2019

Research Outlook

UMT Research

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Learning Resource Center

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UMT Research Outlook 2019

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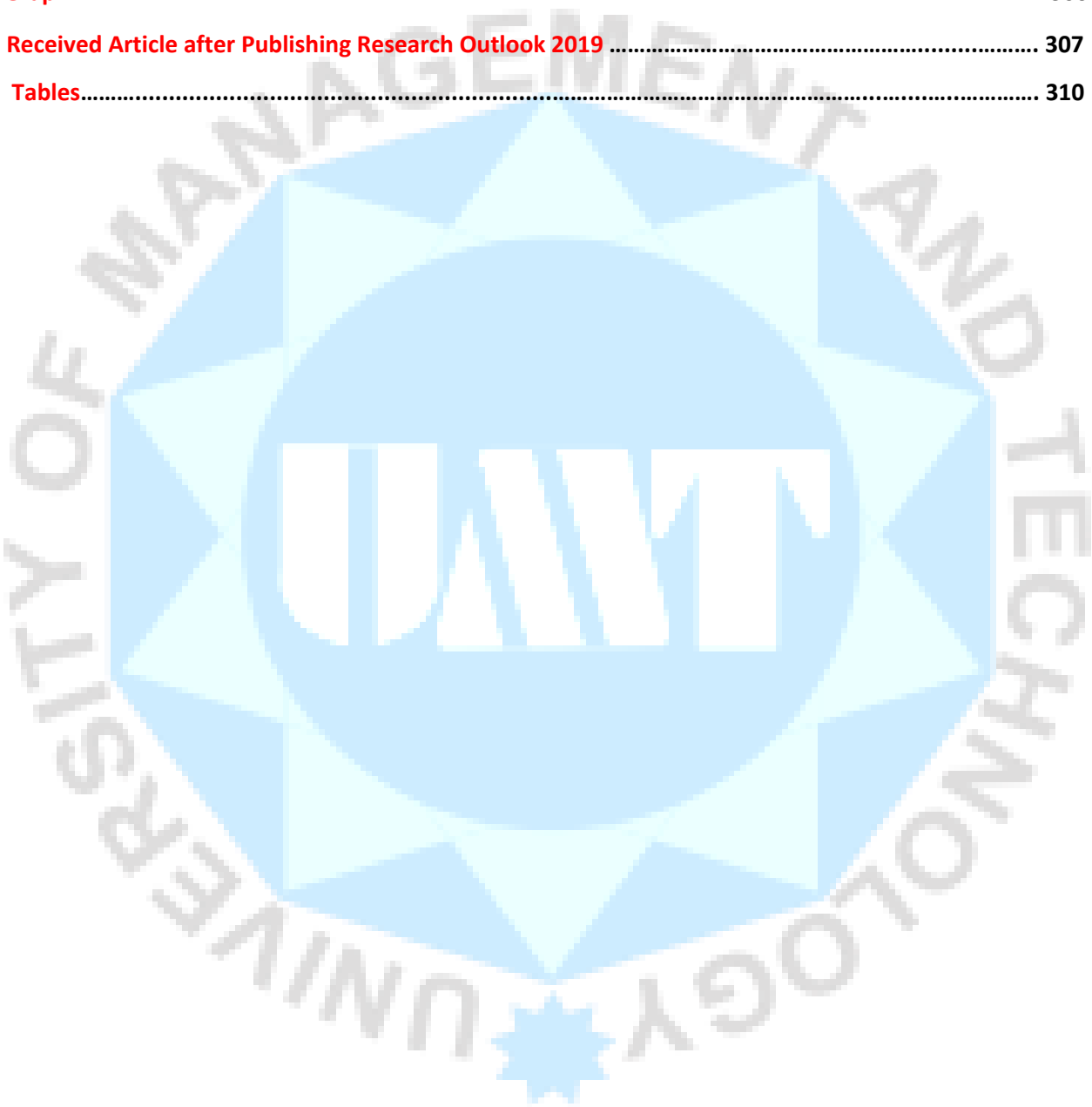
Table of Contents



School of Science (SSC)

Department of Chemistry

Research Articles

1. **Ahmad, A., Aslam, M. U., Afzal, M. S**., & Bhutta, Z. (2019). Organogenesis: need of the current world. *Chinese Medical Journal*, 132(7), 849-852. doi: 10.1097/cm9.0000000000000048.**(Arsalan Ahmad, Muhammad Umer Aslam (Chemistry/SSC), Muhammad Sohail Afzal (Life Sciences/SSC) "Correspondence" Web of Science JCR Listed (IF: 1.555)**
   Abstract: Not available.
   Keywords: *not available.*

2. **Arshad, R., Mohyuddin, A.,** Saeed, S., & **Hassan, A. U.** (2019). Optimized production of tannase and gallic acid from fruit seeds by solid state fermentation. *Tropical Journal of Pharmaceutical Research*, 18(5), 911-918. doi: 10.4314/tjpr.v18i5.1.**(Rida Arshad, Ayesha Mohyuddin, Abrar-Ul-Hassan (Chemistry/SSC) Web of Science JCR Listed (IF: 0.439)**
   Abstract: Purpose: To investigate the possibility for gallic acid production from different tannin-rich fruit seeds using Aspergillus oryzae via solid-state fermentation. Methods: Fruit seeds of apple, guava, tamarind, black plum and watermelon were analyzed to estimate the synthesis of an enzyme tannase and its product gallic acid. Various physicochemical parameters were optimized to increase the gallic acid yield. Gallic acid was extracted by Soxhlet apparatus and identified by Fourier-transform infrared spectroscopy (FTIR). It was quantitatively determined by high performance liquid chromatography (HPLC). Results: Amongst the various substrates tested, black plum seeds gave the highest activity of 34.40 U/g for tannase and 16.66 mg/g for gallic acid under optimized physicochemical conditions, i.e., 1:3 substrate: moisture ratio, 30 degrees C, 96 h incubation period and pH 5.5. Addition of carbon source had a negative effect on production while ammonium sulphate (0.2 %) as nitrogen source increased the yield of both products. The gallic acid produced was 98.5 % pure, compared to the standard. Conclusion: Production of tannase and gallic acid via solid-state fermentation conditions has been optimized in vitro. The optimized conditions can be utilized on a commercial scale for economically viable production of gallic acid.
   Keywords: *tannin rich seeds, solid-state fermentation, tannase, gallic acid, aspergillus oryza.*

3. Ijaz, F., **Shafqat, S. S.**, Ahamd, H. A., Munawar, M. A., & Khan, M. A. (2019). Vic-Tricarbonyl Compounds of Quinolines: Analogues of Ninhydrin: A Short Review. *Journal of Heterocyclic Chemistry, 56*(4), 1231-1238. doi: 10.1002/jhet.3506.**(Syed Salman Shafqat (Chemistry/SSC) Web of Science JCR Listed (IF: 1.241)**
   Abstract: Derivatives of ninhydrin are extensively used in the field of forensic sciences as important latent fingerprint reagents. Many works have been performed upon their synthesis and reactivity, but there are many spaces to work on the compounds of quinoline-2,3,4(1H)-triones-analogues of ninhydrin, in both dimensions: synthesis and reactivity, and according to the best of our knowledge, not a single detailed or short compiled article has been published for these compounds. This review briefly summarizes the chemistry of quinoline-2,3,4(1H)-triones.
   Keywords: *not available.*

4. **Javed, M.**, Saqib, A. N. S., Ata ur, R., Ali, B., Faizan, M., Anang, D. A., . . . Abbas, S. M. (2019). Carbon quantum dots from glucose oxidation as a highly competent anode material for lithium and sodium-ion batteries. *Electrochimica Acta*, 297, 250-257. doi: 10.1016/j.electacta.2018.11.167.**(Mohsin Javed (Chemistry/SSC) Web of Science JCR Listed (IF: 5.383)**

Abstract: Carbon quantum dots derived from the chemical oxidation of D-(+)-glucose have been efficiently synthesized in good yield using a simple and economically viable approach. Carbon quantum dots possess a quasi-spherical structure with facile storage and transport channels for lithium and sodium-ions. When applied as an anode for the lithium-ion battery, the as-prepared quantum dots demonstrate a superior and stable cycling performance after 500 cycles (864.9 mAh g(-1) at 0.5 C) with capacity retention of 91.6%, and a good rate performance (340.2 mAh g(-1) at 20 C). As a sodium-ion battery anode, the quantum dots present a specific capacity of 323.9 mAh g(-1) at 0.5 C and capacity retention of 72.4% after 500 charge/discharge cycles, indicating an excellent cycling stability. A relatively moderate rate performance of 123.6 mAh g(-1) is achieved at the 20 C rate. This study demonstrates the use of individual quantum dots as a potential electrode material for lithium-ion, and sodium-ion battery applications, and it will definitely result in the fabrication of new composite materials in the energy-storage field. The extreme downsizing to the quantum regime has led to the achievement of utmost properties that have been prescribed to the quantum effects, efficient ion diffusion, and the charge transfer.

Keywords: *carbon quantum dots, glucose, anode, lithium-ion batteries, sodium-ion batteries.*

5. Kausar, N., Muratza, S., Raza, M. A., Rafique, H., Arshad, M. N., Altaf, A. A., . . . **Shafqat, S. S**. (2019). Sulfonamide hybrid schiff bases of anthranilic acid: Synthesis, characterization and their biological potential. *Journal of Molecular Structure, 1185*, 8-20. doi: 10.1016/j.molstruc.2019.02.056.**(Syed Salman Shafqat (Chemistry) Web of Science JCR Listed (IF: 2.120) (SKT Campus)**

   Abstract: In the present work, the novel Schiff bases (03-20) of 4-chloro-N-[2-(hydrazinocarbonyl) phenyl]benzenesulfonamide (02) were synthesized by reacting it with various aldehydes. 4-Chloro-N-[2-(hydrazinocarbonyl) phenyl] benzenesulfonamide (02) was synthesized by reacting methyl 2-{[(4-chlorophenyl)sulfonyl]amino}benzoate (01) with hydrazine. All synthesized compounds (01-20) were characterized by using FTIR, NMR and Mass spectrometry and by single crystal X-ray diffraction (XRD) analysis techniques. The synthesized compounds were screened for their enzyme inhibition potential against AChE and BChE enzymes. Molecular docking studies were carried out to demonstrate putative binding modes. Antioxidant potential of the synthesized compounds was also determined. Enzyme inhibition assay revealed that compounds 02 and 12 showed maximum inhibition against AChE enzyme with percentage inhibition of 91% and 83% respectively, while compounds 12 and 07 showed highest inhibition against BChE with percentage inhibition of 92% and 81% respectively. Molecular docking studies supported the results of enzyme inhibition assay with binding energy values of -8.49 kcal mol(-1) against AChE and -8.39 kcal mol(-1) against BChE for compound 12. Antioxidant studies also showed good results with percentage scavenging of 96% for both compounds 02 and 19 investigated by DPPH scavenging method. (C) 2019 Published by Elsevier B.V.

   Keywords: *sulfonamide, mental disorders, docking studies, hydrazine, methyl anthranilate, DPPH.*

6. **Khan, S. A., Shahid, S.**, Kanwal, S., Rizwan, K., Mahmood, T., & Ayub, K. (2019). Synthesis of novel metal complexes of 2-((phenyl (2-(4-sulfophenyl) hydrazono) methyl) diazenyl) benzoic acid formazan dyes: Characterization, antimicrobial and optical properties studies on leather. *Journal of Molecular Structure, 1175*, 73-89. doi: 10.1016/j.molstruc.2018.07.081.**(Shakeel Ahmad Khan, Sammia Shahid (Chemistry/SSC) Web of Science JCR Listed (IF: 2.120)**

   Abstract: We have developed novel formazan dyes (18-23) of enhanced fastness properties with cost-effectiveness in an aqueous system, without employing any Buffers and organic solvents. Their development was entailed of the synthesis of 2-((phenyl (2-(4-sulfophenyl) hydrazono) methyl) diazenyl) benzoic acid followed by the diazotization of 2-aminobenzoic acid that further reacted with the 4-[(2Z)-2-benzylidenehydrazinyll benzene sulfonic acid. The multi-chromic (1:1 and 2:1) metal complexes of 2 ((phenyl

(2-(4-sulfophenyl) hydrazono) methyl) diazenyl) benzoic acid had been developed with the salts of Cr, Fe, Co, Cu and Ni; and they were characterized by elemental analysis, powder X-ray crystallography, Ultraviolet-visible, Fourier transforms infrared, Proton nuclear magnetic resonance and C-13-nuclear magnetic resonance spectroscopic techniques. Density functional theory (DFT) studies of all dyes (18-23) were performed to evaluate the most stable geometries and structural parameters as well. The synthesized formazan dyes were evaluated for their different fastness (light, wash, perspiration), exhaustion and fixation properties on goat leather fabric and were revealed to have virtuous fastness properties (3-5, 4-5, 3-5, and 4-5) with high percentage value of exhaustion and fixation ranged from 91 to 97% and 90-98% respectively. The synthesized formazan dyes (18-23) were developed different colors such as Red, Brown, Green, Black, and Blue on leather. Synthesized formazan dyes were also evaluated for their antibacterial propensity on leather substrate and in solution by agar well diffusion method. The metal complex formazan dye (21) was demonstrated the significant bactericidal propensity against E. coli, S. aureus, Klebsiella and B. subtilis in solution and on leather by exhibiting maximum ZOIs (19 +/- 0.05 mm, 25 +/- 0.07 mm, 23 +/- 0.09 mm, 27 +/- 0.03 mm) and percentage reduction in bacterial growth (60 +/- 0.03%, 69 +/- 0.07%, 80 +/- 0.05% and 86 +/- 0.08%) respectively. Hence, newly synthesized formazan dyes (18-23) have efficient optical and antibacterial properties that would be proved valuable for the development of new industrial products to be commercialize.

Keywords: *synthesis, formazan dyes, characterization, optical properties, antimicrobial propensity.*

7. **Khan, S. A., Shahid, S.**, **Nazir, M.,** Kanwal, S., Zaman, S., Sarwar, M. N., & **Haroon, S. M.** (2019). Efficient template based synthesis of Ni nanorods by etching porous alumina for their enhanced photocatalytic activities against Methyl Red and Methyl Orange dyes. *Journal of Molecular Structure, 1184*, 316-323. doi: 10.1016/j.molstruc.2019.02.038.**(Shakeel Ahmad Khan, Sammia Shahid, Maryam Nazir, Shah Muhammad Haroon (Chemistry/SSC) Web of Science JCR Listed (IF: 2.120)**

   Abstract: Organic-effluents of industrial and agricultural mess are a severe menace to the environs and human-health. Accomplishing consistent photocatalytic-disintegration of organic-effluents under sunlight conditions would have thrilling insinuations for practical manure-treatment. We were fabricated the highly ordered one dimensional Ni nanorods through simple and economical approach via electro-deposition of commercially available Nickel nitrate powder [Ni (NO3)(2).6H(2)O] inside the aluminum template. The fabricated Ni nanorods were evaluated for their potential application as photocatalyst system to disintegrate the synthetic dyes (Methyl Red and Methyl Orange) under sunlight irradiation. The morphology (size and shape), crystalline nature, chemical constituents, band gap energy data, topographical and nanomechanical properties of the fabricated Ni nanorods were characterized through Scanning Electron Microscopy (SEM), X-Ray Diffraction (XRD), Energy dispersive X-Ray, UV-Visible spectroscopy, and Atomic Force Microscopy (AFM) which were corroborated the successful formation of desired Nickel nanorods. Furthermore, the results of photocatalytic activity were confirmed the photocatalytic nature of the fabricated Ni nanorods. The fabricated Ni nanorods were significantly disintegrated the Methyl red and Methyl orange under sunlight irradiation to their respective products in reduced period. Hence, the fabricated Ni nanorods would be prove beneficial photocatalyst system keeping the environment safe from the threats of noxious pollutants produced by different industrial sectors.

   Keywords: *synthesis, ni nanorods, porous alumina, photocatalytic, methyl red, methyl orange.*

8. **Qureshi, K.**, Ahmad, M. Z., Bhatti, I. A., Zahid, M., Nisar, J., & Iqbal, M. (2019). Graphene oxide decorated ZnWO4 architecture synthesis, characterization and photocatalytic activity evaluation. *Journal of Molecular Liquids, 285*, 778-789. doi: 10.1016/j.molliq.2019.04.139.**(Khizar Qureshi (Chemistry/SSC) Web of Science JCR Listed (IF: 4.561) (SKT Campus)**

Abstract: Graphene oxide decorated ZnWO4(GO-ZnWO4) nanocomposite was synthesized by hydrothermal route and characterized using X-rays diffractometry (XRD), scanning electron microscope (SEM), energy dispersive x-rays (EDX), UV-Vis and particle size analyzer. The GO-ZnWO4 composites were in pure crystalline phase with average particle size of 30 nm, spherical and uniformly distributed having band gap value of 3.13 eV. The photocatalytic activity (PCA) was monitored by degrading cetirizine hydrochloride (C-HCl) under UV irradiation. The process variables were optimized through response surface methodology (RSM) and at optimum conditions, up to 89% degradation of C-HCl was achieved and the RSM model (R-2 = 0.98) showed a satisfactory correlation between the experimental and predicted response for the degradation of C-HCl. The hydrothermal route employed was efficient to prepare GO-ZnWO4 nanocomposite and this class of catalysts might be active photocatalyst for the degradation of pharmaceutical agents in the industrial wastewater.
Keywords: *graphene oxide, zinc tungstate, hydrothermal route, cetirizine dihydrochloride, response surface methodology, photocatalysis.*

9. Shabir, G., **Arif, M.,** Saeed, A., & Hussain, G. (2019). Synthesis and Optical Study of Sensitive and Selective Calix 4 Based Cu2+ Ion Detection Probes. *Russian Journal of General Chemistry, 89*(4), 813-818. doi: 10.1134/s1070363219040285.**(Muhammad Arif (Chemistry/SSC) Web of Science JCR Listed (IF: 0.643)**
Abstract: Naked-eye colored chemo dosimeters based on symmetrical calix[4]azo dye conjugates A(1-3) are synthesized and characterized. Calix[4]azo dye conjugates exhibit high selectivity and sensitivity in detection of Fe2+, Ni2+, Co2+, and Cr3+ ions, and the highest sensitivity is determined for Cu2+. For the rapid monitoring of Cu2+ ions a simple paper test strip system is developed.
Keywords: *naked-eye, calix[4] based Cu2+, chemodosimeter.*

10. Taufa, T., Gordon, R. M. A., Hashmi, M. A., **Hira, K.,** Miller, J. H., Lein, M., . . . Keyzers, R. A. (2019). Pyrroloquinoline derivatives from a Tongan specimen of the marine sponge Strongylodesma tongaensis. *Tetrahedron Letters, 60*(28), 1825-1829. doi: 10.1016/j.tetlet.2019.06.014.**(Kainat Hira (Chemistry/SSC) Web of Science JCR Listed (IF: 2.259)**
Abstract: Pyrroloquinoline alkaloids are well known bioactive metabolites commonly found from latrunculiid sponges. Two new pyrroloquinoline alkaloids, 6-bromodamirone B (1) and makaluvamine W (2), were isolated from the Tongan sponge Strongylodesma tongaensis. Makaluvamine W (2) contains an oxazole moiety, which is rare in this large group of natural products, and is the first example of a pyrroloquinoline with nitrogen substitution at C-8. Both 1 and 2 lacked activity against a human promyelocytic leukemia cell line (HL-60), supporting the premise that an intact iminoquinone moiety plays a key role in the cytotoxicity of this compound class. The chemotaxonomic impact of these makaluvamine-type compounds is also discussed.
Keywords: *chemotaxonomy, DP4, NMR, oxazole, pyrroloquinoline, sponge.*

11. Zafar, M. N., Saeed, M., Nadeem, R., Sumrra, S. H., **Shafqat, S. S.,** & Qayyum, M. A. (2019). Chemical pretreatments of Trapa bispinosa's peel (TBP) biosorbent to enhance adsorption capacity for Pb(II). *Open Chemistry, 17*(1). doi: 10.1515/chem-2019-0031.**(Syed Salman Shafqat (Chemistry/SSC) Web of Science JCR Listed (IF: 1.512) (SKT Campus)**
Abstract: In this study, Trapa bispinosa's peel (TBP) biomass is exploited as an effective, low cost and new adsorbent to remove Pb(II) from aqueous solution. TBP is pretreated and modified with HNO3, HClO4 and H2O2 to enhance the Pb(II) removal and it is perceived that chemical modifications enhance the adsorption capacity of TBP. The adsorption behavior of Pb(II) is studied under different conditions, including pH (3-6), TBP dose (0.05-0.8 g), stirring speed (100-200 rpm), initial Pb(II) ion concentration (25-400 mg L-1) and contact time (0-1440 min). Kinetic study reveals sorption is fast in first 15 to 30 min achieving equilibrium in 60 min with q(max) (mg g(-1)) are 77.09, 105.40 and 123.82 for NT-TBP, NA-TBP and HCA-TBP respectively. The

Langmuir model successfully defines the sorption data having higher R-2 and good agreement between theoretical and experimental uptake capacity of Pb(II). The kinetic study exhibits that the pseudo-second order rate equation is better portrayed sorption process. TBP modified with HClO4 shows the highest metal uptake in comparison to HNO3, H2O2 modified TBP and native TBP.

Keywords: *trapa bispinosa, pb(ii), isotherm models, kinetics, chemical pretreatments.*

12. **Khan, S. A., Arshad, Z., Shahid, S., Arshad, I.,** Rizwan, K., **Sher, M., & Fatima, U.** (2019). Synthesis of TiO2/Graphene oxide nanocomposites for their enhanced photocatalytic activity against methylene blue dye and ciprofloxacin. *Composites Part B: Engineering, 175*, 107120. doi: https://doi.org/10.1016/j.compositesb.2019.107120. **(Shakeel Ahmad Khan, Zunaira Arshad, Sammia Shahid, Ishwa Arshad, Mudassar Sher, Urooj Fatima (Chemistry/SSC) Web of Science JCR Listed (IF: 6.864)**

Abstract: We report the synthesis of TiO2/Graphene oxide nanocomposites (2%, 4%, 6% and 8%) by liquid phase deposition of titania on graphene oxide (GO) nanosheets. This chemical method of synthesis was used due to hydrophobic/hydrophilic incompatibility of GO with metal oxides. The fabricated TiO2/GO nanocomposites were successfully characterized using various diffraction, electron microscopy and spectroscopic techniques i.e. X-Ray Diffraction (XRD), Scanning Electron Microscope (SEM), Energy-Dispersive X-Ray (EDX), Ultra-Violet Visible, Diffuse Reflectance Spectroscopy (DRS) and Fourier Transform Infra Red (FTIR). Photocatalytic activity against methylene blue dye and ciprofloxacin was carried out by the synthesized nanocomposites under sun light spectrum. Results were revealed that average crystallite size (12.42 nm, and 12.50 nm) was observed for the synthesized pure TiO2 and TiO2/GO (8%) nanocomposites respectively with crystalline nature and spherical morphology. Moreover, synthesized TiO2/GO (8%) nanocomposites were found to have larger surface area (91.25 m2g-1) and narrow energy band-gap values (2.47 eV) than that of pure TiO2 (55.93 m2g-1 and 3.06 eV) respectively. Furthermore, the TiO2/GO (8%) nanocomposites exhibited fastest and highest rate of photocatalytic degradation of methylene blue among all composites (2%, 4%, and 6%) and pure TiO2 in much reduced period. Their excellent photocatalytic activity against synthetic dye and ciprofloxacin under the spectrum of visible region was attributed to thin two dimensional sheet support, larger surface area, narrow band gap, higher adsorption capacity and good electron acceptability of GO. Hence, the fabricated nanocomponents could be proved valuable photocatalytic system to safe our environs from the intimidations of toxic waste products produced by different industries.

Keywords: *TiO2, graphene oxide, photocatalytic activity, methylene blue, ciprofloxacin.*

13. **Shahid, S., Fatima, U., Rasheed, M. Z.,** Asghar, M. N., Zaman, S., & Sarwar, M. N. (2019). Enhanced sunlight-driven photocatalytic performance of Ag–ZnO hybrid nanoflowers. *Applied Nanoscience*. doi: 10.1007/s13204-019-01076-4.**(Sammia Shahid, Urooj Fatima, Muhammad Zaheer Rasheed (Chemistry/SSC) Web of Science JCR Listed (IF: 3.198)**

Abstract: Photocatalytic materials such as Ag-coated ZnO nanoflowers, pristine ZnO nanoflowers and ZnO nanorods were synthesized by template-assisted method for the treatment of industrial waste water through photocatalysis. Electropolishing and anodization lead to the formation of alumina template. After that, hydrothermal treatment was carried out for the growth of ZnO nanoflowers and nanorods on the template. The morphology of synthesized samples was investigated by scanning electron microscope, X-ray diffraction patterns and energy-dispersive X-ray spectroscopy. XRD patterns of samples clearly indicate the well crystalline structure of synthesized materials. The presence of Ag in Ag-coated ZnO nanoflowers was confirmed by EDS spectral analysis and X-ray diffraction patterns. Grain size was found to be in the range of 10–25 nm as calculated by Scherer's formula from XRD patterns. The sunlight-driven photocatalytic activity of Ag-coated ZnO nanoflowers, ZnO nanoflowers and ZnO nanorods was investigated and compared with each other. In addition, the stability and recovery of photocatalyst were also checked. Photocatalytic

degradation experiment results indicated that Ag-coated ZnO nanoflowers had highest photocatalytic activity towards methylene blue dye.

Keywords: *pristine zno nanoflowers, hydrothermal synthesis, anodization, photocatalysis.*

14. Asghar, M. N., Anwar, A., Rahman, H. M. A., **Shahid, S.,** & Nadeem, I. (2019). Green synthesis and characterization of metal ions-mixed titania for application in dye-sensitized solar cells. *Toxicological & Environmental Chemistry, 100*(8-10), 659-676. doi: 10.1080/02772248.2019.1590582.**(Sammia Shahid (Chemistry/SSC) Web of Science JCR Listed (IF: 0.971)**

    Abstract: The objective of the present study is to synthesize various metal ions mixed TiO2 nanoparticles using a continuous hydrothermal synthesis pilot reactor for dye-sensitized solar cells (DSCs). In the pilot plant, aqueous solutions of the metal salts are mixed with a flow of supercritical water (450?°C and 24.1?MPa) in a confined jet mixer for continuous synthesis of metal ions-mixed nano-titania. Characterization of the particles was made using Brunauer?Emmett?Teller technique for specific surface area, powder X-ray diffraction analysis and transmission electron microscopy for identification and crystallite size, X-ray photoelectron spectroscopy for surface analysis and infrared spectroscopy for distinct group identification. Following the already existing procedures and using the titanates synthesized, dye-sensitized cells of 1?cm2 area were assembled and their photovoltaic parameters were evaluated under standard test conditions. The power conversion efficiencies (? %) for 40?mol % Zn2+, 5?mol % Zr4+ and 10?mol % Zn4+ titania were obtained to be 4.8, 4.95 and 4.9, respectively. The promising efficiency results from a greener and large-scale production of nano-titania is a step forward towards commercializing DSC technology.

    Keywords: *continuous hydrothermal synthesis, titania, dye-sensitized solar cells.*

15. **Muhsan, M. S., Nadeem, S., Hassan, A. U., Mohyuddin, A., Shahid, S.,** & Ali, S. (2019). Synthesis of Carbon Nanoparticles by Using Seed Oils. *Pakistan Journal of Scientific & Industrial Research Series A: Physical Sciences, 62*(1), 1-7.**(Muhammad Salman Muhsan, Sohail Nadeem, Abrar-Ul-Hassan, Ayesha Mohyuddin, Sammia Shahid (Chemistry/SSC) SJR**

    Abstract: Synthesis of carbon nanoparticles was carried out by using different seed oils (olive oil, linseed oil, almond oil, eucalyptus oil, lemon oil, and cardamom oil). Simple combustion technique was applied and it was efficient. Nanoparticles of carbon having nano range were …

    Keywords: *scanning electron microscope, X-ray, diffraction techniques, carbon nanoparticles.*

16. Afzal, A. M., Manzoor, A., Khan, M. Z., Khan, M. F., Skindar, A., Anwer, U., & **Ahmed, Z.** (2019). Effect of Cobalt Substitution on Magnetic, Resistivity and Dielectric Properties of Nickel-Zinc Ferrite (CoxNix-0.5Zn0.5Fe2O4). *Journal of Nanoelectronics and Optoelectronics, 14*(9), 1344-1352. doi: 10.1166/jno.2019.2566.**(Zaheer Ahmad (Chemistry/SSC) Web of Science JCR Listed (IF: 0.989)**

    Abstract: Ferrite materials have a gigantic potential in spintronics and memory devices due to ferroelectric and ferro-magnetic properties at room temperature. In recent work, we synthesized and studied the different characterization of Co-substituted Nickel-Zinc ferrite. We calculated the average crystalline size of the material by X-ray diffraction (XRD) and confirmed by Scanning electron microscope (SEM). We investigated the lattice constant of Cobalt substituted Nickel-Zinc ferrite (CoxNix-0.5Zn0.5Fe2O4) and it was also observed that the lattice constant increased due to the incorporation of cobalt ion. We also studied the magnetic properties and observed that the magnetic properties were directly related to the incorporation of cobalt ion. Further, we analyzed the dc resistivity, dielectric loss tangent (tan delta) and dielectric dispersion with frequency in Co-substituted Nickel-Zinc ferrite.

    Keywords: *DC resistivity, auto-combustion, dielectric dispersion, saturation magnetization, crystalline size, spinel ferrite.*

17. **Ahmed, Z.,** Afzal, A. M., Khan, M. F., Manzoor, A., Khalil, H. M. W., & Aftab, S. (2019). Copper-Doped Nickle-Oxide Nanoparticles for Photocatalytic Degradation of Erichrome Black-T and Methylene Blue and Its Solar Cell Applications. *Journal of Nanoelectronics and Optoelectronics, 14*(9), 1304-1312. doi: 10.1166/jno.2019.2551.**(Zaheer Ahmad (Chemistry/SSC) Web of Science JCR Listed (IF: 0.989)**

Abstract: Metal oxides and thin films nanostructures have been attaining a great interest due to their auspicious properties, stability at high temperature and durability which make them an intriguing candidate for photocatalysis and solar cell applications. In this study, we doped NiOx nanoparticles with Copper (Cu) to enhance the photocatalytic and solar cell activity. However, we investigate the size, thickness, photocatalytic activity and photovoltaic characterization of CuO, NiOx and Cu-NiOx nanoparticles. We observed the size and band gap of CuO, NiOx and Cu-doped NiOx nanoparticles. Although, the band gap of NiOx nanoparticles is reduced by Cu doping which leads to the enhancement of photocatalic activity degradation, photocurrent and power conversion efficiency. Moreover, we demonstrated the nanoparticles thin film based solar cell manifested by ITO/NiOx and ITO/Cu-NiOx junctions. The power conversion efficiency (PCE) is improved from 3.1% to 4.3% when NiOx nanoparticles were doped with Cu to synthesis Cu-NiOx nanoparticles thin film. Thus, doping of high transition metal nanoparticles provide new ideas in nanoelectronics and optoelectronic devices.

Keywords: *NiOX-nanoparticles, photocatalytic activity, photocatalytic degradation, dyes-degradation, solar cell, photoconductivity.*

18. Shahid, M., Farooqi, Z. H., Begum, R., **Arif, M.,** Wu, W. T., & Irfan, A. (2019). Hybrid Microgels for Catalytic and Photocatalytic Removal of Nitroarenes and Organic Dyes From Aqueous Medium: A Review. *Critical Reviews in Analytical Chemistry*. doi: 10.1080/10408347.2019.1663148.**(Muhammad Arif (Chemistry/SSC) Web of Science JCR Listed (IF: 4.325)**

Abstract: Polymer microgels loaded with inorganic nanoparticles have gained much attention as catalytic systems for reduction of toxic chemicals. Enhanced catalytic properties of hybrid microgels are related to the stimuli responsive nature of microgels and extraordinary stability of nanoparticles within network of polymer microgels. Catalytic properties of hybrid microgels can be tuned very easily by slight variation in environmental conditions. Herein we have reviewed catalytic reduction of toxic chemicals such as nitroarenes and organic dyes in the presence of appropriate hybrid microgel catalytic systems under different operating conditions of reaction. Recent advancements in catalytic behavior of hybrid microgels with special emphasis on their ability to catalytically degrade various toxic chemicals has been presented in this review.

Keywords: *catalytic degradation, hybrid microgels, nano-catalysis, toxic chemicals.*

19. **Shahid, S., Fatima, U., Sajjad, R., & Khan, S. A.** (2019). Bioinspired nanotheranostic agent: zinc oxide; green synthesis and biomedical potential. *Digest Journal of Nanomaterials and Biostructures, 14*(4), 1023-1031. **(Sammia Shahid, Urooj Fatima, R. Sajjad, Shakeel Ahmad Khan (Chemistry/SSC) Web of Science JCR Listed (IF: 0.638)**

Abstract: Extraordinary biocompatibility and low toxicity has proved ZnO as potential nanotheranostic agent. Eucalyptus globulus leaf extract facilitates green synthesis of zinc oxide nanoparticles under ambient conditions for estimation of antibacterial, antioxidant and cytotoxic activity on MCF-7 cell. Samples were characterized by Transmission electron microscopy, X-ray Diffraction and UV-Vis Spectrophotometrically. Grains shape was spherical with mean size of 12.63 nm. Streptococcus pseudopneumoniae gave best zone of inhibition with Eucalyptus globulus ZnO Nanoparticles. DPPH assay showed 73% radical scavenging at 250 g/ml. while cytotoxic effect was in between 29-95%. It was concluded that synthesis of ZnO nanoparticles via

Eucalyptus globulus is simple, ecofriendly and capable for strong antioxidant, antibacterial, cytotoxic and antitumor
effect.
Keywords: *green synthesis, eucalyptus globulus, cytotoxic, biocompatibility.*

20. **Fatima, U., & Shahid, S.** (2019). Facile synthesis of novel highly photocatalytic graphitic carbon nitride/NiO nanocomposites for wastewater treatment. *Materials Research Express, 6*(11), 115541. doi: 10.1088/2053-1591/ab4dd6. **(Urooj Fatima, Sammia Shahid (Chemistry/SSC) Web of Science JCR Listed (IF: 1.449)**
Abstract: A Novel Nickel oxide graphitic carbon nitride nanocomposite was prepared by direct mixing method and used for treatment of wastewater by photocatalysis. Nickel oxide nanoparticles were synthesized by precipitation method and subjected to different characterization like; x-ray diffraction patterns, scanning electron microscope, energy-dispersive x-ray spectroscopy and UV-Vis spectrophotometry. X-ray diffraction analysis showed that Nickel oxide graphitic carbon nitride nanocomposite has crystalline structure and nickel oxide nanoparticle has face centered cubic structure. Energy-dispersive x-ray spectroscopy analysis confirms the purity of synthesized material. Photocatalytic activity was perform to notify photosensitivity of synthesized material against methylene blue dye present in wastewater and results showed that synthesized material has outstanding ability to degrade methylene blue dye under sun light irradiation as it degrade 92% dye in 2 h. Furthermore, reusability or stability of prepared photocatalyst was investigated, results showed synthesized material was stable even after four consecutive cycles. Therefore it is concluded that Nickel oxide graphitic carbon nitride nanocomposite is an excellent and most promising photocatalyst to treat wastewater.
Keywords: *graphitic carbon nitride, nickel oxide, nanocomposite, reusability, photocatalysis, methylene blue.*

21. Ikram, M., Hussain, S., & **Javed, M.** (2019). Review: Nature and Therapeutic Potential of Silica-based Mesoporous Bioactive Glass *Scientific Inquiry and Review (SIR), 3*(2), 17–26. **(Mohsin Javed (Chemistry/SSC) UMT Journal**
Abstract: Bioactive materials have received much consideration in the last couple of years because of their astounding properties in various fields. Bioactive Glasses (BGs) are utilized as part of biomedical applications, such as antibacterial materials. BGs can be delivered by means of dissolve extinguishing strategy or sol-gel technique. Bactericidal silverdoped sol-gel inferred mesoporous silica-based bioactive glasses were accounted for the first time in 2000, having the synthesis 76SiO2-19CaO2P2O5-3Ag2O (wt%) and a mean pore width of 28 nm. Bioactive glasses doped with metallic elements such as silver, copper, zinc, cerium and gallium are the focus of this audit in which SiO2, SiO2-CaO and SiO2- CaO-P2O5 frameworks are incorporated as the parent glass creations. Run of the mill uses of mesoporous BGs doped with antibacterial particles incorporate bone tissue recovery, multifunctional earthenware coatings for orthopedic gadgets and orbital inserts, scaffolds with upgraded angiogenesis potential, osteostimulation and antibacterial properties for the treatment of various bone imperfections and also in wound recuperating.
Keywords: *antibacterial, bioactive glass, bone, therapeutic, wound.*

22. Ali, M., Shahzad, M., Ashfaq, M., Tayyib, M., Asrar, M., Gulzar, A., & **Aslam, H. M. U. (**2019). Screening of different rice genotypes (Oryza sativa) against Cnaphalocrocis Medinalis (Lepidoptera: Pyralidae) under field conditions in Lahore, Pakistan. *Pakistan Entomologist, 41*(1), 47-50.**(Hafiz Muhammad Umer Aslam (Chemistry/SSC) Not HEC Recognized**
Abstract: Rice leaf folder has attained the status of major pest from previous few years in Punjab Province. No rice genotype has been reported to carry highly resistance against rice leaf folder. This experiment were conducted in Institute of Agriculture Science University of the Punjab, Lahore during 2016. Randomized

complete block design was used having three replications. Out of 34 genotypes 13 course, 12 fine aromatic and 9 fine non aromatic genotypes were selected. Five weeks data showed that in coarse varieties highest leaf folder infestation were recorded on C-9 (18.18% ± 3.27), Sonahri (17.86% ± 2.80), Nile (16.63% ± 3.12) and lowest infestation were found on KSK-133(12.54% ± 1.53), KS-282 (12.44% ± 1.99), Rondo (12.01% ±1.80) while in fine varieties highest leaf folder infestation were recorded on fine aromatic varieties Kashmir-basmati (11.36 % ± 1.81), Basmati-515 (11.36 % ± 1.81), Dhakan,(10.76 % ± 1.65) and Kasalath (9.89 % ± 1.46); lowest leaf folder infestation were observed on fine non aromatic 7260 (5.51 ± 0.94) and 7240 (4.92 ± 0.79).All other varieties showed intermediate leaf folder infestation. According to IRRI Standard Evaluation system (SES) of rice damage rating scale, our results indicates that only 4 varieties were found moderately resistance with rating scale 3 and all other varieties were found resistance with rating scale 1. It is concluded that KSK-133, KS-282, Rondo and fine non aromatic 7260, 7240 having least infestation of rice leaf folder should be grown in rice grown areas of Punjab, Pakistan.

Keywords: *screening, rice varieties, rice leaf folder, Punjab, Pakistan.*

23. Iqbal, Z., **Javed, M., Rafique, G., & Saleem, T.** (2019). A comparative study of total phenolic contents and antioxidant potential of seeds of Peganum harmala. *International Journal of Biosciences (IJB), 14*(3), 121-127. **(Mohsin Javed, Ghazala Rafique, Tahreem Saleem (Chemistry/SSC) Master Journal List**

Abstract: Various solvents including methanol, hexane, benzene, chloroform and dichloromethane were utilized for the extraction of phenolic contents from the seeds of pegnum harmala. Total phenolic contents (TPC) were determined by using Folin-Ciocalteu reagent method against gallic acid as standard by UV-Vis spectrophotometer at 765 nm while DPPH free radical scavenging activity of the extracts was measure by using UV-Vis spectrophotometer and taking reading at 517 nm and ascorbic acid as standard. Total phenolic contents 27.7 mg GA/g, 22.2 mg GA/g, 26.4 mg GA /g, 30.7 mg GA /g and 17.3 mg GA /g were for dichloromethane, benzene, chloroform, methanol and hexane extracts respectively. Methanol extract showed high TPC content and high antioxidant activity (72%) followed by dichloromethane extract (67%), chloroform extract (63 %), benzene extract (52 %) and hexane extract (48 %) respectively for 50 µL of each sample. The antioxidant activity was concentrated dependent for all the solvents and high TPC contents showed higher antioxidant activity.

Keywords: *peganum harmala l., methanol, dichloromethane, extraction, total phenolic content, antioxidant activity.*

24. Iqbal, Z., **Javed, M.,** Gull, S., Mahmood, M. H.-U.-R., & Hai, Z. (2019). Total phenolic contents of two varieties of Crocus sativus and their antioxidant activity. *International Journal of Biosciences (IJB), 14*(3), 128-132. **(Mohsin Javed (Chemistry/SSC) Master Journal List**

Abstract: Methanolic extract of two varieties of crocus sativus dried stigmas was taken for total phenolic contents and antioxidant activity by using 1,1-diphenyl-2-picryl hydroxide scavenging. UV absorption of both samples separately showed three maximum wavelengths 236 nm and 234 nm (maximum absorbance of picrococine), 320 nm and 308 nm (maximum absorbance of safranal) and 436 nm and 434 nm (maximum absorbance of crocine) respectively. The electrochemical studies showed the oxidation reduction peaks. Total Phenolic content of red and brown saffron by using FC reagent was 5.05 mg and 4 mg of gallic acid equivalent/g of saffron extract respectively. At 50 µL concentration, both red and brown crocus sativus showed 71.68% and 73.70% inhibition respectively.

Keywords: *crocus sativus, extraction,* UV *absorption, total phenolic contents, antioxidant activity.*

25. Iqbal, A., Khan, Z. A., Shahzad, S. A., **Khan, S. A.,** Raza Naqvi, S. A., Bari, A., . . . Umar, M. I. (2019). Synthesis, modeling studies and evaluation of E-stilbene hydrazides as potent anticancer agents. *Journal of Molecular*

Structure, 1197, 271-281. doi: https://doi.org/10.1016/j.molstruc.2019.07.043. **(Shakeel Ahmad Khan (Chemistry/SSC) Web of Science JCR Listed (IF: 2.120)**

Abstract: A group of new thermodynamically more stable *E*-2-styrylbenzohydrazide derivatives (**5a-i**) were synthesized via palladium catalyzed Mizoroki-Heck reaction conditions. All synthesized compounds were characterized by UV-visible, FT-IR, ^{1}H NMR, ^{13}C NMR, mass spectrometry and elemental analysis. Anticancer potential of all synthesized *E*-stilbene analogues (**5a-i**) were investigated via cell proliferation assay and apoptosis by Hoechst 33258 staining assay. The most active compound (**5e)** showed significant anticancer potential against estrogen dependent human breast cancer cells (MCF-7). The cell viability and apoptosis of compound (**5e**) was found 56 ± 0.06% and 80.09 ± 0.07% respectively as compared to standard drug (Doxorubicin) with cell viability of 62 ± 0.03% and apoptosis 73.69 ± 0.05%. Docking studies revealed higher efficacy of compound (**5e**) owing to its better binding affinity and ligand efficiency scores (Ki = 0.000076 nMol). All stilbene hydrazides (**5a-i**) exhibited significant anticancer activity against human breast cancer cells (MCF-7). Therefore, stilbene analogues with hydrazide moiety may offer immense potential for future therapeutic and pharmaceutical applications.

Keywords: *stilbene, hydrazides, mizoroki-heck reaction, breast cancer, docking study.*

26. Khan, M. I., Siddiqi, H. M., Park, C. H., Han, J., Park, H., Kim, B., … **Akhter, T.** (2019). High performance epoxy nanocomposites with enhanced thermal and mechanical properties by incorporating amine-terminated oligoimide-grafted graphene oxide. *High Performance Polymers*, 32(5), 569–587. https://doi.org/10.1177/0954008319888670. **(Toheed Akhter (Chemistry/SSC) SJR**

Abstract: In this work, thermal conductivity and mechanical strength of a commercial epoxy resin were improved by incorporating an amine-terminated oligoimide modified graphene oxide (ATO-GO). For this purpose, the surface of GO was modified with flexible/stable imide backbone and amine terminals. The ATO-GO was incorporated in epoxy proportion to prepare series of nanocomposites. The terminal amino group of ATO-GO also acted as curing moiety for epoxy resin leading to good interfacial compatibility and dispersion in the epoxy matrix resulting in improved properties. The epoxy resin was cured with hardener Aradur-22962 and ATO-GO separately and the results of curing behavior were compared with each other, which clearly showed the curing action of ATO-GO. In the prepared ATO-GO-epoxy nanocomposites, the filler enhanced the thermal conductivity, hardness and elastic modulus without decrease in thermal stability even at higher filler loading. In previous studies, it is reported that at higher GO, filler-loading properties like elastic modulus, hardness values, and glass transition temperature (Tg) were decreased. An enhancement of 59.5% in thermal conductivity was achieved for 5 wt% loading of ATO-GO filler as compared to neat epoxy. Along with this, thermal analysis revealed that the nanocomposites with 5 wt% filler loading have high Tg and thermal strength. Nanoindentation results revealed that elastic modulus and hardness values enhanced by 104% and 147%, respectively, for the same nanocomposites. The enhanced thermal conductivity and good elastic behavior of the ATO-GO-epoxy nanocomposites demonstrated that these can be used as high-performance materials in electronic packing and electronic devices.

Keywords: *ATO-GO, thermal conductivity, nanocomposites, epoxy, graphene oxide, plasticity index.*

27. **Aziz, M.,** Anwar, M., & Iqbal, S. (2019). Theoretical evaluation of valeraldehyde. *South African Journal of Science, 115*, 1-4. **(Muhammad Aziz (Chemistry/SSC) SJR**

Abstract: The aim of this study was to compute the theoretical (software-based) spectroscopic properties of valeraldehyde as a member of the aldehyde family. The structural, thermochemical, electrical and spectroscopic properties of valeraldehyde were investigated using a quantum calculation approach. The infrared, ultraviolet-visible, Raman, and vibrational self-consistent field calculations and thermochemistry were calculated using the computational software GAMESS (General Atomic and Molecular Electronic Structure System) and the nuclear magnetic resonance predictions were calculated. The calculated energy

gap between the lowest unoccupied molecular orbital (LUMO) and the highest occupied molecular orbital (HOMO) was 164.892.eV, which means valeraldehyde is a poor electrical conductor. The band gap is a non-neglected parameter for optical material. Results of the current computational analysis are useful to predict even a complex aldehyde precursor.

Keywords: *DFT spectroscopy calculation, pentanal, aldehyde.*

28. Iqbal, M., Muneer, M., Hussain, S., Parveen, B., **Javed, M.,** Rehman, H. ... Abid, M. A. (2019). Using Combined UV and H2O2 Treatments to Reduce Tannery Wastewater Pollution Load. *Polish Journal of Environmental Studies*, 28(5), 3207-3213. https://doi.org/10.15244/pjoes/92706. **(Mohsin Javed (Chemistry/SSC) SJR**

Abstract: Contaminated wastewater discharged from tanneries in Pakistan creates a lot of pollution problems. This study presents the treatment of wastewater samples collected from inlet and outlet sections of Kasur Tannery Waste Management Agency (KTWMA) in Kasur, Pakistan. The procedure utilizes hydrogen peroxide (H2O2) in the presence of ultraviolet (UV) radiation for the successful degradation of pollutants present in tannery water. The treatment of polluted water samples with UV/H2O2 for the duration of either 45 minutes or 90 minutes has greatly affected the water quality parameters such as biochemical oxygen demand (BOD), chemical oxygen demand (COD), chlorides, chromium, pH, total dissolved solids (TDS) and total suspended solids (TSS). It was concluded that the contaminants were degraded and changed to a great extent as compared to their original concentrations. This process can be considered to be a clean process as it is an environmentally friendly process and does not produce pollutants and solid wastes like other conventional processes.

Keywords: *anneries, wastewater, UV, H2O2, environment.*

Conference Proceedings

1. **Shahid, S., & Taj, S.** (2019). *Antidiabetic activity of extracts of Pistachia khinjuk on alloxan monohydrate induced diabetic mice.* Paper presented at the 2018 2nd International Conference on Functional Materials and Chemical Engineering, Khalifa Univ, Abu Dhabi.**(Sammia Shahid, Saima Taj (Chemistry/SSC) Web of Science**

Abstract: Diabetes is spreading all over the world day by day. There are many ways to treat diabetes mellitus which mainly includes synthetic drugs, homeopathic medicine or Unani medicine etc. These Medicines have many side effects. Natural products; which include herbs, shrubs and large plants, cure diabetes mellitus and prove excellent hypoglycemic activity. These herbal medicines have no reported side effects. Many species of family Anacardiaceae show hypoglycemic activity and used from centuries to cure diabetes. Various pistachio species show hypoglycemic activity and have a very long history of herbal remedies. The present study evaluates the hypoglycemic effect of methanolic extract of Pistachia khinjuk. Six groups of Swiss albino mice were made for extract (80:20 Methanol: water) of Pistachia khinjuk and each group contains six albino mice. All the mice were injected alloxan monohydrate except normal group of wax and extract. Group 1 was treated as normal group and receives no treatment, group 2 receive 5mg/kg of glibenclamide after alloxan monohydrate induction, group 3 receive no treatment after alloxan monohydrate induction, group 4 and 5 receive 500 and 250mg/kg of Pistachia khinjuk extract, while group 6 receives 500mg/kg Pistachia khinjuk wax after alloxan monohydrate treatment. All the mice for extract (Pistachia khinjuk) of group 4, 5 and 6 show hypoglycemic activity and decreases blood glucose level. There may be many factors behind this activity which needs more research on it by isolating and analyzing specific secondary metabolites which causes this effect. The methanolic extract due to phenolic constituents proves to be excellent antidiabetic medicine.

Keywords: *not available.*

Conference Papers

1. **Ashraf, F., & Shahid, S.** (2019). *Comparative Study of Anthelmintic Activity of Three Different Species of Genus Cymbopogon*. Paper presented at the Three Days International Conference on Chemical Sciences Quaid-i-Azam University, Islamabad.**(Faseeha Ashraf, Sammia Shahid (Chemistry/SSC)**

   Abstract: Anthelmintic activity against pest infestation is likely to become more crucial now a day, as they are causing major health obstacles for humans. Infection rates in animals are also increasing which are grazing in contaminated pastures. Some natural compounds especially essential oils are common in family *Lamiaceae* to deal with these parasites. Essential oils contains sufficient amount of oxygenated and phenolic compounds which can be used as anthelmintic agents in contrast to those synthetic drugs on which we are depending a lot. This study covers three plant species *Cymbopogon martinii, Cymbopogon schoenanthus* and *Cymbopogon flexuosus*. This comparative study revealed that species of family *Poaceae* are unconvincingly effective against pests and some arthropods. For testing of anthelmintic activity of essential oils filter paper disc and GC analyzer coupled with MS and FID were used. All oils were more effective as repellents than the commercial product IR3535. Tested oils also depicted low toxicity, showing less than 20% lethality at maximum tested concentration (1.2µL/cm^2) and exposure period (72 h). Assuredly there is a lot of data we received for results but our main concern is to determine most effective specie among three of them. In *vitro* study showed that essential oil of specie *Cymbopogon schoenanthus* resulted in significant effect of anthelmintic activity against *Trichostrongylids* of small ruminants. The aim of this comparative study was to cheer up the scientists to return their area of research to natural products as they are safe.

   Keywords: *not available.*

2. **Shahid, S.** (2019). *Template Assisted Synthesis of Ni Nanorods*. Paper presented at the Emerging Scientist Conference, Faisalabad, Pakistan.**(Sammia Shahid (Chemistry/SSC)**

   Abstract: Highly ordered one dimensional Ni nano rods were successfully fabricated through a simple and inexpensive method of electro-deposition of commercially available Nickel Nitrate powder [$Ni(NO_3)_2.6H_2O$] inside the aluminium template. The aluminium template was prepared in the lab by two step anodization process by using 0.3M oxalic acid solution as an electrolyte and under a constant voltage of 40V. The electro-deposition process was carried out at a constant current density of 10mAcm^{-2}. The morphological and structural properties of grown Ni nanorods were characterized through Scanning Electron Microscopy (SEM), X-Ray Diffraction (XRD) and Atomic Force Microscopy (AFM). The SEM images showed the uniform growth of Ni nanorods and indicated the vertical alignment of nanorods on the aluminium substrate. The diameter of as-prepared Ni nanorods was 40 to 90 nm which is in agreement with the pore diameter of aluminium template. XRD analysis showed the face centered cubic structure of Ni nanorods and verifies the presence of Ni in the template. The topographical study and nano mechanical properties of nanorods were studied using atomic force microscope (AFM). Images taking by AFM indicated the average width and length of Ni nanorods to be 46 nm and 93 nm, respectively. Densely assembled and uni-directionally arranged nanorods with diameters 35 nm to 95 nm and lengths of several micrometers are observed. Template directed synthesis of Ni nanorods indicate the suitability of Direct Current (DC) electro-deposition process as a successful route for template filling to synthesize various metal nanostructures.

   Keywords: *synthesis, ni nanorods, porous alumin, photocatalytic.*

3. **Zahid, A., Shahid, S., & Mukhtar, Z.** (2019). *Fabrication of Ni doped ZnO Nanoparticles by Coprecipitation Method*. Paper presented at the Three Days Conference on Nanomaterials: New Trends in Development and Applications, FCC University Lahore, Pakistan.**(Afifa Zahid, Sammia Shahid, Zahid Mukhtar (Chemistry/SSC)**

   Abstract: The High surface to volume ratio, less band gap and effect of quantum confinement make nano particles beneficial to exhibit strong optical, catalytic and magnetic activities. Transparency and vacancy of

oxygen in ZnO nanoparticles enhance its significance to show strong activities as compare to its bulk material. The doping of transition metals like Mn, Ti, Cd and Ni enhance optical, magnetic, thermal and structural properties of ZnO nanoparticles. This research work reports about the synthesis of ZnO and Ni doped ZnO nanoparticles. The investigation has been made to study the effect of Ni-doping on the ZnO nanoparticles. The Ni doped ZnO nanoparticles were synthesized by co-precipitation method. The surface structure of doped and undoped ZnO was investigated by X-ray diffraction (XRD) and Scanning Electron Microscope (SEM) which confirms that the obtained product is in nanometer range. Doping of Ni on ZnO was verified by energy dispersion X-ray analysis. The Band Gap analysis is studied by ultra violet visible spectrum which reveals incorporation of Ni on ZnO crystals.

Keywords: *band gap, oxygen vacancy, co-precipitation, X-ray diffraction (XRD), scanning electron microscope (sem).*

4. **Ayaz, A. & Shahid, S.** (2019). *Comparative Study of Synthesis of PbS Nanomaterials*. Paper presented at the Three Days Conference on Nanomaterials: New Trends in Development and Applications FCC University Lahore, Pakistan.**(Amber Ayaz, Sammia Shahid (Chemistry/SSC)**

Abstract: Semiconductor nanoparticles have received great interest due to their significant role in fabrication of nano devices with novel optical, electric and magnetic properties when contrasted with the materials in the bulk. This is because of the small band gap energy (0.4eV) and larger excitation Bohr radius (18nm). This comparison study covers the synthesis of PbS nanorods with various methods (Sonochemical, Hydrothermal, Solvothermal route). PbS nanorods were characterized by transmission electron microscopy (TEM), Scanning electron microscope (SEM), energy-dispersive X-ray spectroscopy (EDX), selected area electron diffraction pattern (SAED) and X-ray powder diffraction (XRD). This study further uncovers that surfactant along with their specific concentrations and reaction duration plays important role in the formation of narrow size and high yield of PbS nanorods. Nanorods prepared by the Sonochemical method have a diameter of about 20-60 nm. PbS nanorods prepared by the hydrothermal method have a diameter of about 20-50 nm. PbS nanorods prepared by solvothermal have a diameter of 60-70 nm. The comparative study will nurture the synthesis of PbS nanomaterials with desired morphology and high purity. This comparison is important to identify cost effective and environment friendly route of synthesis. A further study in phocatalysis effects of Pbs Nanowire is suggested.

Keywords: *pbs, nanomaterials, sonochemical, hydrothermal, solvothermal.*

5. **Fatima, R., & Shahid, S.** (2019). *Comparison of Synthesis Sn-Zn-Cu Alloy Nanoparticles*. Paper presented at the Three Days Conference on Nanomaterials: New Trends in Development and Applications FCC University Lahore, Pakistan.**(Rida Fatima, Sammia Shahid (Chemistry/SSC)**

Abstract: Nano-technology has been widely used in many fields now-a-days due to its ability to change the structure of molecules at atomic level. Sn-Zn-Cu alloys are operating as negative electrodes in lithium ion batteries as corrosion resistant. The current comparison gave a comprehensive data on the synthesis of Sn-Zn-Cu alloy nanoparticles, Sn-3.5Ag-XZn and high temperature synthesis of Sn-3.5Ag-0.5Zn. Various techniques were used to produce these alloys. . Several methods were used to prepare nanoparticles but only chemical reduction method using $NABH_4$ and PVPfound most suitable and cheap. Morphology and particle size observed by Transmission electron microscopy and characterized by X-ray diffraction, Scanning electron microscopy and Selected area electron diffraction. Sn-Zn-Cu nanoparticles with a diameter of ~20nm TEM elemental mapping was used to identify the spatial distribution of particles and the second method synthesized the Sn-3.5Ag-Zn nanoparticles with a diameter of 10 and 70nm.The third method synthesized the Sn-3.5Ag-0.5Zn nanoparticles at a temperature of 50°C and 70°C with stirring time of 12h and 3h. TEM and SEM images revealed the diameter which is varied from 10nm to 20nm.

Keywords: *nanotechnology, nanoalloys, chemical reduction method, tem, lithium ion batteries.*

6. **Rais, S., & Shahid, S.** (2019). *Transesterification of Neem Oil into Biodiesel Using Green Synthesized MgO and ZnO Nanoparticles as Catalyst*. Paper presented at the Three Days Conference on Nanomaterials: New Trends in Development and Applications FCC University Lahore, Pakistan.**(Sundas Rais, Sammia Shahid (Chemistry/SSC)**

Abstract: Environment friendly substitute energy sources required to be produced for the purpose to meet the increasing demand for fossil fuels transference. Fossil fuel contribute into the environment contamination and infrequent in the future. Consumption of vegetable oils in the place of fossil fuel is most recognized route. Use of vegetable oils directly as a diesel in engines is inconvenient because of its high value of viscosity, flash point, cloud point, pour point, density and low cetane number. So it needs to be transformed into biodiesel to produce product having convenience with fuel properties of diesel. In order to meet this purpose with high efficiency green synthesized nanoparticles of MgO and ZnO were used. Synthesis of particles by green route was performed to create environmental friendly product. Green synthesis was performed by the use of *Azadirachta indica* (neem) extract as a reducing agent. Synthesized nanoparticles were observed in nanorange of 50-200nm. Synthesis of particles was regular and morphology of ZnO nanoparticles was observed hexagonal wurtzite and MgO nanoparticles face-centered cubic structures. Characterization of synthesized Nanoparticles was performed by UV-VIS, FTIR, SEM and XRD analysis. Biodiesel from seed oil of neem was obtained by using green synthesized MgO and ZnO nanoparticles and MgO and ZnO powder as catalyst in tranesterification process named as MgN, ZnN, MgP, ZnP respectively. It was observed that different properties of produced fuel like kinematic viscosity, density, pour point, flash point, cloud point have decreased values than corresponding oil. At the same time cetane number of produced biodiesel was increased than corresponding oil results in increasing efficiency of oil. GC-MS analysis was used to confirm methyl ester production in the produced biodiesel. By comparing different physical and chemical properties of sample oils it was concluded that biodiesel produced from nanoparticle catalysts were more accurate in their properties, having high yield than the corresponding powder catalyst and cetane number was also found higher. MgN sample was having high yield of 91.2% and ZnN 86.4%. Density, kinematic viscosity, pour point, flash point and cloud point values i.e. 0.80gml^{-1} , 4.2mm^2S^{-1} , -1°C, 127°C, 4°C respectively for MgN were also found decreased than other biodiesels. MgN is having highest cetane number among all i.e. 55. Cetane number confirms ignition efficiency of engine. Further experimentation on different other parameter need to be performed in this research area to get an environmental friendly, decreased pollutant and highly efficient diesel. Biodiesel can mark a major impact in the future if it would be replaced with petroleum and it can provide enhanced fuel properties, decreased emission of unburned hydrocarbons and CO.

Keywords: *not available.*

7. **Murtaza, T., & Shahid, S.** (2019). *Comparative Study of Green Synthesis of Zinc Oxide Nanoparticles by using Different Plant Extracts*.Paper presented at the Three Days Conference on Nanomaterials: New Trends in Development and Applications FCC University Lahore, Pakistan.**(Tousif Murtaza, Sammia Shahid (Chemistry/SSC)**

Abstract: The progress of green chemistry in the synthesis of nanoparticles with the use of plants has engrossed great attention .Nanotechnology has linkage with other sciences as material science, bio-Nano science and technology. They have focused on research and have many applications like medicine, cosmetics, sensors, optoelectronics, storage and cosmetics. This comparative study used three types of different plant like Jatropa latex, Camellia sinesis and Spathodea campanulata and precursor like zinc nitrate and zinc sulphates to synthesize the zinc oxide Nano particles. Biological methods for synthesis of nanoparticles are

proved to be low cost and environmental friendly. These were characterized with U.V, FTIR, XRD, SEM and EDX. XRD confirms the small size as well as high crystallinity of zinc oxide Nano particles. The UV showed absorption in the range from 330-390. The synthesized Nano particles were of size range between 15-100nm.The concentrations of extracts had clear effect on the size of synthesized zinc oxide Nano particles. This study revealed that the best extract route of green synthesis of Nano particle was by using Jatropa latex and Zinc nitrate. The particles size was average 15nm.

Keywords: *not available.*

8. **Hanif, S., & Shahid, S.** (2019). *Comparative study of Biosynthesis of Gold Nanoparticles and its Role as Catalyst in Degradation of 4-Nitrophenol & 4-Nitroaniline*.Paper presented at the Three Days Conference on Nanomaterials: New Trends in Development and Applications FCC University Lahore, Pakistan.**(Sadaf Hanif, Sammia Shahid (Chemistry/SSC)**

   Abstract: Development of green procedure for the synthesis of gold nanoparticles has gained great interest in the field of nanotechnology. Currently, vast range of biological materials such as bacteria and fungi has been reported to synthesize the gold nanoparticles. It was reported that *Pycnoporus sanguineus* could produce large amount of reductase such as laccases, which might enable us to synthesize gold nanoparticles by the fungus. The effects of reaction parameters including plant extract addition, initial gold ion concentration, and solution pH on the characteristics of synthesized gold nanoparticles were evaluated. Fungus *cylindrocladium floridanum*, when cultured in static condition for a period of seven days, the fungus accumulated gold nanoparticles on the surface of the mycelia. Extracellular biosynthesis of gold nanoparticles was achieved using *Escherichia coli* K12 cells without the addition of growth media, pH adjustments or inclusion of electron donors/stabilizing agents. We observed that certain membrane-embedded proteins in the extracellular membrane fraction of the *E. coli* are responsible for reducing gold cation to stable state. The resulting nanoparticles were analyzed by UV-Vis spectroscopy, XRD, AFM, TEM and FT-IR. Gold nanoparticle found wide scale applications in optics, electronics, catalysis, fabrication and in biomedicine. The bio-composites with gold nanoparticles function as an efficient catalyst in degradation of 4-nitrophenol and 4-nitroaniline. All the result suggested that the biological species could be potentially applied for the synthesis of gold nanoparticles.

   Keywords: *gold nanoparticles, bio synthesis, biological species, reductases.*

9. **Shahid, B., & Shahid, S.** (2019). *Comparison of Synthesis of Gold Nanowires by Different Reducing and Capping Agents*.Paper presented at the Three Days Conference on Nanomaterials: New Trends in Development and Applications FCC University Lahore, Pakistan.**(Basma Shahid, Sammia Shahid (Chemistry/SSC)**

   Abstract: Effects of different capping and reducing agents on the synthesis of gold nanoparticles by various methods were compared. Aqueous and methanolic extracts of Pomegranate juice and of *Rhodopseudomonas capsulata* were studied. These agents reduce the gold ions and different shapes were obtained at different concentrations. First method consists of mixing 50ml $HAuCl_4$ with certain concentration of pomegranate juice. Stir the mixture and separated by centrifugation. Then it was washed with deionized water. In second method, $HAuCl_4$ was added to plant extract. Experiment was conducted at 30^oC and pH 6 for 48h; during which reduction of gold ions occurred. In third method, 100 ml of $HAuCl_4$ was heated to 100^oC in round bottom flask equipped with coiled condenser. 2.5 ml of plant extract was pre-neutralized by NaOH and added to boiling solution. The reaction mixture was stirred and mixture changed from pale yellow to grey color. The mixture was kept at boiling temperature and stirred vigorously to obtain nanowires. The shapes were controlled by changing the concentration. At low concentration of gold ions, gold nanoparticles were spherical in shape whereas at high concentration, gold nanowires were formed. The synthesized gold nanowires were then characterized by different techniques i.e. TEM, SAED, XRD, EDX and UV-Visible spectra.

Nanowires with diameter of 30-90 nm (with 1st method), 50-60 nm (with 2nd method) and 15 nm (with 3rd method) were obtained. Efficient synthesis was carried out with first method.
Keywords: *gold nanoparticles, rhodopseudomonas capsulate, capping agent, reducing agent, nanowires.*

10. **Mansoor, S., & Shahid, S.** (2019). *Comparison of Syhthesis of Zinc Stannate Nanoparticles and its Antibacterial Applications*.Paper presented at the Three Days Conference on Nanomaterials: New Trends in Development and Applications FCC University Lahore, Pakistan.**(Sana Mansoor, Sammia Shahid (Chemistry/SSC)**
Abstract: Zinc stannate nanoparticles were obtained by using simple and low-cost hydrothermal method. Potassium hydroxide and sodium hydroxide were used as mineralizer. Zinc stannate nanoparticles are obtained by using solvothermal method and by hydrothermal method as well. In this comparative study hydrothermal method was found to be an effective method and have advantages of low reaction temperature and provide a suitable way to synthesize well crystallized Zn_2SO_4 nanoparticles. The characterization techniques for synthesized Zn_2SO_4 nanoparticles were X-ray diffraction, Field emission scanning electron microscopy, High resolution transmission electron microscope, UV-VIS spectroscopy. X-ray diffraction method usually predicts the morphology, structural properties of Zn_2SO_4. The crystalline size was obtained ~20nm. $ZnSO_4$ have a wide range of application in treating infectious diseases. The antibacterial properties were studied against gram-positive and gram-negative bacteria. Zinc stannate nanoparticles can be used as a bactericidal agent to treat and cure infectious diseases. Field emission Scanning electron microscope results declare that the morphology of nanoparticles as spherical and irregular cubic having size range from 20-50nm.
Keywords: *not available.*

11. **Fatima, H., & Shahid, S.** (2019). *Effect of ZnO Nanoparticles on Viability of Cancer Cells-Comparative Study*.Paper presented at the Three Days Conference on Nanomaterials: New Trends in Development and Applications FCC University Lahore, Pakistan**.(Hira Fatima, Sammia Shahid (Chemistry/SSC)**
Abstract: ZnO particles have photolytic and photo oxidizing ability against chemical and biological species as they belong to a group of metal oxides. Due to their very small size they possess high superficial energy which makes their interaction possible with biomolecules on surfaces and within the cells. This intrinsic tendency introduces them in biomedicines. Toxicity and production of reactive oxygen is inversely relational to the size of nanoparticles and particles with 8nm size are more toxic than larger ones. This comparative study provide data about use of ZnO nanoparticles in cancer treatment by production of reactive oxygen when they get interaction with cancer cells and induce apoptosis to them while normal cells remain intact. Generation of reactive oxygen species and oxidative stress act as common mediators for apoptosis is almost same for all ZnO nanoparticles synthesized by three different methods, solid vapor deposition, forced hydrolysis and coprecipitation technique. Varying concentration of ZnO nanoparticles incubated with proliferating cell culture for different time periods to produce reactive oxygen and cytotoxicity. p53 pathway through which most anticancer agents induce apoptosis, ZnO nanoparticles also used this and provide effective guidelines against liver cancer. Selective toxicity caused by these nanoparticles against specific disease-causing cells measured by using flow cytometry. This comparison will encourage the use of ZnO nanoparticles acting as novel alternative to chemotherapy and radiation therapy because of their biocompatible nature against cancer whether it is benign or malignant type.
Keywords: *reactive oxygen, apoptosis, flow cytometry, cytotoxicity.*

12. **Fatima, I., & Shahid, S.** (2019). *Comparison of Green Synthesis of ZnO Nanoparticles by using different Euphorbia Species*.Paper presented at the Three Days Conference on Nanomaterials: New Trends in

Development and Applications FCC University Lahore, Pakistan.**(Ishrat Fatima, Sammia Shahid (Chemistry/SSC)**

Abstract: Synthesis of ZnO nanoparticles takes place by different electrochemical, photochemical, microwave and laser oblation methods. But all these methods have detrimental effects on environment. Most appropriate methode for synthesis of nanoparticle is green synthesis of ZnO nanoparticles which eco friendly and cheap. Extract from different plant species such as Euphorbia Jatropa Latix , Euphorbia Hirta L and Euphorbia tirucalli are used as reducing agents in process of reduction of ions to ZnO NPs. Among all these synthetic process, process in which Euphorbia Jatropa Latex is best because concentration of latex plays an important role controlling the size of particle and morphology. Results supported by SEM and TEM analyses and tell us that particle hexagonal in nature. EDS of SEM analysis conformed these particles only Zn and O. XPS confirmed the atomic states and EDS confirmed purity of ZnO. Zinc oxide nanoparticles obtained are spherical in nature and agglomerates of nanocrystalites. The average size of synthesized ZNO nanocrystalite calculated as Scherrers formula. Optical properties of the reaction mixtures were analyzed by the UV-Visible double beam spectrophotometer. In Euphorbia Jatropa Latex UV-Visible spectra average energy gap was 3.63eV. The results indicate that the phophoros may be suitable for white light emitting diode (WLED). The ZnO could be targeted for the potential applications including antibacterial, biosensing devices, antifungal and nanoelectronics due to band gaps.

Keywords: *not available.*

13. **Asghar, H., & Shahid, S.** (2019). *Comparative Study to Synthesis Sn-Zn-Cu Alloy Nanoparticles by Various Methods*.Paper presented at the Three Days Conference on Nanomaterials: New Trends in Development and Applications FCC University Lahore, Pakistan.**(Humaira Asghar, Sammia Shahid (Chemistry/SSC)**

Abstract: Tin-Zinc-Copper alloy nanoparticles have great interest, they can be implement in Kesterite based solar cells, employed as negative electrode in lithium ion batteries as corrosion resistant .These nanoparticles also used as effective catalysts with high activity. These nanoparticles show special interest in all field because they have low density and high strength .The control of composition, morphology, position and crystalline phase of bi and tri metallic alloy nanoparticles is essential for development of new Nano phase materials with unique properties. The synthesis of bi –or– tri metallic alloy nanoparticles are limited. Thus, we present here to synthesis of bi- or- tri alloy nanoparticles by chemical reduction technique, wire electrical explosion method and laser vaporization controlled condensation technique. These showed that nanoparticles size change with using different methods. By first technique showed average diameter is 20nm and second method showed 10 to 140nm with mean particles size is 85nm and third method showed 10 to 15nm size.Microstructure and phase evolution of synthesized particles upon heating are investigated and compared with bulky alloy. The results shows these nanoparticles have hexagonal, cubic, spherical and core-shell in shape and by applying electrical field they convert into fibers and filaments. The particles size of product obeys the long normal distribution law. There properties are different from bulky alloys. The properties and possible application of these nanoparticles are as diverse as material science, catalysis, biomedical, environmental and based solar cells. These nanoparticles characterized by X-ray diffraction (XRD),scanning electron microscope (SEM),differential scanning calorimeter (DSC),energy dispersive X-ray spectrometer (EDX) and transmission electron microscope (TEM).

Keywords: *lithium ion batteries, alloy nanoparticles, Transmission electron microscopy, energy dispersive X-ray spectrometer (EDX).*

14. **Fatima, Z., & Shahid, S.** (2019). *Comparison of Removal and Recovery of Cadmium by using Orange Peels*.Paper presented at the Three Days Conference on Nanomaterials: New Trends in Development and Applications FCC University Lahore, Pakistan.**(Zilay Fatima, Sammia Shahid (Chemistry/SSC)**

Abstract: The utilization of orange squanders, produced in the squeezed orange industry, for expelling cadmium from watery arrangements has been explored. The material was described by Fourier change infrared spectroscopy, clump investigations and FTIR were directed to decide the adsorption limit of biomass. A solid reliance of adsorption limit on pH, Temperature and time was watched, limit increments as pH esteem rose, it is likewise observed that at high temperature and time adsorption of cadmium additionally increments . It is also observed from three methods that most extreme evacuation of cadmium was 90% at 4.6-5.1 pH ,250 minutes and 320^{0}C.The dynamic information were investigated utilizing different motor models-pseudo-first equation condition, pseudo-second equation condition, Elovich condition and intraparticle dispersion condition and harmony information were tried utilizing four isotherm models-Langmuir, Freundlich, Slips and Redlich-peterson. The information was shifted by non-straight relapse and five blunder investigation methods were utilized to raise the integrity of the fit. The Elovich condition gives the best exactness to the active information and the tastes demonstrate the Ciosest fit for balance information.

Keywords: *orange industry, infrared spectroscop, langmuir, clump investigations.*

15. **Qamar, M. A., Shahid, S., Javed, M., & Sher, M.** (2019). *Study of Photocatalytic Performance and Antimicrobial Activity of Fe@ZnO/g-C3N4 Nanocomposites*. Paper presented at the 30th National & 18th International Chemistry Conference on Recent Trends in Chemistry-CCUMT-2019, Department of Chemistry, University of Management and Technology, Lahore, Pakistan**,** November 27-29, 2019.**(Muhammad Azam Qamar, Sammia Shahid, Mohsin Javed, Mudassar Sher (Chemistry/SSC)**

Abstract: Discharge of industrial wastes and domestic effluents into the aquatic systems origins severe water pollution and this is one of the major environmental subjects craving immediate attention. Toxicity and colour of the organic pollutants are the crucial factors of the polluted water. Photocatalysis is one of the simplistic, green and environmental friendly technologies employed to degrade organic pollutants. ZnO is one of the acknowledged semiconductor photocatalysts because of its exceptional advantages, such as its low price, high photocatalytic activity, and nontoxicity. However, it has some serious drawbacks such as low charge separation efficiency, liability to photocorrosion, and poor visible light absorbance limited its widely commercial applications. The present work reports on the synthesis of a unique ternary nanocomposite of Fe@ZnO/g-C3N4 and its application as a photocatalyst for the degradation of methylene blue dye. The composite was synthesized by simple chemical co-precipitation method. The photocatalytic and antimicrobial activities of ZnO were tuned by Fe doping and composite formation with g-C3N4. Photocatalytic activity of the synthesized nanocomposites was checked against Methylene blue dye which was used as model dye. The synthesized nanocomposites showed enhanced photocatlytic activity as compared to undoped ZnO, Fe@ZnO, g-C3N4and g-C3N4 /ZnO. The antimicrobial activity of samples was checked against Gram positive and Gram negative bacteria. The antimicrobial ability of the nanocomposite was better than undoped ZnO, Fe@ZnO, g-C3N4and g-C3N4 /ZnO.

Keywords: *not available.*

16. **Sher, M., Shahid, S., Javed, M., & Qamar, M. A.,** (2019). *Nanocomposites*. Paper presented at the 30th National & 18th International Chemistry Conference on Recent Trends in Chemistry-CCUMT-2019, Department of Chemistry, University of Management and Technology, Lahore, Pakistan**,** November 27-29, 2019.**(Mudassar Sher, Sammia Shahid, Mohsin Javed, Muhammad Azam Qamar (Chemistry/SSC)**

Abstract: In view of low cost material with fascinating applications, ZnO is being targeted in present work. The research regarding the use of ZnO in pure state discloses some limitations which vary in context to targeted applications. The limitations in use of ZnO as photocatalyst and as antimicrobial agent are also reported in literature. Various attempts are employed to remove these shortcomings but are not so

successful till now. We are also going to address the factors which hindering the use of ZnO as photocatalyst and antimicrobial agent in pure state. We have addressed limitations by turning ZnO into a unique composite through transition of metal doping and unification with nonmetallic natured GCN. This composite is synthesized by using chemical route. The photocatalytic activity is studied against Methylene blue degradation which is well known textile dye. The antibacterial study is carried against Gram negative and Gram positive bacteria. The composite shows excellent bactericidal and photocatalytic activity as compared with ZnO/Cd doped ZnO and ZnO/GCN composites.

Keywords: *not available.*

17. **Ahmed, H. Z., & Shahid, S.** (2019). *Antileishmanial Activity of Three Different Species from Piperaceae Family*. Paper presented at the 30th National & 18th International Chemistry Conference on Recent Trends in Chemistry-CCUMT-2019, Department of Chemistry, University of Management and Technology, Lahore, Pakistan**,** November 27-29, 2019. **(Hafiza Zainab Ahmed, Sammia Shahid (Chemistry/SSC)**

    Abstract: The species of Piperaceae family are found almost all around the world. A large number of Piper species have been reported to possess anti-inflammatory, antinociceptive and antileishmanial activities. Nowadays we are depending mostly on synthetic drugs and consequently being resistant to these drugs gradually and we are compelled to use the fourth generation of antibiotics with severe adverse effects. This comparison study covers three species, Piper angustifolium, Piper claussenianum and Piper amalago. This study revealed that species of Piperaceae family are incredibly effective against many microorganisms and are being used as folk medicines for different diseases. The essential oil or plant extract was tested for antileishmanial activity using disc diffusion method and broth dilution assay. The comparison of this study will encourage the scientist to return their research to natural products as these natural medicines are safe, easily available and affordable as compared to synthetic drugs.

    Keywords: *not available.*

18. **Amjad, R. N., & Shahid, S.** (2019). *Comparison of Hepatoprotective Activity of Ocimum sanctum against paracetamol, Lead and CCl4 induced hepatotoxicity.* Paper presented at the 30th National & 18th International Chemistry Conference on Recent Trends in Chemistry-CCUMT-2019, Department of Chemistry, University of Management and Technology, Lahore, Pakistan**,** November 27-29, 2019. **(Rana Nabeel Amjad, Sammia Shahid (Chemistry/SSC)**

    Abstract: Liver is the largest internal organ in the body that performs the normal metabolic homeostasis of the body as well as detoxification and excretion and environmental chemical. Herbal treatments are the most popular form of traditional medicine. Plants and natural products have been used traditionally worldwide for the prevention and treatment of liver disease. Leaves of Green tulsi (Ocimum sanctum) belonging to family Lamiaceae are used traditionally for their hepatoprotective effect. These compounds are likely to be used in remedies for stomach disorders, inflammation, antiseptic, anti-catarrhal, heart disease, various form of poisoning and malaria. This present study revealed that leave extract of Ocimum sanctum are incredibly effective against paracetamol, lead and CCl4 hepatic injury causing drugs. The AST, ALT and ALP (p<0.001) liver function test value showed the positive heptatoprotective effect of Ocimum Sancutum compared to standard silymarin. The comparison of this study gave the hepatoprotective activity of alcoholic leave extract and will encourage the researchers to research natural product as these natural medicines are safe, easily available as compared to synthetic drugs.

    Keywords: *not available.*

19. **Khanum, R. F., & Shahid, S.** (2019). *Comparative Study of Synthesis Techniques of BaTiO3.* Paper presented at the 30th National & 18th International Chemistry Conference on Recent Trends in Chemistry-CCUMT-

2019, Department of Chemistry, University of Management and Technology, Lahore, Pakistan**,** November 27-29, 2019. **(Rana faizah Khanum, Sammia Shahid (Chemistry/SSC)**

Abstract: Dielectric barium titanate nanoparticles are essential to develop reliable microelectronic devices. BaTiO3 nanoparticles were developed by various synthesis methods seeking to compare and evaluate their crystal structure, size and homogeneity. Synthesis were carried out by six distinct synthesis method including polymeric precursor (pechini), electrochemical, hydrothermal, microwave-assisted hydrothermal, ultrasonic assisted and sol-precipitation route. The phase composition, functional groups and morphology of synthesized nanoparticles were characterized using XRD, FTIR, TEM and SEM. TEM indicated the morphology of barium titinate nanoparticles as a mono dispersed bowl like structure in size range of 15nm. XRD and FTIR revealed cubic structure of Ba TiO3. Pechini method showed the smaller particles than any other method about 15nm. By electrochemical synthesis and sol precipitation route nanoparticles of size 20nm were obtained. By ultrasonic method 18.18nm size of nanoparticles obtained. Size of about 16nm was obtained by microwave assisted hydrothermal synthesis as compared to hydrothermal synthesis where particle size of 60nm was obtained. All the synthesis methods were effective to synthesize crystalline BaTiO3 nanoparticle with size and structural characteristics. Thus the choice of the suitable method of synthesis will depend on the desired properties of the Ba TiO3 nanoparticles.

Keywords: *not available.*

20. **Ditta, H. A., & Shahid, S.** (2019). *Comparative Study of Hepatoprotective Effect Solanum Xanthocarpum Leaf Extract.* Paper presented at the 30th National & 18th International Chemistry Conference on Recent Trends in Chemistry-CCUMT-2019, Department of Chemistry, University of Management and Technology, Lahore, Pakistan**,** November 27-29, 2019. **(Hazeeqa Allah Ditta, Sammia Shahid (Chemistry/SSC)**

Abstract: Solanum xanthocarpum belongs to family Solanaceae, commonly found in Asia and used to treat cough, bronchial asthma and fever. Hepatoprotective activity of Solanum xanthocarpum on experimental rats were checked, whose livers were injured by CCl4 and paracetamol. Comparative study evaluated the hepatoprotective potential against acute liver damage in experimental rats. CCl4 (1ml/kg) induced hepatotoxicilty in five groups of rats. S. xanthocarpum leaves extract administrated in five groups of rats with dose ranges (100, 200mg/kg) and (100, 200, 400mg/kg) in infected rats for 14 days respectively. In another method, paracetamol induced toxicity in liver of rats and after S. xanthocarpum extract given in dose range (200,400mg/kg) along with silymarin in five group of rats. Hepatoprotective activity was checked by using biochemical parameters such as aspartate aminotransferase (AST), alanine aminotransferase (ALT) and alkaline phosphate (ALP) total bilirubin. Doses level inhibit toxicity and protect against liver injury. Comparative study of research papers demonstrate that S xanthocarpum significantly reduced the lipid peroxidation in the liver tissues and its antioxidant activity scavenged the free radicals and restore the activities of antioxidant enzymes GSH, SOD and catalase towards normal levels and proteins and bilirubin. Histopathology of liver tissues represent reduced inflammatory cells and hepatocellular necrosis.

Keywords: *not available.*

21. **Ditta, N. A., & Shahid, S.** (2019). *Comparison of Pb-Free Cu Front Electrode Si-Based Solar Cell.* Paper presented at the 30th National & 18th International Chemistry Conference on Recent Trends in Chemistry-CCUMT-2019, Department of Chemistry, University of Management and Technology, Lahore, Pakistan**,** November 27-29, 2019. **(Nafeesa Allah Ditta, Sammia Shahid (Chemistry/SSC)**

Abstract: Improved materials can result in manufacturing silicon-based solar cells at lower cost. Photocurrent from the Si emitter in a typical silicon based solar cell is usually collected with a front-side Ag electrode, which is mostly fabricated with low cost screen printing and rapid thermal processing. However, this is not favorable because of two issues. One is high cost due to silver metal, another is the glass containing Pb which

causes serious environmental pollution, it will be more desirable to take Pb out of the content of solar cells. We have compared different researches to established copper front electrode Si base solar cell, because Copper easily oxidize in air atmosphere. The comparison study explain copper front electrode Si base solar cell. Cu paste, designed for making low cost electrodes. These paste printed on screen printing method. This process gives products more environmentally friendly and long term stability of silico solar cells with copper front electrode. SEM imaging used to investigate the structure of the front electrode. TEM cross-section imaging used to investigate reactions close to the interface. EDS used to investigate the reduction. The cells with diffusion barrier donâ€™t show any degradation. Comparison of cell and module results indicate that fast degradation on hot plates at cell level gives a reasonable first estimate regarding cell degradation due to copper diffusion. The method given by Kraft was found best.

Keywords: *not available.*

22. **Fatima, Z., & Shahid, S.** (2019). *Extraction and Characterization of Pectin from Orange Peels.* Paper presented at the 30th National & 18th International Chemistry Conference on Recent Trends in Chemistry-CCUMT-2019, Department of Chemistry, University of Management and Technology, Lahore, Pakistan**,** November 27-29, 2019. **(Zilay Fatima, Sammia Shahid (Chemistry/SSC)**

    Abstract: Present study focused on the potential of citrus peel as a source of pectin. In order to increase profits for citrus orange growers and processors, citrus orange peels, a by-product of citrus orange processing, were investigated as a source of pectin. Pectin was extracted from orange peel powder using two different acids (citric acid and nitric acid) and at three different temperature, time and pH via (60Â°, 70Â° & 80 Â°C), (1.5, & 2.5 pH) respectively. Pectin yield extracted by using citric acid and nitric acid as reagents medium was varied from 22.5 % to 25.9% and 19.6% to 23.8% respectively. The best extraction condition by both the extraction reagents showed higher in yield by using citric acid at 80 Â°C and 1.5 pH. The degree of esterification of extracted pectin showed low Methoxyl pectin. The ash and moisture content of isolated pectin were also determined. Pectin is a natural product and it has long been used for its gel formation, thickening and stabilizing properties in a wide range of applications from food to the pharmaceutical and cosmetic industries.

    Keywords: *not available.*

23. **Qudsia, & Shahid, S.** (2019). *Comparison of Synthesis and Oxygen Sensing Properties of Zinc Oxide Nanorods.* Paper presented at the 30th National & 18th International Chemistry Conference on Recent Trends in Chemistry-CCUMT-2019, Department of Chemistry, University of Management and Technology, Lahore, Pakistan**,** November 27-29, 2019. **(Qudsia, Sammia Shahid (Chemistry/SSC)**

    Abstract: This paper is a comparison of the synthesis of one-dimensional zinc oxide (ZnO) nanostructures and oxygen gas sensing properties are also studied due to the influence of their morphology. ZnO structures were synthesized through CVD, sol-gel and hydrothermal processes. Samples were structurally characterized through X-ray diffraction (XRD) as well as field emission SEM methods. This paper is offerings the unique ultraviolet (UV) irradiation supported nanostructured ZnO film for extraordinary oxygen sensing performance at low process temperature. The method used in current study delivers simplest yet high performance technique for the oxygen sensing in low process temperatures. ZnO nanorods sensing layer that is supported with UV radiation give 419% response in contrast the sensing layer in the absence of UV irradiation give only 74% response. On other hand, the vertically aligned ZnO nanorod arrays are grown hydrothermally as well as they are very favorable for production of the high performance and cost effective oxygen gas sensors.

    Keywords: *not available.*

24. **Yousaf, A., & Shahid, S.** (2019). *Comparison of Supercritical Fluid Process in Nanoparticles Production and Applications.* Paper presented at the 30th National & 18th International Chemistry Conference on Recent Trends in Chemistry-CCUMT-2019, Department of Chemistry, University of Management and Technology, Lahore, Pakistan**,** November 27-29, 2019. **(Aimen Yousaf, Sammia Shahid (Chemistry/SSC)**

Abstract: In production process of pharmaceuticals, nano-particulate form active ingredients is highly desirable but the subsequent product is hard to handle and to apply. So, to overcome this, a novel process is supercritical fluid process used now as rapid expansion of supercritical solution (RESS). In this method supercritical solution having some dissolved constituents is quickly depressurized to ambient pressure through a nozzle. Upon expansion pressure rapidly drop and this high rate of super saturation leads to the precipitation of the dissolved material. Here this (RESS) employed for the production of olanzapine OLZ naoparticles and continuous nanonization of lonidamine by modified-RESS. It is also employed in applications of nano-particle coating to carrier particles. The comparison study of supercritical process gives significant results in the production and application of nanoparticles. Physical characterization of nanoparticles were done with SEM and other spectroscopy techniques. As this process improving the bioavailability of poorly water-soluble drugs for its future pharmaceutical applications.

Keywords: *not available.*

25. **Farooq, H., & Shahid, S.** (2019). *Comparative Study of Synthesis of Silver Nanoparticles and Their Application.* Paper presented at the 30th National & 18th International Chemistry Conference on Recent Trends in Chemistry-CCUMT-2019, Department of Chemistry, University of Management and Technology, Lahore, Pakistan**,** November 27-29, 2019. **(Hamza Farooq, Sammia Shahid (Chemistry/SSC)**

Abstract: For the synthesis of AgNPs, the development of an environmentally benign process is meant to be important part of current nanotechnology research. Several methods are available for the synthesis of AgNPs that include; Green synthesis using onion extract, synthesis by using leaf extract, Synthesis of AgNPs using Dioscorea bulbifera tuber extract. AgNPs synthesized by these methods were characterized by UV-visible absorption spectroscopy, TEM, high-resolution TEM, EDS, and XRD. By using onion extract, UV-Vis spectroscopy showed that the AgNPs absorption band was located at 397 nm in aqueous solution while it was at 424nm by using leaf extract. TEM and XRD determined the morphology of AgNPs that was spherical in shape having average diameter of 6nm by TEM and 5.3 to 10.2nm by XRD and was triangular and hexagonal according to method 3. According to method 3 the AgNPs were found to possess potent antibacterial activity against both Gram-negative and Gram-positive bacteria. The effect of synthesized NPs by onion extract on ascorbic acid signal was investigated by square wave voltammetry in method 1 and LOD of ascorbic acid was 0.1mM. Ascorbic acid and dopamine were determined by differential pulse voltammetric in method 2 and LOD was 0.085ÂµM for DA.

Keywords: *not available.*

26. **Shahid, B., & Shahid, S.** (2019). *Comparison of Synthesis of Manganese Oxide Nanoparticles by using Green, Chemical, and Physical Methods.* Paper presented at the 30th National & 18th International Chemistry Conference on Recent Trends in Chemistry-CCUMT-2019, Department of Chemistry, University of Management and Technology, Lahore, Pakistan**,** November 27-29, 2019. **(Basma Shahid, Sammia Shahid (Chemistry/SSC)**

Abstract: Synthesis of Manganese oxide nanoparticles by various approaches i.e. green, chemical and physical methods were compared. KMnO 4 , Mn (NO 3) 2 , MnSO 4 .H 2 O and MnCl 2 .4H 2 O were used as a precursor salt for synthesis. Different shapes and sizes were obtained via green, oxidation- precipitation, ultrasonic-hydrolyzation, sol-gel methods along with use of deep eutectic solvent. First method consists of using Justicia adhatoda and MnSO 4 .H 2 O. Nanoparticles were obtained by adding leaf extract solution to

precursor solution. In second method, oxidation-precipitation method was used. Mn (NO 3) 2 solution was used into which citric and tartaric acid was added. In third method, MnCl 2 .4H 2 O and ethanol amine were used for synthesis purpose and functioned in ultrasonic field. In fourth method, eutectic solvent was used. KMnO 4 was added to solvent, then stirred, centrifuged, washed and dried to synthesize nanoparticles. In fifth method, nanoparticles were formed by using sol-gel method. In this, reaction between KMnO 4 and glycerol was very fast. Gel was formed. Synthesized nanoparticles were then characterized by different techniques i.e. XRD, SEM, TEM, FT-IR and HR-TEM. Nanoparticles with diameter of ranging between 5- 45 nm were obtained with different morphologies. Efficient synthesis was carried out by using green approach.
Keywords: *not available.*

27. **Khalid, M. U., & Shahid, S.** (2019). *Comparison of Antioxidant Activity of Three Different Species of Genus Mentha.* Paper presented at the 30th National & 18th International Chemistry Conference on Recent Trends in Chemistry-CCUMT-2019, Department of Chemistry, University of Management and Technology, Lahore, Pakistan**,** November 27-29, 2019. **(Muhammad Umer Khalid, Sammia Shahid (Chemistry/SSC)**
Abstract: Antioxidant capacity is an important parameter for nutritional health food characterization.This comparative study was designed to evaluate the antioxidant activity of three species of genus Mentha.These species were named as Mentha arvensis (Pudina), Mentha piperita (peppermint) and Mentha pulegium (pennyroyal mint). Pervious study shows that plants with their aromatic secondary metabolites have strong antioxidant activities. Phytochemical studies of these species have shown presence of components like terpenoids,flavonoids and alkaloids.The species of this genus are also well known for its antimicrobial and antibacterial activities.Antioxidant activities of these species are measured by DPPH, reducing power and ÃŸ-Carotene/linoleic acid assay method. Mentha arvenis shows strong activity with IC50Â¬˜41Âµg/ml as compared to standard antioxidant ascorbic acid with IC˜ 19Âµg/ml in ethanolic extract. Mentha piperita have excellent activity as compared to standard BHT (IC50˜6.1Â± 0.3) with IC50˜15.2 Â± 0.9 in chloroform extract. Mentha pulegium (IC50˜95.14Â±0.03) have markable activity close standard BHA (IC50 ˜96.46Â±0.17).This present study also shown that following genus Mentha species shows good efficiency against the oxidants like ROS/RNS causing carcinogen effects. .Overall, the comparative study suggest that the members of the genus Mentha used in this study possess exploitable antioxidant properties in vitro.
Keywords: *not available.*

28. **Komal, A., & Shahid, S.** (2019). *Comparative Study of Antimalarial Activity of Garcinia Mangostana Linn. (Purple Mangosteen).* Paper presented at the 30th National & 18th International Chemistry Conference on Recent Trends in Chemistry-CCUMT-2019, Department of Chemistry, University of Management and Technology, Lahore, Pakistan**,** November 27-29, 2019. **(Aroosh Komal, Sammia Shahid (Chemistry/SSC)**
Abstract: Malaria is profoundly irresistible ailment that has been one of the common reason for human death. Enormous number of restorative plants have been recognized as potential antimalarial agent. Garcinia mangostana fruit pericarp has been utilized in customary prescription in a few Asian nations for a few reason including treatment of skin contaminations and wounds. The development and spread of mutidrug-safe Plasmodium flaciparum has turned out to be hazardous in under mining jungle fever control programs in the greater part of the world. Some parasites can endure the treatment for a more drawn out timeframe than expected. This rises the probability of an extraordinary endurance system not quite the same as an old style tranquilize opposition phenotype. The antimalarial action of G. mangostana Linn separate against Plasmodium berghi were evaluated utilizing cooperative energy brands green-I based measure than a suppressive test was performed to explore vivo antimalarial action. Current correlation demonstrates that G. mangostana Linn indicated feeble antimalarial action of the concentrate both in vitro and vivo and it could be

because of impediment of ingestion of the dynamic compound. Protein includes in the glycolysis pathway might be the objectives for against malarial action of G. mangostana Linn.
Keywords: *not available.*

29. **Latif, R., & Shahid, S.** (2019). *Study of the Effect of Micronized Nanoparticles on Agriculture.* Paper presented at the 30th National & 18th International Chemistry Conference on Recent Trends in Chemistry-CCUMT-2019, Department of Chemistry, University of Management and Technology, Lahore, Pakistan**,** November 27-29, 2019. **(Rabia Latif, Sammia Shahid (Chemistry/SSC)**
Abstract: Micronized nanoparticle technology is an emerging field. It has many potential application in agriculture. It has recently emerged as powerful tool for pest resistance, to increase shelf life, growth rate, and germination rate, retention of quality of agricultural products, soil remediation and the yield of product. All of these factors contribute toward an increased food production and realization of sustainability. A comparative study on decontamination of seeds, growth enhancement of plant and soil remediation using the CO2/ZnO nanoparticles. These nanoparticles were used as a spray on cabbage, tomato alexander, ice berg lettuce, pepper mix, and capsicum. It was observed that cabbage sprouting started on 2nd day after 48 hour while normal cabbage took 10-12 days. Ice berg lettuce sprouting starting on 5th day and tomato alexander sprouting starting on 6th day. It was concluded that the use of nanoparticles can enhance the growth germination rate, production rate and also can increase the shelf life of vegetables.
Keywords: *micronized nanoparticles, plant.*

30. **Aslam, A., & Shahid, S.** (2019). *Comparison of Synthesis of ZnO Thin Films by Sol Gel Technique for Biosensor Application.* Paper presented at the 30th National & 18th International Chemistry Conference on Recent Trends in Chemistry-CCUMT-2019, Department of Chemistry, University of Management and Technology, Lahore, Pakistan**,** November 27-29, 2019. **(Asma Aslam, Sammia Shahid (Chemistry/SSC)**
Abstract: Nano-scale metal oxide semiconductors are much in talk for their extraordinary applications and non-toxic properties. ZnO is famous due to its great gas sensitivity, high stability, high ratio of adsorption and low in cost. Toxic gases like H2, CO, NO2 are easily detected by ZnO. Among various ones, sol-gel method is selected due to its simple procedure, ability to operate at room temperature .Thin flims(68-94 nm diameter)were grown at temperature of 250Â°C using zinc acetate dehydrate and monoethanol amine. I-V characteristics of ZnO thin flims sensors were discussed. The comparison study reveals the different routes to synthesize ZnO thin flims. Predominantly sol-gel technique using zinc acetate dehydrate Zn(CH_3 COO)_2.2H_2 O, monoethanolamine (NH_2 CH_2 CH_2 OH) & 2-methoxyethanol is more effective because thin flims were grown at the annealing temperature of 250Â°C.
Keywords: *not available.*

31. **Afzal, M. I., & Shahid, S.** (2019). *Fabrication and Characterization of Cadmium Sulfide Nano Wires on Aluminum Oxide Templates.* Paper presented at the 30th National & 18th International Chemistry Conference on Recent Trends in Chemistry-CCUMT-2019, Department of Chemistry, University of Management and Technology, Lahore, Pakistan**,** November 27-29, 2019. **(Malik Imran Afzal, Sammia Shahid (Chemistry/SSC)**
Abstract: Cadmium sulfide nanowires have unique electrical and optical properties and applications. They can synthesized by electrochemical deposition on porous anodized aluminium oxide template with regular hexagonal shapes. Their aspect ratio can be controlled by controlling the pores' depth and diameter which greatly depend on anodization voltage and temperature of the electrolyte. In this research, high purity aluminium was used to prepare nano templates at 5-6°C in 1M phosphoric acid and cadmium supplied was deposited electrochemically using a co-solution of thiourea, cadmium acetate and ammonium acetate. pH was maintained at 11 in heat bath at 75°C with the help of aqueous ammonia solution. Both porous

anodized alumina and cadmium supplied Nanowires were characterized suing SEM. A good quality Nanowires were obtained in bunches with reasonably high aspect ratio.
Keywords: *not available.*

32. **Naeem, Z., & Shahid, S.** (2019). *Comparison of Anti-malarial Activity of Gracinia mangostana of Family Clusianeae.* Paper presented at the 30th National & 18th International Chemistry Conference on Recent Trends in Chemistry-CCUMT-2019, Department of Chemistry, University of Management and Technology, Lahore, Pakistan**,** November 27-29, 2019. **(Zainab Naeem, Sammia Shahid (Chemistry/SSC)**
Abstract: High case fatality rate and resistance of malarial parasites developed against prevailing anti-malarial drugs has triggered the research in order to enhance the anti-malarial activities of various drug. Plants are an important source of medicines including anti-malarial drugs as in case of quinine and artemisinin. So various efforts are done in this context to increase the anti-malarial activities using plants. *Gracinia mangostana* L grows in tropical area of indonesia, where malaria is epidemic. Its general name is mangosteen and belongs to family clusiaceae. This plant is known to have anti-malarial activity as commonly used by the native patients of malaria. In this regard a comparative study on the anti-malarial activity of the rind, pericarp and husk of *Gracinia mangostana* was conducted. IC_{50} values of all the three methods were compared in order to identify the best inhibition of malarial parasitic growth. The pericarp gave the IC_{50} value of 3.7 to 20 µM whereas rind and husk gave the IC_{50} value of 0.41 to > 100 µg/mL and 0.2 ± 0.01 µM respectively. The study concluded that the rind showed the most efficient anti-malarial activity of the all and proved to be even better when used with artemisinin.
Keywords: *not available.*

33. **Saleem, Q., & Shahid, S.** (2019). *Synthesis And Characterization of Anti-Static Charge Properties of Polyaniline Based Nano-Composites.* Paper presented at the 30th National & 18th International Chemistry Conference on Recent Trends in Chemistry-CCUMT-2019, Department of Chemistry, University of Management and Technology, Lahore, Pakistan**,** November 27-29, 2019. **(Qasar Saleem, Sammia Shahid (Chemistry/SSC)**
Abstract: Polyaniline and its composites were prepared with metal doped nanoparticles, in order to minimize surface energy of nanoparticles process was conducted in ice chilled environment. This technique reduced coagulation of particles even after process of polymerization. Manganese doped zinc sulfide (Mn doped ZnS), TiO2, Co doped SnO2 (Cobalt doped tin oxide) and carbon particles were used as templates with aniline to form composites. Resulting products were characterized by SEM, FTIR, XRD and capacitor discharging techniques. Discharging of 220µF capacitor was conducted with all above mentioned composites and discharging time was recorded. Carbon-polyaniline and Mn doped ZnS polyaniline composites discharging time was very fast whereas Co doped SnO2 and TiO2 polyaniline composites were proven insulators and capacitor did not discharge. Metal particles were in size between 1µm to 10µm. antistatic charge ability of carbon-PANI, Mn doped ZnS - polyaniline was appreciable whereas TiO2 and Co doped SnO2 proven good insulators. Discharging time of 4.6KΩ resister was also recorded for a reference. Composites were placed in circuit by replacing resister. Current of the circuit was dropped from 0.1A to 0.01A in case of conducting composites when they were placed in ammonia environment. These composites can also be used in gas sensing devices.
Keywords: *not available.*

34. **Shahid, S., & Ahmad, M. A.** (2019). *Enhancement of Antimicrobial Activities and Dissolution Rate of Clarithromycin Nanoparticles*.Paper presented at the 3rd International Conference on Materials Sciences and Nanomaterials, (ICMSN 2019), at University of Oxford, the United Kingdom, July 22-24, 2019.**(Sammia Shahid, Muhammad Ashfaq Ahmad (Chemistry/SSC)**

Abstract: Macrolide antibiotic are water insoluble, pH sensitive drugs. Low solubility and bioavailability is the major concern for macrolides especially for Clarithromycin. Solubility and dissolution rate could be enhanced by preparing nano drugs as their surface area increases at nano scale. In this research clarithromycin drug nanoparticles were prepared by economical, echo friendly method. Prepared drug nanoparticles were characterized by fourier transform infrared spectrophotometer, scanning electron microscope, X-ray diffraction patterns and energy-dispersive X-ray spectroscopy. No difference was observed in IR spectra of both coarse drugs and nano drug of clarithromycin. X-Ray diffraction (XRD) showed the amorphous form of clarithromycin. Average size for Clarithromycin nanoparticles was 11.9 nm. Dissolution rate was studied by using Dissolution apparatus and High Performance Liquid Chromatography (HPLC). Dissolution rate increased from 30.1% to 54.9% in 10 minutes and from 56.5% to 88.0% after 20 minutes. Nano sized clarithromycin showed a major enhancement in dissolution rate as compared with the coarse drug. In commercial drugs, water content should not be more than 2%, Karl Fisher verified water content for Clarithromycin coarse powder as 1.71% and for prepared Clarithromycin nanoparticles as 1.89%; both the results compliance with United States Pharmacopeia (USP) specifications. The antibacterial activities of both coarse drug and nanoparticles were determined against *Staphylococcus aureus*, *Escherichia coli*, and *Salmonella typhi;* by agar well diffusion method. The nano drug showed clear increase in zones of inhibition (from 24mm to 32mm) as compared to the coarse drug. Nano drug showed enhanced antimicrobial activity and dissolution rate. The synthesized nanoparticles could be suggested for further processing and to be engaged by diverse drug delivery methods.
Keywords: *clarithromycin, high performance liquid chromatography, nano drugs, macrolide antibiotics.*

Department of Physics

Research Articles

1. Afaq, A., **Maaz, H.**, Bakar, A., & **Jamil, M. I.** (2019). Reststrahlen Band Studies of RuCrX (X=Si, Ge, Sn) Half Heusler Alloys. *Journal of Electronic Materials, 48*(8), 5323-5327. doi: 10.1007/s11664-019-07342-z.**(Hassan Maaz, M. Imran Jamil (Physics/SSC) Web of Science JCR Listed (IF: 1.676)**

   Abstract: Reststrahlen band measurements in RuCrX (X=Si, Ge, Sn) Half Heusler Alloys (HHAs) for Far Infrared (FIR) spectroscopy are pointed out in this article by using Density Functional Theory (DFT). Generalized Gradient Approximation (GGA) as an exchange-correlation functional in the WIEN2k-package is used for structural optimization while Martin Troullier norm-conserving pseudo-potentials in Quantum ESPRESSO (QE) are used for structural optimization and lattice dynamic study of the alloys. Phonon dispersion curves elucidate dynamical stability and reststrahlen bands of the alloys. It is found that all alloys are dynamically stable in C1(b) structure and reststrahlen bands for RuCrX (X=Si, Ge, Sn) are 2.92THz (=102.62m), 0.96THz (=311.18m) and 0.81THz (=366.98m) respectively. This predicts RuCrSi HHA has a larger reststrahlen band that corresponds to being more polar in nature than other alloys. The calculated reststrahlen values for all alloys are in the FIR spectral region, so they can be used to manufacture the FIR-devices.

   Keywords: *DFT calculations, vibrational properties, phonon dispersion Relations, reststrahlen band, heusler alloys.*

2. Jabeen, M., **Iqbal, A.,** Kumar, R. V., & Ahmed, M. (2019). Pd-doped zinc oxide nanostructures for liquefied petroleum gas detection at low temperature. *Sensing and Bio-Sensing Research, 25*, 100293. doi: https://doi.org/10.1016/j.sbsr.2019.100293.**(Azhar Iqbal (Physics/SSC) SJR**

   Abstract: One dimensional vertically aligned zinc oxide (ZnO) nanorods sensor was fabricated on aluminum foil as substrate by solvothermal process and their liquefied petroleum gas (LPG) detection characteristics were studied. In this research the relationship between LPG sensing properties and surface morphology of ZnO nanorod sensor is observed. The crystal phase and surface morphology has been studied by X-ray

diffraction and scanning electron microscopy (SEM). It was studied and it was observed that LPG sensing was enhanced up to 80% using a conducting substrate. The sensor exhibited excellent response with 2600 ppm gas flow at room temperature. We also investige that un-coated ZnO nanorods exhibited highest response of 80% at 5000 ppm while Pd-sentisized ZnO nanowires shows greater response 84% at 2600 ppm. Sensing response versus time, temperature and gas concentration was also measured. The experimental results showed that zinc oxide nanorods grown on aluminum foil by solvothermal technique is a promising material for economical growth of a sensor and nanorods have hexagonal tip and wurtzite structure.

Keywords: *lpg, solvo-thermal process, reducing gas, substrate, sensitivity, response.*

3. Khan, Z. S., Rizwan, M., **Hafeez, M.**, Ali, S., Javed, M. R., & Adrees, M. (2019). The accumulation of cadmium in wheat (Triticum aestivum) as influenced by zinc oxide nanoparticles and soil moisture conditions. *Environmental Science and Pollution Research, 26*(19), 19859-19870. doi: 10.1007/s11356-019-05333-5.**(Muhammad Hafeez (Physics/SSC) Web of Science JCR Listed (IF: 2.914)**

   Abstract: Both cadmium (Cd) contamination in agricultural soils and drought stress pose a serious problem for crop quality and human health. Owing to the specific physical and chemical characteristics, zinc oxide (ZnO) nanoparticles (NPs) can be used in agriculture as a nanofertilizer but their impact on Cd accumulation in wheat (Triticum aestivum) grains under normal and limited water conditions remains insufficient. In this study, the efficiency of ZnO NPs on Cd intake by wheat was investigated under normal and water-limited conditions grown in Cd-contaminated soil for 125 days after seed sowing. The lower biomass and higher oxidative stress were observed in the tissues of the control and drought stress further decreased the plant biomass and caused oxidative stress. Zinc oxide NP treatments increased the tissue dry weight and minimized the oxidative stress either Cd stress alone or combined with drought. Drought stress enhanced the Cd contents in wheat tissues and grains, while ZnO NPs significantly reduced the Cd accumulation in tissues and grains by reducing the soil bioavailable Cd and its accumulation by roots. These findings depicted that NP application to contaminated soils can promote wheat productivity and effectively alleviate soil Cd contamination either alone or under water-limited conditions. The baseline data demonstrated in this study provide insights that pave the way towards safer wheat production under combined drought and metal stress. However, the application of NPs at field levels with numerous crops and climatic conditions needs to be investigated before final recommendation.

   Keywords: *cadmium, drought, nanoparticles, zinc, wheat.*

4. **Makhdoom, M., Jamil, M. I.**, Azam, S., Irfan, M., Abbas, Z., Gul, B., . . . Wang, X. (2019). First-Principles Description of the Different Phases in the Li2NH Compound: Electronic Structure and Optical Properties. *Journal of the Korean Physical Society, 74*(12), 1140-1145. doi: 10.3938/jkps.74.1140. **(Madiha Makhdoom, Muhammad Imran Jamil (Physics/SSC) Web of Science JCR Listed (IF: 0. 0.630)**

   Abstract: A hydrogen storage material can also be used as a potential and effective solid reducing agent in addition to its applications as an important energy carrier. The density function theory has been used to find the structural and optoelectronic properties of the Li2NH compound. The exchange-correlation functional based GGA (generalized gradient approximation) is applied for calculating structural and optoelectronic properties. The expression for the formation is used to identify the stability, which is further confirmed by calculating the structural properties of Li2NH. The calculations of the band structure show that a direct band gap is present between the occupied Li and N orbitals. A deep analysis of the optical properties was performed under incident photon radiation at energies up to 14 eV. Our calculated refractive index n(0) and the static part of the dielectric constant epsilon(2)(0) are analogous to the experimental and other reported theoretical value.

   Keywords: *electronic structure, DFT li2NH, compound.*

5. Shaikh, M. N., **Zafar, Q.,** & Papadakis, A. (2019). A study of electromagnetic light propagation in a perovskite-based solar cell via a computational modelling approach. *Bulletin of Materials Science, 42*(4). doi: 10.1007/s12034-019-1837-x. **(Qayyum Zafar (Physics/SSC) Web of Science JCR Listed (IF: 1.264)**

   Abstract: Recently, there has been huge surge of scientific interest in organic-inorganic hybrid perovskite solar cells by virtue of their high efficiency and low cost fabrication procedures. Herein, we examine the light propagation inside a planar perovskite solar cell structure (ITO/TiO2/ZnO/CH3NH3PbI3/Spiro-OMeTAD/Al) by solving the Helmholtz equation in the finite element-frequency domain. The simulations were conducted using the COMSOL multiphysics finite element solver to carry out the two-dimensional optical modelling of simulated solar cells in the visible region. It has been observed that shorter wavelengths of light are significantly absorbed by the top region of the photoactive perovskite layer. Specifically, at a wavelength of 400nm, the effective optical power penetration decays to zero at only 40% of the overall length of the photoactive layer. This observation has been attributed to the high absorption coefficient of the CH3NH3PbI3 perovskite material at shorter wavelengths. However, at longer wavelengths, the incident light propagates deeper into the photoactive layer, reaching 100% penetration. Based on the numerical computation, a maximum generation rate of approximate to 3.43x1023m3s-1 has been observed in the photoactive layer at a wavelength of 550nm.

   Keywords: *optical simulation, finite element-frequency domain (FE-FD), helmholtz equation, organic–inorganic hybrid perovskite, electromagnetic light propagation.*

6. Tariq, S., Mubarak, A. A., Saad, S., **Jamil, M. I.**, & Gilani, S. M. S. (2019). Quantum density functional theory studies of structural, elastic, and opto-electronic properties of ZMoO(3) (Z = Ba and Sr) under pressure. *Chinese Physics B, 28*(6). doi: 10.1088/1674-1056/28/6/066101. **(Muhammad Imran Jamil (Physics/SSC) Web of Science JCR Listed (IF: 1.469)**

   Abstract: In continuation of our recent report on molybdates [Appl. Phys. A 124, 44 (2018)], the structural, electronic, elastic, and optical properties of ZMoO(3) (Z = Ba and Sr) molybdates are investigated under pressure (10 GPa-50 GPa) comprehensively by deploying the density functional theory. Our investigations show that the studied compounds exhibit stable cubic phase with metallic attributes. The thermodynamic parameters such as enthalpy of formation, Debye, and melting temperatures of the compounds are observed to increase with pressure. While the Gruninsen parameter and the coefficient of super-plastic deformation decrease as the pressure increases. Mechanical properties elucidate an increase in measured values of hardness, bulk, shear, and young's moduli with pressure. Our results suggest that the studied compounds are useful in high pressure optoelectronic devices. The optical properties of BaMoO3 (BMO) and SrMoO3 (SMO) are computed for the radiation of up to 35 eV. The present compounds show beneficial optical applications in the anti-reflection coating, lenses, and the high avoiding solar heating applications in the variant applied pressure.

   Keywords: *optical properties, high pressure, elastic properties, electronic properties.*

7. Saleemi, A. S., **Abdullah, A.,** Saeed, M., Anis-ur-Rehman, M., Mahmood, A., Khan, K., . . . Lee, S. L. (2019). Structural and Magnetoresistance Properties of Transfer-Free Amorphous Carbon Thin Films. *Crystals, 9*(3). doi: 10.3390/cryst9030124.**(Ali Abdullah (Physics/SSC) Web of Science JCR Listed (IF: 2.061) (SKT Campus)**

   Abstract: The control of the morphologies and thus the optical, electrical, and magnetic effect of 2D thin films is a challenging task for the development of cost-efficient devices. In particular, the angular dependent magnetoresistance (MR) of surface thin films up to room temperature is an interesting phenomenon in materials science. Here, we report amorphous carbon thin films fabricated through chemical vapor deposition at a SiO2 substrate. Their structural and angular magnetoresistance properties were investigated by several analytical tools. Specifically, we used a physical property measurement system to estimate the

magnitude of the angular MR of these as-prepared sample thin films from 2 K to 300 K. An angular MR magnitude of 1.6% for the undoped a-carbon thin films was found up to 300 K. Under the magnetic field of 7 T, these films possessed an angular MR of 15% at a low temperature of 2 K. A high disorder degree leads to a large magnitude of MR. The grain boundary scattering model was used to interpret the mechanism of this angular MR.

Keywords: *chemical vapor deposition, magnetoresistance, amorphous carbon, transport properties.*

8. **Abdullah, A.,** Anis-Ur-Rehman, M., & Saleemi, A. S. (2019). Functionalized rare earth doped NaMnF3 nanorods; facile synthesis and multicolor fine tuning of potential bimodal bioprobes. *Digest Journal of Nanomaterials and Biostructures, 14*(3), 667-672.**(Ali Abdullah (Physics/School of Science) Web of Science JCR Listed (IF: 0.638) (SKT Campus)**

   Abstract: The synthesis and upconversion fluorescence of NaMnF3: Yb, Er/Tm is being reported here. A one step solvothermal method was utilized to prepare surface modified nanorods. The x-ray diffraction revealed the structure of prepared samples to be orthorhombic and transmission electron microscopy confirmed the nanorod morphology. The intense green, red and near-infra-red emissions were observed with change of dopant and dopant concentration.

   Keywords: *crystal growth, nanocrystalline materials, functional, biomaterials, spectroscopy, luminescence.*

9. Qadir, K. W., **Zafar, Q.,** Ebrahim, N. A., Ahmad, Z., Sulaiman, K., Akram, R., & Nazeeruddin, M. K. (2019). Methodical review of the literature referred to the dye-sensitized solar cells: Bibliometrics analysis and road mapping. *Chinese Physics B, 28*(11). doi: 10.1088/1674-1056/ab4577.**(Qayyum Zafar (Physics/SSC) Web of Science JCR Listed (IF: 1.469)**

   Abstract: This study presents a systematic review of the literature pertaining to dye-sensitized solar cells (DSSCs), in order to anticipate the direction and speed of change in technology trend. To study the general progression in DSSC research, we have assessed the evolution in annual DSSCs publications and their citations. Further, in order to identify the intellectual bases, we have also classified the journals, authors, institutes, and countries according to their scientific productivity in the field of DSSCs research during the period of 2007?2017.

   Keywords: *bibliometric analysis, dye-sensitized solar cells, scientific productivity, international cooperation network.*

10. Shujah, T., Ikram, M., Butt, A. R., Hussain, S. G., Shahzad, M. K., **Zafar, Q.,** & Ali, S. (2019). Growth of Zinc Oxide and Zinc Stannate Nanostructured Thin Films for Carbon Monoxide Sensing Application. *Nanoscience and Nanotechnology Letters, 11*(8), 1050-1059. doi: 10.1166/nnl.2019.2987.**(Qayyum Zafar (Physics/SSC) Web of Science JCR Listed (IF: 2.917)**

    Abstract: Recently metal oxide nanostructures based gas sensors have attracted much attention due to their small dimensions, on-line operation, low power consumption, cost-effectiveness, and high compatibility with microelectronic processing. We demonstrate zinc oxide (ZnO) and zinc stannate (ZnSnO3) active layers based conductometric sensors for carbon monoxide (CO) gas sensing utility. The nanorods based surface morphology of the active thin films has been obtained via facile single step Aerosol Assisted Chemical Vapor Deposition (AACVD) technique at 400 degrees C. The facile AACVD technique has been discussed as a thermal budget and scalable fabrication method for the metal oxide nanostructured thin films in terms of their homogeneity and uniformity. The morphological and structural characterization of active ZnO and ZnSnO3 thin films have been performed by X-ray Diffraction (XRD) and Field Emission Scanning Electron Microscope (FESEM), respectively. The ZnO and ZnSnO3 active layers have been deposited on top of interdigitated platinum (Pt) electrodes to fabricate (Pt/ZnO/Pt) and (Pt/ZnSnO3/Pt) surface type sensors. The resistance

response of the fabricated sensors has been investigated in a number of switching cycles with successive increase in CO gas concentration in 125-800 ppm range. Specifically, the ZnO based sensor has shown a significant 25.89% drop in resistance, whereas the ZnSnO3 based gas sensor has shown comparatively higher i.e., 29.29% resistance variation when the concentration of CO gas is increased from 125-800 ppm. The sensing mechanism of the fabricated gas sensors may be related to the redox reactions of adsorbed gases on the nanostructured active surfaces.

Keywords: *aerosol assisted chemical vapor deposition (AACVD), carbon monoxide (CO), conductometric gas sensors, nanorods based surface morphology, nanostructured zinc oxide and zinc stannate.*

11. Shaikh, M. N., **Zafar, Q.,** & Papadakis, A. (2019). Development of a Comprehensive Matlab/Simulink Based Model for High-Efficiency 2nd Generation Photovoltaic (PV) Modules. *Current Nanoscience*. doi: 10.2174/1573413715666190130161402.**(Qayyum Zafar (Physics/SSC) Web of Science JCR Listed (IF: 1.586)**

Abstract: Background: The accurate energy yield prediction of a PV system under various environmental conditions is important for designing a high performance PV system.

Objective: The robust and cost-effective digital simulation studies on PV systems have the advantage in comparison to studies based on measurements because they provide the opportunity for sensitivity analysis on various design parameters of the PV system.

Method: Herein, we present the development and implementation of a generalized photovoltaic computational model using Matlab/Simulink software package. The model is based on the equivalent diode circuit approach. It is designed to simulate two ubiquitous and high performing 2nd generation photovoltaic (PV) modules constructed with Cadmium Telluride (CdTe) and Copper Indium Gallium di-Selenide (CIGS) photoactive thin films, respectively. The values of key input parameters to the simulator, i.e., parallel resistor (Rp) and series resistor (Rs) have been computed by an efficient Newton-Raphson iteration method.

Results: The output current-voltage (I-V) and power-voltage (P-V) characteristic curves of the aforementioned PV modules have been simulated by taking two input variables (ambient irradiance and temperature) into consideration. The electrical performance of both PV modules under various environmental conditions have been mathematically investigated by the solution of classical non-linear equations.

Conclusion: The developed PV model has been validated with the experimental results obtained from standard PV module datasheets provided by manufacturers. The relative error between simulated and experimental values of various photovoltaic parameters for CdTe and CIGS PV modules at Standard Test Conditions (STC) has been observed to be below 3%.

Keywords: *2nd generation photovoltaic (PV) modules, equivalent diode circuit, photovoltaic parameters, computational modelling, Newton-Raphson iteration method, Matlab/Simulink.*

12. **Shaheen, S., Iqbal, M. A., Kanwal, S.,** Batool, H. Z., **Ashraf, S., & Furqan, M.** (2019). Synthesis of silver nanoparticles, multifunctional properties and applications in biomedicine and environment. *Pakistan Journal of Science, 71*(2), 105-105.**(Saira Shaheen, M.A. Iqbal, Shamsa Kanwal, Sidra Ashraf, M. Furqan (Physics/SSC) HEC Z CAT**

Abstract: Nanotechnology has the got the potential to develop a succession of procedures and tools which can revolutionize biomedical field. They are faster, cheaper, lighter and more energy efficient. The word nanotechnology refers to those materials having at least one of its dimension in the range 1-100nm and display entirely different properties when compared to bulk material due to difference in shape, size and morphology of particles. These properties called nanoparticles (NPs) include large surface area and increased chemical reactivity. Size dependent properties are observed such as, quantum confinement in semi conducting materials and supermagnetism in magnetic materials, etc. They can be synthesized by both ways,

either chemically or biologically. Metallic nanoparticles find their enormous applications ranging from medical treatments, antibacterial activities to use in industries for various purposes. In this regard silver Nps have got immense significance in technology and especially to prevent bacterial infection in medicine. It's also used in hospital equipments including catheters, stents, bandages, and wound dressings. This article intends to present various synthetic techniques, like chemical, physical and biological synthesis of silver nanoparticles. Furthermore, unique properties of silver nanoparticles along with their applications are also reviewed.

Keywords: *synthesis, nano particles, silver, properties, antibacterial activity, bio medical application, photonics.*

13. **Khalid, S., & Shah, Z. H.** (2019). The Effect of Magnetic Field on Electro-deposition of Nickel and Cobalt Nanowires. *Scientific Inquiry Review, 3*(1), 14-24.(**Sidra Khalid, Zaheer Hussain Shah (Physics/SSC) UMT Journal**

Abstract: Anodized Aluminum Oxide (AAO) nano-porous template is fabricated and nickel (Ni) nanowires are synthesized in the nano pores of AAO template by AC electro-deposition technique in the presence and absence of magnetic field applying only in a direction parallel to nanowire axis. Cobalt (Co) nanowires are fabricated by applying magnetic field externally both in perpendicular and parallel directions to the axis of nanowires. Magnetic field can bring change in the preferential grain growth of Ni and Co nanowires. Magnetic field applied parallel to nanowire axis increases deposition rate and current density due to magneto hydrodynamic effect, while magnetic field applied in perpendicular to the surface of electrode does not bring significant change in the chemical reaction. Magnetic properties are also affected by applying external magnetic field during deposition. These changes associated with grain growth in the preferred direction of Ni and Co nanowires are discussed in this article.

Keywords: *crystal structure, magnetic field, magnetic properties, preferred orientation.*

14. Shujah, T., Ikram, M., Butt, A. R., Shahzad, M. K., Rashid, K., **Zafar, Q.,** & Ali, S. (2019). H2S Gas Sensor Based on WO3 Nanostructures Synthesized via Aerosol Assisted Chemical Vapor Deposition Technique. Nanoscience and Nanotechnology Letters, 11(9), 1247-1256. doi: 10.1166/nnl.2019.3011.**(Qayyum Zafar (Physics/SSC) Web of Science JCR Listed (IF: 2.917)**

Abstract: Herein we demonstrate tungsten oxide (WO_3 nanostructures based resistive type sensors for hydrogen sulfide (H_2S) gas sensing utility. The WO_3 dynamic layers have been deposited upon alumina substrates pre-patterned with gold (Au) interdigitated electrodes. For comparative study, two distinct WO_3 nanostructures (S-425 and S-450) have been synthesized using Aerosol Assisted Chemical Vapor Deposition (AACVD) technique at varied deposition temperatures i.e., 425 and 450 °C, respectively. The gas detecting properties of both sensors were investigated against varied concentration (0–60 ppm) of H_2S gas levels. The electrical resistance of fabricated gas detectors has been observed at DC bias of 5 V and low operating temperature 250 °C. Specifically, when concentration of H_2S gas increases from 0–10 ppm, average resistance of the S-425 and S-450 gas sensors was observed to decrease by 96.5% and 97.6%, respectively. In general, the sensing mechanism of gas sensors proposed in this work can be associated with ionosorption of oxygen species over WO_3 nanostructured surfaces. However, the significantly enhanced sensing performance of S-450 sensor may be attributed to improved crystallinity in its structure and improved ions adsorption/desorption kinetics at nanorods surface morphology.

Keywords: *hydrogen sulfide (H2S), nanostructured tungsten oxide, aerosol assisted chemica, vapor deposition (AACVD), nanorods, chemiresistive gas sensor.*

15. Farooq, O., **Abdullah, A., Anis-ur-Rehman, M.,** Zahra, F.-t., & ul Haq, A. (2019). Study of structural, optical and electrical properties of NiO and Fe2O3 (1:1) nanoparticles—composite and compound synthesized by sol-gel method. *Materials Research Express, 6*(12), 125066. doi: 10.1088/2053-1591/ab4a3d.**(Ali Abdullah, Muhammad Anis-ur-Rehman (Physics/School of Science) Web of Science JCR Listed (IF: 1.449) (SKT Campus)**
Abstract: The NiO/Fe_2O_3 (1:1) compound and composite nanoparticles were synthesized by a simplified sol-gel method. Samples were calcined at 500 °C/2 h and sintered at 550 °C/1 h inn air. X-ray diffraction confirmed cubic lattice for compound and rhombohedral lattice for composite samples. Scanning electron microscope and Raman spectroscopy were used for surface morphology and structural analysis, respectively. Ultraviolet-Visible Absorption Spectroscopy showed a decrease in the band gap energy values of composite in comparison to the compound. The dc electrical conductivity measurements showed negative temperature coefficient behavior which is explained by hopping mechanism. AC electrical properties were measured in the frequency range of 20 Hz to 3 MHz, at room temperature. The Dielectric Constant as well as Dielectric Loss Tangent values decreased with the increase in frequency values. AC electrical properties are explained using Koop's theory and the Maxwell–Wagner model. Composite samples showed enhanced electrical properties as compared to compound samples.
Keywords: *not available.*

16. Batool, A., Faridi, M., **Jamil, M. I.,** & Akbar, N. (2019). Influence of pressure on electro-mechanical properties of SrNbO3: A DFT study. *High Temperatures-High Pressures,, 48*(5-6), 399-411.**(Muhammad Imran Jamil (Physics/School of Science) SJR**
Abstract: In the enclosure of density functional theory along with GGA (generalized gradient approximation), incorporated in Wien2k code has been utilized to explore structural, electronic and mechanical properties of SrNbO3 (SNO). It has been found that spin-polarized phase of SNO is most stable at 60 GPa with the calculated lattice constant of 3.801 Å. The calculated lattice constant and bulk modulus at 0 GPa are found to be in agreement with literature. The present calculations predict that SNO is stable and antiferromagnetic in nature up to 60 GPa. The calculated charge density contours and Cauchy pressure depicts majority of the bonding nature between the content atoms of SNO is ionic with a small contribution of covalent bond. The band-gap is found traverse from indirect R-Γ gap under 0 GPa to wider direct Γ-Γ gap under 60 GPa. Furthermore, calculated elastic constants, C11, C12 and C44 suggest that compound is stable up to 60 GPa and exhibits ductile, anisotropic nature. Beneficial electronic and mechanical applications are predicted for SNO that could be used in optoelectronic applications.
Keywords: *electronic structure, elastic properties, high pressure.*

Department of Life Sciences

Research Articles

1. Naveed, A., Ali, S., Ahmed, H., Simsek, S., Rizwan, M., Kaleem, I., . . . **Afzal, M. S.,** Umar, S. (2019). Seroprevalence and Risk Factors of Toxoplasma gondii in Wild Birds of Punjab Province, Pakistan. *Journal of Wildlife Diseases, 55*(1), 129-135. doi: 10.7589/2017-09-228.**(Muhammad Sohail Afzal (Life Sciences/SSC) Web of Science JCR Listed (IF: 1.150)**
Abstract: Toxoplasma gondii is a protozoan parasite of veterinary and human public health importance for which birds act as an intermediate host. No information is available about the epidemiology of T. gondii in wild birds of Pakistan. The present study was designed to determine the seroprevalence and risk factors associated with T. gondii antibodies in wild birds of District Kasur, Punjab Province, Pakistan. A total of 200 wild birds of 28 species were captured from four tehsils (administrative subdistricts of districts) of the district Kasur and their serum samples screened for the presence of T. gondii antibodies using a latex agglutination test (cut-off value: 1:64). Twenty-five (13%) individual birds and 13 (46%) of the bird species were

seropositive for T. gondii antibodies. There were statistical differences in T. gondii prevalence between adults and young (15% and 7%, respectively, P = 0.001) and healthy and sick (11% and 50%, respectively, P = 0.000) while there were not differences between genders, sites, urbanicity, and tehsils. The present study provides evidence of T. gondii antibodies in wild birds of Pakistan.
Keywords: *Pakistan, seroprevalence, toxoplasma gondii, wild birds.*

2. Shuja, M. N., Ali, **M., Ali,** T., Ichattak, B., Qasim, M., & Winter, S. (2019). First Report of Catharanthus Yellow Mosaic Virus, Pedilanthus Leaf Curl Virus, and Tomato Leaf Curl Betasatellite Infecting Duranta erecta in Pakistan. *Plant Disease, 103*(5), 1049-1050. doi: 10.1094/pdis-08-18-1308-pdn**.(Muhammad Ali (Life Sciences/SSC) Web of Science JCR Listed (IF: 3.583) "Disease Note"**
Abstract: Not available.
Keywords: *not available.*

3. **Wahid, B.** (2019). An update on the severe outbreak of HIV in Kot Imrana, Pakistan. *Lancet Infectious Diseases, 19*(3), 241-241. doi: 10.1016/s1473-3099(19)30038-6**.(Braira Wahid (Life Sciences/SSC) Web of Science JCR Listed (IF: 27.516) "Correspondence"**
Abstract: Not available.
Keywords: *not available.*

4. **Wahid, B., Altaf, S., Naeem, N., Ilyas, N.,** & Idrees, M. (2019). Scoping Review of Crimean-Congo Hemorrhagic Fever (CCHF) Literature and Implications of Future Research. *Jcpsp-Journal of the College of Physicians and Surgeons Pakistan, 29*(6), 563-573. doi: 10.29271/jcpsp.2019.06.563**.(Braira Wahid, Saba Altaf, Nabiha Naeem, Nimra Ilyas (Life Sciences/SSC) Web of Science JCR Listed (IF: 0.407)**
Abstract: Crimean-Congo hemorrhagic fever (CCHF) is one of the severe forms of high-fatality hemorrhagic fever transmitted by bite of infected ticks or body fluids of infected individuals. Lack of sufficient research and endemic potential of the disease is posing serious threats to public health. The aim of this review was to explore the current status of Crimean-Congo hemorrhagic fever virus (CCHFV) related research and to identify knowledge gaps and the areas that are yet to be explored. An interpretative scoping review methodology was followed to systematically characterize the most recent literature. Literature survey was conducted using electronic databases: PubMed, Scopus, ScienceDirect and Google Scholar. This comprehensive research yielded more than 300 records, but we excluded 100 articles based on our inclusion criteria and duplicates removal. All articles (n=85) that have been published currently were discussed in this scoping review. From a total of 303 documents retrieved, 85 met the criteria. All the documents (case studies, review articles, systematic reviews, meta-analysis, case control studies, cohort studies, randomised control trials, and longitudinal studies) were included in the study. The articles mainly cover different areas such as epidemiology, prevalence, diagnosis, pathogenesis, clinical outcomes, molecular basis, phylogenetics, transmission and treatment of CCHF. Treatment and prevention related knowledge is limited; therefore, future research should focus the development of therapeutics to mitigate the increasing risk of CCHF. Priority future goal should be studies on the molecular basis and treatment of CCHFV infection because several knowledge gaps have been identified in these areas.
Keywords: *CCHF, CCHFV, molecular basis, pathogenesis, treatment, phylogenetics.*

5. **Wahid, B., Naeem, N., Altaf, S., & Ilyas, N.** (2019). Increasing Prevalence of Untypable and Mixed Genotypes of Hepatitis C Virus in Pakistan: Latest Trends in 2018. *Viral Immunology, 32*(4), 192-194. doi: 10.1089/vim.2018.0152**.(Braira Wahid, Nabiha Naeem, Saba Altaf, Nimra Ilyas(Life Sciences/SSC) Web of Science JCR Listed (IF: 1.417)**

Abstract: Hepatitis C virus (HCV) genotyping is a critical parameter that acts as predictor of treatment response. According to previously reported findings, about 11 million population of Pakistan are HCV infected. Accumulating data suggest that genotype is the most prevalent genotype and mixed and untypable genotypes are the least prevalent genotypes of HCV. We observed that overall prevalence of mixed genotype (5.03%) and untypable genotype (3.3%) of HCV is on constant rise. This study highlights that the emergence of novel quasispecies could be reason of treatment failure in patients receiving direct-acting antiviral drugs.

Keywords: *genome centre for molecular based diagnostics and research (GCMBDR), Pakistan, HCV, genotypin.*

6. **Wahid, B.,** Waqar, M., **Rasool, N.,** Wasim, M., Khalid, I., & Idrees, M. (2019). Prevalence of thyroid stimulating hormone dysfunction among sofosbuvir-treated HCV-infected patients: A real-world clinical experience. *Journal of Medical Virology, 91*(3), 514-517. doi: 10.1002/jmv.25319**.(Braira Wahid, Nouman Rasool(Life Sciences/SSC) Web of Science JCR Listed (IF: 2.049)**

   Abstract: Thyroid dysfunctions occur frequently among hepatitis C virus (HCV)-infected patients. Accumulating evidence has shown the higher incidence of thyroid dysfunctions in interferon-treated patients that was previously the standard of care therapy. However, the prevalence of thyroid disorders has not been studied in the recently developed interferon-free regimens or direct-acting antiviral (DAA) drugs-treated patients. We recruited 37 patients who had just completed 6 months long sofosbuvir-based treatment, and 26 interferon-treated patients were also included in the study. Serum thyrotropin level of all participants was measured using VIDAS. We observed thyroid dysfunctions in both pegylated interferon-experienced and DAA drug-experienced patients but the prevalence of hyperthyroidism was found significantly higher in patients treated with interferon-based regimen as compared with interferon-free regimens. This high prevalence of hypothyroidism in patients with HCV posttreatment highlights the need for regular periodic screening of patients during the treatment.

   Keywords: *hepatitis C virus (HCV), hyperthyroidism, hypothyroidism, Pakistan, sofosbuvir,thyrotropin (TSH).*

7. **Zaid, M., Ali, M., & Afzal, M. S.** (2019). HIV outbreaks in Pakistan. *Lancet Hiv, 6*(7), E418-E419. doi: 10.1016/s2352-3018(19)30180-8**.(Muhammad Zaid, Muhammad Ali,Muhammad Sohail Afzal (Life Sciences/SSC) Web of Science JCR Listed (IF: 14.753) "Correspondence"**

   Abstract: Not available.

   Keywords: *not available.*

8. Tariq, A., **Mateen, R. M.,** Fatima, I., & Akhtar, M. W. (2019). Calreticulin is Differentially Expressed in Invasive Ductal Carcinoma: A Comparative Study. *Current Proteomics, 16*(2), 148-155. doi: 10.2174/1570164615666180907154459**.(Rana Muhammad Mateen(Life Sciences/SSC) Web of Science JCR Listed (IF: 0.768)**

   Abstract: Objective: The aim of the present study was to build protein profiles of untreated breast cancer patients of invasive ductal carcinoma grade II at tissue level in Pakistani population and to compare 2-D profiles of breast tumor tissues with matched normal tissues in order to evaluate for variations of proteins among them. Materials & Methods: Breast tissue profiles were made after polytron tissue lysis and rehydrated proteins were further characterized by using two-dimensional gel electrophoresis. On the basis of isoelectric point (pI) and molecular weight, proteins were identified by online tool named Siena 2-D database and their identification was further confirmed by using MALDI-TOF. Results: Among identified spots, 10 proteins were found to be differentially expressed i.e.; COX5A, THIO, TCTP, HPT, SODC, PPIA, calreticulin (CRT), HBB, albumin and serotransferrin. For further investigation, CRT was selected. The level of CRT in tumors was found to be significantly higher than in normal group ($p < 0.05$). The increased expression of CRT

level in tumor was statistically significant (p = 0.010) at a 95% confidence level (p <0.05) as analyzed by Mann-Whitney. CRT was found distinctly expressed in high amount in tumor tissue as compared to their matched normal tissues. Conclusion: It has been concluded that CRT expression could discriminate between normal tissue and tumor tissue so it might serve as a possible candidate for future studies in cancer diagnostic markers.

Keywords: *breast cancer, MALDI, biomarkers, serum albumin, tumor, two-dimensional gel electrophoresis.*

9. **Wahid, B.** (2019). Successful treatment of HBV, HCV, & HEV, with 12-week long use of tenofovir, sofosbuvir, daclatasvir, and ribavirin: A case report. *Journal of Infection and Public Health*. doi: https://doi.org/10.1016/j.jiph.2019.06.004**.(Braira Wahid (Life Sciences/SSC) Web of Science JCR Listed (IF: 2.487)**

   Abstract: Hepatitis C virus (HCV) is the leading cause of morbidity and mortality worldwide. It causes both chronic and acute infections and it has been estimated that about 80% of HCV infected patients develop chronic HCV infection of which 15–30% develop liver complications specifically liver cirrhosis and hepatocellualar carcinoma (HCC). Interferon therapy was previously used standard of care therapy associated with poor efficacy in major proportion of HCV infected population whereas, the recent development of interferon-free therapy or direct-acting antiviral (DAA) drugs are able to achieve sustained virological response (SVR) in 95% of patients. These new drugs are still not properly explored and currently there is minimal clinical experience regarding an efficacious treatment option suitable for triple infection i.e, Hepatitis B virus (HBV), HCV, and Hepatitis E virus (HEV). Here, we suggest well-tolerated sofsobuvir-based treatment regimen in patient infected with HBV, HCV, and HEV. Twelve weeks long treatment with sofsobuvir, daclatasvir, ribavirin, and tenofovir resulted in sustained virological response (SVR) and cleared HBV, HCV, and HEV in diabetic and asthmatic patient.

   Keywords: *HBV, HCV, HEV, asthma, diabetes, sofosbuvir.*

10. **Wahid, B.** (2019). Current status of dengue virus, poliovirus, and chikungunya virus in Pakistan. *Journal of Medical Virology, 91*(10), 1725-1728. doi: 10.1002/jmv.25513**.(Braira Wahid (Life Sciences/SSC) Web of Science JCR Listed (IF: 2.049)**

    Abstract: Epidemics of infectious diseases especially dengue virus (DENV), chikungunya virus (CHIKV), and poliovirus are the leading cause of mortality and morbidity in Pakistan. Risks associated with these outbreaks have drastic effects on the healthcare infrastructure and economy of the country. This report provides the current status of DENV, poliovirus, and CHIKV in Pakistan and further highlights the measures needed to control these infections.

    Keywords: *aedes, aeygpti, CHIKV, DENV, mosquito, Pakistan, polio.*

11. **Wahid, B.** (2019). Role of SOCS1 Gene in Chronic Hepatitis C Virus Patients: A Mini-Review. *Journal of Interferon & Cytokine Research, 20*(10), 1-6. doi: 10.1089/jir.2018.0109**.(Braira Wahid (Life Sciences/SSC) Web of Science JCR Listed (IF: 1.774)**

    Abstract: Hepatitis C virus (HCV) is a global health problem, with an estimated bioburden of >180 million. Every year about 350,000 people die from HCV-associated liver complications such as cirrhosis and cancer (e.g., hepatocellular carcinoma). Pakistan has the second highest prevalence of HCV. Treatment of this life-threatening disease has been a challenge, but recent developments in direct-acting antivirals have offered hope to many. Although direct-acting antivirals have dramatically improved viral clearance, their exorbitant costs put them out of reach for patients in developing countries. Thus, interferon therapy is still being used in Pakistan. Specifically, interferon-stimulating genes can alter treatment response. For example, interferons induce expression of many antiviral genes through signal transducer and activator of transcription/Janus

kinase signaling. Suppressor of cytokine signaling genes play an eminent role in the inhibition of cytokine signaling pathways and regulation of both adaptive and innate immunity. The present review examines expression of suppressor of cytokine signaling-1 in HCV-treated patients.

Keywords: *SOCS1, hepatitis C virus (HCV), direct-acting antiviral (DAA) drugs, interferons.*

12. Jamal, M., Andleeb, S., Jalil, F., Imran, M., Nawaz, M. A., Hussain, T., . . . Das, C. R. (2019). Isolation, characterization and efficacy of phage MJ2 against biofilm forming multi-drug resistant Enterobacter cloacae. *Folia Microbiologica, 64*(1), 101-111. doi: 10.1007/s12223-018-0636-x**.(Muhammad Ali, Sadeeq ur Rahman (Life Sciences/SSC) Web of Science JCR Listed (IF:1.448)**

Abstract: Biofilm is involved in a variety of infections, playing a critical role in the chronicity of infections. Enterobacter cloacae is a biofilm-forming and multi-drug-resistant (MDR) nosocomial pathogen leading to significant morbidity and mortality. This study aimed at isolation of a bacteriophage against MDR clinical strain of E. cloacae and its efficacy against bacterial planktonic cells and biofilm. A bacteriophage MJ2 was successfully isolated from wastewater and was characterized. The phage exhibited a wide range of thermal and pH stability and demonstrated considerable adsorption to host bacteria in the presence of CaCl2 or MgCl2. Transmission electron microscopy (TEM) showed MJ2 head as approximately 62 and 54 nm width and length, respectively. It had a short non-contractile tail and was characterized as a member of the family Podoviridae [order Caudovirales]. The phage MJ2 was found to possess 11 structural proteins (12–150 kDa) and a double-stranded DNA genome with an approximate size of 40 kb. The log-phase growth of E. cloacae both in biofilm and suspension was significantly reduced by the phage. The E. cloacae biofilm was formed under different conditions to evaluate the efficacy of MJ2 phage. Variable reduction pattern of E. cloacae biofilm was observed while treating it for 4 h with MJ2, i.e., biofilm under static conditions. The renewed media with intervals of 24, 72, and 120 h showed biomass decline of 2.8-, 3-, and 3.5-log, respectively. Whereas, the bacterial biofilm formed with dynamic conditions with refreshing media after 24, 72, and 120 h demonstrated decline in growth at 2.5-, 2.6-, and 3.3-log, respectively. It was, therefore, concluded that phage MJ2 possessed considerable inhibitory effects on MDR E. cloacae both in planktonic and biofilm forms.

Keywords: *not available.*

13. Ali, A., Fatima, Z., **Wahid, B.,** Rafique, S., & Idrees, M. (2019). Cosmopolitan A1 lineage of dengue virus serotype 2 is circulating in Pakistan: A study from 2017 dengue viral outbreak. *Journal of Medical Virology, 91*(11), 1909-1917. doi: 10.1002/jmv.25537**.(Braira Wahid (Life Sciences/SSC) Web of Science JCR Listed (IF: 2.049)**

Abstract: Dengue viral infection has become a challenge in tropical and subtropical countries where dengue virus is endemic. Its epidemics are occurring at higher rates amid its circulation throughout the year. Since the first documented outbreak in Pakistan in 1994, this region has reported many sporadic cases and epidemics. There is availability of small scale demographic and epidemiological studies on dengue viral infection in Pakistan. The year 2017 witnessed a huge dengue outbreak in Peshawar city of Pakistan with 69 deaths and 24 807 laboratory-confirmed cases. We suspect that the circulation of a different lineage or genotype could be responsible for the enhanced number of infected patients in Pakistan's 2017 outbreak since previous studies have already described this phenomenon in other countries. For this, we collected 1447 suspected blood samples and their epidemiological data. After serotyping through polymerase chain reaction nine samples of Dengue virus2 (DENV2) were randomly selected and were subjected to Sanger's sequencing for genotyping analysis. The mean distance, genetic diversity, and phylogenetic analysis were carried out using K2 model. The phylogenetic analysis split Pakistani isolates into two lineages, the sequences from 2017 outbreak in Peshawar grouped within A1 lineage of cosmopolitan genotype (IV) of DENV2. The difference in distance, genetic diversity, and amino acids composition strongly back the results that the new

lineage is circulating in the region. This is significant as Pakistan is struggling to control dengue epidemics which have caused much loss in both monetary and health sectors.
Keywords: *dengue, new lineage, outbreak, Pakistan, serotype 2.*

14. **Mateen, R. M.,** & Tariq, A. (2019). Increasing acceptability of forensic DNA analysis in Pakistan. *Egyptian Journal of Forensic Sciences, 9*(1). doi: 10.1186/s41935-019-0162-2**.(Rana Muhammad Mateen (Life Sciences/SSC) SJR**
Abstract: Not available.
Keywords: *not available.*

15. Mohsin, H., Asif, A., & **Rehman, Y.** (2019). Anoxic growth optimization for metal respiration and photobiological hydrogen production by arsenic-resistant Rhodopseudomonas and Rhodobacter species. *Journal of Basic Microbiology*, 1208–1216. doi: 10.1002/jobm.201900100**.(Yasir Rehman (Life Sciences/SSC) Web of Science JCR Listed (IF: 1.760)**
Abstract: The current research focuses on anaerobic respiration of arsenic and other toxic metals by purple nonsulfur bacteria (PNSB). Among the optimization assays performed were carbon utilization, cross metal resistance, and metal respiration, along with a comparison of each assay in photoheterotrophic and chemoheterotrophic growth. The bacteria were identified by the classification of 16S ribosomal RNA gene sequences. Rhodobacter sp. PI3 proved to be more versatile in carbon source utilization (acetate, lactate, citrate, and oxalate), whereas Rhodopseudomonas palustris PI5 proved to be more versatile in metal resistance (arsenate, arsenite, cobalt, lead, selenium, and nickel). Both the strains were found to be positive for photofermentative hydrogen production along with arsenic respiration. This study reveals that anaerobic conditions are more appropriate for better efficiency of PNSB. Our study demonstrates that R. palustris PI5 and Rhodobacter sp. PI3 can be promising candidates for the biohydrogen production along with metal detoxification using heavy metal-polluted effluents as a substrate.
Keywords: *arsenic respiration, bioremediation, carbon utilization, hydrogen gas production, metal respiration, photobioreactor, purple nonsulfur bacteria, rhodobacterr, hodopseudomonas palustris.*

16. **Wahid, B.** (2019). Hepatotoxicity and virological breakthrough of HCV following treatment with sofosbuvir, daclatasvir, and ribavirin in patients previously treated for tuberculosis. *Journal of Medical Virology, 91*(12), 2195-2197. doi: 10.1002/jmv.25557**. (Braira Wahid (Life Sciences/SSC) Web of Science JCR Listed (IF: 2.049)**
Abstract: The prevalence of hepatitis C virus/tuberculosis (HCV/TB) coinfection has not been estimated globally but few studies highlight the risk of hepatotoxicity following TB treatment or HCV treatment. Previously reported data highlights the risk of drug-induced hepatotoxicity associated with three of the first-line anti-TB agents: rifampin, isoniazid, and pyrazinamide specifically in patients coinfected with HIV and HCV. Thus far, direct-acting antiviral (DAA) drug-induced hepatotoxicity has not been reported in the literature but herein, we observed an unusual case of HCV virological breakthrough and hepatoxicity during treatment with DAA drugs in a patient who has previously been successfully treated for TB.
Keywords: *hepatotoxicity, isoniazid, sofosbuvir, TB.*

17. **Akhtar, A., Amir, A., Hussain, W.,** Ghaffar, A., & Rasool, N. (2019). In Silico Computations of Selective Phytochemicals as Potential Inhibitors Against Major Biological Targets of Diabetes Mellitus. *Current Computer-Aided Drug Design, 15*(5), 401-408. doi: 10.2174/1573409915666190130164923**.(Ammara Akhtar, Anam Amir (Life Sciences/SSC) Waqar Hussain (Computer Science/SST) Web of Science JCR Listed (IF: 1.200)**
Abstract: Background: In the past few years, several developments have been made to understand and control the complications and harmful side-effects associated with the disorder diabetes mellitus (DM).

Many new steps have been taken in a better understanding of the pathophysiology of the disease. With the advancement in the field of medical sciences, various novel therapies have been developed to efficiently control the pathological effects of diabetes mellitus. Recently, phytochemicals possessing various medicinal properties have opened up a new vast range of opportunities to design novel therapeutic drugs against diabetes mellitus. Objective: The present study aims to identify and screen phytochemicals as potent and novel inhibitors against diabetes mellitus. Methods: Three major biological targets of diabetes mellitus named Cytochrome P450, glycogen synthase kinase and PPAR gamma are targeted using phytochemicals by performing pharmacological properties prediction, molecular docking and density functional theory studies. Results: Out of 108 phytochemicals, 20, 12 and 3 phytochemicals showed higher binding affinity values as compared to chemically synthesized drugs against cytochrome P450, glycogen synthase kinase and PPAR gamma, respectively. Conclusion: The screened phytochemicals have strong inhibitory potential against diabetes mellitus and in future, these compounds, holding immense potential, can be considered as candidate drugs for treating diabetes mellitus.

Keywords: *diabetes mellitus, receptors, phytochemicals, ADMET, molecular docking, DFT.*

18. Bracegirdle, J., **Sohail, Z.,** Fairhurst, M. J., Gerth, M. L., Zuccarello, G. C., Hashmi, M. A., & Keyzers, R. A. (2019). Costatone C-A New Halogenated Monoterpene from the New Zealand Red Alga Plocamium angustum. *Marine Drugs, 17*(7). doi: 10.3390/md17070418**.(Zaineb Sohail (Life Sciences/SSC) Web of Science JCR Listed (IF: 3.772)**

Abstract: Red algae of the genus Plocamium have been a rich source of halogenated monoterpenes. Herein, a new cyclic monoterpene, costatone C (7), was isolated from the extract of P. angustum collected in New Zealand, along with the previously reported (1E,5Z)-1,6-dichloro-2-methylhepta-1,5-dien-3-ol (8). Elucidation of the planar structure of 7 was achieved through conventional NMR and (-)-HR-APCI-MS techniques, and the absolute configuration by comparison of experimental and DFT-calculated ECD spectra. The absolute configuration of 8 was determined using Mosher's method. Compound 7 showed mild antibacterial activity against Staphylococcus aureus and S. epidermidis. The state of Plocamium taxonomy and its implications upon natural product distributions, especially across samples from specimens collected in different countries, is also discussed.

Keywords: *halogenated monoterpene, plocamium angustum, costaton, mosher's analysis, DFT, ECD.*

19. **Rasool, N., Ashraf, A., Waseem, M., Hussain, W., & Mahmood, S.** (2019). Computational exploration of antiviral activity of phytochemicals against NS2B/NS3 proteases from dengue virus. *Turkish Journal of Biochemistry-Turk Biyokimya Dergisi, 44*(3), 261-277. doi: 10.1515/tjb-2018-0002**.(Dr. Nouman Rasool,Aisha Ashraf, Muneeba Waseem (Life Sciences/SSC) Waqar Hussain (ComputerScience) Sajid Mahmood (Informatics and Systems) Web of Science JCR Listed (IF: 0.329)**

Abstract: Background: Dengue fever has emerged as a serious threat in Pakistan in the last few years with high morbidity rates and substantial mortality. In the present study, NS2B/NS3 protease from four dengue virus (DENV) serotypes have been targeted using 2350 phytochemicals from various medicinal plants. Material and methods: The phytochemicals were subjected to docking against NS2B/NS3 proteases using AutoDock Vina focusing the binding site, and the binding energies were determined to screen the effectively docked phytochemicals. Pharmacological properties were also analyzed for all the phytochemicals using PreADMET web server. Results: Binding affinities ranged from -4.0 to -9.8 kcal/mol and a threshold of -9.0 kcal/mol was applied for screening compounds. A total of 18 phytochemicals are screened for passing all evaluation criteria of a drug in which three were for DENV1-NS2B/NS3, five for DENV2-NS2B/NS3, six for DENV3-NS2B/NS3 and four for DENV4-NS2B/NS3. Erycristagallin and Osajin from Erythrina variegate, PapraineA from Fumaria indica and Aloe-Emodin from Aloe vera are the most potent inhibitors of NS2B/NS3

protease from DENV1, DENV2, DENV3 and DENV4, having binding affinities of -9.6 kcal/mol, -9.6 kcal/mol, -9.6 kcal/mol and -9.2 kcal/mol, respectively. Conclusion: The effective drug-like properties of all 18 phytochemicals demonstrate the inhibition potential against dengue virus replication in human beings.
Keywords: *dengue virus, NS2B/NS3, phytochemicals, molecular docking, ADMET, virtual screening.*

20. **Wahid, B.** (2019). An unusual case of renal dysfunction and hepatocellular carcinoma following sofosbuvir therapy. *Future Virology, 14*(7), 461-464. doi: 10.2217/fvl-2018-0158**. (Braira Wahid (Life Sciences/SSC) Web of Science JCR Listed (IF: 0.730)**
Abstract: HCV is the major cause of morbidity and mortality worldwide with more than 185 million affectees. Currently, direct-acting antiviral drugs are being used as standard treatment approach that directly target HCV genes to eradicate virus and prevent cirrhosis. Accumulating evidence has reported that more than 90% HCV patients achieve sustained virological response. Adverse drug reactions of interferon-free regimens have not been studied yet. This is the first evidence of renal impairment and hepatocellular carcinoma following direct-acting antiviral drug therapy.
Keywords: *cirrhosis, DAA drug, hepatocellular carcinoma, hepatotoxicity, interferon, nephrotoxicity, renal dysfunction, sofosbuvir, SVR.*

21. **Wahid, B.** (2019). Treatment response of sofosbuvir in HCV virus/Helicobacter pylori co-infected patient a case report. *Gulhane Medical Journal, 61*(4)**. (Braira Wahid (Life Sciences/SSC) SJR "Case Report"**
Abstract: Newly developed direct-acting anti-viral drugs act as a major breakthrough in the area of HCV therapeutics. Accumulating evidence suggest that more than 99% patients achieve sustained virological response after receiving sofosbuvir-based therapy. However, we observed the first case of DAA treatment failure in HCV patient who was co-infected with H. Pylori.
Keywords: *DAA drugs, HCV, H. pylori, sofosbuvir, relapse.*

22. Khan, A., Ahmed, H., Simsek, S., Gondal, M. A., **Afzal, M. S.,** Irum, S., . . . Ali, M. (2019). Poverty-associated emerging infection of Cystic Echinococcosis in population of northern Pakistan: a hospital based study. *Tropical Biomedicine, 36*(2), 324-334.(**Muhammad Sohail Afzal (Life Sciences/SSC) Web of Science JCR Listed (IF: 0.418)**
Abstract: Cystic Echinococcosis (CE) is one of the most important zoonotic parasitic diseases in human, livestock, and wildlife globally. The prevalence of CE depends upon human behavioral risk factors, the diversity and ecology of animal host interactions and the genetic diversity within Echinococcus species which differ in their zoonotic potential and pathogenicity. It is a neglected, economic and socio-cultural problem in Pakistan. The available data about the incidence of CE is very limited and no extensive study has been reported in Pakistan. The current study was aimed to analyze the hospital reported cases of CE and the associated risk factors related to the incidence of CE. The hospital-based data of CE for the time period of January 2012-December 2017 was collected from Islamabad, Rawalpindi and Peshawar. The data covered demographic characteristics including age, gender, and cyst localization of infected individuals and socioeconomic determinants. The data was analyzed based upon different risk factors along with the different socioeconomic parameters that has an important impact on the distribution of disease. A total of 228 cases were presented in the selected hospitals of different cities during the study period. Out of total 228 patients, 59.21% were males and 40.78% were females (P<0.001). Most infections have been recorded in young adults (>20-30) showing 22.8% of total infected individuals followed by children (0-10) showing 10.5% (n=24), respectively (P<0.001). Liver was the most vulnerable organ (58.77%, n=134) followed by lungs (14.47%, n=33) (P<0.001). The infection was higher among rural communities (84.2%) than urban (12.8%) (P<0.001). Socioeconomic and demographic factors had an important impact on the intensity of disease

(P<0.001). The occurrence of cases in children and young adults was an important finding as it indicated an active transmission of the parasite in Pakistan along with the poverty index. Emergence of echinococcosis in Pakistan showed that emerging health issues in Pakistan could bring the disease to limelight for future research. This finding, together with the fact that 1 hospital reported 214 cases over 6 years underlines the need for a program for prevention/control of this disease in Pakistan. The timely measure needs to be taken to hamper the disease development and establishment. In order to control the disease, complete surveillance should be done which in turn weighs down the disease progress.

Keywords: *not available.*

23. Khan, A., Ayaz, R., Mehtab, A., Naz, K., Haider, W., Gondal, M. A., . . . **Afzal, M. S.,** Ahmed, H. (2019). Knowledge, attitude & practices (KAPs) regarding rabies endemicity among the community members, Pakistan. *Acta Tropica, 200*, 105156. doi: https://doi.org/10.1016/j.actatropica.2019.105156.(**Muhammad Sohail Afzal (Life Sciences/SSC) Web of Science JCR Listed (IF: 2.629)**

Abstract: Introduction Rabies is one of the most neglected tropical diseases in numerous regions of the world. Annually, 60,000 deaths have been reported, mostly in Asia and Africa. Dogs are responsible for approximately 99% of human deaths due to rabies. Consequently, incidences of canine bites are increased yet rabies continues to remain a neglected disease in Pakistan. The objective of the study was to investigate the Knowledge, Attitude and Practices (KAP) for rabies, among the participants from urban and rural population of Rawalpindi and Islamabad, Pakistan. Methods Data was collected by conducting household based cross-sectional survey over a period of 5 months (from January 2018 to May 2018). Quantitative data was collected in the form of questionnaires to investigate awareness and knowledge of rabies among the participants. The questionnaire compromised of socio-demographic features and degree of KAP with respect to rabies management and control. Results A total sample size of 434 participants responded in the study. Among them, 89.4% were found to have heard about rabies, 38.7% have no knowledge of signs and symptoms, 93.3% knew that infected dogs are the major cause of spreading rabies and 77.6% considered that the vaccination of animals is important for prevention of rabies. However, only 39.8% actively seek medical treatment at a hospital if bitten by a dog. From the 434 participants 61 reported dog bites, of which 68.8% (42/61) were male and 49.1% (30/61) belonged to age group of 6–25 years. Conclusion This study concludes that respondents have relatively limited knowledge, inconsistent attitude and poor practices towards rabies prevention and control. There is a high need of imparting knowledge to the population from multidisciplinary programs for effective management and prevention of rabies.

Keywords: *rabies, knowledge, attitude, practices, Pakistan.*

24. **Altaf, S.,** Tarar, A., **& Naeem, N.** (2019). Current status of therapeutics and diagnosis of HCV: A review. *BioScientificReview(BSR), 1*(2). (**Saba Altaf, Nabiha Naeem (Life Sciences/SSC) UMT Journal**

Abstract: Hepatitis C virus (HCV) causes a very common blood borne infection. According to a recent estimate, 3% of world population is infected with HCV. Acute infection develops into chronic infection that causes severe liver diseases. Major improvements in diagnosis and antiviral therapy play a crucial role in the management of chronic hepatitis infection. Better understanding of HCV life cycle introduced the development of direct acting antiviral drugs (DAA drugs). Currently, sovaldi or NS5B inhibitor is a major drug used for chronic HCV infection. New therapies are based on the combination of antiviral drugs and/or interferon free regimens. Many new DAA drugs, that are inhibitors of HCV genes, are under investigation. Serological and molecular techniques play a major role in the diagnosis and assessment of the treatment. Anti HCV detection by ELISA is an initial screening test, while nucleic acid tests (NATs) are confirmatory. Quantitative NATs have replaced the qualitative NATs. Developments in the

field of diagnosis and treatment have replaced interferon based regimens with interferon free regimens.

Keywords: *DAA drugs, HCV treatment, HCV testsInterferon, Sovaldi.*

25. Khan, M. T., & **Ameen, A.** (2019). The lack of a centralized and universal tool for input file generation for molecular dynamics simulations and the development of such a tool: A review. *BioScientific Review(BSR), 1*(1), 48–52**.** (**Ayesha Ameen (Life Sciences/SSC) UMT Journal**

Abstract: This study aims to design and develop a tool that can efficiently generate Molecular Dynamics (MD) simulation input files and systems for various simulation software such as NAMD, Amber and GROMACS collectively using a single platform. Molecular Dynamics simulation is performed in order to understand the structure, dynamics and thermodynamic behavior of biomolecular system. There are a lot of MD simulation software available which are very efficient and fast. However, there are some hurdles in making an input file for simulation purpose, such as the use of command line instructions and the need of using multiple sources in order to generate parameter and topology files. This is a very hectic job for any bio-informatician working in this area and it requires a lot of man hours to develop these files. The main challenge which the scientists encounter working in this field is that there are a lot of different simulation software available online and each one of them has some common features and some uncommon and distinctive features. These facts make input file and system generation a slow and hectic process. To solve this issue and to minimize the time consumed in the preparation of input files, there is a need to develop a tool which is user friendly and provides a graphical user interface to make an input file. For this purpose, programming languages like Python and Java will be used during the designing and development process. This will also incorporate all the mathematical equations and calculations that are going on at the back end in the making of input files. Embedding PDB into this tool will also be helpful as users will directly be able to import protein structures from PDB. This software will allow the users to create input files and systems for MD simulations in the shortest possible time.

Keywords: *molecular dynamics (MD), graphical user interface, PDB: protein data bank, charmm, NAMD, VMD, GROMACS, desmond, maestro, AMBER, GROMITA, xleap, tleaparenames of the frequently used molecular dynamics simulations software.*

26. Aslam, M. S., Gull, I., Mahmood, M. S., Iqbal, M. M., Abbas, Z., **Tipu, I.,** . . . Athar, M. A. (2019). High yield expression, characterization, and biological activity of IFNα2-Tα1 fusion protein. *Preparative Biochemistry & Biotechnology*, 1-11. doi: 10.1080/10826068.2019.1689509.**(Imran Tipu (Life Sciences/SSC) Web of Science JCR Listed (IF: 1.117)**

Abstract: The use of interferon α-2 in combination with thymosin α-1 shows higher anti-cancer effect in comparison when both are used individually because of their synergistic effects. In this study we produced an important human interferon α-2-thymosin α-1 (IFNα2-Tα1) fusion protein with probable pharmaceutical properties coupled to its high-level expression, characterization, and study of its biological activity. The IFNα2-Tα1 fusion gene was constructed by over-lap extension PCR and expressed in Escherichia coli expression system. The expression of IFNα2-Tα1 fusion protein was optimized to higher level and its maximum expression was obtained in modified terrific broth medium when lactose was used as inducer. The fusion protein was refolded into its native biologically active form with maximum yield of 83.14% followed by purification with ?98% purity and 69% final yield. A band of purified IFNα2-Tα1 fusion protein equal to ?23?kDa was observed on 12 % SDS-PAGE gel. The integrity of IFNα2-Tα1 fusion protein was confirmed by western blot analysis and secondary structure was assessed by CD spectroscopy. When IFNα2-Tα1 fusion protein was subjected to its biological activity analysis it was observed that it exhibits both IFNα2 & Tα1 activities as well as significantly higher anticancer activity as compared to IFNα-2 alone.

Keywords: *biological activity, purification, expression optimization, fusion protein, high yield, overlap extension PCR.*

27. Qamar, Z., Tariq, M., Rehman, T., Iqbal, M. S., Sarwar, M. B., Sharif, M. N., . . . Awan, M. F.(2019). Trackable CEMB-Klean Cotton Transgenic Technology: Afforadable Climate Neutral Agri-biotech Industrialization for Developing Countries. *Advancements in Life Sciences, 6*(3), 131-138**.(Mudassar Fareed Awan (Department of molecular biology & biochemistry) SJR (SKT Campus)**

Abstract: Background: Transgenic technology reflects the incorporation of novel useful traits in crop plants like cotton for economic benefits by overcoming the problems including insects' pests and weeds in special. The present study is the success story of the continuous effort of CEMB team started back in the 1990s. Methods: This study includes characterization of a large number of Bacillus thuringiensis (Bt) strains taken from local soil and subjected to direct transformation of isolated BT genes into local cotton cultivars. Protocols for transformation into cotton plants were optimized and validated by the development of double gene codon optimized (Cry1Ac and Cry2A) transgenic cotton varieties. Results: The resulting GMOs in the form of CEMB-33, CA-12, CEMB-66 have been approved by Punjab Seed Council in 2013 and 2016 respectively. Double Bt and weedicide resistant cotton harboring CEMB-Modified and codon optimized cp4EPSPS (GTGene). These varieties can tolerate glyphosate spray @ 1900ml per acre without the appearance of necrotic spots/shedding and complete removal of all surrounding weeds in the cotton field is a significant advance to boost cotton production without spending much on insecticides and herbicides. Conclusion: In the current report, two unique sets of primers which amplify 1.1 Kb for CEMB-double Bt genes and 660 bp product for CEMB-Modified cp4EPSPS (GTGene) were tested. CEMB cotton variety CKC-01 is specially designed as low cost and easy to use by local farmer's technology has the potential to revolutionize the cotton growing culture of the country.

Keywords: *event detection, bt cotton, cemb transgenic technology, gtgene.*

28. **Haqqi, A.,** Munir, R., Khalid, M., **Khurram, M., Zaid, M., Ali, M., Shah, Z. H.** ... **& Afzal, M. S.** (2019). Prevalence of Hepatitis C Virus Genotypes in Pakistan: Current Scenario and Review of Literature. *Viral immunology*, *32*(9), 402-413**.(Aleena Haqqi, Muhammad Khurram, Muhammad Zaid, Muhammad Ali, Zaheer Hussain Shah, Muhammad Sohail Afzal (Life Sciences/SSC) Web of Science JCR Listed (IF: 1.417)**

Abstract: Hepatitis C virus (HCV) is a major public health concern globally, resulting in liver-related complications. Approximately 6% population of Pakistan is infected with HCV. HCV is error prone, due to which it is classified into 7 genotypes and 67 subtypes. HCV genotype determination is critical for treatment and therapy response. In this study, 3,539 samples were collected from 2015 to 2019 from all over Punjab. RNA was extracted from samples using QIA Amp Viral RNA MINI kit (Qiagen, Germany) and viral genotyping was performed. Furthermore, a systemized literature search (2009–2018) was done to analyze the HCV genotype distribution pattern in Pakistan. In Punjab, genotype 3a (86.46%) is most prevalent, followed by untypable (7.17%) and genotype 1a (3.84%) and 3b (1.04%). Mixed genotype constitutes only 0.67% of total infections. Genotype 2a, 2b, 3c, and 4 were found to be rare. Data available from literature review when compiled showed that HCV genotype 3a (58.16%) was predominant in Pakistan, followed by genotypes 3b (9.05%), 2a (6.70%), 1a (6.22%), and 1b (2.39%). The frequency of mixed genotypes was found to be 4% and 12% of untypable HCV variants. This study highlights the HCV genotype distribution pattern in different regions of Pakistan. Therapy response and disease management depend on genotype, so HCV genotype determination is crucial. In Pakistan, the most prevalent genotype is 3a, followed by untypable genotype. Both interferon and sofosbuvir are effective against genotype 3a, but treatment with sofosbuvir has comparatively high sustained virological response, less adverse effects, and more tolerability.

Keywords: *epidemiology, HCV, genotype, public health, Pakistan.*

29. Yaseen, M., **Rasool, N.**, Farooq, Z., Nazir, S., & Chohan, S. (2019). A pilot study for the use of coumarin-480 to enhance the fingermarks. *Studia Universitatis Babes-Bolyai Chemia, 64*(1), 185-196. doi: 10.24193/subbchem.2019.1.15**.(Nouman Rasool (Biochemistry/SSC) Web of Science JCR Listed (IF: 0.275)**
Abstract: A new alternative super glue post-treatment method for the enhancement of fingermarks over two different non-porous surfaces including glass slides and high density polyethylene (HDPE) sheets have been investigated. This is the first documented application of 2,3,6,7-tetrahydro-9-methyl-1H,5H-quinolizino(9,1-gh)coumarin or coumarin-480 for the enhancement of cyanoacrylate fumed fingermarks. Coumarin-480 in ethanol was used as cyanoacrylate post-treatment dye. Fingermarks of seven different donors were aged for three different time periods (1 day, 1 week and 4 weeks) over non-fluorescent glass slides and HDPE sheets and developed with cyanoacrylate fumes. Upon staining with coumarin-480, fingermarks of varying qualities were observed under long UV radiations. Rhodamine 6G was used to assess the relative sensitivity of the coumarin-480 for the enhancement cyanoacrylate developed fingermarks. Pseudo-operational trials were conducted on glass bottles and high density polyethylene shopping bags. Coumarin-480 produced superior enhancement on HDPE shopping bags and glass bottles than the rhodamine 6G.
Keywords: *fingermarks enhancement, cyanoacrylate post treatment dye, coumarin-480, fluorescent dye.*

30. Khan, A., **Afzal, M. S.**, Ahmed, H., (2019). Leishmaniasis in Pakistan: A call for action. *Travel Medicine and Infectious Disease*, *32*, 101516**.(Muhammad Sohail Afzal (Life Sciences/SSC) (Letter to editor) Web of Science JCR Listed (IF: 4.868)**
Abstract: Not available.
Keywords: *not available.*

31. Naseer, S., **Afzal, M. S.,** Nisa, A., Hussain, S., Ahmad, M. A., Parveen, S., ... & Riaz, M. (2019). Extraction of brown dye from Eucalyptus bark and its applications in food storage. *Quality Assurance and Safety of Crops & Foods*, *11*(8), 769-780**.(Muhammad Sohail Afzal (Life Sciences/SSC) Web of Science JCR Listed (IF: 0.558)**
Abstract: The importance of plant pigments as natural food colourants has been increasing globally in order to avoid from environmental problems and health hazards associated with synthetic colours. The current consumer prefers the naturally derived food colourants due to their health promoting properties. The present investigations were carried out to establish the safety and nutritional value of natural dye produced from the bark of *Eucalyptus globules*. A brown fine powder was obtained by aqueous extraction of finally ground *Eucalyptus* bark. This brown dye contained tannins, reducing sugar, alkaloids, glycosides, saponins, various antioxidants, antimicrobial agents and antiradical compounds. Total phenolic contents were ranging from 66.83 to 534.80 µg of gallic acid equivalents per 100 grams dry weight of the dye. In 2,2-diphenyl-1-picrylhydrazyl assay, IC_{50} value was observed to be 77.20 µg/ml with respect to butylated hydroxytoluene (9.96 µg/ml) as a standard control. The earlier investigations on the coloured candies of various brands suggest that the synthetic dyes used in the production of candies are a very big jeopardy for human health. In the current studies, the natural brown dye obtained from the *Eucalyptus* bark was applied for the production of candies and then the stability of dye in the candies was measured in terms of caffeic acid content. The *Eucalyptus* bark dye has shown an excellent nutritional value with no toxicity against the tested mice looking its possible safe use as a food colorant in future. None of the aflatoxins were detected in the dye.
Keywords: *eucalyptus dye, natural food colour, nutritional, antimicrobial, candies.*

32. **Zahoor, S.,** Zahoor, S., Hameed, S., Abdullah, S. M., **Afzal, M. S.,** & Butt, U. (2019). Efficacy of sofosbuvir in interferon treated patients of hepatitis C infected with 3a genotype. *The Professional Medical Journal, 26*(10), 1606-1612**. (Saroosh Zahoor, Muhammad Sohail Afzal (Life Sciences/SSC) HEC Z CAT**

Abstract: Objectives: Hepatitis C is a blood borne infection primarily disrupting the functional and architectural integrity of liver and has a considerable share in worldwide mortality and morbidity. Treatment strategies against the causative RNA-based virus has widely evolved over time with newer Direct Acting Antivirals (DAA) being recently introduced. This study serves to assess the efficacy of Sofosbuvir (DAA) in patients of HCV genotype 3a with prior treatment with interferon. Study Design: An Open label, Prospective Quasi Experimental Study. Setting: Mayo Hospital, Lahore. Period: September 2016 to December 2017. Material and Methods: 212 patients with genotype 3a who had been previously treated with interferon (INF). They were treated with Sofosbuvir 400mg once daily and Ribavirin 400mg thrice daily. The treatment duration was 24 weeks following which the end of treatment response (ETR) was determined by quantifying viral load by Polymerase Chain Reaction (PCR). Results: Of the 212 patients enrolled, 50 patients did not give follow up either due to availability issues or due to noncompliance. 13 patients left the treatment due to comorbidities. 149 patients completed the treatment out of whom 131 patients showed positive response (87.9%). Nine patients with high viral load showed relapse while nine patients were non-responders. Conclusion: In interferon experienced patients of HCV genotype 3a, Sofosbuvir has shown to reach sublimecure rates which may serve to obviate conventional treatment strategies owing to their longer treatment duration and significant adverse effects. As demonstrated by this study, the modest safety profile coupled with an enhanced therapeutic efficacy of Sofosbuvir is expected to revolutionize treatment strategies against Hepatitis C limiting the spread and hence the incidence of disease.
Keywords: *genotype 3a, hepatitis C, interferon treated patients, sofosbuvir.*

33. **Afzal, M. S.,** Hussain, W., **Mateen, M., Khurram, M., Zaid, M., Ali, M.,** & Ahmed, H. (2019). Prevalence and future prospects of HIV in Pakistan. *Asian Pacific Journal of Tropical Medicine, 12*(Suppl 1): 20. doi: 10.4103/1995-7645.268165.**(Muhammad Sohail Afzal, Muhammad Mateen, Muhammad Khurram, Muhammad Zaid, Muhammad Ali (Life Sciences/SSC) Web of Science JCR Listed (IF: 1.772)**
Abstract: Not available.
Keywords: *not available.*

34. Khan, A., Rasib, Q., Riaz, S., Ali, I., Riaz, N., **Afzal, M. S.,** Gondal, M. A., & Ahmed, H. (2019). An update on HIV in transgenders of Pakistan. *Asian Pacific Journal of Tropical Medicine, 12*(Suppl 1): 21. doi: 10.4103/1995-7645.268165.**(Muhammad Sohail Afzal (Life Sciences/SSC) Web of Science JCR Listed (IF: 1.772)**
Abstract: Not available.
Keywords: *not available.*

35. Khan, A., **Afzal, M. S.,** Ali, M. I., Riaz, N., & Ahmed, H. (2019). Emerging trend of leishmaniosis in Pakistan: Current status and future Prospects. *Asian Pacific Journal of Tropical Medicine,* 12(Suppl 1): 23. doi: 10.4103/1995-7645.268165.**(Muhammad Sohail Afzal (Life Sciences/SSC) Web of Science JCR Listed (IF: 1.772)**
Abstract: Not available.
Keywords: *not available.*

36. Khan, A., Khan, S. S., **Afzal, M. S.,** Gondal, M. A., Ali, M. I., Riaz, N., Mehmood, M., & Ahmed, H. (2019). An overview of chikungunya in Pakistan. *Asian Pacific Journal of Tropical Medicine,* 12(Suppl 1): 25. doi: 10.4103/1995-7645.268165.**(Muhammad Sohail Afzal (Life Sciences/SSC) Web of Science JCR Listed (IF: 1.772)**
Abstract: Not available.
Keywords: *not available.*

37. Khan, A., Khan, S. S., Gondal, M. A., **Afzal, M. S.,** Umar, M., Afzal, M. I., Ali, M. I., Mehmood, M., & Ahmed, H. (2019). An overview of dengue fever in Pakistan. *Asian Pacific Journal of Tropical Medicine,* 12(Suppl 1): 25. doi: 10.4103/1995-7645.268165.**(Muhammad Sohail Afzal (Life Sciences/SSC) Web of Science JCR Listed (IF: 1.772)**
Abstract: Not available.
Keywords: *not available.*

38. **Mateen, R. M.,** & Tariq, A. (2019). Crime scene investigation in Pakistan: A perspective. *Forensic Science International: Synergy, 1*, 285-287. doi: https://doi.org/10.1016/j.fsisyn.2019.06.046. **(Rana Muhammad Mateen (Life Sciences/SSC) SJR**
Abstract: Crime scene investigation is an important tool in criminal investigation process. Proper processing of crime scene is a prerequisite for successfully solving a criminal case. In Pakistan, local policemen are not properly trained and equipped with the necessary items required for systematic processing of crime scene including proper identification and collection of evidence. Certain capacity building measures and improvements must be needed for proper processing of crime scene in Pakistan. This article focuses the current situation and strategies being practiced in Pakistan followed by suggestions for capacity building measures in this field.
Keywords: *Pakistan, Crime scene, Investigation process, Capacity building.*

39. Khan, S. S., Khan, A., Hussain, N., **Afzal, M. S.,** Gondal, M. A., & Ahmed, H. (2019). An overview of dengue fever in Pakistan Emerging trends of theileriosis in Pakistan. *Asian Pacific Journal of Tropical Medicine,* 12(Suppl 1): 41. doi: 10.4103/1995-7645.268165.**(Muhammad Sohail Afzal (Life Sciences/SSC) Web of Science JCR Listed (IF: 1.772)**
Abstract: Not available.
Keywords: *not available.*

40. **Akhtar, A.,** Hussain, W., & Rasool, N. (2019). Probing the Pharmacological Binding Properties, and Reactivity of Selective Phytochemicals as Potential HIV-1 protease Inhibitors. *Universitas Scientiarum, 24*(3), 441-464. **(Ammara Akhtar (Life Sciences/SSC) SJR**
Abstract: The HIV-1 protease plays an essential role in the replication cycle of HIV-1; therefore there is a direct need to develop novel inhibitors of the HIV-1 protease, which can cease the viral replication. The present study targets the discovery of potential inhibitors of HIV-1 protease from a set of phytochemicals. From 2505 phytochemicals, 108 compounds were docked, after screening, with the HIV-1 protease to analyze their inhibitory potential against the protease. DFT analysis was also conducted to study the reactivity of strongly docked compounds. Out of 108 phytochemicals, 38 compounds showed binding affinity greater than the desired threshold. Reactivity of these 38 inhibitors was also high as compared to other compounds, based on the DFT results. These results suggest that the selected 38 phytochemicals are drug candidates and they have the potential to be effectively used against HIV in the future.
Keywords: H*IV-1, Phytochemicals, Protease, Molecular docking, DFT, ADMET.*

41. Ahmed, S. S., Akhter, M., **Sajjad, M.,** Gul, R., & Khurshid, S. (2019). Soluble Production, Characterization, and Structural Aesthetics of an Industrially Important Thermostable β-Glucosidase from Clostridium thermocellum in Escherichia coli. *BioMed Research International, 2019*, 9308593. doi: 10.1155/2019/9308593.**(Muhammad Sajjad (Life Sciences/SSC) SJR**
Abstract: This study aims to achieve high-level soluble expression and characterization of a thermostable industrially important enzyme, i.e., beta-glucosidase (BglA; EC: 3.2.1.21), from *Clostridium thermocellum* (*C.*

thermocellum) by cloning in an *Escherichia coli* (*E. coli*) expression system. BglA was expressed as a partially soluble component of total cellular protein (TCP) having a molecular weight of ~53 kDa with 50% of it as soluble fraction. Purification in two steps, namely, heat inactivation and Ni-chromatography, yielded approximately 30% and 15% of BglA, respectively. The purified (~98%) BglA enzyme showed promising activity against the salicin substrate having a K_m of 19.83 mM and a V_{max} of 0.12 μmol/min. The enzyme had an optimal temperature and pH of 50°C and 7.0, respectively, while retaining its catalytic activity up till 60°C and at pH 7. The optimized maximum expression level was attained in M9NG medium with lactose as an inducer. Circular dichroism revealed presence of alpha helix (43.50%) and small percentage of beta sheets (10.60%). Factors like high-end cellulolytic activity, fair thermal stability, stability against low pH, and ease of purification make BglA from *C. thermocellum* a potential candidate in industrial applications.

Keywords: *not available.*

Department of Mathematics

Research Articles

1. **Ahmad, S.,** Jami, A. R., Ahmad, I., & **Sadia, H.** (2019). Stellar systems and structure scalars. *Canadian Journal of Physics, 97*(5), 465-471. doi: 10.1139/cjp-2018-0380.**(Shahzad Ahmad, H. Sadia (Mathematics/SSC) Web of Science JCR Listed (IF: 1.016) (SKT Campus)**

   Abstract: The work is devoted to analyzing the effects of dark source polynomial curvature corrections in the mathematical modeling of radiating stars. In this scenario, we have used a particular f(R, T) model and consider the spherically symmetric geometry of relativistic interior. We assumed that our geometry is coupled with anisotropic shearing matter distribution undergoing radiating epoch with free streaming and diffusion approximation. We have calculated spherically symmetric total matter content with the help of Misner-Sharp formalism. A particular relation among anisotropic pressure, shearing viscosity, radiating parameters, energy density, and tidal forces is obtained. We then expressed this equation with the help of f(R, T) structure scalar, the scalar obtained by orthogonal decomposition of the Riemann tensor. The role of the logarithmic Ricci and trace of stress-energy tensor terms are also observed through Weyl scalar, shear, expansion scalar differential equations.

   Keywords: *hrelativistic fluids, anisotropic fluids, dissipative fluids.*

2. **Ahmed, N.,** Rafiq, M., **Rehman, M. A.**, Iqbal, M. S., & Ali, M. (2019). Numerical modeling of three dimensional Brusselator reaction diffusion system. *Aip Advances, 9*(1). doi: 10.1063/1.5070093.**(Nauman Ahmed, M. A. Rehman (Mathematics/SSC) Web of Science JCR Listed (IF: 1.579)**

   Abstract: In many mathematical models, positivity is one of the attributes that must be possessed by the continuous systems. For instance, the unknown quantities in the Brusselator reaction-diffusion model represent the concentration of two reactant species. The negative values of concentration produced by any numerical methods is meaningless. This work is concerned with the investigation of a novel unconditionally positivity preserving finite difference (FD) scheme to be used for the solution of three dimensional Brusselator reaction-diffusion system. Von Neumann stability method and Taylor series expansion is applied to verify unconditional stability and consistency of the proposed FD scheme. Results are compared against well-known forward Euler FD scheme and some results reported in the literature.

   Keywords: *not available.*

3. **Ahmed, N.,** Tahira, S. S., Rafiq, M., **Rehman, M. A.**, Ali, M., & Ahmad, M. O. (2019). Positivity preserving operator splitting nonstandard finite difference methods for SEIR reaction diffusion model. *Open Mathematics, 17*, 313-330. doi: 10.1515/math-2019-0027.**(Nauman Ahmed, M. A. Rehman (Mathematics/SSC) Web of Science JCR Listed (IF: 0.726)**

Abstract: In this work, we will introduce two novel positivity preserving operator splitting nonstandard finite difference (NSFD) schemes for the numerical solution of SEIR reaction diffusion epidemic model. In epidemic model of infection diseases, positivity is an important property of the continuous system because negative value of a subpopulation is meaningless. The proposed operator splitting NSFD schemes are dynamically consistent with the solution of the continuous model. First scheme is conditionally stable while second operator splitting scheme is unconditionally stable. The stability of the diffusive SEIR model is also verified numerically with the help of Routh-Hurwitz stability condition. Bifurcation value of transmission coefficient is also carried out with and without diffusion. The proposed operator splitting NSFD schemes are compared with the well-known operator splitting finite difference (FD) schemes.
Keywords: *SEIR reaction di_usion model, operator splitting techniques, positivity, bifurcation value.*

4. **Ali, A.,** Dimitrov, D., Du, Z. B., & **Ishfaq, F.** (2019). On the extremal graphs for general sum-connectivity index (chi(alpha)) with given cyclomatic number when alpha > 1. *Discrete Applied Mathematics, 257*, 19-30. doi: 10.1016/j.dam.2018.10.009.**(Akbar Ali, Faiza Ishfaq (Mathematics/Knowledge Unit of Science) Web of Science JCR Listed (IF: 0.983) (SKT Campus)**
Abstract: Let V(G) and E(G) be, respectively, the vertex set and edge set of a graph G. The general sum-connectivity index of a graph G is denoted by chi(alpha) (G) and is defined as Sigma(uv is an element of E(G))(d(u) + d(v))(alpha), where uv is the edge connecting the vertices u, v is an element of V(G), d(u) is the degree of the vertex u and a is alpha non-zero real number. The minimum number of edges of a graph G whose removal makes G as acyclic is known as the cyclomatic number and it is usually denoted by v. In this paper, it is proved that the unique graph obtained from the star S-n by adding v edge(s) between a fixed pendant vertex u and v other pendant vertices, has the maximum chi(alpha) value in the collection of all n-vertex connected graphs having cyclomatic number v with the constraints v = 5, n >= 6, alpha > 1 or 6 <= v <= n - 2, alpha >= 2. It is also proved that only those graphs which consist of (only) vertices of degrees 2, 3, such that no two vertices of degree 3 are adjacent, have the minimum chi(alpha) value among all n-vertex connected graphs (and also among all n-vertex connected molecular graphs) having cyclomatic number v with the conditions v >= 3, n >= 5(v - 1) and alpha > 1.
Keywords: *topological index, general sum-connectivity index, cyclomatic number, molecular graph, extremal problem.*

5. **Ali, A., & Rashid, T.** (2019). Hesitant fuzzy best-worst multi-criteria decision-making method and its applications. *International Journal of Intelligent Systems, 34*(8), 1953-1967. doi: 10.1002/int.22131.**(Asif Ali, Tabasam Rashid (Mathematics /SSC) Web of Science JCR Listed (IF: 7.229)**
Abstract: Best-worst method (BWM) is extended to uncertain situations, hesitant fuzzy best-worst method (HFBWM) is proposed by using hesitant fuzzy multiplicative preference relation for multiple-criteria group decision-making problems. The reference comparison of the best criterion and the worst criterion are described by the linguistic terms, which are expressed in hesitant fuzzy elements, of the decision makers. Weights of criteria are calculated by using score function. Using the concept of BWM, nonlinearly constrained optimization problems are formed to obtain hesitant fuzzy weights (HFWs) of different criteria and alternatives. To check the reliability of the HFBWM, consistency ratio is proposed. The advantage and suitability of the proposed HFBWM are determined by three case studies. The results indicate that the HFBWM, due to higher comparison consistency as compared to BWM, obtain plausible preference ranking for alternatives.
Keywords: *consistency ratio, hesitant fuzzy best-worst method, hesitant fuzzy reference comparison (HFRC), hesitant fuzzy sets (HFS), multiple-criteria decision-making.*

6. **Ali, J., Saeed, M., Tabassam, M. F., & Iqbal, S.** (2019). Controlled showering optimization algorithm: an intelligent tool for decision making in global optimization. *Computational and Mathematical Organization Theory, 25*(2), 132-164. doi: 10.1007/s10588-019-09293-6.**(Javaid Ali, Muhammad Saeed, Muhammad Farhan Tabassam (Mathematics/SSC) Shaukat Iqbal (Informatics/SST) Web of Science JCR Listed (IF: 1.372)**
   Abstract: In this study a novel population based meta-heuristic, called controlled showering optimization (CSO) algorithm, for global optimization of unconstrained problems is presented. Modern irrigation systems are equipped with smart tools manufactured and controlled by human intelligence. The proposed CSO algorithm is inspired from the functioning of water distribution tools to model search agents for carrying out the optimization process. CSO imitates the mechanism of projection of water units by sprinklers and the movements of their platforms to the desired locations for scheming optimum searching procedures. The proposed method has been tested using a number of diverse natured benchmark functions with low and high dimensions. Statistical analysis of the empirical data demonstrates that CSO offers solutions of better quality in comparison with several well-practiced algorithms like genetic algorithm (GA), particle swarm optimization (PSO), differential evolution (DE), artificial bee colony (ABC), covariance matrix adaptation evolution strategy (CMA-ES), teaching and learning based optimization (TLBO) and water cycle algorithm (WCA). The experiments on high-dimensional problems reveal that CSO algorithm also outperforms significantly a number of algorithms designed specifically for high dimensional global optimization problems.
   Keywords: *global optimization, population based meta-heuristic, sprinklers search agents, controlled showering, benchmarks.*

7. Bashir, Z., Bashir, Y., **Rashid, T.,** Ali, J., & Gao, W. (2019). A Novel Multi-Attribute Group Decision-Making Approach in the Framework of Proportional Dual Hesitant Fuzzy Sets. *Applied Sciences-Basel, 9*(6). doi: 10.3390/app9061232.**(Tabasam Rashid (Mathematics/SSC) Web of Science JCR Listed (IF: 2.217)**
   Abstract: Making decisions are very common in the modern socio-economic environments. However, with the increasing complexity of the social, today's decision makers (DMs) face such problems in which they hesitate and irresolute to provide their views. To cope with these uncertainties, many generalizations of fuzzy sets are designed, among them dual hesitant fuzzy set (DHFS) is quite resourceful and efficient in solving problems of a more vague nature. In this article, a novel concept called proportional dual hesitant fuzzy set (PDHFS) is proposed to further improve DHFS. The PDHFS is a flexible tool composed of some possible membership values and some possible non-membership values along with their associated proportions. In the theme of PDHFS, the proportions of membership values and non-membership values are considered to be independent. Some basic operations, properties, distance measure and comparison method are studied for the proposed set. Thereafter, a novel approach based on PDHFSs is developed to solve problems for multi-attribute group decision-making (MAGDM) in a fuzzy situation. It is totally different from the traditional approach. Finally, a practical example is given in order to elaborate the proposed method for the selection of the best alternative and detailed comparative analysis is given in order to validate the practicality.
   Keywords: *dual hesitant fuzzy set, proportional dual hesitant fuzzy set, distance measure, multi-attribute group decision making, TOPSIS.*

8. Beg, I., **Jamil, R. N., & Rashid, T.** (2019). Diminishing Choquet Hesitant 2-Tuple Linguistic Aggregation Operator for Multiple Attributes Group Decision Making. *International Journal of Analysis and Applications, 17*(1), 76-104. doi: 10.28924/2291-8639-17-2019-76.**(Raja Noshad Jamil, Tabasam Rashid (Mathematics/SSC) Master Journal List**
   Abstract: In this article, we develop a diminishing hesitant 2-tuple averaging operator (DH2TA) for hesitant 2-tuple linguistic arguments. DH2TA work in the way that it aggregate all hesitant 2-tuple linguistic elements

and during the aggregation process it also controls the hesitation in translation of the resultant aggregated linguistic term. We develop a scalar product for hesitant 2-tuple linguistic elements and based on the scalar product a weighted diminishing hesitant 2-tuple averaging operator (DWH2TA) is introduced. Moreover, combining Choquet integral with hesitant 2-tuple linguistic information, the diminishing Chouqet hesitant 2-tuple average operator (DCH2TA) is defined. The proposed operators higher reflect the correlations among the elements. After investigating the properties of these operators, a multiple attribute decision making method based on DCH2TA operator is proposed. Finally, an example is given to illustrate the significance and usefulness of proposed method.

Keywords: *hesitant 2-tuple model, aggregation operator, choquet integral, multiple attribute group decision making, supply chain management.*

9. Butt, A. S., Ali, A., **Tufail, M. N.,** & Mehmood, A. (2019). Theoretical Investigation of Entropy Generation Effects in Magnetohydrodynamic Flow of Casson Nanofluid Over an Unsteady Permeable Stretching Surface. *Journal of Nanofluids, 8*(1), 103-116. doi: 10.1166/jon.2019.1570.**(M. Nazim Tufail (Mathematics/Knowledge Unit of Science) SJR (SKT Campus)**

   Abstract: The present article examines the entropy generation effects in hydromagnetic flow of non-Newtonian nanofluid over a permeable unsteady stretching surface. The Buongiornio model and Casson fluid model are used to characterize the non-Newtonian behaviour of the fluid. The time dependent partial differential equations that represent the considered problem are converted into a set of non-linear differential equations by suitable similarity transformations. The transformed equations are solved analytically with the help of Homotopy Analysis Method (HAM) and numerically employing shooting technique with fourth-fifth order Runge-Kutta method. The influence of pertinent parameters on velocity, temperature and concentration profiles, local skin friction coefficient and Nusselt number are discussed in detail through graphs and tables. Furthermore, the impact of these parameters on local entropy generation and averaged entropy generation number are analysed qualitatively.

   Keywords: *buongiornio model, casson fluid, entropy generation, unsteady stretching sheet.*

10. Butt, A. S., **Tufail, M. N.**, Ali, A., & Dar, A. (2019). Theoretical investigation of entropy generation effects in nanofluid flow over an inclined stretching cylinder. *International Journal of Exergy, 28*(2), 126-157. doi: 10.1504/ijex.2019.097976.**(M. Nazim Tufail (Mathematics/Knowledge Unit of Science) Web of Science JCR Listed (IF: 1.130) (SKT Campus)**

    Abstract: Laminar incompressible boundary layer flow and heat transfer of nanofluid over an inclined stretching cylinder is considered and the entropy effects are theoretically examined during the phenomena. The problem is mathematically modelled and nonlinear partial differential equations are attained. With the help of suitable similarity transformations, these partial differential equations are transformed into nonlinear ordinary differential equations which are numerically solved by utilising shooting technique with fourth-fifth order Runge-Kutta method. The results obtained are compared with the previously existing literature by considering certain limiting cases. The influence of physical parameters on flow, heat transfer and concentration of nanoparticles are analysed qualitatively with the use of graphs and tables. Furthermore, the impact of various physical parameters on local entropy generation number and averaged entropy generation number are also presented through graphs. A detailed comprehensive study has been carried out of the problem.

    Keywords: *inclined stretching cylinder, nanofluid, entropy generation, mixed convection.*

11. **Javaid, M.,** Abbas, M., Liu, J. B., Teh, W. C., & Cao, J. D. (2019). Topological properties of four-layered neural networks. *Journal of Artificial Intelligence and Soft Computing Research, 9*(2), 111-122. doi: 10.2478/jaiscr-2018-0028.**(Muhammad Javaid (Mathematics/SSC) SJR**

Abstract: A topological property or index of a network is a numeric number which characterises the whole structure of the underlying network. It is used to predict the certain changes in the bio, chemical and physical activities of the networks. The 4-layered probabilistic neural networks are more general than the 3-layered probabilistic neural networks. Javaid and Cao [Neural Comput. and Applic., DOI 10.1007/s00521-017-2972-1] and Liu et al. [Journal of Artificial Intelligence and Soft Computing Research, 8(2018), 225-266] studied the certain degree and distance based topological indices (TI's) of the 3-layered probabilistic neural networks. In this paper, we extend this study to the 4-layered probabilistic neural networks and compute the certain degree-based TI's. In the end, a comparison between all the computed indices is included and it is also proved that the TI's of the 4-layered probabilistic neural networks are better being strictly greater than the 3-layered probabilistic neural networks.

Keywords: *degree of node, topological properties, neural network, probabilistic neural network.*

12. **Kashif, A.,** & Riasat, S. (2019). Fuzzy Soft BCK-Modules. *Punjab University Journal of Mathematics, 51*(6), 143-155.**(Agha Kashif (Mathematics/SSC) HEC X CAT**

Abstract: A BCK-module is an action of a BCK-algebra on an abelian group. In this paper, the theory of fuzzy soft sets is applied on BCKmodules and thereby introduced the notion of fuzzy soft BCK-module (fsX - module). In this regard, various algebraic operations between fsX - modules, like fsX - intersection, fsX - union etc, are studied. Also, fsX - homormorphisms for fsX - modules is defined and discussed. Moreover, fuzzy soft exactness of fsX - modules is introduced and discussed.

Keywords: *fuzzy set, fuzzy soft set, bck-module, soft bck-module, fuzzy soft, bck-module, fuzzy soft-homomorphism, fuzzy soft exactness.*

13. Liu, J. B., Javed, S., **Javaid, M.,** & Shabbir, K. (2019). Computing First General Zagreb Index of Operations on Graphs. *Ieee Access, 7*, 47494-47502. doi: 10.1109/access.2019.2909822.**(Muhammad Javaid (Mathematics/SSC) Web of Science JCR Listed (IF: 4.098)**

Abstract: The numerical coding of the molecular structures on the bases of topological indices plays an important role in the subject of Cheminformatics which is a combination of Computer, Chemistry, and Information Science. In 1972, it was shown that the total pi-electron energy of a molecular graph depends upon its structure and it can be obtained by the sum of the square of degrees of the vertices of a molecular graph. Later on, this sum was named as the first Zagreb index. In 2005, for gamma is an element of R - {0, 1}, the first general Zagreb index of a graph G is defined as M-gamma(G) = Sigma(v is an element of V(G))[d(G)(v)](gamma), where d(G)(v) is degree of the vertex v in G. In this paper, for each gamma is an element of R - {0, 1}, we study the first general Zagreb index of the cartesian product of two graphs such that one of the graphs is D-sum graph and the other is any connected graph, where D-sum graph is obtained by using certain D operations on a connected graph. The obtained results are general extensions of the results of Deng et al. [Applied Mathematics and Computation 275(2016): 422-431] and Akhter et al. [AKCE Int. J. Graphs Combin. 14(2017): 70-79] who proved only for gamma = 2 and gamma = 3, respectively.

Keywords: *molecular graphs, topological indices, cartesian product, sum graphs.*

14. Liu, J. B., **Kashif, A., Rashid, T., & Javaid, M.** (2019). Fractional Metric Dimension of Generalized Jahangir Graph. *Mathematics, 7*(1). doi: 10.3390/math7010100.**(Agha Kashif, Tabasam Rashid, Muhammad Javaid (Mathematics /SSC) Web of Science JCR Listed (IF: 1.105)**

Abstract: Arumugam and Mathew [Discret. Math. 2012, 312, 1584-1590] introduced the notion of fractional

metric dimension of a connected graph. In this paper, a combinatorial technique is devised to compute it. In addition, using this technique the fractional metric dimension of the generalized Jahangir graph J(m,k) is computed for k >= 0 and m = 5.

Keywords: *resolving neighbourhood, Fractional metric dimension, generalized Jahangir graph.*

15. **Luqman, M., Saeed, M., Ali, J., Tabassam, M. F.**, & Mahmood, T. (2019). Targeted Showering Optimization: training irrigation tools to solve crop planning problems. *Pakistan Journal of Agricultural Sciences, 56*(1), 225-235. doi: 10.21162/pakjas/19.7910.**(Muhammad Luqman, Muhammad Saeed, Javaid Ali, Muhammad Farhan Tabassam(Mathematics/SSC) Web of Science JCR Listed (IF: 0.618)**

Abstract: Optimization can play an important role in supporting agricultural community not only in designing and manufacturing mechanical equipment but also in optimal crop planning. The related optimization models are not necessarily linear due to varying resources and complex environmental processes. The traditional linear programming techniques may not be practical in such situations. Metaheuristics are powerful approaches to solve complex nonlinear models. Metaheuristics are developed by transforming dynamics of natural phenomena to artificial intelligence computational environment. Realizing the potential adaptability of working principles of irrigation tools, this paper develops a novel optimization algorithm called Targeted Showering Optimization (TSO) algorithm which aims to solve linear, nonlinear and multi-objective optimization problems arising in agriculture, engineering and other scientific areas. In the present work, the design of TSO algorithm has been elaborated in detail and is followed by the performance evaluation of TSO algorithm by applying it to six well-known benchmark functions. The obtained results reveal that the developed method finds the best quality solutions of at least four benchmark functions in just 100 iterations and in additional 100 iterations it supersedes other nature inspired algorithms. To show the applicability of the proposed method in agriculture, a case study regarding the model of optimal crop rotation in Slovenian organic farming has been solved by TSO. The results of optimization models of crop rotation produced by TSO are also promising and provide a clear trade-off between total income and the nitrogen off-take when the maximization of total income and minimization of nitrogen off-take are dealt simultaneously.

Keywords: *artificial showering, nature inspired algorithms, linear and nonlinear programming, optimal crop rotation, shadow price.*

16. **Manzoor, R.**, Jawad, A., & Rani, S. (2019). Dynamics of evolving self-gravitating models in extended teleparallel gravity. *International Journal of Modern Physics D, 28*(2). doi: 10.1142/s0218271819500433.**(Rubab Manzoor (Mathematics/SSC) Web of Science JCR Listed (IF: 2.004)**

Abstract: The self-gravitating spherically symmetric fluid models are being studied taking power-law model in extended teleparallel (or f (T)) gravity. We form a set of governing equations which describes the dynamics of stellar evolution in the presence of torsion scalar (dark energy candidate) by incorporating power-law model in f (T) gravity along with dynamical terms like shear tensor, anisotropy, expansion scalar, dissipation, Weyl tensor and energy inhomogeneity. We explore some particular models of fluid according to various dynamical scenarios for particular values of model parameter n. It is found that torsion terms associated with vertical bar n vertical bar << 1,n not equal 0, 1, govern stellar evolution and provide deviation from theory of general relativity (GR). For the case, n = 0,1, tetrad field is almost negligible and the evolving models are consistent with GR model having cosmological constant. We obtain practicable rate of change of expansion and deformation of fluid models at 0 < vertical bar n vertical bar << 1.

Keywords: *f(T) gravityrelativistic dissipative fluid.*

17. **Mardan, S. A., Asif, A., & Noureen, I.** (2019). New classes of generalized anisotropic polytropes pertaining radiation density. *European Physical Journal Plus, 134*(5). doi: 10.1140/epjp/i2019-12641-y.**(Syed Ali Mardan, A. Asif, Ifra Noureen (Mathematics/SSC) Web of Science JCR Listed (IF: 2.612)**

Abstract: In this article, we consider the generalized polytropic equation of state with anisotropic matter distribution in isotropic coordinates. The static spherically symmetric configuration is considered for the development of mathematical models of compact objects incorporating the radiation factor. We have examined 12 different stars with the developed models. Analysis of the models shows that they are well-behaved and physically viable.

Keywords: *not available.*

18. **Noureen, I., Mardan, S. A.**, Azam, M., **Shahzad, W.,** & Khalid, S. (2019). Models of charged compact objects with generalized polytropic equation of state. *European Physical Journal C, 79*(4). doi: 10.1140/epjc/s10052-019-6806-4.**(Ifra Noureen, Syed Ali Mardan, W. Shahza (Mathematics/SSC) Web of Science JCR Listed (IF: 4.843)**

Abstract: In this work, we have studied the combined effect of charge and anisotropy on gravitational interaction of compact sources by making use of generalized polytropic equation of state (GPEoS). We have utilized four different values of polytropic index to ascertain the solution of Einstein-Maxwell field equations and develop a new class of spherically symmetric charged polytropic models. Further, we regain the masses of realistic strange stars 4U 1820-30, PSR J1614-2230, PSR J1903+327, Vela 4U and Vela X-1 that shows viability of the present study. Stability of presented models is analyzed by determining speed of sound that indicates the viability of newly generated models.

Keywords: *not available.*

19. Prasad, R., Ali, M., Kwan, P., & **Khan, H.** (2019). Designing a multi-stage multivariate empirical mode decomposition coupled with ant colony optimization and random forest model to forecast monthly solar radiation. *Applied Energy, 236*, 778-792. doi: 10.1016/j.apenergy.2018.12.034.**(Huma Khan (Mathematics/SSC) Web of Science JCR Listed (IF: 8.426)**

Abstract: Solar energy is an alternative renewable energy resource that has the potential of cleanly addressing the increasing demand for electricity in the modern era to overcome future energy crises. In this paper, a multi-stage multivariate empirical mode decomposition coupled with ant colony optimization and random forest (i.e., MEMD-ACO-RF) is designed to forecast monthly solar radiation (Rn). In the first stage, the proposed multi-stage MEMD-ACO-RF model, the MEMD algorithm demarcates the multivariate climate data from January 1905 to June 2018 into resolved signals i.e., intrinsic mode functions (IMFs) and a residual component. After computing the multivariate IMFs, the ant colony optimization (ACO) algorithm is used to determine the best IMFs based features for model development by incorporating the historical lagged data at (t - 1) in the second stage. The RF model at the third stage is applied to the selected IMFs to forecast monthly Rn. The results are benchmarked with M5 tree (M5tree) and minimax probability machine regression (MPMR) models integrated with MEMD and ACO, to develop the comparative hybrid MEMD-ACO-M5tree and MEMD-ACO-MPMR models respectively. The multi-stage MEMD-ACO-RF model is also evaluated against the standalone RF, M5tree and MPMR models. The proposed multi-stage MEMD-ACO-RF with comparative models is tested geographically in three locations of the Queensland state, in Australia. Based on robust evaluation metrics, the proposed multi-stage MEMD-ACO-RF model outperformed models that were compared during the testing phase and has shown the prospects of an accurate forecasting tool. The proposed multi-stage MEMD-ACO-RF model can be considered as a pertinent decision-support framework for monthly Rn forecasting.

Keywords: *solar radiation, energy, multivariate empirical mode decomposition, ant colony optimization,*

random forest.

20. **Rashid, T., Faizi, S., & Zafar, S.** (2019). Outranking method for intuitionistic 2-tuple fuzzy linguistic information model in group decision making. *Soft Computing, 23*(15), 6145-6155. doi: 10.1007/s00500-018-3268-9. **(Tabasam Rashid, Shahzad Faizi, Sohail Zafar (Mathematics/SSC) Web of Science JCR Listed (IF: 2.784)**

    Abstract: This paper attempts to develop an outranking method based on intuitionistic 2-tuple fuzzy linguistic information and apply it to multi-criteria group decision-making problems. The theory of intuitionistic 2-tuple fuzzy linguistic elements (I2FLEs) is useful for modeling impressions and quantifying the ambiguous nature of subjective judgments in a convenient manner. The family of ELECTRE methods is well known and widely used outranking method, but it has not been investigated within the intuitionistic 2-tuple fuzzy linguistic environment. ELECTRE uses the concept of an outranking relationship. Therefore, the directional Hausdorff distance, which uses I2FLEs, is proposed and the outranking relations are subsequently defined using this distance. Furthermore, using the proposed score and accuracy functions of I2FLEs, this paper also develops an outranking method based on intuitionistic fuzzy support function, intuitionistic fuzzy risk function, intuitionistic fuzzy credibility function, and the net outranking flow index similar to the PROMETHEE method. An illustrative example is given to demonstrate the practicality and effectiveness of the developed approaches. Finally, a comparative discussion of two decision-making methods is conducted to demonstrate the advantages of the proposed method over the other.

    Keywords: *intuitionistic 2-tuple fuzzy linguistic set, directional hausdorff distance, 2-tuple linguistic model, intuitionistic linguistic term set, multi-criteria group decision making, outranking method.*

21. Riaz, M., **Saeed, M.**, Saqlain, M., & Jafar, N. (2019). Impact of Water Hardness in Instinctive Laundry System Based on Fuzzy Logic Controller. *Punjab University Journal of Mathematics, 51*(4), 73-84.**(Muhammad Saeed (Mathematics/SSC) HEC X CAT**

    Abstract: In this paper, we discuss the effects of water types and temperature in automatic washing machine. The automatic washing machines are being used in hard water areas void of useful results because machines could not detect the type of water. Hard water consumes more detergent and washing time for laundry. The proposition of the paper is that the soft water and high temperature should be used in washing machines, it will not only reduce the quantity of detergent but also have positive effects on economy and fabrics. In this way, energy and washing time can be saved. The results are verified by TOPSIS technique of MCDM. The pretending results and the actions of aforesaid device have been done by using MATLABs fuzzy logic toolbox.

    Keywords: *hard water, ph, instinctive laundry system, MATLAB, fis editor, fuzzy.*

22. **Riaz, M. B., Asif, N. A.,** Atangana, A., & **Asjad, M. I.** (2019). Couette flows of a viscous fluid with slip effects and non-integer order derivative without singular kernel. *Discrete and Continuous Dynamical Systems-Series S, 12*(3), 645-664. doi: 10.3934/dcdss.2019041**.(Muhammad Bilal Riaz, Naseer Ahmad Asif, Muhammad Imran Asjad (Mathematics/SSC) Web of Science JCR Listed (IF: 0.545)**

    Abstract: Couette flows of an incompressible viscous fluid with non-integer order derivative without singular kernel produced by the motion of a flat plate are analyzed under the slip condition at boundaries. An analytical transform approach is used to obtain the exact expressions for velocity and shear stress. Three particular cases from the general results with and without slip at the wall are obtained. These solutions, which are organized in simple forms in terms of exponential and trigonometric functions, can be conveniently engaged to obtain known solutions from the literature. The control of the new non-integer order derivative on the velocity of the fluid moreover a comparative study with an older model, is analyzed

for some flows with practical applications. The non-integer order derivative with non-singular kernel is more appropriate for handling mathematical calculations of obtained solutions.
Keywords: *caputo and fabrizio, fractional calculus, velocity field, shear stress, analytic solutions.*

23. **Saleem, N.,** Abbas, M., **Ali, B.,** & Raza, Z. (2019). Fixed Points of Suzuki-Type Generalized Multivalued (f, theta, L)- Almost Contractions with Applications. *Filomat, 33*(2), 499-518. doi: 10.2298/fil1902499s.**(Naeem Saleem, Basit Ali (Mathematics /SSC) Web of Science JCR Listed (IF: 0.789)**
Abstract: In this paper, we define Suzuki type generalized multivalued almost contraction mappings and prove some related fixed point results. As an application, some coincidence and common fixed point results are obtained. The results proved herein extend the recent results on fixed points of Kikkawa Suzuki type and almost contraction mappings in the frame work of complete metric spaces. We provide examples to show that obtained results are proper generalization of comparable results in the existing literature. Some applications in homotopy, dynamic programming, integral equations and data dependence problems are also presented.
Keywords: *not available.*

24. **Saleem, N.,** Abbas, M., & De la Sen, M. (2019). Optimal Approximate Solution of Coincidence Point Equations in Fuzzy Metric Spaces. *Mathematics, 7*(4). doi: 10.3390/math7040327.**(Naeem Saleem (Mathematics/SSC) Web of Science JCR Listed (IF: 1.105)**
Abstract: The purpose of this paper is to introduce f-proximal H-contraction of the first and second kind in the setup of complete fuzzy metric space and to obtain optimal coincidence point results. The obtained results unify, extend and generalize various comparable results in the literature. We also present some examples to support the results obtained herein.
Keywords: *fuzzy metric space, t-norm, optimal coincidence point, proximal contraction.*

25. **Sindhu, M. S., Rashid, T., Kashif, A.,** & Guirao, J. L. G. (2019). Multiple Criteria Decision Making Based on Probabilistic Interval-Valued Hesitant Fuzzy Sets by Using LP Methodology. *Discrete Dynamics in Nature and Society*. doi: 10.1155/2019/1527612.**(M. Sarwar Sindhu, Tabasam Rashid, Agha Kashif (Mathematics/SSC) Web of Science JCR Listed (IF: 0.973)**
Abstract: Probabilistic interval-valued hesitant fuzzy sets (PIVHFSs) are an extension of interval-valued hesitant fuzzy sets (IVHFSs) in which each hesitant interval value is considered along with its occurrence probability. These assigned probabilities give more details about the level of agreeness or disagreeness. PIVHFSs describe the belonging degrees in the form of interval along with probabilities and thereby provide more information and can help the decision makers (DMs) to obtain precise, rational, and consistent decision consequences than IVHFSs, as the correspondence of unpredictability and inaccuracy broadly presents in real life problems due to which experts are confused to assign the weights to the criteria. In order to cope with this problem, we construct the linear programming (LP) methodology to find the exact values of the weights for the criteria. Furthermore these weights are employed in the aggregation operators of PIVHFSs recently developed. Finally, the LP methodology and the actions are then applied on a certain multiple criteria decision making (MCDM) problem and a comparative analysis is given at the end.
Keywords: *not available.*

26. Ahmed, H., Bhatti, A. A., & **Ali, A.** (2019). Zeroth-order general Randic index of cactus graphs. *Akce International Journal of Graphs and Combinatorics, 16*(2), 182-189. doi: 10.1016/j.akcej.2018.01.006.**(Akbar Ali (Mathematics/Knowledge Unit of Science) SJR (SKT Campus)**
Abstract: A connected graph G is said to be cactus if no two cycles of G have any common edge. The present

note is devoted to developing some extremal results for the zeroth-order general Randic index of cactus graphs and finding some sharp bounds on this index.

Keywords: *topological index, cactus graph, zeroth-order general randić index.*

27. **Ali, A.,** Iqbal, Z., & Iqbal, Z. (2019). Two physicochemical properties of benzenoid chains: solvent accessible molecular volume and molar refraction. *Canadian Journal of Physics, 97*(5), 524-528. doi: 10.1139/cjp-2017-0454.**(Akbar Ali (Mathematics/Knowledge Unit of Science) Web of Science JCR Listed (IF: 1.016) (SKT Campus)**

Abstract: Predicting physicochemical properties of molecules is one of the fundamental tasks in chemical physics. Many predictive methods have been developed for correlating the molecular structures with their physicochemical properties. One of the simplest such methods involves topological indices. Edge connectivity index (or equivalently, reformulated Randic index), which is denoted as epsilon, seems to be a good topological index for predicting the solvent accessible molecular volume and molar refraction of polycyclic aromatic hydrocarbons. In this paper, a closed-form formula for calculating the reformulated Randic index epsilon of benzenoid hydrocarbon chains (or simply, benzenoid chains, which represent a type of polycyclic aromatic hydrocarbons) is derived. Benzenoid chains with maximum (and minimum) epsilon value are also determined from the collection of all benzenoid chains having fixed number of hexagonal rings. Moreover, an attempt is made to generalize the obtained results for reformulated bond incident degree indices.

Keywords: *solvent accessible molecular volume, molar refraction, benzenoid chain, reformulated randić index, reformulated bond incident degree index.*

28. **Ali, A.**, Zhong, L. P., & Gutman, I. (2019). Harmonic Index and its Generalizations: Extremal Results and Bounds. *Match-Communications in Mathematical and in Computer Chemistry, 81*(2), 249-311.**(Akbar Ali (Mathematics/ Knowledge Unit of Science) Web of Science JCR Listed (IF: 2.126) (SKT Campus)**

Abstract: The general sum-connectivity index chi(alpha) of a graph G is defined as chi(alpha)(G) = Sigma(uv is an element of(G))(d(u) + d(v))(alpha), where uv is the edge connecting the vertices u and v, d(u) is the degree of the vertex u, and alpha is a real number. Research on chi(alpha) began in 1972, when the first Zagreb index chi(1) was introduced within a study of total pi-electron energy. Later, in 1987, the harmonic index H(= 2(chi-1)) appeared in connection with some conjectures, generated by the computer program Graffiti. The sum-connectivity index chi(-1/2), was proposed in 2009 and eventually extended to the general sum-connectivity index chi(alpha), which not only includes all the aforementioned graph invariants but also the hyper-Zagreb index chi(2). In this survey, we outline extremal results and bounds involving the mentioned invariants.

Keywords: *not available.*

29. Ashrafi, A. R., Ghalavand, A., & **Ali, A.** (2019). Molecular trees with the sixth, seventh and eighth minimal irregularity values. *Discrete Mathematics Algorithms and Applications,* 11(1).doi: 10.1142/s1793830919500022. **(Akbar Ali (Mathematics/Knowledge Unit of Science) SJR (SKT Campus)**

Abstract: The irregularity of a graph G is defined as irr(G) = Sigma(uv epsilon E(G)) vertical bar d(u) - d(v)vertical bar, where d(u) denotes the degree of a vertex u epsilon V (G) and E(G) is the edge set of G. From the class of all n-vertex (molecular) trees, graphs with the first five minimal irr-values have already been characterized in the literature. The main purpose of this paper is to determine the graphs with the sixth, seventh and eighth minimal irr-values among all the members of the aforementioned class for n >= 7, n >= 8 and n >= 8, respectively.

Keywords: *irregularity, albertson index, tree, molecular tree, extremal problem, mathematics subject classification 2010: 05c05, 05c07, 05c75.*

30. Du, Z. B., & **Ali, A.** (2019). The Alkanes with Maximum Wiener Polarity Index. *Molecular Informatics, 38*(1-2). doi: 10.1002/minf.201800076.**(Akbar Ali (Mathematics/Knowledge Unit of Science) Web of Science JCR Listed (IF: 2.375) (SKT Campus)**

Abstract: The Wiener polarity index (usually denoted by W-p) of an alkane is the number of unordered pairs of carbon atoms which are separated by three carbon-carbon bonds. This topological index W-p is useful for predicting the boiling points of alkanes. Deng [MATCH Commun. Math. Comput. Chem. 66 (2011) 305] proved that the maximum W-p value among all alkanes, with n carbon atoms, is 3n-15. The main purpose of present paper is to find all those alkanes with n carbon atoms, which attain the maximum value of W-p.

Keywords: *alkanes, chemical graph theory, topological index, wiener polarity index, molecular trees.*

31. Du, Z. B., **Ali, A.,** & Trinajstic, N. (2019). Alkanes with the First Three Maximal/Minimal Modified First Zagreb Connection Indices. *Molecular Informatics,* 38(4). doi: 10.1002/minf.201800116.**(Akbar Ali (Mathematics/Knowledge Unit of Science) Web of Science JCR Listed (IF: 2.375) (SKT Campus)**

Abstract: The modified first Zagreb connection index (ZC1*) is a molecular descriptor, which was initially appeared within a formula of the total electron energy of alternant hydrocarbons in 1972. In a recent paper [A. Ali, N. Trinajstic, A novel/old modification of the first Zagreb index, Mol. Inform. 37 (2018) 1800008], it was observed that the molecular descriptor ZC1* correlates well with the entropy and acentric factor of octane isomers. In this article, the molecules with the first three maximal ZC1* values as well as the first three minimal ZC1* values are determined from the family of all alkanes with n carbon atoms, for n >= 6. This extends the main results of the aforementioned paper.

Keywords: *molecular descriptor, first zagreb index, modified first zagreb connection index, alkanes, extremal values.*

32. Milovanovic, I. Z., Milovanovic, E. I., Matejic, M. M., & **Ali, A.** (2019). A note on the relationship between graph energy and determinant of adjacency matrix. *Discrete Mathematics Algorithms and Applications, 11*(1). doi: 10.1142/s1793830919500010.**(Akbar Ali (Mathematics/Knowledge Unit of Science) SJR (SKT Campus)**

Abstract: Let G be a simple graph of order n, without isolated vertices. Denote by A = (a(ij))(nxn) the adjacency matrix of G. Eigenvalues of the matrix A, lambda(1) >= lambda(2) >= ... >= lambda(n), form the spectrum of the graph G. An important spectrum-based invariant is the graph energy, defined as E(G) = Sigma(n)(i=1) vertical bar lambda(i)vertical bar. The determinant of the matrix A can be calculated as det A = Pi(n)(i=1) lambda(i). Recently, Altindag and Bozkurt [Lower bounds for the energy of (bipartite) graphs, MATCH Commun. Math. Comput. Chem. 77 (2017) 9-14] improved some well-known bounds on the graph energy. In this paper, several inequalities involving the graph invariants E(G) and vertical bar det A vertical bar are derived. Consequently, all the bounds established in the aforementioned paper are improved.

Keywords: *eigenvalue of a graph, graph energy, determinant of adjacency matrix, bounds.*

33. Alolaiyan, H., **Ali, B.,** & Abbas, M. (2019). Characterization of a b-metric space completeness via the existence of a fixed point of Ciric-Suzuki type quasi-contractive multivalued operators and applications. *Analele Stiintifice Ale Universitatii Ovidius Constanta-Seria Matematica*, 27(1), 5-33. doi: 10.2478/auom-2019-0001.**(Basit Ali (Mathematics/SSC) Web of Science JCR Listed (IF: 0.638)**

Abstract: The aim of this paper is to introduce Ciric-Suzuki type quasi-contractive multivalued operators and to obtain the existence of fixed points of such mappings in the framework of b-metric spaces. Some examples are presented to support the results proved herein. We establish a characterization of strong b-metric and b-metric spaces completeness. An asymptotic estimate of a Hausdorff distance between the fixed point sets of two Ciric-Suzuki type quasi-contractive multivalued operators is obtained. As an application of our results, existence and uniqueness of multivalued fractals in the framework of b-metric spaces is proved.

Keywords: *b-metric space, multivalued mapping, fixed point, stability, multivalued fractals.*

34. Saqlain, M., **Saeed, M., Ahmad, M. R.,** & Smarandache, F. (2019). Generalization of TOPSIS for Neutrosophic Hypersoft set using Accuracy Function and its Application. *Neutrosophic Sets and Systems, 27*, 131-137.**(Muhammad Saeed, Muhammad Rayees Ahmad (Mathematics/SSC) SJR**

    Abstract: The purpose of MCDM is to determine the best option amongst all the probable options. Due to linguistic assessments, the traditional crisp techniques are not good to solve MCDM problems. This paper deals with the generalization of TOPSIS for neutrosophic hypersoft set primarily based issues explained in section 3. In section 4, the proposed technique is implemented. The proposed technique is easy to implement, and precise and sensible for fixing the MCDM problem with multiple-valued neutrosophic data. In the end, the applicability of the developed method, the problem of parking on which decision maker has normally vague and imprecise knowledge is used. It seems that the outcomes of these examinations are terrific.

    Keywords: *uncertainties, decision making, FNSS, FNHSS, linguistic variable, accuracy function AF, TOPSIS.*

35. Zahid, A., Saleem, M. U., **Kashif, A.,** Khan, M., Meraj, M. A., & Irfan, R. (2019). Spanning Simplicial Complex of Wheel Graph W-n. *Algebra Colloquium, 26*(2), 309-320. doi: 10.1142/s1005386719000233.**(Agha Kashif (Mathematics/SSC) Web of Science JCR Listed (IF: 0.394)**

    Abstract: In this paper, we explore the spanning simplicial complex of wheel graph W-n on vertex set [n]. Combinatorial properties of the spanning simplicial complex of wheel graph are discussed, which are then used to compute the f-vector and Hilbert series of face ring k[Delta(s)(W-n)] for the spanning simplicial complex Delta(s)(W-n). Moreover, the associated primes of the facet ideal I-F(Delta(s)(W-n)) are also computed.

    Keywords: *simplicial complexes, spanning trees, spanning simplicial complexes, f-vectors, hilbert series, vertex covers.*

36. Rehman, H. U., **Ullah, N., & Imran, M. A.** (2019). Highly dispersive optical solitons using Kudryashov's method. *Optik, 199*, 163349. doi: https://doi.org/10.1016/j.ijleo.2019.163349.**(Naeem Ullah, Muhammad Imran Asjad (Mathematics/SSC) Web of Science JCR Listed (IF: 1.914)**

    Abstract: This work is about highly dispersive optical solitons with Kerr law, quadratic-cubic law and non-local nonlinearities. The Kudryashov's method implemented in this paper to find the unique optical closed form of solutions. The method under consideration is consistent, effectual and can be used to establish new exact solitons of different types of PDEs arising in nonlinear optic.

    Keywords: *Kudryashov's method, kerr law, quadratic-cubic law, non-local nonlinearity, highly dispersive solitons.*

37. **Aleem, M., Imran Asjad, M.,** Chowdhury, M. S. R., & Hussanan, A. (2019). Analysis of mathematical model of fractional viscous fluid through a vertical rectangular channel. *Chinese Journal of Physics*, 61, 336-350. doi: https://doi.org/10.1016/j.cjph.2019.08.014.**(Maryam Aleem, Muhammad Imran Asjad (Mathematics/SSC) Web of Science JCR Listed (IF: 2.544)**

    Abstract: Unsteady motion of a viscous fluid passing through a vertical channel with MHD (magnetohydrodynamics) effect has been analyzed in this manuscript. Fractional model is developed by two approaches, namely; Caputo fractional time derivatives with singular kernel and Caputo–Fabrizio fractional time derivatives with non-singular kernel. Analytical solutions have been obtained via Laplace transform method after converting the governing equations into dimensionless form and presented graphical analysis of the obtained results in terms of comparison. The effect of fractional and other flow parameters on

temperature, concentration and velocity fields is seen, respectively. As a result, we have found that for the physical model with fractional derivative of Caputo–Fabrizio, temperature, concentration and velocity have greater values in comparison with Caputo one. It is also noted that velocity has shown dual nature for large and small time. Further, rates of heat and mass transfer and skin friction can also be enhanced for the small values of non-integer order parameter and are presented in Table 1.

Keywords: *heat and mass transfer flow,mhd (magnetohydrodynamics), fractional modeling, channel flow.*

38. Shaheen, A., **Asjad, M. I.,** & Arshad, S. (2019). Three Dimensional Flow of Nanofluids over an Exponential Horizontal Nonlinear Sheet Saturated in Porous Medium. *International Journal of Heat and Technology*, 37(2), 555-561. doi: https://doi.org/10.18280/ijht.370224**.(Muhammad Imran Asjad (Mathematics/SSC) SJR**

Abstract: This study analyzes the flow and heat transfer for three-dimensional stagnation point flow of water based nanofluid over an exponentially stretching surface. The base fluid for the under-discussion problem is taken to be water (H2O) and three distinct nanoparticles, namely, copper (Cu), alumina (Al2O3), and titania (TiO2). The simulations in this study assume that the surface temperature is also distributed exponentially and reduce the governing equations to a set of ordinary differential equations using a similarity transformation. Series solutions are constructed for the velocity components and temperature. Results are discussed by plotting graphs. In order to find series solution of ordinary differential equations, we employed strong analytical technique referred as optimal homotopy method (OHAM). It is found that the drag force and rate of heat transfer can be enhance for Cu (Copper)- H2O (water) in comparison with other nanofluids.

Keywords: *exponential horizontal sheet, three-dimensional flow, nanofluid, nonlinear ordinary differential equations, optimal homotopy analysis method solutions.*

39. Javid, K., Hassan, **M., Imran Asjad,** M., Ali, I., & Nazib, A. (2019). Rheological effects of biomimetic propulsion on fluid flow: An application of bio-engineering. *The European Physical Journal Plus*, 134(10), 522. doi: 10.1140/epjp/i2019-12801-1**.(Muhammad Imran Asjad (Mathematics/SSC) Web of Science JCR Listed (IF: 2.612)**

Abstract: In the current article, we have studied few rheological phenomena related to the fluid transportation in various forms of flow geometries and motion of the fluid based upon the peristaltic propulsions of the boundary walls. This study is productive for mechanical engineers to design devices that are used as a remedy of complex cardiovascular treatments. This study deals with the flow of a viscous fluid through the complex paths due to the biomimetic propulsions of the boundary walls of geometries. Firstly, due to the complex nature of flow regimes, the continuity and momentum equations are governed into the form of curvilinear coordinates. Secondly, the governing equations are transformed from the laboratory frame to the wave frame by introducing a linear mathematical relation between these two frames. Thirdly, similarity transformations are utilized to convert the system of equations into the dimensionless form and at the last, these equations will reduce into the four ODEs in terms of stream function after using long wavelength approximation. The analytical solution of the governing equation is acquired by applying integration rules and mathematical values of integrating constants are obtained by using Mathematica 10 software. The significant impacts of physical parameters such as curvature parameter and non-uniform parameter in the velocity profile, pumping and trapping phenomena's are argued expansively through graphs to the various forms of flow regimes. Physical characteristics of simple wavy walls and complex wavy walls of the curved channels are also highlighted in detail in the wave frame of reference. Moreover, a comparison among the straight channel and the curved channel is also emphasized. The results of the current study may be useful in designing the complex instruments which are used in medical engineering and treatment of physiological systems. Comprehensive information about the transportation of bio-fluids in the uniform as well as non-uniform vessels or arteries is obtained from the present study. This study provides dynamic

information, to the mechanical engineers, to enhance the performance of the peristaltic micro-pumps.
Keywords: *not available.*

40. Imran, M., Ching, D. L. C., Safdar, R., Khan, I., **Imran, M. A.,** & Nisar, K. S. (2019). The Solutions of Non-Integer Order Burgers' Fluid Flowing through a Round Channel with Semi Analytical Technique. *Symmetry*, 11(8), 962**.(Muhammad Imran Asjad (Mathematics/SSC) SJR**
Abstract: The solutions for velocity and stress are derived by using the methods of Laplace transformation and Modified Bessel's equation for the rotational flow of Burgers' fluid flowing through an unbounded round channel. Initially, supposed that the fluid is not moving with t = 0 and afterward fluid flow is because of the circular motion of the around channel with velocity ΩRtp with time positively grater than zero. At the point of complicated expressions of results, the inverse Laplace transform is alternately calculated by "Stehfest's algorithm" and "MATHCAD" numerically. The numerically obtained solutions in the terms of the Modified Bessel's equations of first and second kind, are satisfying all the imposed conditions of given mathematical model. The impact of the various physical and fractional parameters are also indeed and so presented by graphical demonstrations.
Keywords: *Burgers' fluid, velocity field, shear stress, Laplace transform, modified Bessel function, Stehfest's algorithm, MATHCA.*

41. Shah, N. A., Khan, I., Aleem, M., & **Imran, M.** (2019). Influence of magnetic field on double convection problem of fractional viscous fluid over an exponentially moving vertical plate: New trends of Caputo time-fractional derivative model. *Advances in Mechanical Engineering,* 11(7), 1687814019860384**. (Muhammad Imran Asjad (Mathematics/SSC) Web of Science JCR Listed (IF: 1.024)**
Abstract: In this article, the influence of a magnetic field is studied on a generalized viscous fluid model with double convection,due to simultaneous effects of heat and mass transfer induced by temperature and concentration gradients. The fluid isconsidered over an exponentially accelerated vertical plate with time-dependent boundary conditions. Additional effectsof heat generation and chemical reaction are also considered. A generalized viscous fluid model consists of three partialdifferential equations of momentum, heat, and mass transfer with corresponding initial and boundary condition. The ideaof non-integer order Caputo time-fractional derivatives is used, and exact solutions for velocity, temperature, and con-centration in terms of Wright function and function of Lorenzo–Hartley are developed for ordinary cases. Graphicalanalysis of flow and fractional parameters is made by using computational software MathCad, and discussed. The resultsobtained are also in good agreement with the published results from the literature. As a result, it is found that tempera-ture and fluid velocity can be enhanced for smaller values of fractional parameters.
Keywords: *free convection flow, MHD, Caputo fractional derivative, heat absorption, exact solution, exponentially moving plate.*

42. Ahmad, M., **Imran, M. A., Aleem, M.,** & Khan, I. (2019). A comparative study and analysis of natural convection flow of MHD non-Newtonian fluid in the presence of heat source and first-order chemical reaction. *Journal of Thermal Analysis and Calorimetry*, 137(5), 1783-1796. doi: 10.1007/s10973-019-08065-3**.(Maryam Aleem, Muhammad Imran Asjad (Mathematics/SSC) Web of Science JCR Listed (IF: 2.471)**
Abstract: Heat and mass transfer of fractional Jeffrey's flow over infinite vertical plate moving exponentially with variable temperature and mass diffusion has been detailed. Additionally, first-order chemical reaction, magnetohydrodynamics and rate of heat absorption are also considered. The classical Jeffrey's fluid model is generalized to a fractional model of non-integer-order 'α.' The present problem is solved by two approaches,

namely, Caputo and Caputo–Fabrizio. The exact solutions for temperatures, concentrations and velocities have been obtained via Laplace transform method. The corresponding rates of heat, mass and skin friction are also computed. We have drawn a comparison approach between the solutions of two fractional models of Jeffrey's fluid modeled with Caputo and Caputo–Fabrizio fractional derivatives by means of graphical illustration using MathCad software. Physical impact of fractional parameter 'α' on the Sherwood number, Nusselt number and skin friction was presented in a table and found that they are increased by increasing the value of 'α.' In comparison, the rates of heat and mass transfer and skin friction of Caputo fractional derivative have greater values than Caputo-Fabrizio.

Keywords: *caputo and caputo–fabrizio, fractional jeffrey's fluid, mhd, chemical reaction, heat absorption, a comparison.*

43. **Imran, M. A., Aleem, M., Riaz, M. B., Ali, R.,** & Khan, I. (2019). A comprehensive report on convective flow of fractional (ABC) and (CF) MHD viscous fluid subject to generalized boundary conditions. *Chaos, Solitons & Fractals,* 118, 274-289. doi: https://doi.org/10.1016/j.chaos.2018.12.001**. (Muhammad Imran Asjad, Maryam Aleem, Muhammad Bilal Riaz, Rizwan Ali (Mathematics/SSC) Web of Science JCR Listed (IF: 3.064)**

Abstract: We have analyzed the magnetohydrodynaimcs (MHD) unsteady free convection flow of incompressible Newtonian fluid passing over an inclined plate through porous medium with variable temperature and concentration at the boundary. Additionally, we have also seen the effects of heat sink and chemical reaction. We have solved dimensionless equations governing the physical problem by Laplace transform method. Firstly, we have found the analytical results for concentration, temperature and velocity fields of classical model. After that we have extended the classical model to some fractional models specifically Caputo–Fabrizio (CF) and Atangana–Baleanu (ABC). Semi analytical results are attained for concentration, temperature and velocity fields for both models and then compared with solutions of classical one. Influence of Fembedded parameters on concentration, temperature and velocity domains can be perceived through MathCad software. As a result, we have observed that both the fractional models (CF) and (ABC) are better in describing the history of the physical problem. Further it is noted that, (ABC) model is well-suited in stimulating the history functions of temperature, concentration and velocity fields.

Keywords: *inclined plat, mhd, heat sink, chemical reaction, newtonian fluid, comparison study, cf and abc fractional model.*

44. **Asjad, M. I.** (2019). Fractional Mechanism with Power Law (Singular) and Exponential (Non-singular) Kernels and Its Applications in Bio Heat Transfer Model*. International Journal of Heat and Technology*, 37(3), 846-852. doi: https://doi.org/10.18280/ijht.370322**.(Muhammad Imran Asjad (Mathematics/SSC) SJR**

Abstract: This study deals with breast cancer therapy with fractional derivative in porous medium. The classical model of energy balance equation can be generalized to some fractional derivatives namely, Caputo (C) with singular kernel and Atangana-Baleanu (ABC) with non-singular kernel. We have found the semi exact solutions of initial value problem via Laplace transform. Hyperthermia technique named as a moderate method for the treatment of breast cancer. Graphical illustration is provided for numerical values of embedded parameters with the help of MATHCAD software. As a result, a steady-state time required the therapeutic temperature point to get the death of tumor cell has been computed. A comparison has also been drawn between the solutions of fractional models with fractional derivatives and found that Atangana-Baleanu fractional model is well suited in exhibiting the memory effect of the temperature function. The findings of this research may serve the advantage that it is affordable and important in clinical or medical practice.

Keywords: *hyperthermia, fractional derivative, Bio heat, breast cancer, comparison.*

45. **Rana, S.,** Qayyum, M., **Saeed, M.,** Smarandache, F., & Khan, B. A. (2019). Plithogenic Fuzzy Whole Hypersoft Set, Construction of Operators and their Application in Frequency Matrix Multi Attribute Decision Making Technique. *Neutrosophic Sets & Systems, 28*, 34-50**.(Shazia Rana, Muhammad Saeed (Mathematics/SSC)** **SJR**

Abstract: In this paper, initially a matrix representation of Plithogenic Hypersoft Set (PHSS) is introduced and then with the help of this matrix some local operators for Plithogenic Fuzzy Hypersoft set (PFHSS) are developed. These local operators are used to generalize PFHSS to Plithogenic Fuzzy Whole Hypersoft set (PFWHSS). The generalized PFWHSS set is hybridization of Fuzzy Hypersoft set (which represent multiattributes and their subattributes as a combined whole membership i.e. case of having an exterior view of the event) and the Plithogenic Fuzzy Hypersoft set (in which multi attributes and their subattributes are represented with individual memberships case of having interior view). Thus, the speciality of PFWHSS is its presentation of an exterior and interior view of a situation simultaneously. Later, the PFWHSS is employed in development of multi attributes decision making scheme named as Frequency Matrix Multi Attributes Decision making scheme (FMMADMS). This innovative technique is not only simpler than any of the former MADM techniques, but also has a unique capability of dealing mathematically a variety of human mind psychologies at every level that are working in different environments (fuzzy, intuitionistic, neutrosophic, plithogenic). Besides, FMMADMS also provides the percentage authenticity of the final ranking which in itself is a new idea providing a transparent and unbiased ranking. Moreover, the new introduced idea of frequency matrix handles the ranking ties in the best possible way and has an ability to provide the authenticity comparative analysis of previously developed schemes. Lastly, application of this FMMADMS is described as a numerical example for a case of ranking and selecting the best alternative.

Keywords: *plithogenic hypersoft set, exterior view, plithogenic whole hypersoft set, interior view, frequency matrix, multi attribute decision making scheme, percentage authenticity.*

46. **Ahmad, M., Javaid, M., Saeed, M.,** & Jung Chahn, Y. (2019). Valency-based molecular descriptors of Bakelite network B N m n $B\text N_{m}^{n}$. *Open Chemistry, 17*(1), 663. doi: 10.1515/chem-2019-0081**.(Maqsood Ahmad, Muhammad Javaid, Muhammad Saeed (Mathematics/SSC)** **Web of Science JCR Listed (IF: 1.512)**

Abstract: Bakelite network BNnmis a molecular graph of bakelite, a pioneering and revolutionary synthetic polymer (Thermosetting Plastic) and regarded as the material of a thousand uses. In this paper, we aim to compute various degree-based topological indices of a molecular graph of bakelite network BNnm. These molecular descriptors play a fundamental role in QSPR/QSAR studies in describing the chemical and physical properties of Bakelite network BNnm. We computed atom-bond connectivity ABC its fourth version ABC4 geometric arithmetic GA its fifth version GA5 Narumi-Katayama, sum-connectivity and Sanskruti indices, first, second, modified and augmented Zagreb indices, inverse and general Randic' indices, symmetric division, harmonic and inverse sum indices of BNnm.

Keywords: *molecular graph, bakelite network, zagreb index, chemical properties.*

47. **Saeed, M.,** Saqlain, M., & Riaz, M. (2019). Application of Generalized Fuzzy TOPSIS in Decision Making for Neutrosophic Soft Set to Predict the Champion of FIFA 2018: A Mathematical Analysis. *Punjab University Journal of Mathematics, 51*(8), 111-126**.(Muhammad Saeed (Mathematics/SSC)** **HEC X CAT**

Abstract: Predicting the outcomes of soccer matches is curious to numerous; from fans to supporters. Prediction about the outcomes of soccer matches is also very exciting and enticing as a research problem, especially due to its complications, exertion, unexpected inferences etc. Consequently, a soccer match is

relying upon various factors, actors and unpredictable situations. Therefore, it is very agonizing and uphill task to predict the meticulous and close to truth-based results of soccer matches. Such a research demands a multi-criteria decision-making approach, i.e. TOPSIS, to foresee accurate ranking and applied to the fallouts of FIFA 2018 world cup soccer matches explicitly. The match statistics have been used up to quarter finals, to make better estimates for the impending games. Outcomes proved prediction of approximately right ranking and outcomes of matches are substantially higher than those of reported through other means.

Keywords: *english football association league (EFAL), FIFA, football, MCDM, prediction, TOPSIS.*

48. Wang, X.-L., Liu, J.-B., Ahmad, M., Kamran Siddiqui, M., Hussain, M., & **Saeed, M.** (2019). Molecular Properties of Symmetrical Networks Using Topological Polynomials. *Open Chemistry, 17*(1), 849. doi: 10.1515/chem-2019-0109**.(Muhammad Saeed (Mathematics/SSC) Web of Science JCR Listed (IF: 1.512)**

Abstract: A numeric quantity that comprehend characteristics of molecular graph Γ of chemical compound is known as topological index. This number is, in fact, invariant with respect to symmetry properties of molecular graph Γ. Many researchers have established, after diverse studies, a parallel between the physico chemical properties like boiling point, stability, similarity, chirality and melting point of chemical species and corresponding chemical graph. These descriptors defined on chemical graphs are extremely helpful for researchers to conduct regression model like QSAR/QSPR and better understand the physical features, complexity of molecules, chemical and biological properties of underlying compound. In this paper, several structure descriptors of vital importance, namely, first, second, modified and augmented Zagreb indices, inverse and general Randic indices, symmetric division, harmonic, inverse sum and forgotten indices of Hex-derived Meshes (networks) of two kinds, namely, HDN1(n) and HDN2(n) are computed and recovered using general approach of topological polynomials.

Keywords: *topological indices, m-polynomial, forgotten polynomial, molecular graphs, hex-derive networks.*

49. **Sindhu, M. S., Rashid, T., & Kashif, A.** (2019). Modeling of linear programming and extended TOPSIS in decision making problem under the framework of picture fuzzy sets. *PLoS ONE, 14*(8), 1-13. doi: 10.1371/journal.pone.0220957.**(M. Sarwar Sindhu, Tabasam Rashid, Agha Kashif (Mathematics/SSC) Web of Science JCR Listed (IF: 2.776)**

Abstract: Picture fuzzy sets (PFSs) are comparatively a new extension of fuzzy sets which describe the human opinions that has more answers like acceptance, rejection, neutral and desist, which cannot be correctly presented in fuzzy sets (FSs) and intuitionistic fuzzy sets (IFSs). The PFSs are categorized by three objects, the degree of belonging, the degree of neutral belonging and the degree of non- belonging such that the total of these three degrees must not be more than one. So far, there is no such work presented in the literature which deals with unknown weights of criteria based on PFSs. In the present work, we have developed a linear programming (LP) model to find the exact weights from the given constraints of weights for the criteria and construct a modified distance based on similarity measure between picture fuzzy sets. Then we have utilized this similarity measure to achieve the best option in the multiple criteria decision making (MCDM) problem. Lastly, two practical examples for the selection of alternatives are presented to compare the obtained results with the existing similarity measures.

Keywords: *fuzzy sets, similarity (geometry), statistical decision making, linear programming, multiple criteria decision making.*

50. **Asim, A., Nasar, R., & Rashid, T.** (2019). Correlation coefficient of intuitionistic hesitant fuzzy sets based on informational energy and their applications to clustering analysis. *Soft Computing, 23*(20), 10393-10406. doi:

10.1007/s00500-018-3591-1.(**Adina Asim, Rabia Nasar, Tabasam Rashid (Mathematics/SSC) Web of Science JCR Listed (IF: 2.784)**

Abstract: On daily basis human beings came across with the activity in which one should have to choose among various choices the most convenient one for the decision situation by means of mental and reasoning process. In this paper we utilize the concept of intuitionistic hesitant fuzzy set (IHFS) which is the combination of hesitant fuzzy set and intuitionistic fuzzy set to manage those situations in which professionals hesitate amid several possible membership and non-membership values to evaluate an alternative. To attain a few correlation coefficient formulas for IHFS and implement them to clustering analysis under intuitionistic hesitant fuzzy surroundings is the aim of this paper. Two examples, i.e., universities categorization on the basis of quality and countries evaluation on the basis of economy are implemented to exemplify the undeniable requirement of the clustering algorithm depend on IHFS. These examples link the distinction of assessment data supplied by unalike professionals in clustering operations.

Keywords: *correlation coefficient, hesitant fuzzy set, cluster analysis.*

51. **Faizi, S., Rashid, T.,** Xu, Z., & **Zafar, S.** (2019). Distance measures for hesitant intuitionistic fuzzy linguistic term sets based on a risk factor parameter. *International Journal of Computers and Applications, 41*(6), 418-435. doi: 10.1080/1206212X.2018.1465653.**(Shahzad Faizi, Tabasam Rashid, Sohail Zafar (Mathematics/SSC) SJR**

Abstract: We propose notions of some distance measures between two hesitant intuitionistic fuzzy linguistic term sets (HIFLTSs). Weighted distance measures between two collections of HIFLTSs are also proposed and analyzed for discrete and continuous cases. Based on the proposed distance measures, the relative closeness (RC) coefficients for different alternatives are established and then used to rank the alternatives in a multi-criteria group decision-making problem. Furthermore, a comparison between the RC coefficients of alternatives by using the proposed distance measures for different values of the risk factor parameter is given graphically. Two illustrative examples are provided to elaborate the applicability and advantage of the proposed approach for the selection of suitable alternative.

Keywords: *fuzzy set, hesitant fuzzy set, hesitant fuzzy linguistic term set, hesitant intuitionistic fuzzy linguistic term set.*

52. Liu, J., **Aslam, M. K., Javaid, M.,** & Raheem, A. (2019). Computing Edge-Weight Bounds of Antimagic Labeling on a Class of Trees. *Ieee Access, 7*, 93375-93386. doi: 10.1109/ACCESS.2019.2927244.**(Muhammad Kamran Aslam, Muhammad Javaid (Mathematics/SSC) Web of Science JCR Listed (IF: 4.098)**

Abstract: Graph labeling has wide applications in the field of computer science, such as coding theory, cryptography, software testing, database management systems, computer architecture, and networking. The computers connected in a network can now be converted in a graph and labels assigned to the graph so formed will help to regulate bandwidth, data traffic, in coding and decoding signals. Let A = (V(Λ), E(Λ)) beagraphwith|V(Λ)| = m and|V(Λ)| = n.Abijection from ζ : V(Λ)∪E(Λ) → {1, 2, 3, ⋯,m + n} is called (a, d)-edge antimagic total labeling if the edge-weights ζ(x) + ζ(xy) + ζ(y) for each xy ∈ E(Λ) form a sequence of consecutive positive integers with minimum edge-weight a and common difference d. In addition, it is called super (a, d)-edge antimagic total labeling if vertices receive the smallest labels. Enomoto et al. (2000) proposed the conjecture that every tree admits super (a, 0)-EAT labeling. In this note, bounds of the minimum and maximum edge-weights for super (a, d)-EAT labeling on the more generalized class of subdivided caterpillars are obtained. Moreover, we have investigated the existence of super (a, d)EAT labeling for the validation of the obtained bounds and the partial support of the aforesaid conjecture, where d ∈ {0, 1, 2}. In fact, the obtained results are a general extension of the results Akhlaq et al. [Utiltas Mathematica, 98 (2015), 227-249].

Keywords: *antimagic labeling, edge-weight, subdivided caterpillar.*

53. Liu, J., **Javaid, M., & Awais, H. M. (**2019). Computing Zagreb Indices of the Subdivision-Related Generalized Operations of Graphs. *Ieee Access, 7*, 105479-105488. doi: 10.1109/ACCESS.2019.2932002.**(Muhammad Javaid, Hafiz Muhammad Awais (Mathematics/SSC) Web of Science JCR Listed (IF: 4.098)**

Abstract: Mathematical modeling or numerical coding of the molecular structures play a significant role in the studies of the quantitative structure-activity relationships (QSAR) and quantitative structures property relationships (QSPR). In 1972, the entire energy of π-electron of a molecular graph is computed by the addition of square of degrees (valencies) of its vertices (nodes). Later on, this computational result was called by the first Zagreb index and became well studied topological index in the field of molecular graph theory. In this paper, for k ∈ N (set of counting numbers), we define four subdivision-related operations of graphs in their generalized form named by Sk, Rk, Qk and Tk. Moreover, using these operations and the concept of the cartesian product of graphs, we construct the generalized Fk-sum graphs Γ1+Fk Γ2, where Fk ∈ {Sk, Rk, Qk, Tk} and Γi are any connected graphs for i ∈ {1, 2}. Finally, the first and second Zagreb indices are computed for the generalized Fk-sum graphs in terms of their factor graphs. In fact, the obtained results are a general extension of the results Eliasi et al. and Deng et al. who studied these operations for exactly k = 1 and computed the Zagreb indices for only F1-sum graphs respectively.

Keywords: *molecular structures, subdivision operations, generalized fk-sum graphs.*

54. Raheem, A., **Javaid, M.,** Umar, M., & Lau, G. (2019). ON SUPER (a; d)-EAT VALUATION OF SUBDIVIDED CATERPILLAR. *TWMS Journal of Applied and Engineering Mathematics, 9*(4), 693.**(Muhammad Javaid (Mathematics/SSC) SJR**

Abstract: Let G = (V (G);E(G)) be a graph with v = jV (G)j vertices and e = jE(G) edges. A bijective function _ : V (G) [E(G) $ f1; 2; : : : ; v + eg is called an (a; d)-

edge antimagic total (EAT) labeling(valuation) if the weight of all the edges fw(xy) :xy 2 E(G)g form an arithmetic sequence starting with rst term a and having common dierence d, where w(xy) = _(x) + _(y) + _(xy). And, if _(V) = f1; 2; : : : ; vg then G is super (a; d)-edge antimagic total(EAT) graph. In this paper, we determine the super (a,d)-edge antimagic total (EAT) labeling of the subdivided caterpillar for dierent values of the parameter d.

Keywords: *caterpillar, subdivided caterpillar, super(a; d)-eAT graph.*

55. **Javaid, M.,** Raheem, A., Abbas, M., & Cao, J. (2019). M-Polynomial Method for Topological Indices of 3-Layered Probabilistic Neural Networks. *TWMS Journal of Applied and Engineering Mathematics, 9*(4), 864.**(Muhammad Javaid (Mathematics/SSC) SJR**

Abstract: A molecular network can be uniquely identied by a number, polynomial or matrix. A topological index (TI) is a number that characterizes a molecular network completely which is used to predict the physical features of the certain changes such as bioactivities and chemical reactivities in the chemical compound. Javaid and Cao [Neural Comput. and Applic., 30(2018), 3869-3876] studied the first Zagreb index, second Zagreb index, general Randic index, and augmented Zagreb index for the 3-layered probabilistic neural networks (PNN). In this paper, we prove the M-polynomial of the 3-layered PNN and use it as a latest developed tool to compute the certain degree based TI's. At the end, a comparison is also shown to find the better one among all the obtained results.

Keywords: *m-polynomial, degree-based ti's, networks, probabilistic neural network.*

56. Raheem, A., **Javaid, M.,** Teh, W. C., Wang, S., & Liu, J.-B. (2019). M-polynomial method for topological indices of 2D-lattice of three-layered single-walled titania nanotubes. *Journal of Information and*

Optimization Sciences, 1-11. doi: 10.1080/02522667.2019.1565446.**(Muhammad Javaid (Mathematics/SSC) Master Journal List**

Abstract: A numeric number which represents a complete shape of the chemical graph is said to be the topological index. In this paper, we study the 2D-lattice of three-layered single- walled Titania nanotubes (SWTNT) and investigate their M-polynomial. Mainly, we compute the certain topological indices (TI?s) which relates to degree-based by the help of this M-polynomial. In addition, we give the first as well as second Zagreb polynomials of the aforesaid 2D-lattice nanotubes. At the end, we draw a comparison for the better understanding of the computed results.

Keywords: *m-polynomial, topological indices, titania nanotubes, 2d-lattice.*

57. **Javaid, M., Awais, H. M.,** & Jamal, M. (2019). Forgotten Index of Generalized F-Sum Graphs. *Journal of Prime Research in Mathematics, 15*, 115-128.**(Hafiz Muhammad Awais, Muhammad Javaid (Mathematics/SSC) SJR**

Abstract: Liu et al. [IEEE Access; 7(2019); 105479-105488] defined the concept of the generalized subdivided operations on graphs and obtained the generalized F-sum graphs. They also calculated the 1st and 2nd Zagreb indices of the generalized F-sum graphs. In the continuation of this work, we study the forgotten index (F-index) of the generalized F-sum graphs in terms of di_erent topological indices (TI's) of their base graphs. In the end, the results of F-index on the generalized F-sum graphs acquired by the particular classes of alkane are also included.

Keywords: *generalized operations, zagreb indices, F-index.*

58. Raheem, A., Hasni, R., **Javaid, M.,** Umar, M. A., & Hussain, A. (2019). On (a, d)-SEAT labeling of forests of subdivided stars. *Journal of Discrete Mathematical Sciences and Cryptography*, 1-10. doi: 10.1080/09720529.2019.1675299. **(Muhammad Javaid (Mathematics/SSC) SJR**

Abstract: Graph ? = (V(?), E(?)) contain finite nodes V(?) and finite edges E(?). We also represent the order of the graph and size as ? = |V(?)| and v = |V(?)|. A graph is called (a, d)-edge magic total (EAT) labeling if there exists a bijective map ϕ from V(?) ? E(?) to the elements if the weight-set X = {?(qr)|qr ? E(?)} is arithmetic progression (A. P.) of positive integers which is started with a, d as common difference and ?(qr) = ϕ(q) + ϕ(qr) + ϕ(r). We say ? as the set of edge-weights. Further, if then the graph ? is said to be super (a, d)-edge antimagic total((a, d)-SEAT) labeling. In this article, we represent some new result on the (a, d)-SEAT labeling of some disjoint copies for subdivided star for the parameter.

Keywords: *star, subdivided star, (a, d)-seat labeling.*

59. **Ahmad, M., Saeed, M., Javaid, M.,** & Hussain, M. (2019). Exact Formula and Improved Bounds for General Sum-Connectivity Index of Graph-Operations. *Ieee Access, 7*, 167290-167299. doi: 10.1109/ACCESS.2019.2953338.**(Maqsood Ahmad, Muhammad Saeed, Muhammad Javaid (Mathematics/SSC) Web of Science JCR Listed (IF: 4.098)**

Abstract: For a molecular graph $\Gamma $, the general sum-connectivity index is defined as $\chi _{\beta }(\Gamma) = \sum _{vw \in E(\Gamma)}[d_{\Gamma }(v)+d_{\Gamma }(w)]^{\beta }$, where $\beta \in \mathbb{R}$ and $d_{\Gamma }(v)$ denotes the degree of the vertex v in the molecular graph $\Gamma $. The problem of finding best possible upper and lower bound for certain topological index is of fundamental nature in extremal graph theory. Akhtar and Imran [J. Inequal. Appl. (2016) 241] obtained the sharp bounds of general sum-connectivity index for four graph operations (F -sum graphs) introduced by Eliasi and Taeri [Discrete Appl. Math. 157: 794-803, 2009)]. In this paper, for $\beta \in \mathbb{N}$, we figured out and improved the sharp bounds of the general sum-connectivity index for F -sum graphs, where $F \in \{R,Q,T\}$. Several examples are presented to elaborate and compare the results of improved

bounds with existing sharp bounds. In addition, we obtained exact formula of general sum-connectivity index for F -sum graphs, when $F=S$.

Keywords: *molecular graphs, topological indices, cartesian product, total graph, f-sum graphs.*

60. Wang, H., **Javaid, M., Akram, S.,** Jamal, M., & Wang, S. (2019). Least eigenvalue of the connected graphs whose complements are cacti. *Open Mathematics, 17*(1), 1319-1331.**(Muhammad Javaid, Sana Akram (Mathematics/SSC) Web of Science JCR Listed (IF: 0.726)**

Abstract: Suppose that Γ is a graph of order n and $A(\Gamma) = [a_{i,j}]$ is its adjacency matrix such that $a_{i,j}$ is equal to 1 if v_i is adjacent to v_j and $a_{i,j}$ is zero otherwise, where $1 \leq i, j \leq n$. In a family of graphs, a graph is called minimizing if the least eigenvalue of its adjacency matrix is minimum in the set of the least eigenvalues of all the graphs. Petrović et al. [On the least eigenvalue of cacti, Linear Algebra Appl., 2011, 435, 2357-2364] characterized a minimizing graph in the family of all cacti such that the complement of this minimizing graph is disconnected. In this paper, we characterize the minimizing graphs $G \in \Omega cn$, i.e. $\lambda min(G) \leq \lambda min(Cc)$ for each $C^c \in \Omega cn$, where Ωcn is a collection of connected graphs such that the complement of each graph of order n is a cactus with the condition that either its each block is only an edge or it has at least one block which is an edge and at least one block which is a cycle.

Keywords: *adjacency matrix, least eigenvalue, connected graphs, cacti.*

61. **Javaid, M.**, Amin, U., & Raheem, A. (2019). Extremal unicyclic graphs with respect to the Sanskruti index. *Asian-European Journal of Mathematics, 0*(0), 2050147. doi: 10.1142/s1793557120501478.**(Muhammad Javaid (Mathematics/SSC) SJR**

Abstract: Sanskruti index of a graph G(V (G),E(G)) with vertex-set V (G) and edge-set E(G) is S(G) =∑uv∈E(G)(SuSv Su+Sv−2)3, where Su =∑v∈NG(u)dv. In this paper, the extremal graphs in the class of unicyclic graphs are characterized with respect to the Sanskruti index, where the considered class of unicyclic graphs contains five different large families of graphs.

Keywords: *Sanskruti index, degree-based index, unicyclic graphs.*

62. Zhang, X., **Awais, H. M., Javaid, M**., & Siddiqui, M. K. (2019). Multiplicative Zagreb Indices of Molecular Graphs. *Journal of Chemistry*.**(Hafiz Muhammad Awais, Muhammad Javaid (Mathematics/SSC) Web of Science JCR Listed (IF: 1.727)**

Abstract: MatheMathematical modeling with the help of numerical coding of graphs has been used in the different fields of science, especially in chemistry for the studies of the molecular structures. It also plays a vital role in the study of the quantitative structure activities relationship (QSAR) and quantitative structure properties relationship (QSPR) models. Todeshine et al. (2010) and Eliasi et al. (2012) defined two different versions of the 1st multiplicative Zagreb index as ∏(Γ) = ∏p∈V(Γ)[dΓ(p) 2] and ∏1(Γ) = ∏pq∈E(Γ)[dΓ(p) + dΓ(q)], respectively. In the same paper of Todeshine, they also defined the 2nd multiplicative Zagreb index as ∏2(Γ) = ∏pq∈E(Γ)[dΓ(p) × dΓ(q)]. Recently, Liu et al. [IEEE Access; 7(2019); 105479–-105488] defined the generalized subdivision-related operations of graphs and obtained the generalized F-sum graphs using these operations.)ey also computed the first and second Zagreb indices of the newly defined generalized F-sum graphs. In this paper, we extend this study and compute the upper bonds of the first multiplicative Zagreb and second multiplicative Zagreb indices of the generalized F-sum graphs. At the end, some particular results as applications of the obtained results for alkane are also included.

Keywords: *not available.*

63. **Dayan, F., Javaid, M., & Aziz-ur-Rehman, M.** (2019). On Leap Reduced Reciprocal Randic and Leap Reduced Second Zagreb Indices of Some Graphs. *Scientific Inquiry and Review (SIR), 3*(2), 28-35.**(Fazal**

Dayan, Muhammad Javaid, Muhammad Aziz-ur-Rehman (Mathematics/SSC) UMT Journal

Abstract: Naji et al. introduced the leap Zagreb indices of a graph in 2017 which are new distance-degree-based topological indices conceived depending on the second degree of vertices. In this paper, we have defined the first and second leap reduced reciprocal Randic index and leap reduced second Zagreb index for selected wheel related graphs.

Keywords: *leap indices, reduced reciprocal Randic index, reduced second Zagreb index, flower graph, gear graph, helm graph, sunflower graph, wheel graph.*

64. Liu, J.-B., **Javaid, M., Raza, M., & Saleem, N.** (2019). On minimum algebraic connectivity of graphs whose complements are bicyclic. *Open Mathematics, 17*(1), 1490-1502.**(Muhammad Javaid, Mohsin Raza, Naeem Saleem (Mathematics/SSC) Web of Science JCR Listed (IF: 0.726)**

Abstract: The second smallest eigenvalue of the Laplacian matrix of a graph (network) is called its algebraic connectivity which is used to diagnose Alzheimer's disease, distinguish the group di_erences, measure the robustness, construct multiplex model, synchronize the stability, analyze the di_usion processes and _nd the connectivity of the graphs (networks). A connected graph containing two or three cycles is called a bicyclic graph if its number of edges is equal to its number of vertices plus one. In this paper, _rstly the unique graph with a minimum algebraic connectivity is characterized in the class of connected graphswhose complements are bicyclic with exactly three cycles. Then, we _nd the unique graph of minimum algebraic connectivity in the class of connected graphs cn = c 1,n [c 2 ,n, where c 1,n and c 2,n are classes of the connected graphs in which the complement of each graph of order n is a bicyclic graph with exactly two and three cycles, respectively.

Keywords: *laplacian matrix, eigenvalues, algebraic connectivity.*

65. **Javaid, M.** (2019). On the second minimizing graph in the set of complements of trees. *Akce International Journal of Graphs and Combinatorics, 16*(3), 258-264. doi: https://doi.org/10.1016/j.akcej.2018.11.005.**(Muhammad Javaid (Mathematics/SSC) SJR**

Abstract: Let G be a graph of order n and A(G)=[ai,j] be its adjacency matrix such that ai,j=1 if vi is adjacent to vj and ai,j=0 otherwise, where 1≤i,j≤n. In a certain family of graphs, a graph is called minimizing (or second minimizing) if the least eigenvalue of its adjacency matrix attains the minimum (or second minimum). In this paper, we characterize the second minimizing graph among all graphs which belong to the set of complements of the trees.

Keywords: *adjacency matrix, least eigenvalue, complement of trees.*

66. Teh, W. C., Ng, Z. C., **Javaid, M.,** & Chern, Z. J. (2019). Parikh word representability of bipartite permutation graphs. *Discrete Applied Mathematics*. doi: https://doi.org/10.1016/j.dam.2019.12.005. **(Muhammad Javaid (Mathematics/SSC) Web of Science JCR Listed (IF: 0.983)**

Abstract: The class of Parikh word representable graphs were recently introduced. In this work, we further develop its general theory beyond the binary alphabet. Our main result shows that this class is equivalent to the class of bipartite permutation graphs. Furthermore, we study certain graph theoretic properties of these graphs in terms of the arity of the representing word.

Keywords: *parikh word representable graph, bipartite permutation graph, parikh matrices, diameter, hamiltonian cycle.*

67. Tang, J.-H., **Ali, U., Javaid, M.,** & Shabbir, K. (2019). Zagreb Connection Indices of Subdivision and Semi-Total Point Operations on Graphs. *Journal of Chemistry, 2019*. doi: https://doi.org/10.1155/2019/9846913.**(Usman Ali, Muhammad Javaid (Mathematics/SSC) Web of Science JCR Listed (IF: 1.727)**

Abstract: Representation or coding of the molecular graphs with the help of numerical numbers plays a vital role in the studies of physicochemical and structural properties of the chemical compounds that are involved in the molecular graphs. For the first time, the modified first Zagreb connection index appeared in the paper by Gutman and Trinajstic (1972) to compute total electron energy of the alternant hydrocarbons, but after that, for a long time, it has not been studied. Recently, Ali and Trinajstic (2018) restudied the first Zagreb connection index (ZC1), the second Zagreb connection index (ZC2), and the modified first Zagreb connection index (ZC∗1) to find entropy and acentric factor of the octane isomers. ,ey also reported that the values provided by the International Academy of Mathematical Chemistry show better chemical capability of the Zagreb connection indices than the ordinary Zagreb indices. Assume that *S*1 and *S*2 denote the operations of subdivision and semitotal point, respectively. ,en, the *S*sum graphs *Q*1 + *SQ*2 are obtained by the cartesian product of *S*(*Q*1) and *Q*2, where *S* ∈ ⍰*S*1*, S*2⍰, *Q*1 and *Q*2 are any connected graphs, and *S*(*Q*1) is a graph obtained after applying the operation *S* on *Q*1. In this paper, we compute the Zagreb connection indices (ZC1, ZC2, and ZC∗1) of the *S*-sum graphs in terms of various topological indices of their factor graphs. At the end, as an application of the computed results, the Zagreb connection indices of the *S*-sum graphs obtained by the particular classes of alkanes are also included.

Keywords: *not available.*

68. **Khan, S., Mardan, S. A., & Rehman, M. A.** (2019). Framework for generalized polytropes with complexity factor. *The European Physical Journal C, 79*(12), 1037. doi: 10.1140/epjc/s10052-019-7569-7.**(Shiraz Khan, S. A. Mardan , M. A. Rehman (Mathematics/SSC) Web of Science JCR Listed (IF: 4.843)**

Abstract: A framework is developed for generalized polytropes with the help of complexity factor introduced by Herrera (Phy Rev D 97:044010, 2018), by using the spherical symmetry with anisotropic inner fluid distribution. For this purpose generalized polytropic equation of state will be used, having two cases (i) for mass density $$(\mu _{o})$$(μo), (ii) for energy density $$(\mu)$$(μ), each case leads to a system of differential equations. These systems of differential equations involve two equations with three unknowns and they will be made consistent by using the complexity factor. The analysis of the solutions of these systems will be carried out graphically by using different parametric values involved in the systems.

Keywords: *not available.*

69. **Tufail, M. N., Saleem, M.,** & Chaudhry, Q. A. (2019). An oscillation effect on MHD radiative Casson fluid flows in an asymmetric channel through group theoretical analysis. *Canadian Journal of Physics, 98*(1), 81-88. doi: 10.1139/cjp-2018-0723.**(Muhammad Nazim Tufail, Musharafa Saleem(Mathematics/Knowledge Unit of Science) Web of Science JCR Listed (IF: 1.016) (SKT Campus)**

Abstract: The flow has been made by considering oscillation and radiation effects for the magnetohydrodynamic (MHD) Casson fluid model within an asymmetric wavy channel. Oscillation occurs during the flow by taking into account the pressure gradient across the ends of the channel. The governed mathematical statement is handled analytically by choosing the group theoretical method. The partial differential equations (PDEs) of the governed system are transformed into ordinary differential equations (ODEs) by calculating the symmetries. Further, the mathematical problem is concluded and the graphical results are shown for the following emerging parameters: Casson fluid parameter β, wavelength λ, oscillation parameter ω, Reynolds number Re, Hartmann number M, radiation parameter R, heat source–sink parameter Q, and Peclet number Pe. The magnitude of velocity profile f(η) increased with an increase in β, λ, Re, and K. With variations of H and ω, f(η) decreased. The temperature profile θ(η) increased when the values of Pe, Q, and R increased.

Keywords: *asymmetric channel flow, oscillation parameter, Hartmann number, pressure gradient, heat source–sink parameter.*

70. **Ahmed, N.,** Tahira, S. S., Imran, M., Rafiq, M., **Rehman, M. A.,** & Younis, M. (2019). Numerical analysis of auto-catalytic glycolysis model. *Aip Advances, 9*(8). doi: 10.1063/1.5112831.(**Nauman Ahmed, M. A. Rehman (Mathematics/SSC) Web of Science JCR Listed (IF: 1.579)**

Abstract: The main purpose of this paper is to investigate the solution of general reaction-diffusion glycolysis system numerically. Glycolysis model demonstrates the positive solution as the unknown variables show concentration of chemical substances. Three numerical methods are used to solve glycolysis model. Two methods are well-known finite difference (FD) schemes and one is proposed FD scheme. The proposed scheme is explicit in nature. The main feature of the proposed FD scheme is to preserve the property of positivity retained by the glycolysis model. Results are compared with forward Euler explicit scheme and Crank Nicolson implicit scheme. All the attributes are verified by simulations. (C) 2019 Author(s).

Keywords: *not available.*

71. **Ali, A.,** Raza, Z., & Bhatti, A. A. (2019). Some Vertex-Degree-Based Topological Indices Of Cacti. *Ars Combinatoria, 144*, 195-206.(**Akbar Ali (Mathematics/Knowledge Unit of Science) Web of Science JCR Listed (IF: 0.192) (SKT Campus)**

Abstract: The present study is devoted to characterize the cactus with minimum T-1 index and maximum T-2 index over the class of all cacti having fixed number of vertices and cycles, where T-1 index is the first multiplicative Zagreb index, Narumi-Katayama index, modified second Zagreb index, or harmonic index, and T-2 index is the second multiplicative Zagreb index or modified first multiplicative Zagreb index.

Keywords: *not available.*

72. Jamal, S. S., Attaullah, Shah, T., AlKhaldi, A. H., & **Tufail, M. N.** (2019). Construction of new substitution boxes using linear fractional transformation and enhanced chaos. *Chinese Journal of Physics, 60*, 564-572. doi: 10.1016/j.cjph.2019.05.038.(**Muhammad Nazim Tufail (Mathematics/Knowledge Unit of Science) Web of Science JCR Listed (IF: 2.544) (SKT Campus)**

Abstract: Substitution boxes are used in different security techniques and cryptosystems to ensure the secure communication of data. To enhance the randomness and perplexity of data, chaos theory has utmost importance in encryption schemes and multimedia security. In this paper, Substitution boxes are developed by using linear fractional transformation and combination of chaotic systems with the increased chaotic range as compared to their seed maps. The Substitution boxes are assessed by using various analyses which include nonlinearity, strict Avalanche criterion, bit independence criterion, linear and differential approximation probabilities. Majority logic criterion is also performed to evaluate its application in various encryption systems.

Keywords: *sine-logistic map, increased chaotic range, s-box, encryption.*

73. **Manzoor, R.,** Jawad, A., **Adeel, M., Saeed, M.,** & Rani, S. (2019). Collapsing stellar filament and exotic matter in Palatini f(R) gravity. *European Physical Journal C, 79*(10). doi: 10.1140/epjc/s10052-019-7332.(**Rubab Manzoor, Muhammad Adeel, Muhammad Saeed (Mathematics/SSC) Web of Science JCR Listed (IF: 4.843)**

Abstract: We explore the dynamics of collapsing stellar filament in the presence of exotic material like dark matter. We use Palatini f(R) theory to include exotic substance in the collapsing process. We derive a collapse equation by applying Darmois junction conditions on collapsing surface boundary Sigma. It is found that the radial pressure related to baryonic matter remains non-zero at Sigma. We then discuss the stability criteria of the collapsing process in the framework of three parameteric model, f (R) = R+lambda R-c[1-(1-(1+R-2/R-c(2))(-n)]. It is concluded that the stability of collapsing filament depends upon a directly proportional relation of gravitational effects of exotic termswith the radial pressure of seen matter. Stability criteria of family of polytropic filamentary structures are also discussed. For all stable polytropic filaments, it is found

that the density of seen material is exponentially related to the exotic forces. Finally, we explore theoretical relation between gravitational waves and dark terms. It is theoretically predicted that the presence of exotic material can affect the propagation of gravitational waves.
Keywords: *not available.*

74. Mirza, I. A., Akram, M. S., & **Siddique, I.** (2019). Flows of a generalized second grade fluid in a cylinder due to a velocity shock. *Chinese Journal of Physics, 60*, 720-730. doi: 10.1016/j.cjph.2019.06.009.(**Imran Siddique (Mathematics/SSC) Web of Science JCR Listed (IF: 2.544)**
Abstract: Unsteady axial flows of second grade fluids with generalized fractional constitutive equation in a circular cylinder are studied. Flows are generated by a time-dependent pressure gradient in the axial direction, an external magnetic field perpendicular on the flow direction and by the cylinder motion. Two different problems are analyzed; one in which the cylinder velocity supports a shock at the instant t = 0 and another in which the cylinder motion is a translation with time-dependent velocity along the axis of cylinder. The generalized fractional constitutive equation of second grade fluid is described by the Caputo time-fractional derivative. Analytical solutions for the velocity field are obtained by using the Laplace transform with respect to time variable and the finite Hankel transform of order zero with respect to the radial coordinate. The influence of the fractional parameter of Caputo derivative on the fluid velocity has been studied by numerical simulations and graphical illustrations. It is found that the fractional fluid flows are faster than the ordinary second grade fluid.
Keywords: *second grade fluid, fractional fluid, caputo derivative, integral transforms.*

75. **Siddique, I.,** & Umbreen, Y. (2019). Exact solutions of generalized stokes' problems for an incompressible couple stress fluid flows. *Journal of Applied Mathematics & Informatics, 37*(5-6), 507-519. doi: 10.14317/jami.2019.507.(**Imran Siddique (Mathematics/SSC) Master Journal List**
Abstract: The ground for this paper is to examine the generalized Stokes' first and second issues for an incompressible couple pressure liquid under isothermal conditions. Exact solutions for each problem are acquired by using the Laplace transform (LT) with respect to the time variable t and the sine Fourier transform (FT) with respect to the y-variable. Further, a comparison is given of the obtained results and the results of Devakar and Lyengar [1] and by using the four inverse Laplace transform algorithms (Stehfest's, Tzou's, Talbot, Fourier series) in the space time domain utilizing a numerical methodology. Moreover, velocity profiles are plotted and considered for various occasions and distinctive estimations of couple stress parameters. At the end, the outcomes are exhibited by graphs and in tabular forms.
Keywords: *generalized stoke's problems, couple stress fluid, laplace and fourier transforms, velocity field, numerical inversion.*

76. **Ahmed, N.,** Rafiq, M., Baleanu, D., & **Aziz-ur-Rehman, M.** (2019). Spatio-temporal numerical modeling of auto-catalytic brusselator model. *Romanian Journal of Physics, 64*(7-8).(**Nauman Ahmed, Muhammad Aziz-ur-Rehman (Mathematics/SSC) Web of Science JCR Listed (IF: 1.460)**
Abstract: The main objective of this article is to propose a chaos free explicit finite-difference (FD) scheme to find the numerical solution for the Brusselator reaction-diffusion model. The scheme is unconditionally stable and it is unconditionally dynamically consistent with the positivity property of continuous model as unknown quantities of auto-catalytic Brusselator system describe the concentrations of two reactant substances. Stability of the proposed FD method is showed with the help of Neumann criteria of stability. Taylor series is used to validate the consistency of the proposed FD method. Forward Euler explicit FD approach and semi-implicit Crank-Nicolson FD scheme are also applied to solve the Brusselator reaction-diffusion system and to make the comparison with the proposed FD scheme.

Keywords: *auto-catalytic chemical reaction, structure preserving scheme, consistency, von neumann stability analysis, numerical simulations.*

77. **Ali, A.,** Du, Z. B., & **Shehzadi, K.** (2019). Estimating Some General Molecular Descriptors of Saturated Hydrocarbons. *Molecular Informatics*. doi: 10.1002/minf.201900007.(**Akbar Ali, Kiran Shehzadi (Mathematics/Knowledge Unit of Science) Web of Science JCR Listed (IF: 2.375) (SKT Campus)**
Abstract: Three general molecular descriptors, namely the general sum-connectivity index, general Platt index and ordinary generalized geometric-arithmetic index, are studied here. Best possible bounds for the aforementioned descriptors of arbitrary saturated hydrocarbons are derived under certain constraints. These bounds are expressed in terms of number of carbon atoms and number of carbon-carbon bonds of the considered hydrocarbons.
Keywords: *molecular descriptor, topological index, general sum-connectivity index, general platt index, ordinary generalized geometric-arithmetic index.*

78. **Fatima, N.,** Bhatti, A. A., **Ali, A.,** & Gao, W. (2019). ZAGREB CONNECTION INDICES OF TWO DENDRIMER NANOSTARS. *Acta Chemica Iasi, 27*(1), 1-14. doi: 10.2478/achi-2019-0001.**(Nisar Fatima Akbar Ali (Mathematics/Knowledge Unit of Science) Master Journal List (SKT Campus)**
Abstract: It is well known fact that several physicochemical properties of chemical compounds are closely related to their molecular structure. Mathematical chemistry provides a method to predict the aforementioned properties of compounds using topological indices. The Zagreb indices are among the most studied topological indices. Recently, three modified versions of the Zagreb indices were proposed independently in [Ali, A.; Trinajstic, N. A novel/old modification of the first Zagreb index, arXiv: 1705.10430 [math.CO] 2017; Mol. Inform. 2018, 37, 1800008] and [Naji, A. M.; Soner, N. D.; Gutman, I. On leap Zagreb indices of graphs, Commun. Comb. Optim. 2017, 2, 99-117], which were named as the Zagreb connection indices and the leap Zagreb indices, respectively. In this paper, we check the chemical applicability of the newly considered Zagreb connection indices on the set of octane isomers and establish general expressions for calculating these indices of two well-known dendrimer nanostars.
Keywords: *chemical graph theory, topological index, Zagreb connection indices, leap Zagreb indices, dendrimer nanostar.*

79. **Kirmani, S.,** Suaib, N. B. M., & **Riaz, M. B.** (2019). Shape preserving fractional order KNR C-1 cubic spline. *European Physical Journal Plus, 134*(7). doi: 10.1140/epjp/i2019-12704-1.(**Syed Kirmani, Muhammad Bilal Riaz (Mathematics/SSC) Web of Science JCR Listed (IF: 2.612)**
Abstract: In the field of computer graphics, spline curves and surfaces are playing a vital role. In fact, they are known as standard tools for computer graphics. Due to this reason, much work has been done in this field and is still going on. This research adopted a novel technique, called Caputo fractional derivatives, to find all unknowns that appear in a spline cubic polynomial. This new method of finding unknowns could be an important technique in the cases where one does not need a curve to be C-2. The fractional derivative technique can further be applied on other kinds of spline curves. Our technique provides an alternate impressive approach to develop piecewise cubic spline polynomials for shape preservation. These polynomials are C-1 continuous in nature.
Keywords: *not available.*

80. Milovanovic, I. Z., Matejic, M., Milosevic, P., Milovanovic, E., & **Ali, A.** (2019). A note on some lower bounds of the laplacian energy of a graph. *Transactions on Combinatorics, 8*(2), 13-19. doi:

10.22108/toc.2019.115269.1616.**(Akbar Ali (Mathematics/Knowledge Unit of Science) Master Journal List (SKT Campus)**

Abstract: For a simple connected graph G of order n and size m, the Laplacian energy of G is defined as LE(G) = Sigma(n)(i=1) vertical bar mu(i) - 2m/n vertical bar where mu(1), mu(2), ... , mu(n-1), mu(n) are the Laplacian eigenvalues of G satisfying mu(1) >= mu(2) >= ... >= mu(n-1) > mu(n) = 0. In this note, some new lower bounds on the graph invariant LE(G) are derived. The obtained results are compared with some already known lower bounds of LE(G).

Keywords: *not available.*

81. **Sindhu, M. S., Rashid, T., & Khan, M.** (2019). Group decision making based on hesitant fuzzy ranking of hesitant fuzzy preference relations. *Journal of Intelligent & Fuzzy Systems, 37*(2), 2563-2573. doi: 10.3233/jifs-182780. **(M. Sarwar Sindhu, Tabasam Rashid, M. Khan(Mathematics/SSC) Web of Science JCR Listed (IF: 1.637)**

Abstract: Hesitant fuzzy sets (HFSs) play a dominant role in the decision making process. Different tools are developed to attract the decision makers (DMs) in making the effective decision, the hesitant fuzzy preference relation (HFPR) is one of the important implementation of them. Preference of an alternative over another alternative is a useful way to express the opinion of decision maker. In this paper, a hesitant fuzzy ranking (HFR) technique is established, constructed the hesitant fuzzy ranking from the HFPR in the group decision making situations. Secondly, a correlation between the alternatives is developed by using Spearman ranked correlation coefficient formula, which helps the DMs to identify the better alternative. The novelty of the proposed strategy is that it evades the need to compute the cooperative preference relations and approvals are generated for the individuals in their original domains.

Keywords: *hesitant fuzzy sets, fuzzy preference relations, hesitant fuzzy preference relation, fuzzy rankings, group decision making.*

82. Zhao, Y., Ali, N., **Ul Haq, A.,** & Abbas, M. (2019). Further Generalized Hybrid Mappings and Common Attractive Points in CAT(0) Spaces: A New Iterative Process. *Ieee Access, 7*, 115208-115213. doi: 10.1109/access.2019.2932664.**(Absar-ul-Haq (Mathematics/SSC) Web of Science JCR Listed (IF: 4.098)**

Abstract: There are many methods present in literature for finding attractive points for different mappings in various spaces. In this article, we aim to give an approximation method for the common attractive points (CAP) of further generalized hybrid mappings (FGHM) in CAT(0) spaces. We give the CAP of FGHM by using Picard-Mann iterative process generalized to the case of two mappings in framework of CAT(0) spaces. The results presented in this article, extend some known results of literature.

Keywords: *cat(0) space, attractive points, further generalized hybrid mappings, picard-mann iterative process.*

83. Abbasa, M., **Saleemb, N.,** & Sohailc, K. (2019). Optimal Coincidence Best Approximation Solution in B-Fuzzy Metric Spaces. *Communications in Nonlinear Analysis, 6*(1), 1–12.**(Naeem Saleem (Mathematics/SSC) Not HEC Recognized**

Abstract: In this paper, we prove the existence of optimal coincidence point and best proximity point in b-fuzzy

metric space for two mappings satisfying certain contractive conditions and prove some proximal theorems which provide the existence of an optimal approximate solution to some operator equations which are not solvable. We also provide an application to the fixed point theory of our obtained results.

Keywords: *fuzzy metric space, b-fuzzy metric space, optimal approximate solution, fuzzy expansive, fuzzy isometry, s-increasing sequence, t-norm. 2010 msc: 47h10, 47h04.*

84. Foruzanfar, Z., **Asif, F., Zahid, Z., Zafar, S.,** & Farahani, M. R. (2019). ABC_ {4} and GA_ {5} Indices of Para-Line Graph of Some Convex Polytope. *Statistics, Optimization & Information Computing, 7*(1), 192-197. **(Fatima Asif, Zohaib Zahid, Sohail Zafar (Mathematics/SSC) SJR**
Abstract: In this paper, we will compute Fourth atom-bond connectivity index ABC_4(G) and Fifth geometric-arithmetic connectivity index GA_5(G), by considering G as para-line graph of some convex polytopes.
Keywords: *topological indices, line graph, subdivision, convex polytopes.*

85. **Siddique, I.,** & Umbreen, Y. (2019). Analytical Solutions of Incompressible Couple Stress Fluid Flows. *Applied Mathematics & Information Sciences, An International Journal, 13*(6), 1-6.**(Imran Siddique (Mathematics/SSC) SJR**
Abstract: In the present article, we intend to solve the Stokes' first and second problems for an incompressible couple stress fluid under isothermal conditions. The solutions of the considered problems are obtained by employ the Laplace transform (LT) as for the time variable t and the sine Fourier transform (FT) as for the y-variable. It ought be noticed that by suitable manipulations of the inverse integral transforms, fluid velocity expressions are written as the sum of steady-state (post-transient solution) and transient solutions. Further, we wish to give a comparison of the obtained results and the results obtained by Devakar and Lyengar [1] and by using the four Inverse Laplace transform algorithms (Stehfest's, Tzou's, Talbot, Fourier series) in the space time domain utilizing a numerical methodology. Moreover, velocity profiles are plotted and considered for different times and different values of couple stress Reynolds number. At the end, the outcomes are introduced through graphs and in tabular forms.
Keywords: *Stoke's first and second problems, Couple stress fluid, Laplace and Fourier Transforms, velocity field, numerical inversion.*

86. Aslam, A., Nadeem, M. F., **Zahid, Z., Zafar, S.,** & Gao, W. (2019). Computing certain topological indices of the line graphs of subdivision graphs of some rooted product graphs. *Mathematics, 7*(5), 393.**(Zohaib Zahid, Sohail Zafar (Mathematics/SSC) Web of Science JCR Listed (IF: 1.105)**
Abstract: In this work, we study the degree-based topological invariants, and the general sum-connectivity, , , general Zagreb, , generalized Randić, and indices of the line graphs of some rooted product graphs (and) are determined by menas of the concept of subdivision. Moreover, we also computed all these indices of the line graphs of the subdivision graphs of i-th vertex rooted product graph.
Keywords: *topological indices, line graph, subdivision graph.*

87. Iftikhar, N., Husnine, S. M., & **Riaz, M. B.** (2019). Heat and mass transfer in MHD Maxwell fluid over an infinite vertical plate. *Journal of Prime Research in Mathematics, 15*, 63-80.**(Muhammad Bilal Riaz(Mathematics/SSC) SJR**
Abstract: The main focus of this article is to investigate the exact solution for MHD flow of Maxwell fluid over an infinite vertical plate with ramped temperature and constant concentration. Plate is moving along a straight line with arbitrary velocity which depends on time. Laplace transform and convolution theorem are used to acquire solutions for temperature, concentration and velocity. Moreover, results already present in literature are acquired as limiting case from these general results.
Keywords: *Maxwell fluid, laplace transform, magnetic effect, concentration, ramped temperature, free convection.*

88. **Kashif, A.,** Raza, Z. & Anwar, I., (2019). Algebraic Characterization of the SSC _s(G1 n;r)ules. *Journal of Combinatorial Mathematics and Combinatorial Computing, 110*, 157-170. **(Agha Kashif (Mathematics/SSC) SJR**

Abstract: In this paper, we characterize the set of spanning trees of G1 n;r (a simple connected graph consisting of n edges, containing exactly one 1-edge-connected chain of r cycles C1r and G1 n;r n C1ris a forest). We compute the Hilbert series of the face ring k[_s(G1 n;r)] for the span- ning simplicial complex _s(G1 n;r). Also, we characterize associated primes of the facet ideal IF(_s(G1 n;r)). Furthermore, we prove that the face ring k[_s(G1 n;r)] is Cohen-Macaulay..

Keywords: *simplicial complex, f-vector, face ring, facet ideal, spanning trees, primary decomposition, hilbert series, cohen-macaulay ring. (2000) mathematics subject classi_cation : primary 13p10, secondary 13h10, 13f20, 13c14.*

89. Farman, M., Saleem, M. U., **Tabassam, M. F.,** Ahmad, A., & Ahmad, M. O. (2019). A linear control of composite model for glucose insulin glucagon pump. *Ain Shams Engineering Journal, 10*(4), 867-872. doi: https://doi.org/10.1016/j.asej.2019.04.001. **(Muhammad Farhan Tabassam (Mathematics/SSC) SJR**

Abstract: Presently Type 1 diabetes is global issue and challenges for diabetes public for healthy life. Fully automatic artificial pancreas is well solution for diabetic patients to avoid the hyperglycemia/hypoglycemia as it provided the insulin/glucose when needed. A composite model of Glucagon-Glucose Dynamics is treated for type 1 diabetes mellitus to check the linear controllability and observability of the model and the stability analysis by using Lyapunov function. Two cases are discussed in system according to the input. For case I, Insulin as the input only and glucose as an output and in case II insulin and glucagon as an input and glucose as output only. A control system can only be used in the form of closed-loop control to stabilize the system. This may be show vital part in the progress of fully automatic artificial pancreas and stabilize the control loop system for the Glucose Insulin Glucagon pump.

Keywords: *controllability, observability, diabetes mellitus, artificial pancreas, lyapunov function, stability analysis.*

90. Raza, A., Rafiq, M., Baleanu, D., Arif, M. S., Naveed, M., & **Ashraf, K.** (2019). Competitive numerical analysis for stochastic HIV/AIDS epidemic model in a two-sex population. *IET Systems Biology, 13*(6), 305-315. doi: 10.1049/iet-syb.2019.0051. **(Kaleem Ashraf (Mathematics/SSC) SJR**

Abstract: This study is an attempt to explain a reliable numerical analysis of a stochastic HIV/AIDS model in a two-sex population considering counselling and antiretroviral therapy (ART). The authors are comparing the solutions of the stochastic and deterministic HIV/AIDS epidemic model. Here, an endeavour has been made to explain the stochastic HIV/AIDS epidemic model is comparatively more pragmatic in contrast with the deterministic HIV/AIDS epidemic model. The effect of threshold number H^* holds on the stochastic HIV/AIDS epidemic model. If $H^* < 1$ then condition helps us to control disease in a two-sex human population while $H^* > 1$ explains the persistence of disease in the two-sex human population. Lamentably, numerical methods such as Euler–Maruyama, stochastic Euler, and stochastic Runge–Kutta do not work for large time step sizes. The recommended structure preserving framework of the stochastic non-standard finite difference (SNSFD) scheme conserve all vital characteristics such as positivity, boundedness, and dynamical consistency defined by Mickens. The effectiveness of counselling and ART may control HIV/AIDS in a two-sex population.

Keywords: *diseases, stochastic processes, epidemics, patient treatment, finite difference methods.*

91. Shin Min Kang, **Haq, A. U,** Nazeer, W., Ahmad, I., & Ahmad, M. (2019). Explicit viscosity rule of nonexpansive mappings in CAT(0) spaces. *Journal of Computational Analysis & Applications*, *27*(1), 1034–1043. **(Absar-ul-Haq (Mathematics/Knowledge Unit of Science) SJR (SKT Campus)**

Abstract: In this paper, we present a explicit viscosity technique of nonexpansive mappings in the framework of CAT(0) spaces. The strong convergence theorem of the proposed technique is proved under certain assumptions imposed on the sequence of parameters. The results presented in this paper extend and improve some recent announced in the current literature.

Keywords: *not available.*

92. Shin Min Kang, **Haq, A. U.,** Nazeer, W., & Ahmad, I. (2019). The generalized viscosity implicit rules of asymptotically nonexpansive mappings in CAT(0) spaces. *Journal of Computational Analysis & Applications*, *27*(6), 1044–1056. **(Absar-ul-Haq (Mathematics/Knowledge Unit of Science) SJR (SKT Campus)**
Abstract: In this paper, we establish the generalized viscosity implicit rules of asymptotically nonexpansive mappings in CAT(0) spaces. The strong convergence theorems of the implicit rules proposed are proved under certain assumptions imposed on the control parameters. The results presented in this paper improve and extend some recent corresponding results announced.
Keywords: *not available.*

93. **Saleem, N.,** Vujaković, J., Baloch, W. U., & Radenović, S. (2019). Coincidence point results for multivalued Suzuki type mappings using θ-contraction in b-metric spaces. *Mathematics, 7*(11), 1017.**(Naeem Saleem (Mathematics/SSC) Web of Science JCR Listed (IF: 1.105)**
Abstract: In this paper, we introduce the concept of coincidence best proximity point for multivalued Suzuki-type α -admissible mapping using ϑ -contraction in b-metric space. Some examples are presented here to understand the use of the main results and to support the results proved herein. The obtained results extend and generalize various existing results in literature.
Keywords: *b-metric space, ψ-contraction, ϑ-contraction, α-admissible, best proximity points.*

94. Kang, S. M., Qadri, H. M. U. A., Nazeer, W., & **Haq, A. U.,**(2019). On modulus of convexity of quasi-Banach spaces. *Journal of Computational Analysis & Applications, 27*(1). **(Absar-ul-Haq (Mathematics/SSC) SJR**
Abstract: The aim of this report is to study modulus of convexityδBof a quasi-Banach spaceB. We prove thatδBis convex, continuous, nondecreasing and for arbitrary uniformlyconvex quasi-Banach spaceB,δB() = 1−1C√1−2C24. We also prove that a quasi-Banach spaceBis uniformly convex if and only ifδB()≥0.Moreover we prove thata non-trivial quasi-Banach spaceBis uniformly non-square if and only ifδB()>0.2010 Mathematics Subject Classification: 47H05, 46B20, 46E30
Keywords: *modulus of convexity, uniformly convex, uniformly non-square, quasi Banach space.*

95. Kwun, Y. C., **Virk, A. U. R.,** Rafaqat, M., Rehman, M. U., & Nazeer, W. (2019). Some reversed degree-based topological indices for graphene. *Journal of Discrete Mathematical Sciences and Cryptography, 22*(7), 1305-1314. doi:10.1080/09720529.2019.1691329**. (Abaid ur Rehman Virk (Mathematics/SSC) SJR**
Abstract: Topological indices are numerical values that correlate the chemical structures with physical properties. In this article, we will discuss some new reverse degree based topological indices namely reverse first zagreb index, reverse second Zagreb index, reverse third Zagreb index, reverse Atom-bond connectivity index and reverse Geometric-arithmetic inde.
Keywords: *graphene, reverse first zagreb index, reverse second zagreb index, reverse third zagreb index, reverse atombond connectivity index, reverse geometric-arithmetic index.*

96. **Butt, A. S., Tufail, M. N.,** & Ali, A. (2019). Study of Entropy Generation Effects in Magnetohydrodynamic Flow and Heat Transfer of Casson Nanofluid Over a Radially Stretching Surface. *Journal of Nanofluids, 8*(7), 1397-1411. **(Adnan Saeed Butt, Muhammad Nazim Tufail (Mathematics/Knowledge Unit of Science) SJR (SKT Campus)**
Abstract: The present article deals with the study of entropy generation effects in magnetohydrodynamic boundary layer flow and heat transfer of CassonNanofluid over a radially stretching surface. The Buongiornio and Casson fluidmodel are used to depict the non-Newtonian characteristics of the fluid. By introducing suitable similarity transformation, the governing partial differential equations are converted into a set of nonlinear ordinary differential equations. The reduced equations are then solved analytically by Optimal

Homotopy Analysis Method (OHAM) and numerically by shooting technique with fourth-fifth order Runge-Kutta method. The obtained results are analyzed and the effects of various pertinent parameters on velocity, temperature and concentration profiles as well as on skin friction coefficient and Nusselt number are presented through graphs and tables. Furthermore, the influence of these parameters on entropy generation is shown by plotting graphs of local entropy generation and averaged entropy generation number.
Keywords: *casson fluid, entropy generation, magnetic field, nanoparticles, radially stretching surface.*

97. Gao, W., **Sardar, M. S., Zafar, S., & Zahid, Z.** (2019). Coordinate descent based ontology sparse vector computing strategy and its applications. *Cluster Computing, 22*(4), 10309-10323. doi:10.1007/s10586-017-1283-8. **(Muhammad Shoaib Sardar, Sohail Zafar, Zohaib Zahid (Mathematics/SSC) SJR**
Abstract: In recent years, as a semantic analysis and com-putational tool, ontology has been widely applied in manyengineering applications. Many cases suggests that it's con-fronted with countless big data source with the complex datastructures. In order to relieve the dilemma, the sparse learningalgorithms are introduced into the ontology similarity mea-suring and ontology mapping. In this setting, it should bea high dimensional expression of each ontology vertex, andthe ontology algorithm should extract key component infor-mation effectively. Under such background, we consider theontology sparse vector learning algorithm and application indifferent engineering applications. In this article, by meansof coordinate descent minimization tricks, we present theontology sparse vector optimization strategy and discuss thedifferent transformation in different settings. At last, the newontology sparse vector learning proceeding is applied to fourengineering applications respectively to get its efficiency ver-ified.
Keywords: *ontology, similarity measure, ontologymapping, sparse vector.*

98. Li, X., **Asif, F., Zahid, Z., & Zafar, S.** (2019). On topological properties of plane graphs by using line operator on their subdivisions. *International Journal of Applied Mathematics, 32*(6), 1023-1036. **(Fatima Asif, Zohaib Zahid, Sohail Zafar (Mathematics/SSC) SJR**
Abstract: In this paper, we will compute some topological indices such as Zagreb indices M1(G), M2(G), M3(G), Zagreb coindices M1(G), M1(G), M2(G), M2(G)), M2(G), hyper-Zagreb index HM(G), atom-bond connectivity index ABC(G), sum connectivity index χ(G), augumented Zagreb index AZI and geometric-arithmetic connectivity index GA(G) of line graph of subdivision of some plane graphs.
Keywords: *topological indices, line graph, convex polytopes.*

99. **Tufail, M. N.,** Butt, A. S., & Ali, A. (2019). Entropy analysis of 3D MHD nanofluid flow over a linearly stretching surface. *International Journal of Exergy, 30*(4), 322-337. doi: 10.1504/ijex.2019.104100. **(Muhammad Nazim Tufail (Mathematics/Knowledge Unit of Science) SJR (SKT Campus)**
Abstract: A numerical study of three dimensional magnetohydrodynamic flow of nanofluid over a surface stretching linearly in two directions is carried out. The problem is analysed from first and second law of thermodynamics point of view. Suitable similarity transformations are employed to obtain nonlinear ordinary differential equations from the partial differential equations that govern the considered problem. The shooting technique with fourth fifth order Runge Kutta method is utilised to solve the converted equations. The effects of pertinent parameters on velocity and temperature profiles as well as on entropy generation are discussed briefly using graphs.
Keywords: *buongiorno model, brownian motion, thermophoresis, entropy generation, magnetic field.*

100. **Virk, A. u. R., Rehman, M. A.,** Shi, C., & Nazeer, W. (2019). Useful Irregularity Indices in QSPR Study for Bismuth Tri-Iodide. *Journal of Chemistry, 2019*, 2096019. doi: 10.1155/2019/2096019. **(Abaid ur Rehman Virk, M. A. Rehman (Mathematics/SSC) Web of Science JCR Listed (IF: 1.727)**
Abstract: Topological indices give us a mathematical language to study molecular structures. They convert a

chemical compound into a single number which foresees properties, for example, boiling points, viscosity, and the radius of gyrations. Drugs and other chemical compounds are often modeled as various polygonal shapes, trees, and graphs. In this paper, we will compute some irregularity indices for bismuth tri-iodide chain and sheet that are useful in the quantitative structure-activity relationship.

Keywords: *not available.*

101. Khalid, M., **Iqbal, R.,** & Broumi, S. (2019). Neutrosophic soft cubic Subalgebras of G-algebras. *Neutrosophic Sets and Systems, 28*(1), 20. **(Rakib Iqbal (Mathematics/SSC) SJR**

Abstract: In this paper, neutrosophic soft cubic G-subalgebra is studied through P-union, Pintersection, R-union and R-intersection etc. furthermore we study the notion of homomorphism on G-algebra with some results.

Keywords: *g-algebra, neutrosophic soft cubic set, neutrosophic soft cubic g-subalgebra, homomorphism of neutrosophic soft cubic subalgebra.*

102. **Ali, A.,** Ahmed, S., Du, Z., Gao, W., & Malik, M. A. (2019). On the Minimal General Sum-Connectivity Index of Connected Graphs Without Pendant Vertices. *Ieee Access, 7*, 136743-136751. doi: 10.1109/ACCESS.2019.2939510. **(Akbar Ali (Mathematics/Knowledge Unit of Science) Web of Science JCR Listed (IF: 4.098) (SKT Campus)**

Abstract: The general sum-connectivity index of a graph G, denoted by χ_α P (G), is defined as $uv\in E(G)$ $(d(u) + d(v))^\alpha$, where uv is the edge connecting the vertices u, $v \in V(G)$, d(w) denotes the degree of a vertex $w \in V(G)$, and α is a non-zero real number. For $\alpha = -1/2$ and $n \geq 11$, Wang et al. [On the sumconnectivity index, Filomat 25 (2011) 29–42] proved that K2 + Kn−2 is the unique graph with minimum χ_α value among all the n–vertex graphs having minimum degree at least 2, where K2 + Kn−2 is the join of the 2-vertex complete graph K2 and the edgeless graph Kn−2 on n − 2 vertices. Tomescu [2-connected graphs with minimum general sum-connectivity index, Discrete Appl. Math. 178 (2014) 135–141] proved that the result of Wang et al. holds also for $n \geq 3$ and $-1 \leq \alpha < -0.867$. In this paper, it is shown that the aforementioned result of Wang et al. remains valid if the graphs under consideration are connected, $n \geq 6$ and $-1 \leq \alpha < \alpha 0$, where $\alpha 0 \approx -0.68119$ is the unique real root of the equation χ_α (K2 +K4)−χ_α (C6) = 0, and C6 is the cycle on 6 vertices.

Keywords: *chemical graph theory, general sum-connectivity index, topological index.*

103. **Ali, A.,** Balachandran, S., Elumalai, S., & Mansour, T. (2019). On the n-vertex trees with sixth to fifteenth maximum harmonic indices. *Afrika Matematika*. doi: 10.1007/s13370-019-00758-0. **(Akbar Ali (Mathematics/Knowledge Unit of Science) SJR (SKT Campus)**

Abstract: The *harmonic index* of a graph *G* is denoted by *H*(*G*) and is defined as $H(G)=\sum uv\in E(G)2du+dvH(G)=\sum uv\in E(G)2du+dv$, where dudu, dvdv denote the degrees of the vertices *u*, *v*, respectively, of *G* and *E*(*G*) is the edge set of *G*. In this paper, the graphs having sixth to fifteenth maximum harmonic indices are characterized from the class of all *n*-vertex trees for sufficiently large *n*.

Keywords: *harmonic index, extremal problem, trees.*

104. Nazeer, W., Mehmood, Q., Kang, S. M., & **Haq, A. Ul.** (2019). An application of Binomial distribution series on certain analytic functions. *Journal of Computational Analysis and Applications, 26*, 11-17. **(Absar-ul-Haq (Mathematics/Knowledge Unit of Science) SJR (SKT Campus)**

Abstract: In the present note we will introduce a Binomial distribution series and obtain necessary and sufficient conditions for this series belonging to the classes $T(\lambda, \alpha)$ and $C(\lambda, \alpha)$. An integral operator related to this series is also considered. 2010 Mathematics Subject Classification: 30C45, 30C55*n*.

Keywords: *analytic function, binomial distribution, univalent.*

105. Chen, Z., **Virk, A. u. R.,** Habib, M., Zia, T. J., Ahmed, I., Shi, C., & Nazeer, W. (2019). Irregularity Indices of Dendrimer Structures Used as Molecular Disrupter in QSAR Study. *Journal of Chemistry, 2019*, 5371254. doi: 10.1155/2019/5371254. **(Abaid ur Rehman Virk (Mathematics/SSC) Web of Science JCR Listed (IF: 1.727)**

Abstract: Dendrimers are rising polymeric structures known for their flexibility in medication conveyance and high usefulness, whose properties are same biomolecules. These nanostructured macromolecules have shown potential capacities in capturing as well as conjugating the high subatomic weight hydrophilic/hydrophobic substances by host-visitor collaborations and covalent holding (prodrug approach) individually. In quantitative structure-property relationships (QSPR), topological indices are utilized to gather properties of dendrimers. Topological indices catch symmetry of dendrimer structures and give it a logical reasoning to predict properties, for instance, viscosity, boiling points, the radius of gyrations, etc. In this report, we intend to examine dendrimers through irregularity indices that are valuable in QSPR studies. We studied sixteen irregularity indices if diverse dendrimer structures.

Keywords: *not available.*

106. Ansari, A. H., Došenovic, T., Radenovic, S., **Saleem, N.,** Šešum-Cavic, V., & Vujakovic, J. (2019). C− class functions on some fixed point results in ordered partial metric spaces via admissible mappings. *Novi Sad J. Math, 49*(1), 101-116. **(Naeem Saleem (Mathematics/SSC) SJR**

Abstract: In this paper, we generalized the results presented in the paper W. Long, S. Khaleghizadeh, P. Salimi, S. Radenovi´c and S. Shukla, Some new fixed point results in partially ordered metric spaces via admissible mappings, Fixed Point Theory Appl. (2014), 2014:117, in the framework of partial metric spaces by using C−class function in ordered structure. Also, we provide an example to support our theoretical results and shows that obtained results are potential generalization of the already existing results in literature.

Keywords: *partial metric spaces, fixed point, c−class function, γ−admissible mapping, μ−subadmissible mapping.*

Conference Papers

1. **Javaid, M**. (2019). *K^th– Algebraic Connectivity of Connected Graphs*. Paper presented at the 20th International Pure Mathematics Conference 2019 AIOU and Islamabad Club, Pakistan**.(Muhammad Javaid (Mathematics/SSC)**

Abstract: For a graph T, the algebraic connectivity donated by a (T) is the second smallest eigenvalue of the Laplacian matrix L(T) of T, where the Laplacian matrix is obtained by the subtraction of the degree matrix from the adjacency matrix of T, In this paper we characterize the unique graph with K minimum algebraic connectivity in the class of graphs whose complements are connected, wherek=2.

Keywords: *not available.*

2. **Ali, U**. (2019). *Leap Zagreb Indices of Operations on Graphs*. Paper presented at the 20th International Pure Mathematics Conference 2019 AIOU and Islamabad Club, Pakistan**.(Usman Ali (Mathematics/ SSC)**

Abstract: Not available.

Keywords: *not available.*

3. **Awais, H. M.** (2019). *Computing Zagreb Indices of Generalized F-Sum Graphs*. Paper presented at the 20th International Pure Mathematics Conference 2019 AIOU and Islamabad Club, Pakistan**.(Hafiz Muhammad Awais (Mathematics/ SSC)**

Abstract: Not available.

Keywords: *not available.*

4. **Malik, A.** (2019). *Behavior of Anisotropic Compact Stars in f(R, ϕ) Gravity*. Paper presented at the 20th International Pure Mathematics Conference 2019 AIOU and Islamabad Club, Pakistan**.(Adnan Malik (Mathematics/ SSC)** **(SKT Campus)**
   Abstract: Not available.
   Keywords: *not available.*

5. **Raza, M.** (2019). *Local fractional metric dimension of wheel related graphs*. Paper presented at the 20th International Pure Mathematics Conference 2019 AIOU and Islamabad Club, Pakistan**.(Mohsin Raza (Mathematics/ SSC)**
   Abstract: Not available.
   Keywords: *not available.*

School of Engineering (SEN)

Department of Civil Engineering

Research Articles

1. Rashid, K., **Tariq, S.,** & Shaukat, W. (2019). Attribution of molasses dosage on fresh and hardened performance of recycled aggregate concrete. *Construction and Building Materials*, 197, 497-505. doi: 10.1016/j.conbuildmat.2018.11.249.**(Samia Tariq (Civil Engineering/SEN)** **Web of Science JCR Listed (IF: 4.046)**
   Abstract: Molasses is a by-product of sugar production; which not only improves concrete fluidity but also prevents early hardening of cement paste. Moreover, the usage of recycled aggregates in concrete is not a novel practice; however, the key issue observed in its utilization is the high-water absorption of aggregates leading to low workability and ultimately poor mechanical strength. This paper investigates the possibility of using cane molasses as a water-reducing admixture in recycled aggregate concrete. The addition of molasses along with recycled aggregate in concrete has the potential of mitigating the negative effects observed with the use of recycled aggregate only. Hence, various dosages of cane molasses (0.25-0.75% by weight of cement) were utilized in this study to investigate the fresh properties of cement pastes and recycled aggregate concrete. Key properties of hardened concrete, such as compressive strength, splitting tensile strength and shear strength were assessed up to 365 days. X-ray diffraction analysis was also performed at all ages of testing. With the addition of molasses reduction in water demand for normal consistency, whereas increase in setting times and workability was observed. By experiments and analytical discussions, improvement in mechanical performance of recycled aggregate concrete was also revealed with the addition of molasses up to 0.25%. The obtained results disclosed that the use of molasses in concrete with recycled aggregates is encouraging, provided that the dosage limitations are taken into account.
   Keywords: *recycled aggregate concrete, molasses dosage, setting time, workability, mechanical strength, x-ray diffraction.*

2. Abbas, A., **Ajwad, A.,** Khan, M., Aqdas, A., **Ilyas, U., Rashid, M. U., Abdullah, & Adnan, M. A.** (2019). Effect of Gap between Prefabricated Concrete Deck Elements on Stiffness of Composite Bridges. *The Nucleus, 56*(1), 1-5**.(Ali Ajwad, Usman Ilyas, Muhammad Usman Rashid, Abdullah, Muhammad Ahmad Adnan (Civil Engineering/SEN)** **HEC Y CAT**
   Abstract: Composite bridges are a new dimension of today's bridges, which involves two materials of different

properties that are combined to give a unique property together. In this research, such a bridge made of Concrete and steel was chosen where the supporting medium was a steel beam with a concrete deck on top of it. One of the more advanced steps in this bridge was to prefabricate the concrete deck. The influence of the gap between the prefabricated concrete deck elements and its effect on the bridge stiffness was studied under serviceability loading. It was found that increasing the gap did affect the stiffness of composite bridge. The deflection increased linearly with the increase in gap of concrete deck elements. Also when compared with the hand calculation, the results from ABAQUS showed presence of shear lag.

Keywords: *prefabricated deck elements, linear finite element analysis, composite bridges, dry joints.*

3. **Ajwad, A., Ilyas, U., Khadim, N., Abdullah, Usman, M., Ahmad, S., . . . Akhtar, A. W.** (2019). Assessing the durability of concrete with the addition of low quality fly ash. *Scientific Inquiry and Review (SIR), 3*(1), 43-47**. (Ali Ajwad, Usman Ilyas, Nouman Khadim, Abdullah, Muhammad Usman, Shakir Ahmad, Bilal Zahid, Abdul Waqar Akhtar (Civil Engineering/SEN) UMT Journal**

   Abstract: The life span of a structure is basically determined by its durability. Over the course of time, concrete carbonation and corrosion of steel reinforcement lead to weakness in concrete's structural elements and hence reduce its useful life. The addition of fibers in concrete can act as barrier and delays the activation of these processes. In this study, low quality fly ash was added to concrete to check its effect on the durability of concrete. It was found that the addition of low quality fly ash with an activator does have a positive impact on carbonation and reinforcement of corrosion resistance.

   Keywords: *structure, durability, carbonation, corrosion, fly ash.*

4. **Ajwad, A., Abdullah, Usman, M., Ahmad, S., Ilyas, U., Waqar, A., & Zahid, A. B.** (2019). Enhancing Concrete Properties by Adding Shred-like Steel Fibres and Steel Dust. *Scientific Inquiry and Review (SIR), 3*(3), 55–68. **(Ali Ajwad, Abdullah, Muhammad Usman, Shakir Ahmad, Usman Ilyas, Abdul Waqar Akhtar, Bilal Zahid (Civil Engineering/SEN) UMT Journal**

   Abstract: In this research, fine and coarse aggregates present in the concrete were replaced with steel dust and shred-like steel fibres respectively in different ratios and the effect of their replacement on the properties of concrete was studied. Eight batches of concrete were mixed, each with the mix proportion of 1:2:4 and water-cement ratio of 0.52. Batch A was of normal concrete. In batches B, C, and D, 5%, 10%, and 15% of sand was replaced with steel dust, respectively. In batches, E, F, and G, 2%, 5%, and 8% of coarse aggregates were replaced with steel fibres. In the last batch H, 5% of sand and 5% of coarse aggregates were replaced with steel fines and steel fibres, respectively. British as well as American standards were followed during the research. Slump test was performed in the fresh state of each mix to find the effect of these replacements on its workability. 12 cubes of 150mm × 150mm × 150mm for compressive strength test and 12 cylinders of 150mm diameter and 300mmheight for tensile strength test were made for each batch to check their strength after every 3, 7, 14, and 28 days. It was found that the workability of fresh concrete decreases while the density of fresh as well as hardened concrete increases with these replacements. They also result in an increase in initial compressive strength and a decrease in final compressive strength as compared to those of normal concrete. As far as tensile strength is concerned, an increase in initial as well as final strength was observed.

   Keywords: *aggregate, mix ratio, replacement, steel dust, steel fibres.*

5. Khan, M. A., **Ajwad, A.,** Abbas, A., & Aqdas, A. (2019). Study of Crack Repair in Reinforced Concrete Structures Using Suitable Materials. *Pakistan Journal of Engineering and Technology, 2*(1), 41-43. **(Ali Ajwad (Civil Engineering/SEN) Not HEC Recognized**

Abstract: Out of numerous serious problems that occur in reinforced concrete, formation of cracks and their propagation has its own say. Different types of cracks can form due to numerous reasons which include reinforcement corrosion, environmental effect, load impact and settlement of framework which can then affect the useful lifetime of any structure hence making the reinforced concrete structure less durable. Crack repairs, with the help of suitable materials, need to be done in order to reinstate the original strength of the structure. Water penetration test besides compression test were used to study the effectiveness of different materials used for repair work in current study. Results elaborated that polymer injection with materials available in local market can restore the actual strength of reinforced concrete elements and works more effectively as compared to other additives. It was found out through Water penetration test that water resistance was shown by all polymer injection materials.

Keywords: *repair, reinforced concrete, cementitious materials, cracks.*

6. **Ajwad, A.,** Aqdas, A., Khan, M. A., Abbas, A., & **Baig, Z.** (2019). Using Carbon Fibre Reinforced Polymer Strips for Recuperation of Originally Fissured Concrete Beams. *Pakistan Journal of Engineering and Technology, 2*(1), 36-40. **(Ali Ajwad, Zafar Baig (Civil Engineering /SEN)** **Not HEC Recognized**

   Abstract: Carbon fiber reinforced polymer (CFRP) strips are widely used all over the globe as a repair and strengthening material for concrete elements. This paper looks at comparison of numerous methods to rehabilitate concrete beams with the use of CFRP sheet strips. This research work consists of4 under-reinforced, properly cured RCC beams under two point loading test. One beam was loaded till failure which was considered the control beam for comparison. Other 3 beams were load till theappearance of initial crack which normally occurred at third-quarters of failure load and then repaired with different ratios and design of CFRP sheet strips. Afterwards, the repaired beams were loaded again till failure and the results were compared with control beam. Deflections and ultimate load were noted for all concrete beams. It was found out the use of CFRP sheet strips did increase the maximum load bearing capacity of cracked beams although their behavior was more brittle as compared with control beam.

   Keywords: *frp, rehabilitation, deflection, brittleness, cracked sections concrete bonding, mechanical, chemical, bonding agent, mix ratio.*

Conference Proceedings

1. **Sattar, H.,** Sarwar, S., & Shrestha, S. (2019). *Hydrologic Impact of Climate Change on Planned Hydro Dams in Swat River Basin Pakistan*. ICDSME 2019. ICDSME 2019. Water Resources Development and Management. Springer, Singapore **(Hira Sattar (Civil Engineering /SEN)** **Web of Science**

   Abstract: In Pakistan, there exists already a rather high awareness on the threats that climate change might pose on water resources. Khyber Pakhtunkhwa province of Pakistan in particular Swat basin has experienced several disastrous floods during recent past. There is large potential of hydropower development in the basin and many projects are planned to be constructed in the coming years. Mohmand Dam, largest multipurpose storage dam in Swat basin is being constructed in the basin. Therefore, it is pertinent to investigate the impact of climate change in this basin. A hydrological model Soil and Water Assessment Tool (SWAT) is coupled with regional circulation models (RCMs) to assess the potential water resources and other water budget components of the future under the changing climate. The hydrologic model was calibrated and validated against the measured stream flow data using observed weather data and inputs from the global SWAT database. The SWAT and RCM performed well, especially on an annual basis. Climate change impacts on hydrology were then quantified by driving SWAT with the existing and future climate scenarios. The outcome of the research indicates that it is very likely that temperature will increase further in the future. It will result in early snow melt and peak flow pattern of the basin will shift from summer months to spring season. The modelling results reveal that overall increase in temperature will be about 1.3–2.2℃ and 2.3–

3.75 ℃ in the century (2011–2099) under RCP 4.5 and RCP 8.5 respectively. The future projections also indicate that it is very likely that precipitation in the future will also vary with respect to baseline, the expected change in the precipitation will vary from 16% to 23% and −20% to 13.8% for the RCP 4.5 and RCP 8.5 respectively. The change in temperature, shift of snow melt season and precipitation will impact on the flow pattern of the basin and it is very likely that overall flow in the basin (Swat basin) will be more in the future. There will be more flows in the river from November to May and decrease in flows from June to December compared to existing scenario. The change in future precipitation simulated by the RCM produced 18% increase in & face runoff, and 24% decrease in base flow and 20% increase in evapotranspiration in the river (Swat Basin) on an annual basis.

Keywords: *climate change, stream flows, water budget, swat river basin, Pakistan.*

Conference Papers

1. **Rashid, M. U., Azmat, M., Ajwad, A.** (2019). *Genetic Algorithm Based Optimization of Multipurpose Cascade Reservoirs for Sustainable Economic Growth*. Paper presented at the 11th world congress on water resources and environment (EWRA 2019) "Managing water resources for a sustainable future", Madrid, Spain.**(Muhammad Usman Rashid, Muhammad Azmat, Ali Ajwad (Civil Engineering /SEN)**

   Abstract: Not available.

   Keywords: *not available.*

Department of Industrial Engineering

Research Articles

1. Zubair, H. M., Qadir, A., Zeshan, H. M. A., **Osaid, H. M.,** & Shah, S. A. A. (2019). The Investigation of heat transfer performance of Shell and Tube Heat Exchanger. *Technical Journal, 24*(03), 63-71. **(Hafiz Muhammad Osaid (Industrial Engineering/SEN) HEC Y CAT**

   Abstract: Objective of this research is to investigate the heat transfer performance of STHE (Shell and Tube Heat Exchanger). For this purpose, STHE with baffles and without baffles have been modelled in MATLAB Simulink, by using its block diagrams. Simulink models have been developed by using NTU (Number of Transfer Units) effectiveness method. Both models are verified mathematically by using NTU effectiveness heat transfer equations. Heat transfer and outlet temperature of cold fluid are achieved at different inlet temperature of hot fluid. Reference value of inlet temperature of hot fluid is set at 500, 480, 460, 440 and 420 °C and different values of heat transfer and outlet temperature of cold fluid are achieved. After that, comparisons between baffles and without baffles model have been developed for STHE performance. Greater heat is transferred in baffles model instead of other without baffles model at same inlet conditions. Cold fluid outlet temperature is better in baffles model instead of without baffles model. Moreover, a nonlinear direct relationship is found between inlet temperature of hot fluid and outlet temperature of the cold fluid. Heat transfer rate is decreased by decreasing the inlet temperature of hot fluid. Hence, this research proves that baffles or cross flow shell and tube heat exchangers gives the batter heat transfer as compare to counter flow STHE.

   Keywords: *shell and tube heat exchanger, MATLAB simulink, NTU, transfer function, fluid flow rate, fluid temperature, heat transfer.*

Conference Proceedings

1. **Qazi, F. D., Chaudhry, I. A.,** & Zaid, O. (2019). *Technology-driven LPG Supply Chain Integration – A Case of Pakistan.* Paper presented at the Proceedings of the International Conference on Industrial Engineering and Operations Management Bangkok, Thailand, March 5-7, 2019. **(Farhan Daud Qazi, Ijaz Ahmad Chaudhry) (Industrial Engineering/SEN) SJR**

Abstract: Pakistan has a wide network of gas pipelines supplying natural gas to domestic, commercial, industrial and power production sectors. Due to its capital-intensive nature, many newly developed urban areas, most of suburban localities, hilly areas in the north and rural areas across Pakistan are not connected to the gas network. Households and commercial activities requiring gas in areas disconnected from natural gas supply, therefore, depend mainly on Liquid Petroleum Gas (LPG) cylinders for different purposes. Of the total requirement in Pakistan, about 40 to 45 percent is imported and the remaining requirement is fulfilled through domestic production. About 150 oil and marketing companies have the license to import and sell LPG to all sectors across Pakistan. Large consumers of LPG are catered directly or through outsourced distributors by these oil marketing companies. Households and commercial users, constituting mainly smaller consumers but significantly large in numbers, are served through mostly illegal decanters who get their supplies through distributors. Apart from legal issues, this network poses serious problems vis-à-vis standard safety procedures in testing, decanting and supply of LPG cylinders. Moreover, there is a host of issues that the domestic and small scale commercial users of LPG cylinders face. First, for the lack of reliable LPG volume detection in cylinders, sometimes users run out of gas while the cylinder is in use, and the consumers may have to face problems in case 'safety stock' is not available. Second, special arrangements e.g., of carriage and transport, which may not always be convenient, have to be made for bringing cylinders to decanter. Moreover, gas cylinder decanting is usually only possible during specific hours and if cylinder decanting is required at some odd time of the day, the consumers may have to face availability issues too. This article presents an ingenious solution to the highlighted problems, which are essentially related to supply chain integration issues of optimal stock level, demand forecasting, order penetration point, and logistics. During an undergraduate capstone project, a smart scale equipped with a microcontroller, a load sensor and a GSM module was developed. The device was programmed to send periodic messages about LPG level based on weight on load sensor, allowing to estimate LPG level and hence detection of demand even before the need arises. Order penetration point was thus shifted upstream for the supplier enabling a timely and efficient delivery to all such consumers within a certain geographic zone. If conceived properly, through introduction of distributor directly from legal oil and gas marketing companies to the end consumer, the device may allow elimination of a complete tier of illegal decanters along with their profit margins, increase the profits of main suppliers, possibly reduced cost to consumers, and also help in near accurate demand forecasting.
Keywords: *lpg supply chain, integrated supply chain, demand forecasting, order penetration point, logistics.*

Department of Electrical Engineering

Research Articles

1. **Ahmad, J.,** Tahir, M., & Mazumder, S. K. (2019). Dynamic Economic Dispatch and Transient Control of Distributed Generators in a Microgrid. *Ieee Systems Journal, 13*(1), 802-812. doi: 10.1109/jsyst.2018.2859755. **(Jameel Ahmad (Electrical Engineering/SEN) Web of Science Science JCR Listed (IF: 4.463)**

Abstract: Microgrids have multiple distributed generators (DGs) with increased penetration of renewable energy sources. Efficient integration of these DGs in a microgrid, whether in grid-connected or islanded mode, poses many challenges, such as optimal power sharing, control of load-side and generator-side transients, and economic dispatch (ED), to name a few. Different control strategies for power sharing and ED fall short in providing good dynamic performance. To address this issue, we propose a novel solution that provides ED with improved dynamic performance. Specifically, the ED problem employs dynamic performance controller based on proportional-integral-derivative control for improved performance by using an augmented Lagrangian-based approach. For the distributed coordinated control of DGs, we utilize a multiagent system architecture. The performance evaluation results show that the proposed solution for ED improves the overall system performance of the microgrid. The system achieves an optimal state, where DGs operate at minimum cost while improving the transient response during load or generator switching.

Keywords: *distributed generation, dynamic performance, islanded microgrid, multiagent system (MAS), optimized control.*

2. Ayub, M., **Hussain, A.,** Jawad, G., & Kwon, B. I. (2019). Brushless Operation of a Wound-Field Synchronous Machine Using a Novel Winding Scheme. *Ieee Transactions on Magnetics, 55*(6). doi: 10.1109/tmag.2019.2893883.**(Asif Hussain (Electrical Engineering/SEN) Web of Science Science JCR Listed (IF: 1.651)**

   Abstract: This paper proposes a novel winding scheme to generate an additional sub-harmonic magneto-motive force (SH-MMF) component for the brushless (BL) operation of a wound-field synchronous machine. The existing SH generation schemes for BL operation use a dual inverter or a single inverter with asymmetrical winding and low slot fill factor in half of the stator. The proposed scheme comprises a single inverter with symmetrical stator winding distribution and the same fill factor for all stator slots. The generated additional SH-MMF component in the proposed scheme is induced in the harmonic winding wound on the machine rotor. A rotating bridge rectifier mounted on the rotor periphery connects the rotor harmonic winding with the rotor field winding, and rectified dc is supplied to the rotor field winding. The 2-D finite-element analysis (FEA) was carried out to analyze the principle, and the FEA predictions were experimentally validated.

   Keywords: *brushless operation, sub-harmonic magnetomotive force (SH-MMF), winding scheme, wound-field synchronous machine (WFSM).*

3. **Chattha, J. N.,** & Uppal, M. (2019). Joint Noisy Network Coding and Decode-Forward Relaying for Non-Orthogonal Multiple Access. *Ieee Transactions on Wireless Communications, 18*(1), 296-309. doi: 10.1109/twc.2018.2879486.**(Jawwad Nasar Chattha (Electrical Engineering/SEN)Web of Science JCR Listed (IF: 6.394)**

   Abstract: We consider a non-orthogonal multiple access channel in which multiple users communicate with a base-station through a dedicated relay. For this setup, we propose a novel joint-noisy network-coded (J-NNC)-decode-and-forward (DF) cooperation scheme that employs NNC relaying with opportunistic DF. The proposed scheme utilizes the DF cooperation when messages from all users are successfully decoded at the relay and the NNC when the relay is unable to decode any one of the users. In the scenario when the relay decodes only a subset of users, the proposed scheme utilizes joint DF and NNC encoding. We derive the information theoretic conditions required for successful message recovery and show that the J-NNC-DF has a strictly better outage performance than the conventional DF-only, NNC-only, or DF-or-NNC schemes. For the two-user case, we derive closed-form expressions for the outage performance under Rayleigh fading while assuming access only to the local channel state information at the relay. For these expressions, let us choose the NNC quantization parameter so as to attain optimum outage performance. The simulation results validate the theoretical findings and show that the J-NNC-DF achieves a performance gain of 0.75, 1.7, and 2.1 dB compared with the DF-or-NNC, DF-only and NNC-only strategies, respectively.

   Keywords: *non-orthogonal multiple access, relaying, decode-and-forward, noisy network coding.*

4. Hussain, S., Al-Hitmi, M., Khaliq, S., **Hussain, A.,** & Saqib, M. A. (2019). Implementation and Comparison of Particle Swarm Optimization and Genetic Algorithm Techniques in Combined Economic Emission Dispatch of an Independent Power Plant. *Energies, 12*(11). doi: 10.3390/en12112037.**(Asif Hussain (Electrical Engineering/SEN) Web of Science JCR Listed (IF: 2.707)**

   Abstract: This paper presents the optimization of fuel cost, emission of NOX, COX, and SOX gases caused by the generators in a thermal power plant using penalty factor approach. Practical constraints such as generator limits and power balance were considered. Two contemporary metaheuristic techniques, particle

swarm optimization (PSO) and genetic algorithm (GA), have were simultaneously implemented for combined economic emission dispatch (CEED) of an independent power plant (IPP) situated in Pakistan for different load demands. The results are of great significance as the real data of an IPP is used and imply that the performance of PSO is better than that of GA in case of CEED for finding the optimal solution concerning fuel cost, emission, convergence characteristics, and computational time. The novelty of this work is the parallel implementation of PSO and GA techniques in MATLAB environment employed for the same systems. They were then compared in terms of convergence characteristics using 3D plots corresponding to fuel cost and gas emissions. These results are further validated by comparing the performance of both algorithms for CEED on IEEE 30 bus test bed.

Keywords: *economic load dispatch, emission dispatch, combined economic emission/environmental dispatch, particle swarm optimization, genetic algorithm, penalty factor approach.*

5. Illahi, A., Bashir, M., **Alkanhal, M. A. S.,** Khatoon, S., Ghaffar, A., & **Khan, Y.** (2019). Electromagnetic waves scattering from a sphere of complex conjugate medium. *Journal of the European Optical Society-Rapid Publications, 15*. doi: 10.1186/s41476-019-0107-2.**(Majeed A. S. Alkanhal, Y. Khan(Electrical Engineering/SEN) Web of Science JCR Listed (IF: 1.253)**

   Abstract: A boundary value problem involving the scattering of electromagnetic waves from a sphere of complex conjugate medium (CCM) is studied. The sphere is placed in free space. The source of excitation for the sphere in our case is a plane wave. Incident, scattered and transmitted fields are formulated. The unknown coefficients in the scattered and transmitted fields are found using boundary conditions. From these electromagnetic fields, the Mie efficiencies are determined. The technique used in studying the scattering of electromagnetic waves from CCM is analytical and a closed form solution is obtained. It is shown by numerical results that the scattering is enhanced in case of CCM sphere as a target. Results for the limiting cases are also derived to compare the validity of our formulation with the published work.

   Keywords: *scattering, sphere, complex medium.*

6. Shami, U. T., **& Shami, S. H.** (2019). A digital logic controlled variable resistor with isolation and scalability. *Analog Integrated Circuits and Signal Processing, 99*(2), 467-469. doi: 10.1007/s10470-019-01440-y.**(Sajjad H. Shami (Electrical Engineering/SEN) Web of Science JCR Listed (IF: 0.823)**

   Abstract: This letter discusses an optocoupler based variable resistor circuit. The circuit has digital inputs and the output is a variable resistance with a resolution (unit step size) of 1. The circuit is easy to assemble especially for microsystems and low cost. Attractive features include variable resistance range scalability, galvanic isolation and digital logic based input.

   Keywords: *opto-electronics, variable resistance, digital control, galvanic isolation.*

7. Shehzad, M. H., **Bashir, M.,** Yaqoob, M. Z., Ghaffar, A., Alkanhal, M., & Khan, Y. (2019). Characteristics of electromagnetic wave transmission and reflection from isotropic plasma coated circular nihility cylinder. *Aip Advances, 9*(4). doi: 10.1063/1.5087109.**(M. Bashir (Electrical Engineering/SEN) Web of Science JCR Listed (IF: 1.579)**

   Abstract: Theoretical investigation has been carried out to study the scattering and transmission of electromagnetic energy from isotropic plasma coated circular nihility cylinder. The physical modeling of the problem is done in frame work of classical scattering theory. All the fields are expanded in terms of cylindrical vector wave functions (CVWFs). The analytical as well as numerical solution for both Transverse Electric (TE) and Transverse Magnetic (TM) polarizations is presented. The unknown scattering coefficients are computed by implementing the boundary conditions at each interface (free space/plasma and plasma/nihility). The influence of plasma parameters i.e., plasma density (N-D) and effective collision

frequency (v) on the bistatic echo width is analyzed and it is concluded that the plasma coating can be used to control and tune the scattering amplitude. Further it is also concluded that for the case w > w(p) the scattering amplitude is much less than for the case w < w(p). Under special conditions, the results of present work compared with the published literature and good agreement is found.
Keywords: *not available.*

8. **Ahmad, S.,** & Dabrowski, J. (2019). Design of Two-Tone RF Generator for On-Chip IP3/IP2 Test. *Journal of Electronic Testing-Theory and Applications, 35*(1), 77-85. doi: 10.1007/s10836-019-05780-5.**(Shakeel Ahmad (Electrical Engineering/SEN) Web of Science JCR Listed (IF: 0.625)**
Abstract: In this paper a built-in-self-test (BiST) aimed at the third and second intercept point (IP3/IP2) characterization of RF receiver is discussed with a focus on a stimulus generator. The generator is designed based on a specialized phase-lock loop (PLL) architecture with two voltage controlled oscillators (VCOs) operating in GHz frequency range. The objective of PLL is to keep the VCOs' frequency spacing under control. According to the test requirements the phase noise and nonlinear distortion of the two-tone generator are considered as a merit for the design of VCOs and analog adder. The PLL reference spurs, critical for the IP3 measurement, are avoided by means of a frequency doubling technique. The circuit is designed in 65nm CMOS. A highly linear analog adder with OIP3>+15dBm and ring VCOs with phase noise < -104 dBc/Hz at 1MHz offset are used to generate the RF stimulus of total power greater than -22dBm. In simulations a performance sufficient for IP3/IP2 test of a typical RF CMOS receiver is demonstrated.
Keywords: *BiST, IP3/IP2 test, on-chip test, phase noise, pll, receiver front-end, rf stimulus, two-tone generator.*

9. **Iqbal, W., Shoaib, M., Ahmad, j., Asim, M., Khalid, A., & Adnan, M.** (2019). Parametric and non-parametric spectral signal processing techniques for estimation of periodicity in sunspot numbers. *Proceedings of the Pakistan Academy of Sciences: A. Physical and Computational Sciences, 56* (1), 9–20.**(Waseem Iqbal, Muhammad Shoaib, Jameel Ahmad, Muhammad Asim Butt, Abdullah Khalid, and Muhammad Adnan (Electrical Engineering/SEN) SJR**
Abstract: Sunspots occur due to magnetic disturbances on the surface of the sun. The sunspot activity effects Weather on earth and also affect the earth temperature. In this research paper, various spectral estimation techniques for estimation of universal cyclic behavior of sunspot numbers are discussed. Spectral analysis has been based on two different approaches, namely parametric and non-parametric estimation. The performance of various parametric and non-parametric spectral estimation methods has been compared and frequency of occurrence of sunspots is calculated. MATLAB computer simulations have been extensively used for various estimator settings to arrive at correct results.The results show that the parametric spectral estimation techniques show better and consistent performance as compared to non-parametric spectral estimation techniques.
Keywords: *sunspot, periodogram, solar activity, blackman-tuckey, yule-walker method, parametric and nonparametric spectral estimation.*

10. Ahmad, F., & **Shami, S. H.** (2019). Hamlet's Fear of Freedom: An 'Existential' Attitude. *Scholedge International Journal of Multidisciplinary & Allied Studies, 6*(2), 9-12. doi: 10.19085/journal.sijmas060201.**(Sajjad H. Shami (Electrical Engineering/SEN) Not HEC Recognized**
Abstract: This article investigates the reason(s) for what has polemically come to be termed as Hamlet's procrastination in the light of existential doctrine of Sartre and explain how Hamlet's crippling fears of : (a) having to resolve and,(b) then actualize the decision embroil him in the existential dilemma of futilely evading the responsibility only to realize, albeit at the heavy price of losing what he calls „the eternal jewel?

i.e., his own life, that it is the very essence and condition of our being and cannot be escaped. As Sartre claimed that even in not making a decision, a man takes an alternative decision i.e. of not performing the act, and is subsequently caught up in the clutches of responsibility again. This article analyzes in the theoretical backdrop of existential theory, using the descriptive-cum-analytical method, the notion of „fear of freedom? and asserts that Hamlet had been the victim of this existential dilemma of not making the final decision, in order to avoid the burden of responsibility.

Keywords: *Shakespeare, Hamlet, Sartre, existentialism, determinism, being-in-itself, being-for-itself.*

11. **Ahmad, J.,** Tahir, M., & Mazumder, S. K. (2019). Improved Dynamic Performance and Hierarchical Energy Management of Microgrids With Energy Routing. *Ieee Transactions on Industrial Informatics, 15*(6), 3218-3229. doi: 10.1109/tii.2018.2877739. **(Jameel Ahmad (Electrical Engineering/SEN) Web of Science JCR Listed (IF: 7.377)**

    Abstract: In this paper, a hierarchical distributed energy management of multimicrogrids (MMGs) with energy routing is proposed. Existing control strategies for power sharing, transient performance, and economic-emission dispatch in microgrids with distributed generators (DGs) fall short in providing good dynamic performance. To address this issue, a hierarchical distributed optimization is proposed by using top-down approach, which decomposes original economic-emission dispatch of MMG scenario into individual microgrid (MG) and energy routing subproblems. Distributed electric vehicle charging, intermittent photovoltaic source, and battery energy storage system are incorporated in the optimization model. Using multiagent system model for DG, a dynamic performance controller (DPC) is proposed for each MG to achieve improved performance during transients. Convergence of optimization algorithm is proved using Lyapunov theory. Performance evaluation results show that the proposed DPC for economic-emission dispatch improves system performance significantly during either load or generator switching.

    Keywords: *distributed generation, dynamic performance, energy router, economic-emission dispatch, multiagent system (MAS).*

12. **Jafri, S. I.,** Saleem, R., & **Khokhar, K.** (2019). CPW-fed UWB Antenna with Tri-band Frequency Notch Functionality. *Applied Computational Electromagnetics Society Journal, 34*(9), 1274-1279. **(Irum Jafri, Khawar Khokhar (Electrical Engineering/SEN) Web of Science JCR Listed (IF: 0.584)**

    Abstract: In this paper, a UWB antenna exhibiting frequency suppression characteristics for WiMAX and WLAN spectra is modeled and analyzed. The proposed geometry is composed of a circular radiating element. Impedance matching at higher frequencies is achieved by incorporating steps near the feedline. Introduction of arc-shaped slots in the radiator results in significant band rejection for 3.3-3.7 GHz, 5.15-5.25 GHz and 5.725-5.825 GHz. Designed antenna has an impedance bandwidth (VSWR < 2) of 9 GHz ranging 3-12 GHz. A prototype of the proposed model is fabricated on a low loss substrate. Comparative study of measured results to the simulated results depicts that the performance parameters of the antenna, e.g., impedance bandwidth, S-parameters and radiation characteristics meet the criteria for wideband applications.

    Keywords: *circular patch antenna, impedance bandwidth, multiband antenna, tri-band notch, UWB antenna.*

13. Illahi, A., **Bashir, M.,** Iftikhar, P., Naqvi, Q. A., Ghuffar, A., Naz, M. Y., & Ghaffar, A. (2019). Electromagnetic scattering from complex conjugate cylinder of infinite length. *Journal of Optoelectronics and Advanced Materials, 21*(5-6), 338-342. **(M. Bashir (Electrical Engineering/SEN) Web of Science JCR Listed (IF: 0.588)**

    Abstract: A plane wave interacts with a complex conjugate medium (CCM) circular cylinder of radius a. The cylinder is placed in free space. Taking in account the classical scattering theory, the incident and scattered fields are found. By solving the boundary value problem, the unknown coefficients and scattered fields are formulated. Numerical results are found by plotting the echo width, scattered and transmitted fields with

size parameter of the cylinder, observation angle and imaginary part of the refractive index. Comparison of obtained numerical results for limiting cases is done with published literature and has been found in good agreement. It has been shown that the scattering from CCM cylindrical geometry is larger than standard dielectric. Both the TE and TM polarizations of incident plane wave have been used in the analysis.
Keywords: *scattering, complex conjugate medium, optical properties.*

14. **Ullah, I.** (2019). Optical modeling of two-stage concentrator photovoltaic system using parabolic trough. *Journal of Photonics for Energy, 9*(4), 043102. doi: doi.org/10.1117/1.JPE.9.043102. **(Irfan Ullah (Electrical Engineering/SEN) Web of Science JCR Listed (IF: 2.277)**
Abstract: Concentrator photovoltaic (CPV) technology is one of the best available technologies to use sunlight efficiently. Nonimaging optical elements have been used for the development of CPV systems for delivering uniform flux distribution, which gives a high optical efficiency. This research presents optical modeling of a CPV system, which consists of a primary parabolic trough and a secondary nonimaging reflector. The proposed concentrating system is capable of providing high concentration. In the literature, parabolic trough-based CPV systems included multijunction solar cells in a linear array, which provided low concentration about 50 × on the solar cells. The proposed design sets the solar cell at the center of the trough in a square shape, which achieves a geometrical concentration of 285, acceptance angle of ±1.1 deg, and optical efficiency of 72%. The detailed architecture design and optical ray-tracing simulation are presented to show the innovative idea for harnessing solar energy using the parabolic trough concentrator.
Keywords: *not available.*

15. **Ullah, I**. (2019). Heliostats Daylighting System for Multi-floor Buildings. *Journal of Daylighting, 6*(2), 202-209. **(Irfan Ullah (Electrical Engineering/SEN) SJR**
Abstract: Daylighting has been considered as a major part of sustainable buildings for saving electric lighting and providing benefits such as, health, visual comfort, and productivity of the occupants. A daylighting system enables the sunlight to capture and deliver it in the interior spaces that cannot be illuminated through windows. Previously, small-scale daylighting systems have been presented using active and passive techniques. This paper presents a daylighting scheme to illuminate the interior of a multi-floor building. Traditional light pipe-based systems are lacked to achieve a high concentration of sunlight for illuminating the interior of a multi-floor building. Here, a highly concentrated light pipe-based daylighting system is presented using heliostats. The daylighting system includes heliostats, light pipe, and light guide to collect, transmit, and distribute the light in the interior of the multi-floor building, respectively. The light guide is made of a reflective film and a prismatic optical film for distributing the light in the interior. Heliostats track the sun and reflect the light towards a circular flat mirror, which inserts the light into the light pipe. To transmit a portion of the light into the light guide for illuminating the interior of each floor, a redirecting mirror is placed at the inlet of the light guide inside the light pipe. Simulation results have shown that an efficiency of 40% is achieved providing almost uniform illumination in the interior.
Keywords: *daylighting, light pipe, prismatic light guide, heliostats.*

16. Uddin, W., Zeb, N., Zeb, K., Ishfaq, M., Khan, I., **Tanoli, A., Haider, A.,** . . . Park, G.-S. (2019). A Neural Network-Based Model Reference Control Architecture for Oscillation Damping in Interconnected Power System. *Energies, 12*(19), 3653. **(Ayesha Tanoli, Aun Haider (Electrical Engineering) Web of Science JCR Listed (IF: 2.707) (SKT Campus)**
Abstract: In this paper, a model reference controller (MRC) based on a neural network (NN) is proposed for damping oscillations in electric power systems. Variation in reactive load, internal or external perturbation/faults, and asynchronization of the connected machine cause oscillations in power systems. If

the oscillation is not damped properly, it will lead to a complete collapse of the power system. An MRC base unified power flow controller (UPFC) is proposed to mitigate the oscillations in 2-area, 4-machine interconnected power systems. The MRC controller is using the NN for training, as well as for plant identification. The proposed NN-based MRC controller is capable of damping power oscillations; hence, the system acquires a stable condition. The response of the proposed MRC is compared with the traditionally used proportional integral (PI) controller to validate its performance. The key performance indicator integral square error (ISE) and integral absolute error (IAE) of both controllers is calculated for single phase, two phase, and three phase faults. MATLAB/Simulink is used to implement and simulate the 2-area, 4-machine power system.

Keywords: *power oscillations, UPFC, non-linear control, neural network, model reference control.*

17. Uddin, W., **Tanoli, A.,**, Zeb, K., **Haider, A.,** Khan, B., Islam, S. u., . . . Kim, H. J. (2019). Current and future prospects of small hydro power in Pakistan: A survey. *Energy Strategy Reviews, 24*, 166-177. doi:https://doi.org/10.1016/j.esr.2019.03.002. **(Ayesha Tanoli, Aun Haider (Electrical Engineering) SJR "Review" (SKT Campus)**

Abstract: Currently, the electrical energy crisis is an important issue in Pakistan. Due to the shortage of electrical power, inhabitants of the country are facing 10–12 h of blackouts in urban areas and 14–20 h in rural areas daily. The current demand for electrical power is 15,000 MW, which is expected to increase further to 49,078 MW by 2050. Conventional energy sources are unable to meet this demand. This paper discusses the potential of Small Hydro Power Plants (SHPPs) to partially overcome the shortage of electricity. Overall, 60,000 MW of hydroelectric resources have been identified in Pakistan. whereas, approximately 11% of the identified resources are operational, producing 7228 MW of electric power. The energy crisis can be easily overcome by installing SHPPs. The use of SHPPs has been estimated to save 120 million tons of coal or 83.3 billion liters of oil in a year. Thus, these plants are environmentally friendly and make a low contribution to global warming. Worldwide, SHPPs provide employment to 0.2 million people. Pakistan Council of Renewable Energy Technology (PCRET) and Sarhad Rural Support Program (SRSP) has installed 1100 SHPPs, with a total capacity of 42.507 MW, which fulfills the electrical energy demand of approximately 0.7 million people in Pakistan.

Keywords: *not available.*

Conference Proceedings

1. Zeb, K., Uddin, W., Islam, S. U., Khan, I., Ishfaq, M., **Ullah, Z.,** . . . **Haider, A.** (2019, 30-31 Jan. 2019). *Adaptive Fuzzy Logic Controller for Indirect Field Oriented Controlled Induction Motor.* Paper presented at the 2019 2nd International Conference on Computing, Mathematics and Engineering Technologies (iCoMET). **(Zahid Ullah, Aun Haider (Electrical Engineering) SJR (SKT Campus)**

Abstract: A New Adaptive Fuzzy Logic Control (AFLC) strategy is analyzed in this paper for three phase Induction Motor, in order to achieve robustness and fast dynamic response for high and low-speed variation and to attain high torque and efficiency. The direct-quadrature axis modeling of IM in the synchronous reference frame is accomplished in Matlab/ Simulink. Both PI and AFLC based on Levenberg Marquart technique is analyzed, designed and simulated for Indirect Field Oriented Controlled (IFOC) IM drive system. A Comparative study to the conventionally tuned PI controller of controlled speed, torque, and flux loops results shows that the proposed ALFC based on LM gives better, effective and faster responses with low overshoot, rise and settling time for IFOC IM drive system.

Keywords: *induction motor (IM), indirect field oriented control (IVC), pi control, levenberg marquart technique, speed variation.*

2. Islam, S., Zeb, K., Uddin, W., Khan, I., Ishfaq, M., **Ullah, Z.,** & Kim, H. J. (2019, 2-3 Dec. 2019). *Design and Investigation of FRT Schemes for Three-Phase Grid-Tied PV System.* Paper presented at the 2019 15th International Conference on Emerging Technologies (ICET). **(Zahid Ullah (Electrical Engineering) SJR (SKT Campus)**

   Abstract: his paper presents a newly designed fault-ride-through (FRT) scheme i.e. bridge-type fault-current limiter (BFCL) for Grid-Tied photovoltaic system (PVS) to optimize unbalance fault variables. A 100 kW three-phase Grid-Tied MATLAB/Simulink model is used to analyze the system response during unbalance conditions. The simulation results of designed FRT scheme are critically compared with conventionally adopted FRT scheme i.e. crowbar circuitry. However, for inverter control proportional integrator (PI) controller is used. Moreover, the analysis is carried out for faults at point of common-coupling (PCC) as well as 5-km away from PCC. The obtained simulated results of PI controller with well-designed FRT scheme authenticates stable, minimum oscillation, ripples free, robust and fast performance for unbalance fault variables as compared to previous work.

   Keywords: *grid-tied pv system, pi controller, frt scheme, lvrt capability, bfcl scheme.*

3. Zeb, K., Saif ul, I., Uddin, W., **Khan, I.,** Ishfaq, M., Ullah, Z., . . . Kim, H. J. (2019). *Design of Adaptive Sliding Mode Controller for Single-Phase Grid-Tied PV System.* Paper presented at the 2019 15th International Conference on Emerging Technologies (ICET). **(Imran Khan (Electrical Engineering) SJR (SKT Campus)**

   Abstract: This paper proposed Fuzzy-Sliding Mode Controller (F-SMC) for regulation of DC-link voltage and Proportional Resonant (PR) with Resonant Harmonic Compensator (RHC) for output current control of two stages 3 kW single-phase grid-tied Photovoltaic (PV) system. The dynamics of the system are tested with and without a feed-forward PV power loop. A SOGI phase lock loop is implemented that has harmonic insusceptibility, a fast-tracking accuracy, and rapid-dynamic response. The proposed controller enhances the dynamic and steady state performance of the overall system. Furthermore, the simulation results of PI controller is also presented to show the effectiveness of the proposed control strategy. A graphical and tabulated comparative assessment with a well-tuned PI controller authenticates the effectiveness, fastness and robustness of proposed controller. MATLAB/Simulink R2017b software is used as a design and implementation platform.

   Keywords: *photovoltaic, grid-tied, pi control, fuzzysliding mode control, sogi pll.*

4. Banaras, N., Yasmin, M., & **Saleem, M. S.** (2019). *Cognitive Learning through Collaborative Tasks: Impact on the Oral Proficiency of Pakistani University ESL Learners.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Muhammad Shoaib Saleem (Electrical Engineering) SJR (SKT Campus)**

   Abstract: This study argues in favour of the collaborative approach to oral proficiency based on sociocultural theory. It was conducted to check the impact of collaborative tasks on ESL learners' oral proficiency. It claims that learning with group members/peers provides a better way to learn the second language. This study was experimental in nature. A sample of 32 students of BS-2nd semester from University of Gujrat was selected through purposive sampling and divided into two groups: the control group and the experimental group. Data were collected through an oral interview by following the structure of PET. This PET has been comprised of four components: grammar and vocabulary, discourse management, pronunciation and interactive communication. The experimental group was provided with the treatment in the form of various designed activities by ensuring maximum peer interaction in the collaborative setting. This treatment was implemented in a span of six months. Meantime, the control group learned in the conventional way. At the end, the performance was checked with the help of post-test. Finally, data were analysed with the help of quantitative approach. It was concluded that learning via collaborative tasks has a positive impact on oral proficiency including all the four basic components.

Keywords: *collaborative learning, oral proficiency, pet test, esl learners, socio-cultural theory.*

5. Yasmeen, A., Yasmin, M., & **Saleem, M. S.** (2019). *Cognitive Learning in Outcome-Based Education: A Case Study of Bachelor of Science in Electrical Engineering.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Muhammad Shoaib Saleem (Electrical Engineering) SJR (SKT Campus)**
   Abstract: The purpose of the present study is to assess the level of cognitive learning, with the help of question paper analysis, among the students of Bachelor of Science in Electrical Engineering studying under Outcome Based Education. The data for this study were collected from the Department of Electrical Engineering, University of Gujrat. The data were descriptively analyzed and presented through tables and graphs for quick and easy interpretation of the results. The results showed that, out of six courses, only one course reached the highest level of cognitive learning.
   Keywords: *cognitive learning, outcome based education (obe), bloom's taxonomy, question papers.*

6. Shahriar, M. S., Sha'aban, Y. A., Habiballah, I. O., & **Ahmad, F. A.** (2019). *PMU Optimal Placement in Smart Grid using WLAV Power System Estimator.* Paper presented at the 2019 2nd International Conference of the IEEE Nigeria Computer Chapter (NigeriaComputConf). **(Farhan Ammar Ahmad (Electrical Engineering) SJR (SKT Campus)**
   Abstract: The monitoring, observation and security of a modern-day smartgrid system is highly dependenton the accuracy of theselected state estimator. State estimation provides accurate states of a power system in a real-time frame. The conventional meters, which are mostly installed in current smart grid systems are prone to provide wrong measurements to the estimator, which reduces the efficiency of the state estimation results. Over the last two decades, new and reliable meters have beenintroduced to electric utilities. For example, phasor measurement units (PMU), whichare devices that can provide voltage and current phasors with a very high accuracyare readily available. However, they are expensive and need to be optimally placed onthe smart grids. This paper presents atechnique for optimizing the placement of PMUs, with the objective of improving the estimation performanceusing Genetic Algorithm (GA). The weighted least absolute value (WLAV)estimator, which is one of the well-established robust estimators, is being selected for simulation. The IEEE-14 and 30-bus power systems are chosen to demonstrate the effectiveness of proposed optimal PMU placement.
   Keywords: *genetic algorithm, optimal pmu placement,phasor measurement unit, state estimation, weighted least absolute value.*

7. **Khalid, A., Zeb, K., & Haider, A.** (2019). *Conventional PID, Adaptive PID, and Sliding Mode Controllers Design for Aircraft Pitch Control.* Paper presented at the 2019 International Conference on Engineering and Emerging Technologies (ICEET).**(Adnan Khalid, Kamran Zeb, Aun Haider (Electrical Engineering) SJR (SKT Campus)**
   Abstract: In this paper conventional PID, Fuzzy PID and Sliding Mode (SM) controllers have been designed and analyzed for the pitch control of an aircraft. The main purpose is to stabilize the aircraft in case of any external disturbance. An appropriate mathematical model for the longitudinal motion of aircraft is considered. Simulations are performed in MATLAB Simulink for the proposed controllers and results are critically and analytically discussed. Furthermore, analysis based on different performance measures i.e. Integral Squared Error (ISE), Integral Absolute Error (IAE), rise time, settling time, and under shoot are performed to compare the response of the controllers. Besides in comparison, the simulation results validate the robustness and better performance of SMC and Fuzzy PID for pitch control of an aircraft.
   Keywords: *PID, aircraft pitch control, fuzzy pid, sliding mode control, integral squared error and integral absolute error.*

8. Mushtaq, Z., Yaqub, A., **Hassan, A.,** & Su, S. F. (2019). *Performance Analysis of Supervised Classifiers Using PCA Based Techniques on Breast Cancer.* Paper presented at the 2019 International Conference on Engineering and Emerging Technologies (ICEET). **(Ali Hassan (Electrical Engineering) SJR**

   Abstract: Focus of this paper is to recognize tumorous (malignant) and non-tumorous (benign) from the dataset. Wisconsin breast cancer data (WBCD) has been used and taken from UCI machine learning repository. Most popular supervised learning classifiers with PCA based dimensionality rebate techniques applied. Support Vector Machine, K Nearest Neighbor, Decision Tree, Naïve Bayes and Logistic Regression used with Linear, Sigmoid, Cosine, Poly and Radial basis function based PCA's. Numerous performance metrics tested after getting confusion matrix. Among them accuracy, sensitivity, specificity, false positive rate, false omission rate, precision, prevalence, f1-score, negative predicted value, false negative rate, false discovery rate and markedness. Our best performing models then relatively compared with other existing models. Sigmoid based Naïve Bayes exhibits best accuracy of 99.20%.K Nearest Neighbor also illustrate superb performance with all kernel PCA based techniques. Accuracy ranges from 96.4% to 97.8%.

   Keywords: *breast cancer, classification, data-mining, naïve bayes, supervised, k nearest neighbor, support vector machine.*

9. **Zia, A., Saeed, A., & Malik, Q.** (2019). *Notice of Removal: Programmable Logic Controller based Automatic Voltage and Frequency Control of MicroGrid.* Paper presented at the 2019 IEEE/IAS 55th Industrial and Commercial Power Systems Technical Conference (I&CPS). **(Aamir Zia, Awais Saeed, Qasim Malik (Electrical Engineering) SJR**

   Abstract: Not Available.

   Keywords: *not available.*

Conference Papers

1. **Kaleem, M.,** Cordes, D., (2019). *Characterization of Resting-State Networks in Terms of the Hurst Exponent*. Paper presented at the Human Brain Mapping Conference**.** Rome, Italy, June 9 - 13, 2019. **(Muhammad Farhat Kaleem (Electrical Engineering/SEN)**

   Abstract: Not available.

   Keywords: *not available.*

2. Cordes, D., Yang, Z., Zhuang, X., **Kaleem, M.,** Curran, T., Sreenivasan, K., Mishra, V., Nandy, R., (2019). *Empirical Mode Decomposition and Energy-Period Characteristics of Brain Networks in Group fMRI Resting-State Data*. Paper presented at the 27th Annual Meeting of International Society for Magnetic Resonance in Medicine (ISMRM), Montreal, Canada, 11-16 May, 2019. **(Muhammad Farhat Kaleem (Electrical Engineering/SEN)**

   Abstract: Not available.

   Keywords: *not available.*

Department of Mechanical Engineering

Research Articles

1. Asad, M., Ijaz, H., Saleem, W., Mahfouz, A. S. B., **Ahmad, Z.,** & Mabrouki, T. (2019). Finite Element Analysis and Statistical Optimization of End-Burr in Turning AA2024. *Metals, 9*(3). doi: 10.3390/met9030276.**(Zeshan Ahmad (Mechanical Engineering /SEN) Web of Science JCR Listed (IF: 2.259)**

   Abstract: This contribution presents three-dimensional turning operation simulations exploiting the capabilities of finite element (FE) based software Abaqus/Explicit. Coupled temperature-displacement simulations for orthogonal cutting on an aerospace grade aluminum alloy AA2024-T351 with the conceived

numerical model have been performed. Numerically computed results of cutting forces have been substantiated with the experimental data. Research work aims to contribute in comprehension of the end-burr formation process in orthogonal cutting. Multi-physical phenomena like crack propagation, evolution of shear zones (positive and negative), pivot-point appearance, thermal softening, etc., effecting burr formation for varying cutting parameters have been highlighted. Additionally, quantitative predictions of end burr lengths with foot type chip formation on the exit edge of the machined workpiece for various cutting parameters including cutting speed, feed rate, and tool rake angles have been made. Onwards, to investigate the influence of each cutting parameter on burr lengths and to find optimum values of cutting parameters statistical analyses using Taguchi's design of experiment (DOE) technique and response surface methodology (RSM) have been performed. Investigations show that feed has a major impact, while cutting speed has the least impact in burr formation. Furthermore, it has been found that the early appearance of the pivot-point on the exit edge of the workpiece surface results in larger end-burr lengths. Results of statistical analyses have been successfully correlated with experimental findings in published literature.

Keywords: *finite element analysis; end burr, design of experiments, response surface methodology, analysis of variance, AA2024.*

2. Rafique, M. M., Bahaidarah, H. M. S., & **Anwar, M. K.** (2019). Enabling private sector investment in off-grid electrification for cleaner production: Optimum designing and achievable rate of unit electricity. *Journal of Cleaner Production, 206*, 508-523. doi: 10.1016/j.jclepro.2018.09.123.**(M. Khalil Anwar (Mechanical Engineering/SEN) Web of Science JCR Listed (IF: 6.395)**

Abstract: The electrification rate and unit rate of electricity are important factors for economic and social development; especially in developing countries. The supply of electric power at low rates can help in setting ambitious targets to expand the reach of electricity to remote rural areas. The private or local investment to build isolated microgrids could be a cost effective and technically viable solution to extend the electricity access in different countries. However, country specific feasibility studies are required which can help to estimate the required investment and life cycle expenditures. In this paper, an algorithm has been presented for optimal sizing and life cycle cost analysis of an off-grid solar PV system. As a case study, an off-grid PV system is designed to build a zero energy community in five capital cities of Pakistan in order to access the feasibility and potential of off-grid power systems throughout the country. Furthermore, life cycle cost analysis of designed PV system has been carried out in order to determine the unit cost of electricity. The results of economic model show that, the installed PV system can provide electricity at an average rate of 0.082 US$/kWh for all cities with a minimum rate of 0.076 US$/kWh achieved for Quetta whereas; cost of conventional electricity varies from 0.15 to 0.20 US$/kWh in Pakistan. It can be concluded that, installing an off grid PV system in Pakistan is viable both technically and economically. The produced electricity is 45-58% cheaper than the conventional electric power supply used in the country. This study can be used as a benchmarking and guideline to design off-grid PV power systems for other facilities and locations with estimated load demands.

Keywords: *solar energy, off-grid pv, sustainable development, zero energy communities, developing countries, Pakistan.*

3. **Sultan, T., Ahmad, Z.**, & Hayat, K. (2019). Design and optimization of open-channel water ultraviolet disinfection reactor. *Chemical Papers, 73*(6), 1423-1436. doi: 10.1007/s11696-019-00694-0.**(Tipu Sultan, Zeshan Ahmad (Mechanical Engineering/SEN) Web of Science JCR Listed (IF: 1.246)**

Abstract: Design and optimization have developed gradually from a methodology for academic attraction into a technology that has made a significant impact on the industrial growth. A careful and well-optimized design of open-channel water ultraviolet (UV) disinfection reactor ensures the achievement of minimum UV

dose required, as well as allowing the minimum operational costs. Such UV reactors are mostly utilized in water treatment plants throughout the world to provide the system for disinfecting the drinking water. Yet, at present, lack of rigorous quantitative understanding of behavior in such reactor geometries is shown to limit the versatile and efficient optimization of UV reactor. A new UV reactor design concept is essential that should be able to consider the three significant parameters, namely: uniform UV light propagation within the open-channel UV reactor, providing optimum lamp positioning within the volume of the UV reactor and should allow optimum flow rate of the water. It is approved that computational fluid dynamics (CFD) simulation can be used as a quick and cheap means for design and optimization of water disinfection UV reactor. A novel design and optimization approach which combines CFD modeling, design of experiment (DOE), response surface method (RSM) and goal-driven optimization (GDO) was presented for open-channel water UV disinfection reactor. This methodology includes a heuristic approach from scratch to the final optimal solution. The optimal design variables which have the optimum value of the object functions were identified through proposed methodology. The results showed that the CFD method can be employed for estimation of the optimum design, even though the shape of the open-channel UV reactor is complex. The CFD results reveal that the UV dose distribution and flow of water were largely dependent on the lamp positioning. This paper demonstrates that UV reactor optimization in conceptual design is possible using a commercial CFD package. As a conclusion, the proposed design and optimization technique based on DOE, RSM and GDO could be a suitable technique prior to a final design of open-channel water UV disinfection reactor.

Keywords: *CFD, fluence rate, open-channel, optimization, reactor design, water disinfection.*

4. Hayat, K., Ha, S. K., **Sultan, T.,** & Ahmad, Z. (2019). Fatigue Life of Megawatt-Scale Composite Wind Turbine Blades with Shallow-Angled Laminates. *Mechanics of Composite Materials*, 1-12. doi: 10.1007/s11029-019-09827-8.**(Tipu Sultan(Mechanical Engineering/SEN) Web of Science JCR Listed (IF: 0.703)**

   Abstract: The fatigue life of megawatt-scale composite wind turbine blades implemented with shallow-angled laminates is investigated. Full dynamic simulations of a 5-MW 3-bladed horizontal-axis wind turbine were carried out to estimate the incident fatigue loads. The fatigue stress histories experienced by lay up materials were then computed using a finite-element model of the composite blade developed to ply-level details. Thereafter, the fatigue life of blade was estimated considering the 100% availability of the turbine for the site-specific annual wind distribution related to the wind turbine class IB. It is demonstrated that the application of shallow-angled laminates leads to a more durable design.

   Keywords: *composite blades, megawatt-scale wind turbines, fatigue life, shallow-angled laminates.*

5. Ali, A., Nasir, M. A., **Khalid, M. Y.**, Nauman, S., Shaker, K., Khushnood, S., . . . Hussain, A. (2019). Experimental and numerical characterization of mechanical properties of carbon/jute fabric reinforced epoxy hybrid composites. *Journal of Mechanical Science and Technology, 33*(9), 4217-4226. doi: 10.1007/s12206-019-0817-9.**(Muhammad Yasir Khalid (Mechanical Engineering/SEN) Web of Science JCR Listed (IF: 1.221)**

   Abstract: Natural fiber composites have great potential for reducing the product cost, lowering weight and enhancing renewability. Functionality and performance of natural fibers can be enhanced many folds using them together with synthetic fibers. Hybridization of carbon and low-cost natural jute fiber offers a sustainable hybrid composite having high modulus and mechanical strength. This study investigates flexural behavior of carbon/jute epoxy composites experimentally and numerically. Also, impact response is characterized through drop weight method. Study concludes that flexural strength decreases with increase in jute percentage. Simulation of flexural behavior diverges more than 10 % from experimental results. This anomaly is due to waviness of fiber resulting in heterogeneous property distribution in composites. Further,

the fracto-graphic study revealed modes of failure. The drop weight impact tests reveal increased damage area with increase in jute percentage.

Keywords: *CFRP, drop weight test, flexural test, hybrid, numerical simulation.*

6. **Adeeb, E.,** & Sohn, C. H. (2019). Flow and Heat Transfer Characteristics of Cylindrical Structures with Corner Radius Variation: Tandem, SIDE-BY-SIDE, and Flow-Induced Vibration. *Heat Transfer Engineering*, 1-19. doi: 10.1080/01457632.2019.1699293. **(Ehsan Adeeb (Mechanical Engineering) SJR (SKT Campus)**

   Abstract: This study investigates the effects of corner radius variation on thermohydraulic parameters around two equal isothermal square cylinders in tandem and side-by-side arrangements. In particular, a two-dimensional numerical study of unsteady laminar-forced convective heat transfer was conducted for a Reynolds number of 100. The Prandtl number was held constant at 0.71. The ratio of cylinder diameter over corner radius was varied from 0.0 to 0.5 with an increment of 0.1. The thermohydraulic parameters such as Strouhal number, drag coefficient, lift coefficient, and Nusselt number were discussed for various spacing ratios. In side-by-side arrangement, the Nusselt number increased for all corner radii with increasing distance between cylinders. However in tandem arrangement, as distance increased from the wake length of upstream circular cylinders, heat transfer was improved for both bodies. Moreover, the mean Nusselt number for the upstream cylinder approached a single cylinder value, while mean Nusselt number for the downstream cylinder was lower than that of a single cylinder. Furthermore, the flow induced vibration was coupled, which enhanced the heat transfer of a single square cylinder.

   Keywords: *not available.*

7. **Younis, M. R.,** Farooq, M., **Imran, M.,** Kazim, A. H., & Shabbir, A. (2019). Characterization of the viscosity of bio-oil produced by fast pyrolysis of the wheat straw. *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects*, 1-16. doi: 10.1080/15567036.2019.1666181. **(Muhammad Rizwan Younis, Muhammad Imran (Mechanical Engineering) SJR**

   Abstract: The aim of this work is to evaluate the role of viscosity of the organic condensate obtained from fast pyrolysis of wheat straw. Based on the experi- mental data, a model has been developed that is able to adequately describe the viscosity as a function of relevant process parameters. The developed model is helpful to investigate the reduction of heat transfer in the heat exchangers of the organic condensate cycle when glycol is replaced by an organic condensate. Temperature, solid contents, and water contents play a significant role and affect the viscosity of bio-oil. As temperature increases, the viscosity of oil reduces rapidly. Viscosity-temperature profile follows an Arrhenius-type-relationship, where the viscosity of the bio-oil decreases expo- nentially with increasing temperature. As solid content increases, exponential increase of viscosity takes place. However, the increase in water content results in decrease of viscosity on logarithmic scale. The range of water addition in organic condensate is possible up to a certain limit, after certain limit it starts to separate out in two phases. Investigation of reduction of heat transfer in heat exchanger shows that Nusselt number decreases with the increase of viscosity. Therefore, the overall heat transfer coefficient will decrease in case of organic condensate as compared to glycol.

   Keywords: *rheology, fast pyrolysis, wheat straw, viscosity, bio- oil, heat transfer, bioliq.*

8. Farooq, M., Saeed, M. A., **Imran, M.,** Uddin, G. M., Asim, M., **Younis, M. R.,**. . . Andresen, J. M. (2019). CO2 capture through electro-conductive adsorbent using physical adsorption system for sustainable development. *Environmental Geochemistry and Health*. doi: 10.1007/s10653-019-00318-2. **(Muhammad Imran, Muhammad Rizwan Younis, (Mechanical Engineering) SJR**

   Abstract: The most critical energy and environmental challenge that our planet is facing today is to minimize the dependence on fossil fuels. Carbon dioxide may be of utmost significance as a solution of this issue

through realization of carbon neutral energy cycle. Potentially, this could be achieved through the carbon dioxide capture as the urgent response to ongoing climate change. Activated carbon (AC) adsorption is one the most effective, environment friendly and techno-economic process for the carbon capture. In the current research, an electro-conductive-activated carbon was prepared by mixing powdered activated carbon (PAC) with an electro-conductive polymer (ECP). Different ratios of 0, 25, 50, 75 and 100 wt% of ECP with PAC were used for the different analyses of activated carbons in a gas mixture of CO_2/N_2 using a physical adsorption system. Adsorption and desorption analyses, capacities of the process and desorption effects were examined. Electro-conductive polymers (ECP) were mixed with AC samples, where breakthrough time was increased up to 400% when mixed with the PAC for CO_2 adsorption. Following adsorption analysis, desorption of activated carbons was conducted with different potentials. It was revealed that mixing could help the PAC sample to overcome the packing issue to increase the breakthrough capacity and the volumes before and after the breakthrough adsorption in the packed bed systems. The desorption rates of the PAC sample were also enhanced, and fast desorption was observed when mixed with ECP. It is envisioned that this method is very much promising carbon capture method for the techno-economic feasibility and sustainable development of the environment.

Keywords: *activated carbon, carbon capture, electro-conductive polymers, physical adsorption, sustainable development.*

Conference Proceedings

1. Rehman, U. u., Kamal, K., Iqbal, J., & **Sheikh, M. F.** (2019). *Biometric Identification Through ECG Signal Using a Hybridized Approach*. Paper presented at the Proceedings of the 2019 5th International Conference on Computing and Artificial Intelligence, Bali, Indonesia. https://doi.org/10.1145/3330482.3330496. **(Muhammad Fahad Sheikh (Mechanical Engineering) SJR (SKT Campus)**

   Abstract: Automatic identification of individuals using biometric features is an area that has gained high importance nowadays. The paper presents a novel approach for biometric identification through ECG signal using hybridization of different features and Radial Basis Function Neural Network (RBF-NN). Three different features namely ARIMA, Wavelet Entropy, and Sample Entropy are extracted from an ECG dataset. The features are then fed to an RBF-NN to identify different individuals. In the past, these features were used individually for person identification. This paper presents an approach for person identification by hybridization of the above mentioned features. The proposed approach shows promising results with an accuracy of 99.50% to identify 55 individuals correctly.

   Keywords: *biometric identification, electrocardiography, sample entropy, wavelet entropy, radial basis function neural network.*

2. Hussain, M. A., Rehman, U. u., Islam, S. O. B., **Sheikh, M. F.,** & Javaid, A. (2019). *Detection and Classification of Retinal Red Lesions via Regional Spatial Transformations and Neural Network*. Paper presented at the Proceedings of the 2019 5th International Conference on Computing and Artificial Intelligence, Bali, Indonesia. https://doi.org/10.1145/3330482.3330486. **(Muhammad Fahad Sheikh (Mechanical Engineering) SJR (SKT Campus)**

   Abstract: The worldwide loss in human vision is primarily associated with Diabetic Retinopathy (DR). It occurs due to accelerated levels of blood sugar thereby causing perforation, bulging and leakage of retinal blood vessels (BVs). DR commences with the emergence of small blood spots on the retinal surface known as Microaneurysms (MAs) that are subsequently transformed into heavy blood deposits called Hemorrhages (HGs). This paper proposes an optimized and computationally inexpensive digital image processing (DIP) technique for detection and classification of 'Retinal Red Lesions' (RRLs) i.e. MAs and HGs using green channel of the digital fundus images. The basic essence of the proposed technique revolves around regional

spatial transformations detection performed through region based spatial filtering, matching features and neural networks classification. The proposed technique comprises of five main stages i.e. Pre-processing, Regional Spatial Transformations, Optimization, Features extraction and Classification. Speed Up Robust Features (SURF) algorithm has been used for features selection & extraction while Feed-forward Back-propagation Artificial Neural Network (FFBP ANN) has been used for classification. The proposed technique has been successfully applied on commercially available digital fundus image data-set and has yielded 98.4% 'Sensitivity' (SE), 94% 'Specificity' (SP) and 98% 'Accuracy' (AC). The SE, SP and AC have also been compared with other RRLs detection methods and has shown highly promising and encouraging results.

Keywords: *retinal red lesions, diabetic retinopathy, regional spatial.*

3. Arslan, M., Kamal, K., **Fahad, M.,** Mathavan, S., & Khan, M. A. (2019). *Automated Machine Tool Prognostics for Turning Operation using Acoustic Emission and Learning Vector Quantization.* Paper presented at the 2019 5th International Conference on Control, Automation and Robotics (ICCAR). **(Muhammad Fahad Sheikh (Mechanical Engineering) SJR (SKT Campus)**

   Abstract: Computer Numeric Control (CNC) machines are vital need of every manufacturing industry from small to large scale. Machine breakdown time or bad machining costs significantly with respect to time, quality and possible human labor injury that can be avoided by devising automated machine and tool condition monitoring systems to adapt automated preventive maintenance. This research is envisioned to device online tool condition monitoring system for CNC machine using airborne acoustic emission; a cheap yet highly accurate tool state prognostic scheme. Learning Vector Quantization (LVQ) neural network is trained on seven statistical features for two different types of machining materials (Aluminum and Mild Steel) with Carbide tool tip. Training accuracies of 95.33% and 94.33% are achieved with the proposed design for the two trails. The experimentation delivered promising industrial oriented performance scores with an efficient applicability.

   Keywords: *CNC machine, LVQ, airborne AE, new tool, used tool, worn-out tool.*

School of Systems and Technology (SST)

Department of Computer Science

Research Articles

1. **Butt, A. H., Rasool, N., & Khan, Y. D.** (2019). Prediction of antioxidant proteins by incorporating statistical moments based features into Chou's PseAAC. *Journal of Theoretical Biology, 473*, 1-8. doi: 10.1016/j.jtbi.2019.04.019.**(Ahmad Hassan Butt, Yaser Daanial Khan(Computer Science/SST), Nouman Rasool(Life Sciences/SSC) Web of Science JCR Listed(IF: 1.875)**

   Abstract: Antioxidant proteins are considered crucial in the areas of research on life sciences and pharmacology. They prevent damage to cells and DNA which are caused by free radicals. The role of antioxidants in the ageing process makes them more significant in their accurate identification. Disease preventions through antioxidant protein have also been the area of study in recent past. The existing process to identify and test every single antioxidant protein in order to obtain its properties is inefficient and expensive. Due to this nature, many pharmaceutical agents have reflected antioxidant proteins as attractive targets. Approaches based on computational methodologies have appeared to be as a highly desirable resource in the annotation and determination process of antioxidant proteins. In this study, we have developed a method that is built on computation intelligence and statistical moments based features for prediction. Our proposed system has achieved better accuracy than state-of-art systems in the prediction of antioxidant proteins from non-antioxidant proteins using 10-fold-cross-validation tests. These outcomes

suggest that the use of statistical moments with a multilayer neural network could bear more effective and efficient results.

Keywords: *antioxidant proteins, neural networks, 10-fold-cross-validation, PseAAC, Chou's 5-step-rule, statistical moments.*

2. Halim, Z., & **Khan, S**. (2019). A data science-based framework to categorize academic journals. *Scientometrics, 119*(1), 393-423. doi: 10.1007/s11192-019-03035-w.**(Shafaq Khan (Computer Science/SST) Web of Science JCR Listed(IF: 2.770)**

Abstract: Academic journals play a significant role in the dissemination of new research insights and knowledge among scientists. The number of such journals has recently increased significantly. Scientists prefer to publish their scholarly work at reputed venues. Speed of publication is also an import factor considered by many while selecting a publication venue. To evaluate a journal's quality, few of the key indicators include impact factor, Source Normalized Impact per Paper (SNIP), and Hirsch index (h-index). Journals' ranking is an indication of their impact and quality with respect to other venues in a specific discipline. Various measures can be utilized for ranking, like, field specific statistics, intra discipline ranking, or a combination of both. Earlier, the journals' ranking was done through a manual process by providing an institutional list created by academic leaders. Factors like politicization, biases, and personal interests were the key issues with such categorization. Later, the process evolved to a database system based on impact factor, SNIP (Source Normalized Impact per Paper), h-index, or any combination of these. All this demanded an external source of categorizing academic journals. This work presents a data science-based framework that evaluates journals based on their key bibliometric indicators and presents an automated approach to categorize them. For this, the current proposal is restricted to the journals published in the computer science domain. The journal's features considered in the proposed framework include: publisher, impact factor, website, CiteScore, SJR (SCImago Journal & Country Rank), SNIP, h-index, country, age, cited half-life, immediacy factor/index, Eigenfactor score, article influence score, open access, percentile, citations, acceptance rate, peer review, and the number of articles published yearly. A dataset is collected for 660 journals consisting of these 19 features. The dataset is preprocessed to fill-in the missing values and perform scaling. Three feature selection techniques, namely, Mutual Information (MI), minimum Redundancy Maximum Relevance (mRMR), and Statistical Dependency (SD) are used to rank the aforementioned features. The dataset is then vertically divided into three sets, all features, top nine features, and bottom ten features. Later, two clustering techniques, namely, k-means and k-medoids are employed to find the optimum number of coherent groups in the dataset. Based on a rigorous evaluation, four groups of journals are identified. It is followed by training two classifiers, i.e., k-NN (Nearest Neighbor) and Artificial Neural Network (ANN) to predict the category of an unknown journal. Where, the ANN shows an average accuracy of 82.85%. A descriptive analysis of the clusters formed is also presented to gain insights about the four journal categories. The proposed framework provides an opportunity to independently categorize academic journals based on data science methods using multiple significant bibliometric indicators.

Keywords: *journals categorization, ranking, data science, clustering application.*

3. **Hussain, W.**, **Khan, Y. D.**, Rasool, N., Khan, S. A., & Chou, K. C. (2019a). SPalmitoylC-PseAAC: A sequence-based model developed via Chou's 5-steps rule and general PseAAC for identifying S-palmitoylation sites in proteins. *Analytical Biochemistry, 568*, 14-23. doi: 10.1016/j.ab.2018.12.019.**(Waqar Hussain, Yaser Daanial Khan(Computer Science /SST) Web of Science JCR Listed(IF: 2.507)**

Abstract: The protein prenylation (or S-prenylation) is one of the most essential modifications, required for the association of membrane of a plethora of signalling proteins with the key biological process such as protein trafficking, cell growth, proliferation and differentiation. Due to the ubiquitous nature of S-

prenylation and its role in cellular functions, any defect in the biosynthesis or regulation of the isoprenoid leads to the occurrence of a variety of diseases including neurodegenerative disorders, metabolic issues, cardiovascular diseases and one of the most fatal diseases, cancer. This depicts the strong biological significance of S-prenylation, thus, the timely and accurate identification of S-prenylation sites is crucial and may provide with possible ways to understand the mechanism of this modification in proteins. To avoid laborious, resource demanding and expensive experimental techniques of identifying S-prenylation sites, here, we propose a novel predictor namely SPrenylC-PseAAC by integrating the Chou's Pseudo Amino Acid Composition (PseAAC) and relative/absolute position-based features. A 2-tier classification was performed i.e., at first level, identification of prenylation and non-prenylation sites is performed, while at the second level, identification of S-farnesylation and S-geranylgeranylation sites is performed. Using jackknife, perdition model validation gave 95.31% accuracy for tier-1 classification and 91.42% for tier 2 classification, while for 10-fold cross-validation, it gave 93.68% accuracy for tier-1 classification and 89.70% for tier 2 classification. Thus the proposed predictor can help in predicting the Prenylation sites in an efficient and accurate way. The SPrenylC-PseAAC is available at (biopred.org/prenyl).

Keywords: *S-prenylation, S-prenyl cysteine, PseAAC5-step rule, statistical moments, prediction.*

4. **Hussain, W., Khan, Y. D., Rasool, N.**, Khan, S. A., & Chou, K. C. (2019b). SPrenylC-PseAAC: A sequence-based model developed via Chou's 5-steps rule and general PseAAC for identifying S-prenylation sites in proteins. *Journal of Theoretical Biology, 468*, 1-11. doi: 10.1016/j.jtbi.2019.02.007.**(Waqar Hussain, Yaser Daanial Khan(Computer Science /SST), Nouman Rasool(Life Sciences/SSC) Web of Science JCR Listed (IF: 1.875)**

   Abstract: S-Pahnitoylation is a uniquely reversible and biologically important post-translational modification as it plays an essential role in a variety of cellular processes including signal transduction, protein-membrane interactions, neuronal development, lipid raft targeting, subcellular localization and apoptosis. Due to its association with the neuronal development, it plays a pivotal role in a variety of neurodegenerative diseases, mainly Alzheimer's, Schizophrenia and Huntington's disease. It is also essential for developmental life cycles and pathogenesis of Toxoplasma gondii and Plasmodium falciparum, known to cause toxoplasmosis and malaria, respectively. This depicts the strong biological significance of S-Palmitoylation, thus, the timely and accurate identification of S-palmitoylation sites is crucial. Herein, we propose a predictor for S-Palmitoylation sites in proteins namely SPalmitoylC-PseAAC by integrating the Chou's Pseudo Amino Acid Composition (PseAAC) and relative/absolute position-based features. Self-consistency testing and 10-fold cross-validation are performed to evaluate the performance of SPalmitoylC-PseAAC, using accuracy metrics. For self-consistency testing, 99.79% Acc, 99.77% Sp, 99.80% Sn and 1.00 MCC was observed, whereas, for 10-fold cross validation 97.22% Acc, 98.85% Sp, 95.80% Sn and 0.94 MCC was observed. Thus the proposed predictor can help in predicting the palmitoylation sites in an efficient and accurate way. The SPalmitoylC-PseAAC is available at (biopred.org/palm).

   Keywords: *S-palmitoylation, S-palmitoyl cysteine, PseAAC5-step rule, statistical moments, prediction.*

5. Khan, S. A., **Khan, Y. D.,** Ahmad, S., & Allehaibi, K. H. (2019). N-MyristoylG-PseAAC: Sequence-based Prediction of N-Myristoyl Glycine Sites in Proteins by Integration of PseAAC and Statistical Moments. *Letters in Organic Chemistry, 16*(3), 226-234. doi: 10.2174/1570178616666181217153958.**(Yaser Daanial Khan(Computer Science /SST) Web of Science JCR Listed(IF: 0.723)**

   Abstract: N-Myristoylation, an irreversible protein modification, occurs by the covalent attachment of myristate with the N-terminal glycine of the eukaryotic and viral proteins, and is associated with a variety of pathogens and disease-related proteins. Identification of myristoylation sites through experimental mechanisms can be costly, labour associated and time-consuming. Due to the association of N-myristoylation with various diseases, its timely prediction can help in diagnosing and controlling the associated fatal

diseases. Herein, we present a method named N-MyristoylG-PseAAC in which we have incorporated PseAAC with statistical moments for the prediction of N-Myristoyl Glycine (NMG) sites. A benchmark dataset of 893 positive and 1093 negative samples was collected and used in this study. For feature vector, various position and composition relative features along with the statistical moments were calculated. Later on, a back propagation neural network was trained using feature vectors and scaled conjugate gradient descent with adaptive learning was used as an optimizer. Self-consistency testing and 10-fold cross-validation were performed to evaluate the performance of N-MyristoylG-PseAAC, by using accuracy metrics. For self-consistency testing, 99.80% Acc, 99.78% Sp, 99.81% Sn and 0.99 MCC were observed, whereas, for 10-fold cross validation, 97.18% Acc, 98.54% Sp, 96.07% Sn and 0.94 MCC were observed. Thus, it was found that the proposed predictor can help in predicting the myristoylation sites in an efficient and accurate way.

Keywords: *5-step rule, N-Myristoyl Glycine, N-Myristoylation, PseAAC, prediction, statistical moments.*

6. **Khan, Y. D., Batool, A., Rasool, N.,** Khan, S. A., & Chou, K. C. (2019). Prediction of Nitrosocysteine Sites Using Position and Composition Variant Features. *Letters in Organic Chemistry, 16*(4), 283-293. doi: 10.2174/1570178615666180802122953.**(Yaser Daanial Khan, Aroosa Batool(Computer Science /SST), Nouman Rasool(Life Sciences/SSC) Web of Science JCR Listed(IF: 0.723)**

Abstract: S-nitrosylation is one of the most prominent posttranslational modification among proteins. It involves the addition of nitrogen oxide group to cysteine thiols forming S-nitrosocysteine. Evidence suggests that S-nitrosylation plays a foremost role in numerous human diseases and disorders. The incorporation of techniques for robust identification of S-nitrosylated proteins is highly anticipated in biological research and drug discovery. The proposed system endeavors a novel strategy based on a statistical and computational intelligent methods for the identification of S-nitrosocystiene sites within a given primary protein sequence. For this purpose, 5-step rule was approached comprising of benchmark dataset creation, mathematical modelling, prediction, evaluation and web-server development. For position relative feature extraction, statistical moments were used and a multilayer neural network was trained adapting Gradient Descent and Adaptive Learning algorithms. The results were comparatively analyzed with existing techniques using benchmark datasets. It is inferred through conclusive experimentation that the proposed scheme is very propitious, accurate and exceptionally effective for the prediction of S-nitrosocystiene in protein sequences.

Keywords: *5-step rule, nitrosocystiene, neural network, prediction model, ribosome, statistical moments.*

7. **Khan, Y. D., Jamil, M., Hussain, W., Rasool, N.,** Khan, S. A., & Chou, K. C. (2019). pSSbond-PseAAC: Prediction of disulfide bonding sites by integration of PseAAC and statistical moments. *Journal of Theoretical Biology , 463*, 47-55. doi: 10.1016/j.jtbi.2018.12.015.**(Yaser Daanial Khan, Mehreen Jamil, Waqar Hussain (Computer Science /SST), Nouman Rasool(Life Sciences/SSC) Web of Science JCR Listed(IF: 1.875)**

Abstract: The structure of protein gains additional stability against various detrimental effects by the presence of disulfide bonds. The formation of correct disulfide bonds between cysteine residues ensures proper in vivo and in vitro folding of the protein. Many cysteine residues can be present in the polypeptide chain of a protein, however, not all cysteine residues are involved in the formation of a disulfide bond, and therefore, accurate prediction of these bonds is crucial for identifying biophysical characteristics of a protein. In the present study, a novel method is proposed for the prediction of intramolecular disulfide bonds accurately using statistical moments and PseAAC. The pSSbond-PseAAC uses PseAAC along with position and composition relative features to calculate statistical moments. Statistical moments are important as they are very sensitive regarding the position of data sequences and for prediction of intramolecular disulfide bonds, moments are combined together to train neural networks. The overall accuracy of the pSSbond-PseAAC is 98.97% to sensitivity value 98.92%, specificity 98.99% and 0.98 MCC; and it outperforms various previously reported studies.

Keywords: *5-step rule, neural networks, position relative features, 10-fold cross validation.*

8. Shahzad, K., Nawab, R. M. A., **Abid, A.,** Sharif, K., **Ali, F.,** Aslam, F., & Mazhar, A. (2019). A Process Model Collection and Gold Standard Corresponding for Process Model Matching. *Ieee Access, 7*, 30708-30723. doi: 10.1109/access.2019.2900174.**(Adnan Abid , Faizan Ali (Computer Science /SST) Web of Science JCR Listed (IF: 4.098)**

   Abstract: Business process models are the conceptual models to depict the workflow of an organization. Process model matching (PMM) refers to the automatic identification of corresponding activities between a pair of process models that show similar or the same behavior. During the last few years, PMM has received much of the researchers' attention due to its wide range of applications, such as clone detection and harmonization of process models. Consequently, a plethora of PMM techniques has been developed. In order to evaluate the effectiveness of these techniques, experts have developed three benchmark datasets, formally called PMMC' 15 datasets. Furthermore, the process models in the datasets have been converted into OAEI'17 ontologies. These resources are a valuable asset for the PMM community to evaluate process model matching techniques. However, these resources (PMMC' 15 and OAEI' 17) are limited to fewer models and a handful collection of corresponding activities among these models that may not be sufficient to rigorously evaluate the PMM techniques. To fill this gap, this paper provides a large, diverse, and a carefully handcrafted collection of process models, along with their benchmark correspondences. The process model collection and benchmark correspondences between these models are freely available for the community [1]. Our newly developed dataset, together with the existing resources, can be used for a thorough evaluation of PMM techniques, especially in the context of the vocabulary mismatch problem. At last, we have evaluated the characteristics of our dataset by a series of experiments while involving widely used similarity measures in PMM research. The results reveal that our dataset is larger, diverse, and challenging as compared to existing datasets in the PMM domain.

   Keywords: *modeling resources, benchmark corpus, process model matching, benchmark correspondences, corpus annotations.*

9. **Zahid, A. H**., Arshad, M. J., & Ahmad, M. (2019). A Novel Construction of Efficient Substitution-Boxes Using Cubic Fractional Transformation. *Entropy, 21*(3). doi: 10.3390/e21030245.**(Amjad Hussain Zahid (Computer Science/SST) Web of Science JCR Listed(IF: 2.419)**

   Abstract: A symmetric block cipher employing a substitution-permutation duo is an effective technique for the provision of information security. For substitution, modern block ciphers use one or more substitution boxes (S-Boxes). Certain criteria and design principles are fulfilled and followed for the construction of a good S-Box. In this paper, an innovative technique to construct substitution-boxes using our cubic fractional transformation (CFT) is presented. The cryptographic strength of the proposed S-box is critically evaluated against the state of the art performance criteria of strong S-boxes, including bijection, nonlinearity, bit independence criterion, strict avalanche effect, and linear and differential approximation probabilities. The performance results of the proposed S-Box are compared with recently investigated S-Boxes to prove its cryptographic strength. The simulation and comparison analyses validate that the proposed S-Box construction method has adequate efficacy to generate efficient candidate S-Boxes for usage in block ciphers.

   Keywords: *substitution box, cubic fractional transformation, block ciphers, security.*

10. Malik, N., Khan, H. U., **Ramzan, M.,** Faisal, M. S., & Mahmood, A. (2019). Finding Attractive Research Areas for Young Scientists. *International Journal of Advanced Computer Science and Applications, 10*(3), 458-462. **(Muhammad Ramzan (Computer Science/SST) SJR**

Abstract: The selection of the research area is very vital for new researchers. One of the major issues for researchers is the selection of the domain of research on which he/she can carry out research. This case is very vital on the grounds that it decides the future of the researchers in that research area. Finding hot and attractive research areas is not considered in the relevant literature of Scientometrics. In this regard, the correct decision of the selection of the research domain helps the researchers to show better performance as well gain a good academic career. The main aim of this research study is to figure out the attractive research areas for the researchers, especially who are at the starting stage of their research life. To the best of our knowledge, this research area is still very limited due to limited work done in this area. So in order to distinguish the attractive research field for the new researchers, new rising fields are identified by applying the well-known g-index, which is widely used for finding the top authors in academic networks. In addition, we compute diverse, relevant features of the research fields which help us to identify top research area. The results demonstrate that the proposed methodology is capable to recommend the attractive research fields for potential future research work An extensive empirical analysis has been carried out using the widely used academic database of DBLP.

Keywords: *research field, scientometrics, attractive areas, gindex.*

11. **Ramzan, M.,** Khan, H. U., **Awan, S. M.,** Ismail, A., Ilyas, M., & Mahmood, A. (2019). A Survey on State-of-the-Art Drowsiness Detection Techniques. *Ieee Access, 7*, 61904-61919. doi: 10.1109/access.2019.2914373. **(Muhammad Ramzan, Shahid Mahmood Awan(Computer Science/SST) Web of Science JCR Listed (IF: 4.098)**

Abstract: Drowsiness or fatigue is a major cause of road accidents and has significant implications for road safety. Several deadly accidents can be prevented if the drowsy drivers are warned in time. A variety of drowsiness detection methods exist that monitor the drivers' drowsiness state while driving and alarm the drivers if they are not concentrating on driving. The relevant features can be extracted from facial expressions such as yawning, eye closure, and head movements for inferring the level of drowsiness. The biological condition of the drivers' body, as well as vehicle behavior, is analyzed for driver drowsiness detection. This paper presents a comprehensive analysis of the existing methods of driver drowsiness detection and presents a detailed analysis of widely used classification techniques in this regard. First, in this paper, we classify the existing techniques into three categories: behavioral, vehicular, and physiological parameters-based techniques. Second, top supervised learning techniques used for drowsiness detection are reviewed. Third, the pros and cons and comparative study of the diverse method are discussed. In addition, the research frameworks are elaborated in diagrams for better understanding. In the end, overall research findings based on the extensive survey are concluded which will help young researchers for finding potential future work in the relevant field.

Keywords: *digital image processing, driver drowsiness, sensors, fatigue detection, supervised learning, classification, support vector machine (SVM).*

12. **Shaheen, M., Anees, T., Manzoor, M. I.,** Akbar, S., Obaid, I., & Anum, A. (2019). How Volunteering affects the Offender's Behavior Agent-based Modelling and Simulation. *International Journal of Advanced Computer Science and Applications, 10*(4), 430-439. **(Momina Shaheen, Tayyaba Anees, Muhammad Imran Manzoor (Computer Science/SST) SJR**

Abstract: Agent Based modelling is widely used for presenting and evaluating a social phenomenon. Agent based modelling helps the researcher to analyze and evaluate a social model and its related hypothetical theories by simulating a real situation. This research presents a model for showing the behavior of an offender that is greatly influenced by volunteering of people on the offending tendencies. It is observed that how the offending behavior of someone urges others to do the same criminal act or violation of norms. And how can volunteering make the offender feel shameful of his doings and motivate others to volunteer in

likewise situation in future. An agent based Model is presented and simulated to evaluate and validate the conceptualization of presented social dilemma. This model is simulated by asking some questions with exacting focus on the offending behavior of an agent. This study evaluates all the simulated results from the presented model to describe theoretical foundation spreading of offending or criminal behavior. Moreover, it validates the role of volunteering in the decrement of offending tendencies of the people as it presents an understandable situation in which offending of someone increases the offending tendencies of audience. Moreover the results of this research show that the volunteering decreases the offending tendencies of not just offender but also of the audience.

Keywords: *offender's behavior, spreading of criminal behavior, agent-based modelling, simulation, norm violation, criminology.*

13. Asghar, K., Sadddique, M., ul Haq, I., **Nawaz-ul-Ghani, M. A.,** & Ali, G. (2019). Stacked Support Vector Machine Ensembles for Cross-Culture Emotions Classification. *International Journal of Computer Science and Network Security, 19*(7), 23-30.**(M. Ahmad Nawaz-ul-Ghani (Computer Science/SST)** **Master Journal List**

Abstract: Facial expressions play a main role in representing the human's internal emotional state in social communication, but the scope to which they are universal and culture reliant is a subject of discussion. In this paper, we introduced the Stacked Support Vector Machine Ensembles (SVMEs) for cross-culture emotions classification. A pool of SVM ensembles is stacked to learn the cross-culture emotions. The SVM ensemble is a collection of a set of support vector machines. The outcomes of support vector machines were tied to the probability distribution across the support vector machine ensembles. The fmal decision about the presence of an emotion is made by naive Bayes predictor. The cross-cultural facial images from JAFFE, TFEID, KDEF, CK+ and RadBoud databases are combined to develop the multi-culture dataset. The participants of multi-culture database originate from following geography and ethnicity: Japanese, Taiwanese, Caucasians, Moroccans, Swedish, Asians, Northern Europeans, Euro-American, and Afro-American. The experimental results and inter-expression resemblance analysis demonstrate that the proposed ensemble approach performs significantly better than the stat-of-the-art ensemble techniques.

Keywords: *support vector machine ensemble, facial expression classification, boosted ensemble classifier, universal emotions classification.*

14. **Habib, S.,** & Akram, M. (2019). Medical decision support systems based on Fuzzy Cognitive Maps. *International Journal of Biomathematics, 12*(6). doi: 10.1142/s1793524519500694.**(Shaista Habib (Computer Science/SST)** **Web of Science JCR Listed (IF: 0.894)**

Abstract: This paper determines the risk for cardiovascular diseases (CVDs), and nutrition level in infants aged 0-6 months using Fuzzy Cognitive Maps (FCMs). The aim of this study is to facilitate the medical experts to early detects these diseases with accuracy, so that overall death ratio can be reduced. Firstly, we have introduced the concepts of FCMs and briefly refer to the applications of these methods in medical. After that, two intelligent decision support systems for cardiovascular and malnutrition are developed using FCMs. The proposed cardiovascular risk assessment system takes six inputs: chest pain, cholesterol, heart rate, blood pressure, blood sugar, and old peak and determines CVDs risk. The second decision support system of malnutrition diagnosis takes twelve inputs: breastfeeding, daily income, maternal education, colostrum intake, energy intake, protein intake, vitamin A intake, iron intake, family size, height, weight, head circumference, and skin fold thickness and diagnoses the nutrition level in infants. We have explained the working of both decision support systems using case studies.

Keywords: *fuzzy sets, fuzzy cognitive maps, algorithm, time complexity, cardiovascular diseases, malnutrition.*

15. **Ramzani, M., Awan, S. M.,** Aldabbas, H., **Abid, A.,** Farhan, M., Khalid, S., & Latif, R. M. A. (2019). Internet of medical things for smart D3S to enable road safety. *International Journal of Distributed Sensor Networks, 15*(8). doi: 10.1177/1550147719864883.**(Muhammad Ramzan, Shahid Mahmood Awan, Adnan Abid (Computer Science/SST)** **Web of Science JCR Listed (IF: 1.614)**

Abstract: It has been seen that most of the accidents occur due to driver's fatigue. Drowsiness is a state of mind before the driver falls asleep, which means the driver could not accomplish his actions, such as vehicular braking, controlling vehicular motion, properly. We have built an Internet of things-based medical application to analyze driver's drowsiness. An architecture has been proposed and a simulation of that scenario in NS3 WSN simulation tool has been done. This simulation shows that the ratio of accidents can be majorly reduced. When drowsiness of drivers is captured, a message alert is delivered to all other drivers of the vehicles that are near to the sleeping driver; for this, different sensor nodes are used. Another unique feature of the sensor network used here is the collaborative effect of sensor nodes. So for measurement and analysis of applications on Google Play, a dataset of the medical applications category was scraped. The scraping was done with 550 applications of each category of medical applications. On each application on Google Play store, almost 70 attributes for each category were scraped. It is envisioned that, in future, wireless sensor networks will be an integral part of our lives, more so than the present-day personal computers.

Keywords: *driver's drowsiness detection system (d3s), vehicular motion, internet of medical things, wireless sensor networks, google play store, healthcare, scraping.*

16. Barukab, O., Khan, **Y. D., Khan,** S. A., & Chou, K. C. (2019). iSulfoTyr-PseAAC: Identify Tyrosine Sulfation Sites by Incorporating Statistical Moments via Chou's 5-steps Rule and Pseudo Components. *Current Genomics, 20*(4), 306-320. doi: 10.2174/1389202920666190819091609.**(Yaser Daanial Khan (Computer Science/SST)** **Web of Science JCR Listed (IF: 2.174)**

Abstract: Background: The amino acid residues, in protein, undergo post-translation modification (PTM) during protein synthesis, a process of chemical and physical change in an amino acid that in turn alters behavioral properties of proteins. Tyrosine sulfation is a ubiquitous posttranslational modification which is known to be associated with regulation of various biological functions and pathological processes. Thus its identification is necessary to understand its mechanism. Experimental determination through site-directed mutagenesis and high throughput mass spectrometry is a costly and time taking process, thus, the reliable computational model is required for identification of sulfotyrosine sites. Methodology: In this paper, we present a computational model for the prediction of the sulfotyrosine sites named iSulfoTyr-PseAAC in which feature vectors are constructed using statistical moments of protein amino acid sequences and various position/composition relative features. These features arc incorporated into PseAAC. The model is validated by jackknife, cross-validation, self-consistency and independent testing. Results: Accuracy determined through validation was 93.9.3% for jackknife test, 95.16% for cross validation, 94.3% for self-consistency and 94.3% for independent testing. Conclusion: The proposed model has better performance as compared to the existing predictors, however, the accuracy can he improved further, in future, due to increasing number of sulfotyrosine sites in proteins.

Keywords: *sulfation, sulfotyrosine, statistical moments, PseAAC, 5-step rule, pseudo components.*

17. Ejaz, W., Azam, M. A., Saadat, S., Iqbal, F., & **Hanan, A.** (2019). Unmanned Aerial Vehicles Enabled IoT Platform for Disaster Management. *Energies, 12*(14). doi: 10.3390/en12142706.**(Abdul Hanan (Computer Science/SST)** **Web of Science JCR Listed (IF: 2.707)** **(SKT Campus)**

Abstract: Efficient and reliable systems are required to detect and monitor disasters such as wildfires as well as to notify the people in the disaster-affected areas. Internet of Things (IoT) is the key paradigm that can

address the multitude problems related to disaster management. In addition, an unmanned aerial vehicles (UAVs)-enabled IoT platform connected via cellular network can further enhance the robustness of the disaster management system. The UAV-enabled IoT platform is based on three main research areas: (i) ground IoT network; (ii) communication technologies for ground and aerial connectivity; and (iii) data analytics. In this paper, we provide a holistic view of a UAVs-enabled IoT platform which can provide ubiquitous connectivity to both aerial and ground users in challenging environments such as wildfire management. We then highlight key challenges for the design of an efficient and reliable IoT platform. We detail a case study targeting the design of an efficient ground IoT network that can detect and monitor fire and send notifications to people using named data networking (NDN) architecture. The use of NDN architecture in a sensor network for IoT integrates pull-based communication to enable reliable and efficient message dissemination in the network and to notify the users as soon as possible in case of disastrous situations. The results of the case study show the enormous impact on the performance of IoT platform for wildfire management. Lastly, we draw the conclusion and outline future research directions in this field.

Keywords: *internet of things, 5G and beyond networks, named data networks, wildfire management.*

18. **Ilyas, S., Hussain, W., Ashraf, A., Khan, Y. D.,** Khan, S. A., & Chou, K. C. (2019). iMethylK-PseAAC: Improving Accuracy of Lysine Methylation Sites Identification by Incorporating Statistical Moments and Position Relative Features into General PseAAC via Chou's 5-steps Rule. *Current Genomics, 20*(4), 275-292. doi: 10.2174/1389202920666190809095206.**(Sarah Ilyas, Waqar Hussain, Adeel Ashraf, Yaser Daanial Khan (Computer Science/SST) Web of Science JCR Listed (IF: 2.174)**

Abstract: Background: Methylation is one of the most important post-translational modifications in the human body which usually arises on lysine among the most intensely modified residues. It performs a dynamic role in numerous biological procedures, such as regulation of gene expression, regulation of protein function and RNA processing. Therefore, to identity lysine methylation sites is an important challenge as some experimental procedures are time-consuming. Objective: Herein, we propose a computational predictor named iMethylK-PseAAC to identify lysine methylation sites. Methods: Firstly, we constructed feature vectors based on PseAAC using position and composition relative features and statistical moments. A neural network is trained based on the extracted features. The performance of the proposed method is then validated using cross-validation and jackknife testing. Results: The objective evaluation of the predictor showed accuracy of 96.7% for self-consistency, 91.61 A, for 10-fold cross-validation and 93.42% for jackknife testing. Conclusion: It is concluded that iMethylK-PseAAC outperforms the counterparts to identify lysine methylation sites such as iMethyl-PseACC, BPB-PPMS and PMeS.

Keywords: *methylation, lysine methylation, PseAAC, statistical moments, 5-steps rule, prediction.*

19. Naz, M., Zafar, K., & **Khan, A.** (2019). Ensemble Based Classification of Sentiments Using Forest Optimization Algorithm. *Data, 4*(2). doi: 10.3390/data4020076.**(Ayesha Khan (Computer Science/SST) SJR**

Abstract: Feature subset selection is a process to choose a set of relevant features from a high dimensionality dataset to improve the performance of classifiers. The meaningful words extracted from data forms a set of features for sentiment analysis. Many evolutionary algorithms, like the Genetic Algorithm (GA) and Particle Swarm Optimization (PSO), have been applied to feature subset selection problem and computational performance can still be improved. This research presents a solution to feature subset selection problem for classification of sentiments using ensemble-based classifiers. It consists of a hybrid technique of minimum redundancy and maximum relevance (mRMR) and Forest Optimization Algorithm (FOA)-based feature selection. Ensemble-based classification is implemented to optimize the results of individual classifiers. The Forest Optimization Algorithm as a feature selection technique has been applied to various classification datasets from the UCI machine learning repository. The classifiers used for ensemble

methods for UCI repository datasets are the k-Nearest Neighbor (k-NN) and Naive Bayes (NB). For the classification of sentiments, 15-20% improvement has been recorded. The dataset used for classification of sentiments is Blitzer's dataset consisting of reviews of electronic products. The results are further improved by ensemble of k-NN, NB, and Support Vector Machine (SVM) with an accuracy of 95% for the classification of sentiment tasks.

Keywords: *feature subset selection, classification, ensemble, evolutionary algorithms, data mining, sentiment analysis.*

20. **Ramzan, M., Abid, A.,** Khan, H. U., **Awan, S. M.,** Ismail, A., Ahmed, M., . . . Mahmood, A. (2019). A Review on State-of-the-Art Violence Detection Techniques. *Ieee Access, 7*, 107560-107575. doi: 10.1109/access.2019.2932114.**(Muhammad Ramzan, Adnan Abid, Shahid Mahmood Awan(Computer Science/SST) Web of Science JCR Listed (IF: 4.098)**

Abstract: With the rapid growth of surveillance cameras to monitor the human activity demands such system which recognize the violence and suspicious events automatically. Abnormal and violence action detection has become an active research area of computer vision and image processing to attract new researchers. The relevant literature presents different techniques for detection of such activities from the video proposed in the recent years. This paper reviews various state-of-the-art techniques of violence detection. In this paper, the methods of detection are divided into three categories that is based on classification techniques used: violence detection using traditional machine learning, using support vector machine (SVM), and using deep learning. The feature extraction techniques and object detection techniques of the each single method are also presented. Moreover, datasets and video features that used in the techniques, which play a vital role in recognition process are also discussed. For better understanding, the steps of the research approaches have been presented in an architecture diagram. The overall research findings have been discussed which may be helpful for finding the potential future work in this research domain.

Keywords: *violence detection, violent behavior, support vector machine, deep learning, machine learning, surveillance camera, computer vision.*

21. **Suleman, M. T., & Awan, S. M.** (2019). Optimization of URL-Based Phishing Websites Detection through Genetic Algorithms. *Automatic Control and Computer Sciences, 53*(4), 333-341. doi: 10.3103/s0146411619040102.**(Muhammad Taseer Suleman, Shahid Mahmood Awan (Computer Science/SST) SJR**

Abstract: Website phishing is an online crime for obtaining secret information such as passwords, account numbers, and credit card details. Attackers lure users through attractive hyperlinks, in order to, redirect to the fake websites. Phishing detection through a machine-learning approach has become quite effective nowadays. In this research, the Uniform Resource Locator (URL) based phishing detection approach has been used. Machine-learning classifiers like Naive Bayes, Iterative Dichotomiser-3 (ID3), K-Nearest Neighbor (KNN), Decision Tree and Random Forest used for the classification of legitimate and illegitimate websites. This classification would help in the detection of phishing websites. However, it has been observed that use of Genetic Algorithms (GAs) for feature selection can improve the detection accuracy. Our experimental results portrayed the use of Iterative Dichotomiser-3 (ID3) along with Yet Another Generating Genetic Algorithm (YAGGA) improves the detection accuracy up to 95%.

Keywords: *phishing, machine learning algorithms, genetic algorithms, URL.*

22. Arooj, A., **Farooq, M. S.,** Umer, T., & Shan, R. U. (2019). Cognitive Internet of Vehicles and disaster management: A proposed architecture and future direction. *Transactions on Emerging Telecommunications*

Technologies, 1-29. doi: 10.1002/ett.3625**.(Muhammad Shoaib Farooq (Computer Science/SST) Web of Science JCR Listed (IF: 1.258)**

Abstract: Abstract Historically, the vehicle has just been a component of the human ambulatory system and slave to the commands of driving force. However, recent advancement in technologies such as 5G wireless systems, cloud/edge computing, machine learning, artificial intelligence, and deep learning have opened the new paradigm of the Cognitive Internet of Vehicles (CIoV). The network of heterogeneous intelligent vehicles, not only having the social interaction capabilities but also have the ability to visualize, capture, and disseminate information to dynamic cognitive engines for identifying and analyzing different patterns and prediction of optimized outcomes. From secure navigation to traffic control, transportation security for pollution control has advocated plausible applications in real-time operations of Internet of Vehicles in humanitarian operations. Proceeding this research, this paper aimed to propose a state-of-the-art architecture based on CIoV for identifying emerging capabilities of available technologies to observe, detect, and mitigate natural disasters, and to develop the CIoV ecosystem for processing the global scale data for intelligent decision making and better service provisioning in natural disaster management.

Keywords: *not available.*

23. Mahboob Alam, T., Iqbal, M. A., Ali, Y., **Wahab, A., Ijaz, S., Imtiaz Baig, T.,** . . . Abbas, Z. (2019). A model for early prediction of diabetes. *Informatics in Medicine Unlocked*, 16, 100204. doi: https://doi.org/10.1016/j.imu.2019.100204.**(Abdul Wahab, Safdar Ijaz, Talha Imtiaz Baig, Muhammad Awais Malik, Muhammad Mehdi Raza, Salman Ibrar, Ayaz Hussain (Computer Science/SST) SJR**

Abstract: Diabetes is a common, chronic disease. Prediction of diabetes at an early stage can lead to improved treatment. Data mining techniques are widely used for prediction of disease at an early stage. In this research paper, diabetes is predicted using significant attributes, and the relationship of the differing attributes is also characterized. Various tools are used to determine significant attribute selection, and for clustering, prediction, and association rule mining for diabetes. Significant attributes selection was done via the principal component analysis method. Our findings indicate a strong association of diabetes with body mass index (BMI) and with glucose level, which was extracted via the Apriori method. Artificial neural network (ANN), random forest (RF) and K-means clustering techniques were implemented for the prediction of diabetes. The ANN technique provided a best accuracy of 75.7%, and may be useful to assist medical professionals with treatment decisions.

Keywords: *association rule mining, artificial neural network (ANN), data mining, diabetes, k-means clustering, random forest.*

24. Ishaq, K., **Abid, A., Farooq, S., Farooq, U., & Ijaz, M.** (2019). Use of Cloud Computing In Higher Education of Pakistan. *International Journal of Innovative Technology and Exploring Engineering (IJITEE), 9*(2). doi: 10.35940/ijitee.B7730.129219.**(Adnan Abid, Shoaib Farooq, Uzma Farooq, Mustansar Ijaz (Computer Science/SST) SJR**

Abstract: Cloud computing is an internet-based service of delivering technology to users and an important technological facility where mutual resources are delivered on demand. Usage of cloud computing in educational Institutions provides students as well as administrative staff an opportunity to access various applications and knowledge swiftly. Its simplicity, upfront-cost, reduced downtime and less management effort make this service acceptable for all fragments of society particularly students and teachers. Despite the fact that the cloud computing technology is very useful, such as ease of access, cost effective. It has various issues like security violations, data confidentiality, data integrity, regional and geographical restrictions over the data. Safe cloud services are required to protect its users from different external threats such as disclosure or loss of data and compromising of users' accounts. Users' understanding about the cloud

computing's advantages, disadvantages and security issues can protect them from potential threats while ensuring its optimal usage in education. In this paper, a survey has been conducted to identify students understanding about the advantages, disadvantages and security issues regarding cloud computing in the educational sector. A sample of 212 respondents from graduate and undergraduate programs was taken to obtain required information. The findings reveal a lack of awareness about the use of cloud computing, its benefits, and security concerns and the implications of this deficiency are critical as multiple issues like outflow of personal data and its loss is faced
by its users which may have adverse social, emotional and professional effects on student's life. Considering the usefulness as well as the sensitivity of cloud computing in educational institutions, Authors propose maximum utilization of cloud computing in educational sector while ensuring the security of its users.
Keywords: *cloud computing, security issues, education, safe technology.*

25. **Farooq, M. S., Riaz, S., Abid, A.,** Abid, K., & Naeem, M. A. (2019). A Survey on the Role of IoT in Agriculture for the Implementation of Smart Farming. *Ieee Access, 7*, 156237-156271. doi: 10.1109/ACCESS.2019.2949703. **(Muhammad Shoaib Farooq ,Shamyla Riaz, Adnan Abid (Computer Science/SST) Web of Science JCR Listed (IF: 4.098)**
Abstract: Internet of things (IoT) is a promising technology which provides efficient and reliable solutions towards the modernization of several domains. IoT based solutions are being developed to automatically maintain and monitor agricultural farms with minimal human involvement. The article presents many aspects of technologies involved in the domain of IoT in agriculture. It explains the major components of IoT based smart farming. A rigorous discussion on network technologies used in IoT based agriculture has been presented, that involves network architecture and layers, network topologies used, and protocols. Furthermore, the connection of IoT based agriculture systems with relevant technologies including cloud computing, big data storage and analytics has also been presented. In addition, security issues in IoT agriculture have been highlighted. A list of smart phone based and sensor based applications developed for different aspects of farm management has also been presented. Lastly, the regulations and policies made by several countries to standardize IoT based agriculture have been presented along with few available success stories. In the end, some open research issues and challenges in IoT agriculture field have been presented.
Keywords: *IoT, smart farming, applications, protocols, network, architecture, platforms, industries, security, challenges, technologies, policies.*

26. **Zahid, A. H.,** & Arshad, M. J. (2019). An innovative design of substitution-boxes using cubic polynomial mapping. *Symmetry, 11*(3), 437. **(Amjad Hussain Zahid (Computer Science/SST) SJR**
Abstract: In this paper, we propose to present a novel technique for designing cryptographically strong substitution-boxes using cubic polynomial mapping. The proposed cubic polynomial mapping is proficient to map the input sequence to a strong 8 × 8 S-box meeting the requirements of a bijective function. The use of cubic polynomial maintains the simplicity of S-box construction method and found consistent when compared with other existing S-box techniques used to construct S-boxes. An example proposed S-box is obtained which is analytically evaluated using standard performance criteria including nonlinearity, bijection, bit independence, strict avalanche effect, linear approximation probability, and differential uniformity. The performance results are equated with some recently scrutinized S-boxes to ascertain its cryptographic forte. The critical analyses endorse that the proposed S-box construction technique is considerably innovative and effective to generate cryptographic strong substitution-boxes.
Keywords: *substitution box, cubic polynomial mapping, block ciphers, security.*

27. Ali, Y., Farooq, A., Alam, T. M., **Farooq, M. S., Awan, M. J., & Baig, T. I.** (2019). Detection of Schistosomiasis Factors Using Association Rule Mining. *Ieee Access, 7*, 186108-186114. doi: 10.1109/ACCESS.2019.2956020. **(Muhammad Shoaib Farooq, Mazhar Javed Awan,Talha Imtiaz Baig(Computer Science/SST) Web of Science JCR Listed (IF: 4.098)**

Abstract: Bilharzia or schistosomiasis is one of the most fatal and factitious disease happens through pollute which become a significant reason of deaths in the world. Prediction and factors identification that become causes of disease in early stage, may escort to treatment before it becomes critical. Data mining techniques are used to assist medical professionals effectively in diseases' classification. This research investigates the recovery and death factors which contributes to schistosomiasis disease preprocessed dataset, collected from Hubei, China. A computerized learning method, association rule mining (Apriori) is used to spot factors. Different tools were used for analysis and model evaluation with minimum support and minimum confidence indicated higher than 90% to generate rules. In addition, attributes indicating recovery and death of individuals were identified. Strong associations of disease factors; BMI, viability, nourishment, extent to ascites etc. determined and classified through Apriori algorithm. Further, results generated by association rule mining method may useful for professionals in treatment decision with better precision.

Keywords: *schistosomiasis, association rule mining (ARM), feature extraction, prediction, recovery, death, data mining.*

28. Ehsan, A., Mahmood, M. K., **Khan, Y. D., Barukab, O. M.,** Khan, S. A., & Chou, K.-C. (2019). iHyd-PseAAC (EPSV): Identifying Hydroxylation Sites in Proteins by Extracting Enhanced Position and Sequence Variant Feature via Chou's 5-Step Rule and General Pseudo Amino Acid Composition. *Current Genomics, 20*(2), 124-133. doi: 10.2174/1389202920666190325162307.(**Yaser Daanial Khan, Omar M. Barukab(Computer Science/SST) Web of Science JCR Listed (IF: 2.174)**

Abstract: Background: In various biological processes and cell functions, Post Translational Modifications (PTMs) bear critical significance. Hydroxylation of proline residue is one kind of PTM, which occurs following protein synthesis. The experimental determination of hydroxyproline sites in an uncharacterized protein sequence requires extensive, time-consuming and expensive tests.
</br> Methods: With the torrential slide of protein sequences produced in the post-genomic age, certain remarkable computational strategies are desired to overwhelm the issue. Keeping in view the composition and sequence order effect within polypeptide chains, an innovative in-silico predictor via a mathematical model is proposed.
</br> Results: Later, it was stringently verified using self-consistency, cross-validation and jackknife tests on benchmark datasets. It was established after a rigorous jackknife test that the new predictor values are superior to the values predicted by previous methodologies.
</br> Conclusion: This new mathematical technique is the most appropriate and encouraging as compared with the existing models.

Keywords: *PseAAC, hydroxylation of proline, post translational modifications (PTMs), sequence-coupling model, mammalian proteins, hydroxyproline.*

29. **Malik, A. M., Hussain, W., Khan, Y. D.,** Rasool, N., Khan, S. A., & Chou, K. (2019). iPhosH-PseAAC: Identify phosphohistidine sites in proteins by blending statistical moments and position relative features according to the Chou's 5-step rule and general pseudo amino acid composition. *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, 1-1. doi: 10.1109/TCBB.2019.2919025**.(Muhammad Awais Malik, Waqar Hussain, Yaser Daanial Khan (Computer Science/SST) Web of Science JCR Listed (IF: 2.896)**

Abstract: Protein phosphorylation is one of the key mechanism in prokaryotes and eukaryotes and is responsible for various biological functions such as protein degradation, intracellular localization, the multitude of cellular processes, molecular association, cytoskeletal dynamics, and enzymatic inhibition/activation. Phosphohistidine (PhosH) has a key role in a number of biological processes, including

central metabolism to signalling in eukaryotes and bacteria. Thus, identification of phosphohistidine sites in a protein sequence is crucial, and experimental identification can be expensive, time-taking and laborious. To address this problem, here, we propose a novel computational model namely iPhosH-PseAAC for prediction of phosphohistidine sites in a given protein sequence using pseudo amino acid composition (PseAAC), statistical moments and position relative features. The results of the proposed predictor are validated through self-consistency testing, 10-fold cross-validation and jackknife testing. The self-consistency validation gave the 100% accuracy, whereas, for cross-validation, the accuracy achieved is 94.26%. Moreover, jackknife testing gave 97.07% accuracy for the proposed model. Thus, the proposed model iPhosH-PseAAC for prediction of iPhosH site has the great ability to predict the PhosH sites in given proteins.

Keywords: *phosphohistidine, phosphorylation, PseAAC, 5-step rule, artificial neural network, statistical moments.*

30. **Mehmood, E., & Anees, T.** (2019). Performance Analysis of Not Only SQL Semi-Stream Join Using MongoDB for Real-Time Data Warehousing. *Ieee Access, 7*, 134215-134225. doi: 10.1109/ACCESS.2019.2941925. **(Erum Mehmood, Tayyaba Anees (Computer Science/SST) Web of Science JCR Listed (IF: 4.098)**

Abstract: Data warehousing has been indispensable to enterprises for decades. However, infrequently updated data warehouse environment does not support quicker business decisions and faster data recovery in case of transformation or load issue. Implementation of real-time data warehouse provides solution to update problems of enterprises. Efficient stream processing for un-structured(NoSQL) and structured(SQL) data from various sources is required for the successful implementation of real-time data warehousing. We have done an analysis between un-structured and structured semi-stream join processing, using efficient database engine MongoDB at Extraction-Transformation-Loading phase. Semi-stream tuples coming from different sources are joined with disk-based master data, based on keys in memory, for both un-structured and structured documents(tuples) using MongoDB server, where the I/O rates are different for both inputs. Through experiments, in this paper we have analyzed the CPU and memory usage for real-time semi-stream join processing through two types of tests, un-structured and structured data streams using synthetic and real datasets. The results show that, memory usage and execution time remains consistent for a given specification irrespective of the nature of data streams (un-structured or structured), even when incoming semi-streams are growing.

Keywords: *NoSQL/SQL, semi-stream join, real-time data warehousing, mongodb.*

31. **Faheem, M. R., Anees, T., & Hussain, M.** (2019). The Web of Things: Findability Taxonomy and Challenges. *Ieee Access, 7*, 185028-185041. doi: 10.1109/ACCESS.2019.2960446.**(Muhammad Rehan Faheem, Tayyaba Anees, Muzammil Hussain (Computer Science/SST) Web of Science JCR Listed (IF: 4.098)**

Abstract: Due to an increase in the number of devices, the Web of Things (WoT) has attracted a great deal of attention and focus from researchers in the past few years. The ultimate goal of Web of Things is to build an ideal search engine where the user or even devices can find other devices anywhere and at any time for using the resources of other devices. The purpose of the paper is to identify and to present the current research on Web of Things. Additionally, the paper focuses on the research gap that currently exists and on future needs in the domain of WoT. In Author's opinion, the literature review presented in the paper will effectively help the researchers in finding resources in WoT as it highlights the research gap in the domain of Web of Things and searching resources in WoT. The results of the review indicate that the current challenges for the Web of Things are dynamic searching, scalability, data integration, intent-based searching, etc. The focus of this paper is on dynamic searching.

Keywords: *Indexing, ranking, crawling, IoT, WoT, things model, schema, use-cases, JSON-LD, RDF.*

32. **Latif, S., & Anees, T.** (2019). Blockchain based Decentralized Electronic Voting System: A Step towards Transparent Elections. *IJCSNS International Journal of Computer Science and Network Security, 19*(12), 165-172. (**Shehzad Latif ,Tayyaba Anees (Computer Science/SST)** **Master Journal List**

Abstract: Public Elections are the best way to elect the government in democracy. Thus, it is the utmost responsibility of the state to organize non-fraudulent elections. With the advancement in technology we have an opportunity to switch our voting system from ballot paper to an electronic voting system. The Estonian voting system is one of the leading electronic voting systems which is still not perfect & need to improve its security & privacy features. Keeping in focus the privacy & transparency concerns this paper introduces a blockchain based decentralized electronic voting system for elections on large scale. The significant features of the proposed system are data integrity & transparency. Blockchain uses encryption & hashing to ensure the security of each vote. The scalability & verifiability in proposed system make the voting process more secured and reliable.

Keywords: *blockchain, e-voting, bio metrics, distributed ledger, authentication, immutable ledger.*

33. **Rehman, K. U. U., & Khan, Y. D.** (2019). A Scale and Rotation Invariant Urdu Nastalique Ligature Recognition Using Cascade Forward Backpropagation Neural Network. *Ieee Access, 7*, 120648-120669. doi: 10.1109/ACCESS.2019.2936363. **(Khawaja Ubaid ur Rehman, Yaser Daanial Khan(Computer Science/SST)** **Web of Science JCR Listed (IF: 4.098)**

Abstract: In the emerging age of technologies, machines are becoming more and more skilled and capable just like humans. Despite the fact that machines do not have their own intelligence, but still due to advancement in Artificial Intelligence (AI), machines are rapidly advancing. The area of Pattern Recognition (PR) deals with bringing enhancements to identify obscure patterns corresponding to specific classes. Optical Character Recognition (OCR) is a subfield of PR which deals with the recognition of characters. A great work has been done for Japanese, Hindi, Arabic and Chinese scripts, but only a diminutive work has been done for Urdu script. The Urdu language is highly cursive and is written in different calligraphic styles like Naskh, Nastalique, Kofi, Devani and Riqa. The Nastalique font is very calligraphic with aesthetic beauty. The ligature segmentation of Urdu Nastalique is also more difficult as compared to other languages. Urdu Nastalique has some characteristics like stacking of ligatures and cursiveness which makes its ligature segmentation a difficult task. Cursiveness means ligatures are joined together to form a new shape. It contains connected ligatures which makes it more complicated as compared to other languages. The ligature recognition of Urdu text by an OCR is a strenuous task due to variants of scaling, rotation, orientation and font style. In this study, a scale and rotation invariant classifier for Urdu Nastalique OCR is proposed. A combination of scale and location invariant moments is used for feature extraction and the classification is performed using Cascade Forward Backpropagation Neural Network. The model is validated through independent dataset testing and 5-fold cross-validation which gave 96.474% and 96.922% accuracy. The results depict the adaptability of the proposed model due to its high accuracy for recognition of Urdu Nastalique Ligature.

Keywords: *deep neural network (DNN), optical character recognition (OCR), scale invariant classifier, rotation invariant classifier.*

34. **Butt, A.H., Khan, Y.D.** (2019). Prediction of S-Sulfenylation Sites Using Statistical Moments Based Features via CHOU'S 5-Step Rule. *International Journal of Peptide Research and Therapeutics*. https:// doi.org/10.1007/s10989-019-09931-2.**(Ahmad Hassan Butt, Yaser Daanial Khan(Computer Science/SST)** **Web of Science JCR Listed (IF: 1.219)**

Abstract: Post-translation modifcation (PTM) of cysteine S-sulfenylation sites in protein is important in cellular biology. S-sulfenylation plays a signifcant role in protein functioning, cell signaling and transcriptional regulation. Cysteine, S-sulfenylation site prediction is crucial in order to interpret the S-sulfenylation molecular

mechanisms. In this study, statistical moments based methodology is proposed for cysteine S-sulfenylation site predictions. The system proposed has achieved accuracy far better than current state-of-the-art methods using tenfold cross validations and independent tests. The outcomes from the proposed method revealed that using statistical moments based features could produce more efcient and efective results. For the accessibility of the scientifc community, we have developed a GitHub repository for cysteine S-sulfenylation sites prediction system which is freely accessible at https://www.github.com/ahmad-umt/S-Sulfenylation.

Keywords: *post-translation modifcations, cysteine s-sulfenylation, chou's 5-step-rule, position relative matrix, hahn moments, tenfold cross validation.*

35. **Butt, A.H., Khan, Y.D.** (2019). CanLect-Pred: A Cancer Therapeutics Tool for Prediction of Target Cancerlectins Using Experiential Annotated Proteomic Sequences, *IEEE Access*, 8, 9520-9531, 2020, doi: 10.1109/ACCESS.2019.2962002.**(Ahmad Hassan Butt, Yaser Daanial Khan(Computer Science/SST) Web of Science JCR Listed (IF: 4.098)**

Abstract: Cancerlectins are significantly important group of lectins that have an inhibitory effect on cancer cells with respect to their growth. They have a vital role in various tumor cell interactions like adhesion, growth, metastasis, differentiation and mainly in cellular infection. The investigations associated with cancerlectins are applicable to relevant studies in laboratories, diagnostics and therapy in clinical applications, and drug discoveries in targeting cancers. Prediction of cancerlectins is considered a helpful task due to the fact that they are specifically useful in dissecting cancers. Although, several Bioinformatics tools have been developed to predict cancerlectins, however, the need for improvement in the quality of its prediction model requires enhancements in the annotation and determination process of cancerlectins. In this study, a new model is proposed that builds on statistical moments based features to distinguish cancerlectins from non-cancerlectins. The currently proposed model achieved an accuracy of 88.36% using jackknife test which is better than current state-of-the-art models. These outcomes suggest that the use of statistical moments could bear more effective and efficient results. For the accessibility of the scientific community, a user-friendly web server has been developed which will associate the researchers in medical science.

Keywords: *cancerlectins, hahn moments, lectins, moment invariants, PRIM.*

36. Ishaq, K., **Abid, A.,** Abid, K., Ali, Q., & **Ijaz, M.** (2019). Factor Influencing the Convergence Time in Border Gateway Protocol (BGP). *International Journal of Innovative Technology and Exploring Engineering (IJITEE), 9*(2). doi: 10.35940/ijitee.B7582.129219.**(Adnan Abid, Mustansar Ijaz (Computer Science/SST) SJR**

Abstract: Border Gateway Protocol (BGP) is the protocol which helps to route the traffic over the internet, it also helps to interchange reachability and routing information between diverse Autonomous systems (AS). The major operations of Border gateway Protocol (BGP) takes place at transport layer. When BGP works with TCP it removes the need for acknowledgement, sequence number. The major problem which occurs over the network is due to delay during the process of path selection and due to change in routing table [2]. This degradation convergence and delay can occur due to defined policy in between the peers of network. BGP performance can be improved by implementing different techniques such as MD5 Authentication, 16 bits Autonomous system, 32 bits Autonomous system, Classless Inter Domain Routing (CIDR), IPSec over BGP and consistency assertions. In this paper we have used CIDR technique to enhance BGP performance as well as we have focused on identifying and calculating affects on convergence time of BGP protocol due to the variation in the number of nodes and complex topology design. We have designed simulation based topology over OpNet, to analyze the impact of convergence time of BGP. Simulation results show that we can minimize the convergence time due to link failure.

Keywords: *border gateway protocol (BGP), autonomous systems (AS), route flap damping (RFD), transmission control protocol (TCP), finite state machine (FMS).*

37. Rasool, N., **Husssain, W., & Khan, Y. D.** (2019). Revelation of enzyme activity of mutant pyrazinamidases from Mycobacterium tuberculosis upon binding with various metals using quantum mechanical approach. *Computational Biology and Chemistry, 83*, 107108. doi: https://doi.org/10.1016/j.compbiolchem.2019.107108. **(Waqar Hussain, Yaser Daanial Khan(Computer Science/SST) SJR**

Abstract: Pyrazinamide (PZA) is one of the most potent bacteriostatic drug against tuberculosis, a deadliest disease with high mortality and morbidity rate. PZA metabolizes into its active form pyrazinoic acid (POA) with the help of a metalloenzyme, pyrazinamidase (PZase). Mutagenicity and metal substitution in PZase weakens the binding of PZA with PZase and increases the drug resistance in *Mycobacterium tuberculosis*. The present study aims at the quantum mechanistic analysis of mutant-metal substituted PZase complexes by studying the mechanics of metals and PZA binding at MCS and catalytic site, respectively. A total of 66 complexes are scrutinised in this study to elucidate the effect of mutations on the enzymatic function of PZase. Among the 10 mutations considered in this study, 7 different mutations i.e. Asp_{49} → Asn, His_{51} → Arg, Gly_{78} → Cys, Asp_{12} → Gly, Asp_{12} → Ala, Thr_{135} → Pro and Asp_{136} → Gly cause a detrimental effect on the activity of PZase. In addition to this, the substitution of iron with cobalt enhances the enzymatic activity of both wild type and mutant PZase while zinc, magnesium and copper reduce it. Based on these results, it is concluded that upon substitution of iron with zinc, magnesium and copper, PZase cannot function properly. Due to mutations, the reactivity of the drug also reduces as its binding with PZase weakens and this phenomenon enhances the resistance of *Mycobacterium tuberculosis* against drug.

Keywords: *pyrazinamidase, pyrazinamide, quantum mechanics, dft analysis, metal substitution, mutagenicity.*

38. Razzaq, A., **Asim, M.,** Ali, Z., Qadri, S., Mumtaz, I., Khan, D. M., & Niaz, Q. (2019). Text sentiment analysis using frequency-based vigorous features. *China Communications, 16*(12), 145-153. doi: 10.23919/JCC.2019.12.011. **(Muhammad Asim (Computer Science/SST) SJR**

Abstract: Sentiment Analysis, an un-abating research area in text mining, requires a computational method for extracting useful information from text. In recent days, social media has become a really rich source to get information about the behavioral state of people (opinion) through reviews and comments. Numerous techniques have been aimed to analyze the sentiment of the text, however, they were unable to come up to the complexity of the sentiments. The complexity requires novel approach for deep analysis of sentiments for more accurate prediction. This research presents a three-step Sentiment Analysis and Prediction (SAP) solution of Text Trend through K-Nearest Neighbor (KNN). At first, sentences are transformed into tokens and stop words are removed. Secondly, polarity of the sentence, paragraph and text is calculated through contributing weighted words, intensity clauses and sentiment shifters. The resulting features extracted in this step played significant role to improve the results. Finally, the trend of the input text has been predicted using KNN classifier based on extracted features. The training and testing of the model has been performed on publically available datasets of twitter and movie reviews. Experiments results illustrated the satisfactory improvement as compared to existing solutions. In addition, GUI (Hello World) based text analysis framework has been designed to perform the text analytics.

Keywords: *text mining, sentiment analysis, sentiment shifters, KNN.*

39. Malebary, S. J., ur Rehman, M. S., & **Khan, Y. D.** (2019). iCrotoK-PseAAC: Identify lysine crotonylation sites by blending position relative statistical features according to the Chou's 5-step rule. *PLoS ONE, 14*(11). **(Yaser Daanial Khan (Computer Science/SST) Web of Science JCR Listed (IF: 2.776)**

Abstract: Among different post-translational modifications (PTMs), one of the most important one is the lysine crotonylation in proteins. Its importance cannot be undermined related to different diseases and essential biological practice. The key step for finding the hidden mechanisms of crotonylation along with their occurrence sites is to completely apprehend the mechanism behind this biological process. In previously reported studies, researchers have used different techniques, like position weighted matrix (PWM), support vector machine (SVM), k nearest neighbors (KNN), and many others. However, the maximum prediction accuracy achieved was not such high. To address this, herein, we propose an improved predictor for lysine crotonylation sites named iCrotoK-PseAAC, in which we have incorporated various position and composition relative features along with statistical moments into PseAAC. The results of self-consistency testing were 100% accurate, while the 10-fold cross validation gave 99.0% accuracy. Based on the validation and comparison of model, it is concluded that the iCrotoK-PseAAC is more accurate than the previously proposed models.

Keywords: *not available.*

40. Alam, T. M., Khan, M. M. A., Iqbal, M. A., **Abdul, W.,** & Mushtaq, M. (2019). Cervical cancer prediction through different screening methods using data mining. *IJACSA) International Journal of Advanced Computer Science and Applications, 10*(2). **(Abdul Wahab (Computer Science/SST) SJR**

Abstract: Cervical cancer remains an important reason of deaths worldwide because effective access to cervical screening methods is a big challenge. Data mining techniques including decision tree algorithms are used in biomedical research for predictive analysis. The imbalanced data-set was obtained from the data-set archive belongs to the University of California, Irvine. Synthetic Minority Oversampling Technique (SMOTE) has been used to balance the data-set in which the number of instances has increased. The data-set consists of patient age, number of pregnancies, contraceptives usage, smoking patterns and chronological records of sexually transmitted diseases (STDs). Microsoft azure machine learning tool was used for simulation of results. This paper mainly focuses on cervical cancer prediction through different screening methods using data mining techniques like Boosted decision tree, decision forest and decision jungle algorithms as well performance evaluation has done on the basis of AUROC (Area under Receiver operating characteristic) curve, accuracy, specificity and sensitivity. 10-fold cross-validation method was utilized to authenticate the results and Boosted decision tree has given the best results. Boosted decision tree provided very high prediction with 0.978 on AUROC curve while Hinslemann screening method has used. The results obtained by other classifiers were significantly worse than boosted decision tree.

Keywords: *boosted decision tree, cervical cancer, data mining, decision trees, decision forest, decision jungle, screening methods.*

41. Khan, Z. A., Butt, A. A., Alghamdi, T. A., Fatima, A., Akbar, M., **Ramzan, M.,** & Javaid, N. (2019). Energy Management in Smart Sectors Using Fog Based Environment and Meta-Heuristic Algorithms. *Ieee Access, 7*, 157254-157267. doi: 10.1109/ACCESS.2019.2949863**. (Muhammad Ramzan (Computer Science/SST) Web of Science JCR Listed (IF: 4.098)**

Abstract: Smart Grid (SG) plays vital role in modern electricity grid. The data is increasing with the drastic increase in number of users. An efficient technology is required to handle this dramatic growth of data. Cloud computing is then used to store the data and to provide numerous services to the consumers. There are various cloud Data Centers (DC), which deal with the requests coming from consumers. However, there is a chance of delay due to the large geographical area between cloud and consumer. So, a concept of fog computing is presented to minimize the delay and to maximize the efficiency. However, the issue of load balancing is raising; as the number of consumers and services provided by fog grow. So, an enhanced

mechanism is required to balance the load of fog. In this paper, a three-layered architecture comprising of cloud, fog and consumer layers is proposed. A meta-heuristic algorithm: Improved Particle Swarm Optimization with Levy Walk (IPSOLW) is proposed to balance the load of fog. Consumers send request to the fog servers, which then provide services. Further, cloud is deployed to save the records of all consumers and to provide the services to the consumers, if fog layer is failed. The proposed algorithm is then compared with existing algorithms: genetic algorithm, particle swarm optimization, binary PSO, cuckoo with levy walk and BAT. Further, service broker policies are used for efficient selection of DC. The service broker policies used in this paper are: closest data center, optimize response time, reconfigure dynamically with load and new advance service broker policy. Moreover, response time and processing time are minimized. The IPSOLW has outperformed to its counterpart algorithms with almost 4.89% better results.

Keywords: *cloud computing, fog computing, smart grid, smart city, load balancing, server broker policies.*

42. Mustafa, S., **Sattar, K.,** Shuja, J., Sarwar, S., Maqsood, T., Madani, S. A., & Guizani, S. (2019). SLA-Aware Best Fit Decreasing Techniques for Workload Consolidation in Clouds. *Ieee Access, 7*, 135256-135267. doi: 10.1109/ACCESS.2019.2941145**. (Kinza Sattar (Computer Science/SST) Web of Science JCR Listed (IF: 4.098) (SKT Campus)**

Abstract: Cloud computing emerged as one of the leading computational paradigms due to elastic resource provisioning and pay-as-you-go model. Large data centers are used by the service providers to host the various services. These data centers consume enormous energy, which leads to increase in operating costs and carbon footprints. Therefore, green cloud computing is a necessity, which not only reduces energy consumption, but also affects the environment positively. In order to reduce the energy consumption, workload consolidation approach is used that consolidates the tasks in minimum possible servers. However, workload consolidation may lead to service level agreement (SLA) violations due to non-availability of resources on the server. Therefore, workload consolidation techniques should consider the aforementioned problem. In this paper, we present two consolidation based energy-efficient techniques that reduce energy consumption along with resultant SLA violations. In addition to that, we also enhanced the existing Enhanced-Conscious Task Consolidation (ECTC) and Maximum Utilization (MaxUtil) techniques that attempt to reduce energy consumption and SLA violations. Experimental results show that the proposed techniques perform better than the selected heuristic based techniques in terms of energy, SLA, and migrations.

Keywords: *energy efficiency, workload consolidation, SLA violation, resource management, cloud computing.*

Conference Proceedings

1. **Yasir, T., Abid, A.,** Shahzada, A., & Ieee. (2019). Development of Smart phone based Cultural Social Stories for Intellectually Disabled Children of Pakistan *2019 2nd International Conference on Advancements in Computational Sciences* (pp. 86-93).**(Tahreem Yasir, Adnan Abid (Computer Science/SST) SJR**

Abstract: Intellectual disability (ID) is defined by a limitation in adaptive skills and cognitive functioning of an individual which attributes towards difficulty in handling or dealing with everyday life situations. Research validates that cognitive functioning and adaptive skills of ID individual can be reduced through Early Intervention which is a set of therapeutic services provided as soon as the first sign of disability appears. As intellectually disabled children (IDC) are better able to learn through demonstrations and role plays that is why early intervention techniques such as Social Stories and Video Modeling are considered effective at teaching various adaptive, social, daily life and self help skills to IDC. Research recommends that these social stories should be developed with respect to the targeted culture and should represent the cultural norms, language and attire else they might not be helpful. This study has been conducted in collaboration experts and teachers from Amin Maktab, Lahore (Pakistan) where the experts have not only endorsed the significance of culturally tailored social stories but have also recommended to present these social stories to Pakistani IDC using smart phones to teach them various social and adaptive skills. This paper proposes the

framework to develop culturally tailored social stories for Pakistani IDC followed by the design implications for development of an Android application Parity through which the social stories shall be presented.
Keywords: *intellectually disabled children, early intervention, smart phones, social stories, video modeling.*

2. Chattha, S. J., Batool, B., & **Farooq, M. S.** (2019). *Modernization of Front Desk Project (FDP) Training Curriculum for Punjab Police.* Paper presented at the Proceedings of Intcess 2019- 6th International Conference on Education and Social Sciences, Dubai, U.A.E.**(Muhammad Shoaib Farooq(Computer Science/SST)** **Web Of Science**
Abstract: Front Desk Project (FDP) was initiated by the Punjab government to bridge the gap between police and public in 2015. Punjab police was facing too much complains and lack of confidence from public as a friendly service oriented organization. FDP was aimed to bring educated people in police station to deal with the complainants by using latest technology to make it easier to lodge a complaint and First Information Report (FIR). Previously Police manage their records manually but after initiation of FDP, everything was computerized and easy to follow up a case in short period of time. A training progr SPrenylC-PseAAC:
am of FDP was devised to train the front desk officers who deal with public. It was initially designed as forty days training based on computer typing skills and law at police training centers. This program consisted of basics of Law, typing skills and motivational lectures. This paper aims to identify the short comings in the training program i.e. traditional curriculum which doesn't match with the job requirement, which requires software training, physiological, behavioral, ethical trainings and also requires practical exposure. Moreover, exploring the opportunities to propose a system for the transformation of traditional FDP curriculum composed of state-of-the-art training methods. The proposed FDP curriculum has a capacity to enhance capabilities and real time experience for the trainees. This would also help trainers to automate the course and be helpful in police working and management.
Keywords: *front desk curriculum, training, management, modernization of curriculum.*

3. **Hassan, A.,** Bilal, H. M., Khan, M. A., Khan, M. F., Hassan, R., & Farooq, M. S. (2019). *Enhanced Fuzzy Resolution Appliance for Identification of Heart Disease in Teenagers.* Paper presented at the Intelligent Technologies and Applications, Intap 2018. **(Arfa Hassan(Computer Science /SST)** **SJR**
Abstract: The forecast of a Myocardial infarction in youngsters is a significant challenge for cardiac experts and technologists because its symptoms and chemical levels of biomarkers in the blood are different from mature adults. Deployment of an intelligent method in this context is also a challenging task. The proposed method of this article for heart diseases is Mamdani fuzzy inference system. This intelligent system takes 14 different input parameters. These are CP ("chest pain"), BP ("blood pressure"), LDL ("bad cholesterol"), ED ("energy drink"), BS ("blood sugar"), HB ("heartbeat"), FH ("family history"), and LOP ("lack of physical activity"), HOA (" history of autoimmune disease"), HD (" unhealthy diet"), and D (" drug use"). The proposed system is able to predict the heart situation as an output which is named as "Chance". The proposed system indicates whether Myocardial infarction risk is moderate, mild or severe on the basis of some mathematical calculations. For this purpose, various type of standard mathematical functions has been used. The proposed system is specifically designed for teenagers' heart health issue and uses more variables as compared to any other intelligent system, so it gives more accurate results about teenagers' heart.
Keywords: *fuzzy inference, chance, myocardial infarction, heart health.*

4. Farooq, U., **Asmat, A.,** Rahim, M. S. B. M., **Khan, N. S., & Abid, A.** (2019). *A Comparison of Hardware Based Approaches for Sign Language Gesture Recognition Systems.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Ayesha Asmat, Nabeel Sabir Khan, Adnan Abid (Computer Science/SST)** **SJR**

Abstract: Sign language is a gesture-based language used worldwide by the deaf people to communicate with one another. This language comprises of different hand movements and facial expressions. Over the years, different tools and applications have been built and developed by the researchers to facilitate the deaf community in their communication with normal people. One branch of research deals with the recognition of gestures by machines, i.e. the machine is able to understand the gesture performed by a person. Many different approaches involving a variety of hardware including gloves, Microsoft Kinect, and sensors have been used for this purpose. The literature survey reveals that the most significant and advanced work in this regard has been accomplished in American Sign Language (ASL). Whereas, recently noticeable research is being conducted for the development of different Asian sign languages as well. This work presents a study of hardware-based approaches for gesture recognition in ASL and Asian sign languages.

Keywords: *sign language, gesture recognition, sensors, kinect, glove.*

5. **Zainab, M., Usmani, A. R., Mehrban, S., & Hussain, M.** (2019). *FPGA Based Implementations of RNN and CNN: A Brief Analysis.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Mahreen Zainab, Asad R. Usmani, Sobia Mehrban, Muzammil Hussain (Computer Science/SST)** **SJR**

   Abstract: Deep neural network (DNNs) is an extensive field which used for application those have complex nature such as processing of voice and image. It has two main varieties namely Convolutional neural network (CNNs) and recurrent neural network (RNNs) are got recent success in industrial applications. CNN used for applications like image classification, RNNs used for time-variant problems. Even though both belong to the DNNs family they implementations show substantial differences. I get more potential results on Field Programmable Gate Array (FPGA) besides CPU and GPU's implementations. Evolution shows remarkable advantages of FPGA implementations over GPUs and CPUs. In this Research article FPGA implementation of CNNs and RNNs are compared and analyse its optimizations. Benefits and drawbacks of FPGA implementations of deep neural networks are also highlighted.

   Keywords: *deep learning, convolutional, recurrent neural network.*

6. **Khalid, H.** (2019). *Systematic Literature Review on Social Network Analysis.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Haris Khalid (Computer Science/SST)** **SJR**

   Abstract: Context: Social network analysis refers to the measuring, and mapping of flows, and interrelationships between computers, people, URLs, organizations, groups, and other linked knowledge or information entities. SNA is a strategic technique to investigate the social structures. It can be implemented in many fields like computing, mathematics, statistics and engineering. Furthermore, SNA has its influence in the information sciences and information retrieval techniques. Now Information scientists study and analyze the publications, citation, co-citation networks, social collaboration networks and many other forms of interrelated social networks. Previously, there exists several research done regarding SNA, thus need to investigate, and present key additions of SNA to research fraternity. Objectives: In this paper, we reviewed of all Social Network sites with their growth, techniques, types, variations, measurements and unit of analysis in one platform. Methods: Moreover, we discussed different methodologies and terminologies related to SNA and summaries the researches contributions. The study conducted systematic literature review for SNA. Results: The study concluded that extensive use of social networking sites in public and organizations has increased significantly; therefore, more research is needed to explore this vast subject. Secondly, it can be concluded that there is a need of improvement in social network like missing data, visualization, uncertainty, finding the shortest path, because of security risks there should be a team who monitors and manages the

social networks so that for the investigators, all the necessary information should not be distributed on web servers.

Keywords: *SNA, centralization, network density, centrality, lurking.*

7. **Yaqoob, A., Ashraf, M. A., Ferooz, F., Butt, A. H., & Khan, Y. D.** (2019). *WSN Operating Systems for Internet of Things(IoT): A Survey.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Adeel Yaqoob, Muhammad Adeel Ashraf, Ahmad Hassan Butt, Yaser Daanial Khan (Computer Science/SST) Faria Ferooz (Software Engineering/SST) SJR**

   Abstract: The Internet of Things is a concept which allows communication of all surrounding things around human's living space no matter it is living thing, a computer, a wooden piece or anything else. IoT started in early 2 decades as a concept. IoT covers almost all aspects of human life as it covers industry, business, medical, agriculture, infrastructure, communication, household and many other aspects of human life. Basic concept behind IoT is to automate and communicate objects and things without human provided input. Objects communicate with each other via wireless communication devices like RFID. Information could be collected from information by using sensors and actuators. As communication between devices increases, need of an Operating System which communicates with heterogeneous devices also increases. In this paper, recent Wireless Sensor Networks (WSN) Operating Systems for IoT are discussed and also a generic framework is designed which represents the features of an IoT oriented operating systems.

   Keywords: *internet of things, wireless sensor network, operating system, earliest deadline first.*

8. **Zafar, S., & Farooq, M. S.** (2019). *A graphical methodology to promote programming language concepts in novice.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Sumaira Zafar, Muhammad Shoaib Farooq (Computer Science/SST) SJR**

   Abstract: Programming language is core of computer studies. Basic programming concepts are very essential for every computer student to develop better understanding of programming language. At university, college and school level, review on programming courses are required. There is lack of structured/graphical tutoring of programming language for beginners. Students have trouble to use language syntax and understand language. There is confusion for novice students to develop concept of compiler working as well. To address these issues, we are proposing a graphical methodology, which will help to improve conceptual ability of students regarding problem solving. This solution may provide better understanding about programming building blocks and working of compiler by using flow charts and drag and drop techniques with little introduction of lexical analyzer for tracking of compiler working. This tool will help to resolve student's confusion about compiler construction andprogramming language concepts. A graphical methodology is proposed and developed to help students improve their conceptual ability of problem solving, programming building blocks and working of compiler.

   Keywords: *programming language, flow chart, drag and drop, lexical analysis.*

9. **Nadir, R. M. (2019).** *Comparative study of permissioned blockchain solutions for enterprises.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Rana M. Nadir (Computer Science/SST) SJR**

   Abstract: Digital world is shifting towards distributed systems due to scalability and reliability issues of centralized systems. Blockchain is one of rapidly growing technology of distributed nature. Most of people have information about public blockchain due to bitcoin and other cryptocurrencies, but there is another face of blockchain which is private or permissioned blockchain. Permissioned blockchain is a distribute ledger for consortium enterprises network. The escalation in popularity of permissioned blockchain platforms in recent era is remarkable. There are multiple solutions available for permissioned blockchain, but there are

three leading houses which deals enterprise blockchain, Fabric, Corda and Quorum. All developing communities have their contribution in market and claim their solution is best but blockchain just stepin permissioned era there are multiple plus and negative point in these frameworks. In this paper, I have discussed permissioned blockchain frameworks and analyze them comparatively on the bases of consensus range, modularity, language support, privacy, transaction rate, currency, and accumulate the adoption rate from these filters.

Keywords: *permissioned blockchains, enterprise blockchain, comparative study, corda, quorum, fabric.*

10. **Khalid, M. A., Anees, T., & Moeed, A.** (2019). *LAQF: Lightweight Document Oriented, Reusable Agile Quality Framework.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Muhammad Adeel Khalid, Tayyaba Anees, Abdul Moeed(Computer Science/SST)** SJR

Abstract: agile software development is taking over traditional methodologies. Agile methodologies provide more benefits than traditional methodologies that's the reason why more software organizations, teams are making their transitions towards agile era. There are many flavors of agile methodologies available today. Organizations can choose them according to their needs. These methodologies include Scrum, eXtreme Programming (XP), Dynamic Systems Development Method (DSDM) and others. Agile methods especially target functional aspects of the software to be built, quality is their second priority. Software Quality is one of the major concerns for software organizations now a days. Reusability, on the other hand, is also important in terms of reducing cost to market, less time consumption in development and increased software productivity. Agile methods put a very little emphasis on these two highlighted points. In the paper, authors have proposed an effective, more reactive framework to increase the capabilities of agile to address reusability, documentation and ultimately quality concerns. Authors evaluated the proposed framework with the existing agile methodologies and the results show that the proposed framework improves quality better than existing agile methodologies.

Keywords: *software quality, agile documentation, reusability in agile.*

11. **Fatima, K., Nawaz, S., & Mehrban, S.** (2019). *Biometric Authentication in Health Care Sector: A Survey.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Kalsoom Fatima, Sumbal Nawaz, Sobia Mehrban (Computer Science/SST)** SJR

Abstract: The development of technology has affected the performance of the healthcare system globally. There is no denying the way that security is fundamental in-patient consideration. Health care records are essential to every patient and medical expert as well. There should be a system that only authorised person can get access to the patient record because if any unauthorised person gains access to the patient record, it can lead to the wrong medication or even the death of the patient. Identification of a person is a very challenging problem. The traditional method includes ID cards and password etc. It can be lost, misuse or can share among colleague. To overcome these limitations of traditional ways biometric authentication method introduced. Biometric as the identifier can play a significant role in maintaining security and privacy of healthcare system. Biometric identification is the measurable unique traits of the individual. It divides into two categories: first is physiological that includes the face, fingerprints, iris, retina and hand geometry. Second is behavioural that includes voice recognition, signature verification and keystroke dynamics. In this survey paper, we review different physical and behavioral biometric techniques that described in a different research paper in past decades; then we analyse findings and future direction of different papers separately based on physical and behavioural biometric methods. We provide a comparative analysis of all biometric techniques it will help out readers to get a better idea about different biometric technologies that which one will suit according to their needs and budget. We conclude that for identification, authentication, in healthcare sector there is a need of proper implementation of any of these biometric authentication

techniques or the combination of different techniques properly, to provide advanced security and prevention from any security threats to patient records.

Keywords: *biometric authentication in healthcare, fingerprint authentication, face authentication, hand geometry, iris, retina, signature, voice, keystroke biometric.*

12. **Ahmad, U., Asim, H., Hassan, M. T., & Naseer, S.** (2019). *Analysis of Classification Techniques for Intrusion Detection.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Umair Ahmad, Sheraz Naseer (Computer Science/SST) Hira Asim, Malik Tahir Hassan (Software Engineering/SST) SJR**

Abstract: In the field of machine learning, many supervised and unsupervised methods have been developed to develop an effective and efficient Intrusion Detection System (IDS). However, a comprehensive comparative analysis of different intrusion/anomaly detection methods on standard datasets is required. In this work, a standard dataset NSLKDD is used for comparative analysis of six popular classifiers. The normal and anomalous records have been identified using following classification techniques: Decision Tree, Naïve Bayes, Ada Boost, MLP, Random Forest and Liner SVM. Implementation is done using Python based scikit-learn library. Results yielded are evaluated and compared on the basis of standard performance evaluation measures like accuracy, precision, recall, F1 score, confusion matrix and AUROC curve. The highest percentage accuracies have been achieved by MLP model, i.e., 100% and Decision Tree Model i.e., 98%. Moreover, the comparative analysis of the data mining techniques applied in last five years on two standard and publicly available datasets ISCX-IDS2012 and UNSWNB15 has also presented in this paper.

Keywords: *intrusion detection system, network security, nsl-kdd, iscx-ids2012, unsw-nb15, mlp, decision tree, classification, machine learning, data mining.*

13. **Usmani, A. R.** (2019). *A Novel Time and Space Complexity Efficient Variant of Counting-Sort Algorithm.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Asad R. Usmani (Computer Science/SST) SJR**

Abstract: Sorting is a well-known problem, which is most commonly discussed in Algorithms. Although, there exist many algorithms to solve the sorting problem but Counting-sort algorithm has its own importance due to its linear time-complexity, which is O(n + k) with 2n + k space-complexity. Moreover, depending upon the feasibility of input data, It is the most efficient sorting algorithm available in terms of time if n > k holds but a significant value of k−n restricts its usage in practice due to its high memory and computational demands in case of violation. So, in this paper, we have proposed a novel variant of trivial Counting-sort algorithm, which is comparatively not only time but space efficient as well. The time and space complexity of our proposed ARU-Counting-sort algorithm is O(n+ √ k) and 2n + 2√ k respectively.

Keywords: *counting sort, sorting algorithms, indexing, complexity analysis, optimization.*

14. **Arshad, A., & Khan, Y. D.** (2019). *DNA Computing A Survey.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Amna Arshad, Yaser Daanial Khan (Computer Science/SST) SJR**

Abstract: Researchers work on computationally intensive problems like Hamiltonian path and Traveling Salesman problem thrived the need of DNA Computing. DNA computing is a secure and efficient way to solve computationally intensive problems. [1] Now a days it is a significant area of research and technology. DNA encodes within itself huge information in a secure and efficient way hence providing a unique, robust and error free technology to the world to save any type of data. This paper discusses was specific computationally intensive problems that can be solved using DNA computing and also indicates the main and basic algorithms which are used to define the DNA computing area.

Keywords: *dna computing, np-problems, np-hard problems, genetic algorithm, rsa algorithm.*

15. **Hussain, W., Ashraf, M. A., Ferooz, F., Butt, A. H., & Khan, Y. D.** (2019). *An exposition on the applications of Locality Aware Scheduling algorithms.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Waqar Hussain, Muhammad Adeel Ashraf, Ahmad Hassan Butt, Yaser Daanial Khan (Computer Science/SST) Faria Ferooz (Software Engineering /SST)** **SJR**

Abstract: The present study analyses the various applications of the Locality aware scheduling algorithms, focusing the effectiveness and efficiency of these algorithms. Locality-Aware Scheduling algorithms (LAS) is observed having various applications in the field of computer science. It has been observed that the locality is a universal behavior in all the computational fields and it is observed that these tend to refer repeatedly among various subsets of the resources within various time intervals. It is observed that the execution of each computation basically generates a reference to the objects within the memory such as the memory pages, memory sectors, database records and the web pages. Through the analysis of various locality aware scheduling algorithms, it is observed that the locality aware scheduling works more effectively as compared to the other scheduling algorithms. Among these various systems, it has been observed that the locality aware scheduling is the most effective and efficient technique for the scheduling of the processes. The concept of locality aware scheduling is to make the data parallel applications run more efficiently with less data loss or data inconsistency. Analyzing the effectiveness of LAS it is clearly identifiable that the LAS is achieving this purpose with high effectiveness as compared to the other scheduling algorithms. For future considerations, LAS can be point of interest for the researchers due to its effective results.

Keywords: *data locality, locality of reference, scheduling, locality aware scheduling, numa, mapreduce, gpu, memory locality.*

16. Asif, M., Qureshi, M. A., **Abid, A.,** & Kamal, A. (2019, 1-2 Nov. 2019). *A Dataset for the Sentiment Analysis of Indo-Pak Music Industry.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). doi: 10.1109/ICIC48496.2019.8966720. **(Adnan Abid (Computer Science/SST)** **SJR**

Abstract: The continuous increase in data creates a need, that data be analysed and useful hidden patterns be found and explored. If the data is readily available, it can easily be analysed. But most of the time it needs to be dug. Substantial increase in the use of social media and online services can be witnessed nowadays. People not only buy and sell things online but also give their remarks on those items/services. Many websites provide such services along with a dedicated section for reviews and comments. These items/services can be ranked and analysed based upon these reviews, which shows the sentiments of the reviewer. These reviews are in millions and promptly in billions. The huge increase in reviews there is a need to analyse them through a proper mechanism. This research is targeting the mining of the sentiments from these reviews. Three songs from YouTube are selected and their reviews are scrapped, pre-processed and analysed using Decision Tree (ID3) and Naïve Bayes. Both presented 75%accuracy on test data. This article presents a dataset to perform Sentiment Analysis on Roman Urdu/Hindi reviews. Dataset is a combination of Indo-Pak song reviews.

Keywords: *sentiment analysis, music reviews, roman urdu, songs comments, roman urdu dataset, songs dataset.*

17. **Hassan, H., Ashraf, M. A., Hussain, W., Akram, M. S., Butt, A. H., & Khan, Y. D.** (2019). *A Survey about Efficient Job Scheduling Strategies in Cloud and Large Scale Environments.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Hamid Hassan, Muhammad Adeel Ashraf, Waqar Hussain, Muhammad Sohaib Akram, Ahmad Hassan Butt, Yaser Daanial Khan(Computer Science/SST)** **SJR**

Abstract: Internet of Things is the new emerging field Job scheduling strategies pay important role for optimal utilization of resources, in cloud or large scale environments demand for efficient resource allocation becomes manifolds due to increased volume of requests for available resources. In this paper we present comparative study of provided solutions for job scheduling techniques by research communities. This paper is comprised of analysis of job scheduling strategies to minimize job queuing and response time in order to allocate resources efficiently in cloud environments. Growing infrastructure of clouds and economical aspects of resource hiring demand efficient and best fit strategies for resource allocation. Comparative analysis of job scheduling and resource allocation will lead to adopt best policy framework for infrastructure designers. Selection of efficient set of job scheduling policies pay important role in distribution of workload to available resources, hence allocation of resources is finalized on the basis of combination of variety of policies which best fit in accordance with nature of requested jobs. We present comparative study of variety of job scheduling policies in this paper to support the designers for adoption of suitable set of policies in given scenarios.

Keywords: *cloud, job scheduling, resource allocation, job queuing.*

18. **Majeed, K., Farooq, M. S., & Majeed, B**. (2019). *Strategy for Promoting Programming in KPK.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Kanwal Majeed, Muhammad Shoaib Farooq, Bismal Majeed (Computer Science/SST) SJR**

Abstract: Programming demonstrated to be a venturing stone toward the changing position of nation in comity of a countries. The improvement of programming includes labor with specialized help, where the chief spotlight in on PC programming. In this manner, creating an enormous number of adroit PC developers in Pakistan would positively help the reason for building up programming houses, which thusly, will draw in the western world to re-appropriate their product undertakings Pakistan. It can surely become like a distinct advantage for the Pakistan's economy by gaining a tremendous income. In exploration we displayed a philosophy to expand the enthusiasm of the Pakistani individuals in PC programming giving a bilingual PC improvement condition in Pashto and the English dialects. This demonstration may absolutely open the new components of instructing PC programming. In conclusion, this paper had displayed visual plan of such bilingual condition alongside engineering adjustment in preprocessor a C++ language to help Pashto and English dialects for composing PC programs.

Keywords: *pashto language, pc programming in pashto, programming in provincial dialects, PL.*

19. **Nadeem, M. W., Hussain, M.,** Khan, M. A., **Munir, M. U., & Mehrban, S.** (2019). *Fuzzy-Based Model to Evaluate City Centric Parameters for Smart City.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Muhammad Waqas Nadeem, Muzammil Hussain, Muhammad Umar Munir, Sobia Mehrban (Computer Science/SST) SJR**

Abstract: The positive initiatives developed toward smart city realization and designing to make the city more “smarter” and sustainable. The smart city represented by a unique system where diverse utility companies, stakeholders, local authorities and citizens are involved to create numerous active interactions and interdependencies. To understand the key indicators for the establishment and “acceptance of smart city” is a tough challenge for the researchers. A number of parameters such as, governance, technologies, citizens, economy, livability and so on, which are important for smart city evaluation, are evaluated in this article. The main aim of this research is to propose an appropriate methodology for the development and acceptance of smart city. A mathematical fuzzy-based model is proposed in this research for the evaluation and prediction of parameters which contribute significantly for a city to be successfully accepted as a smart city. This mathematical based model proved to be a highly scalable and cost-effective solution for the prediction of appropriate parameters for smart city acceptance.

Keywords: *smart city, fuzzy logic, smart system, smart citizenship, internet of things.*

20. **Zaman, R., Farooq, M. S., Bashir, R., Zaman, T., & Rashid, I.** (2019). *Traffic Noise Pollution Impacts on Human Work Capability Using Fuzzy Expert System.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Rabia Zaman, Muhammad Shoaib Farooq, Rafia Bashir, Iqra Rashid (Computer Science/SST) SJR**

    Abstract: Noise pollution is a significant problem in our environment that influences human health and it can also reduce human's capability for different activities in daily life. We examined the distraction occur due to giant road traffic and flow of traffic situations whether it is slow or fast which entirely depends on personal work performance. We have recorded noise with Sound Meter in unit of sound (dB). The fuzzy logics and fuzzy sets regarding to structure of mathematics expressions is described as Fuzzy Expert System within semantic procedure that produce outcomes from random information. Data for noise index count data and its magnitude was collected simultaneously at targeted places of the city. By using MATLAB, a correlation has been produced between individual parameters of traffic noise and its damaging impacts on capability of individuals. In addition, to estimate the high percentage of irritation among the individuals, regression equations have been generated that are more suitable for noise parameters and parameters related to the flow of traffic. This paper deals with the issues of exhaustion in individual's efficiency at different areas due to the occurrence of noise pollution from giant traffic on roads.

    Keywords: *traffic noise pollution, fuzzy system, fuzzy logics, regression equation.*

21. Ishaq, K., Zin, N. A. M., Rosdi, F., **Abid, A.,** & Farooq, U. (2019). *Effectiveness of Literacy & Numeracy Drive (LND): A Students' Perspective.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Adnan Abid (Computer Science/SST) SJR**

    Abstract: This paper discussed the effectiveness of English language software Literacy & Numeracy Drive (LND) used in the public sector primary schools of Punjab province, Pakistan. A mobile based application named as “Literacy & Numeracy Drive (LND)” is currently in use to teach students of Grade 03 on a tablet for learning English, Urdu and Mathematics. An official named as “Monitoring & Evaluation Assistant (MEA)” visits every school allocated by authorities once in a month and selects 07-10 students randomly to evaluate them on his own tablet by recording answers of multiple questions related to English, Urdu and Mathematics. After the evaluation, MEA uploads the results of respective school on official portal. A quantitative research was adopted to conduct this study in which 300 participants from different schools of district Sheikhupura were selected to measure the effectiveness of LND. The results reveal that LND application was not found effective due to the issues in terms of non-availability of technology at home, language, content, assessment, usability and design. Further, students recommended game based learning consisting of interactive interface, phonics, animations, relevant content and assessment.

    Keywords: *LND, MEA, English as a second language, TESL, primary school, tablet.*

22. **Fayyaz, H.,** Rehman, Z. U., & Abbas, S. (2019). *An IoT Enabled Framework for Smart Buildings Empowered with Cloud & Fog Infrastructures.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Hira Fayyaz (Computer Science/SST) SJR**

    Abstract: Modern Urban development of Internet of Things (IoT) are appropriate candidates for the initiative of Smart City; which aims at integrating physical environments into computing & communication technologies leveraging maximum benefit in terms of resource utilization for optimal services. One substantial constituent of Smart City is Smart Building. A smart building is adequately intelligent to sense contextual environment and take smart decisions, competently employing available resource thus being more accurate, energy efficient and secure. Smart Building utilizes systems which are highly complex,

dynamic natured and heterogeneous. Considering the functional requirements of Smart Building this research work emphasize that cloud has the potential of supporting complex computations, long term analytics and storage facilities for bulk amount of data being produced. It further specifies that cloud performance could be enhanced if innovative paradigm of Fog Computing is introduced along with cloud solution. The proposed Internet of Things (IoT) framework of Smart Building is deliberated with all associated benefits and apprehension of cloud Fog paradigm. Application model of the framework along with it processing modules is also demonstrated in research effort. Performance metrics are evaluated with cloud deployments and with cloud fog deployments for further clarity.

Keywords: *internet of things (IoT), cloud computing, Fog computing, smart cities, smart buildings.*

23. Abid, F., Chenli, Alam, M., & **Abid, A.** (2019). *Representation of Words Over Vectors in Recurrent Convolutional Attention Architecture for Sentiment Analysis.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Adnan Abid (Computer Science/SST)** SJR

Abstract: Subjectivity in the text concerns to sentiment analysis, which entails Natural language processing (NLP) techniques to detain the casual way of communication. Many NLP undertakings used to capture the sentimental contextual information through distributed representations. Neural networks (NNs) like recurrent and convolutional neural networks have productively attained the remarkable outcomes in text classification. However, few of architectures learning through vector representation of words in the recurrent network for capturing long-term dependencies while in the convolutional for feature extraction along with pooling layer; a max-pooling task for dimensional reduction has been proposed, still, unable to seizure enough syntactic and semantic regularities for sentiment analysis. This paper empowers sentiment analysis by exploring unsupervised learning of vectors representation such as Word2Vec and GloVe, then acquired word vectors is input to the proposed architecture which is composed of RNN and CNN engaging with attention-mechanism referred to Recurrent Convolutional Attention Architecture "RCAA." Experimentations show that through unsupervised learning of representation of words into qualified vectors in interpreting the similarities related to syntactic and semantic context and the sentiments at adequate computational cost along with the combination neural architecture by succeeding accuracy on word2vec by 83.62%, GloVe by 85.72% as compared with Random initialization by 79.97% on rotten tomatoes test dataset respectively.

Keywords: *sentiment analysis, distributed representation, Word2Vec, GloVe, Recurrent, and convolutional neural network, RCAA.*

24. Ishaq, K., Zaki, F., **Abid, A.,** Abid, K., & **Ijaz, M.** (2019). *Impact of Social Media on Students' Academic Performance & Generation Gap: A Study of Public Sector University in Punjab.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC).**(Adnan Abid, Mustansar Ijaz (Computer Science/SST)** SJR

Abstract: Social Media websites are continuing to grow in popularity. It is our premises Social Media is playing a vital role in students' lives particularly in their academic performance and in the field of their socialization. In fact, today's Social Media is running in the life of students. It continually detracts students from their studies as they feel comfort in wasting most of their time in Social Media. The leading task of this research is to find out the impact of Social Media on students' academic performance and leading trend of generation gap. In our research field purposive sampling technique was used to get to know the interest of students. This study was gender specified and 306 female students were participated that were used as sample tool in research methodology. The main findings of research is that Social Media has positively and continuous impact on students' academic performance and leading towards the generation gap. As students suffered from low grades and prefer to waste their study hours in browsing Social Media websites. Contrary

Social Media is leading a source of income by the concept of online earning. Unfortunately, Social Media is not only an electronic connection it also has become an addiction which is leading to a parent's student's gap. Students feel easy to share their feelings on Social Media rather than share it with their elders.

Keywords: *social media, social networking websites, academic performance, generation gap.*

25. **Baig, T. I.,** Alam, T. M., **Anjum, T., Naseer, S., Wahab, A.,** Imtiaz, M., & **Raza, M. M.** (2019). *Classification of Human Face: Asian and Non-Asian People.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC).**(Talha Imtiaz Baig, Tayaba Anjum , Sheraz Naseer, Abdul Wahab, Muhammad Mehdi Raza (Computer Science/SST)** SJR

Abstract: Humans have always been recognized as different from neighboring groups, but such distinction has not always been understood to be natural, permanent and universal. These features are recognized as different features of how the abstraction of race classification is used today. In this way, the concept of race classification came about during the documented process of inspection and subjection which brought it as communication with groups from different continents, and of the idea of classification and typology found in the natural sciences. This method helps us to extract various features from the network and can utilize it to distinguish individuals in the world with a precise personality. The proposed method incorporates the essential feature associated with surface, skin color pattern and another secondary characteristic of training images to efficiently rank the strokes. A CNN based model is proposed to create a system that classifies facial images based on a variety of different facial attributes and classified into two distinct categories. The accuracy of 84.91% was achieved by utilizing the CNN model.

Keywords: *convolutional neural network, race classification, forward propagation, backward propagation, convolutional layer,pooling layer, fully connected layer.*

26. Ishaq, K., Zaki, F., Zin, N. A. M., **Abid, A.,** Farooq, U., & **Ijaz, M.** (2019). *Impact of Social Media on Student's Health: A Study of Public Sector Universities in Punjab.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Adnan Abid, Mustansar Ijaz (Computer Science/SST)** SJR

Abstract: In the present world of technology, social media is used to communicate, share information or linked within the Global field of the world. In this research, to find out the physical, psychological & sexual health impact by using social media is focused. Social Networking websites have an adverse influence on students' lives and students browse social websites and got to know some complex stuff before their age. Purposive sampling technique was used in this research and questionnaire was administered from 300 students to collect the data using survey. According to research findings, there is no association between social media and students Health. The main reason was that students were addicted to browsing of social media, even they do not aware of suffering from the bundle of physical and psychological health issues. They also browse to get health-related information which may be prohibited stuff like sexual health. Some hackers also use students as a tool to diverse their belief as pupils spend most of their time using social media. Lastly, it is stated that Social Media is like a "DEEP OCEAN", which have an intense impact on students from each aspect of their lives.

Keywords: *social media, social networking sites, physical health, psychological health, sexual health.*

27. Khan, M. B., Mushtaq, M. T., **Khan, S.,** Asjad, M., Ali, J., & Bilal, J. (2019). *Modified RLS Algorithm for Interference Cancelation in a MIMO System.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Shafaq Khan (Computer Science/SST)** SJR

Abstract: In this work, we propose modified Recursive Least Square (RLS) algorithm which helps to mitigate interference and to enhance the signal strength for wireless communication. In our proposed algorithm, we modify RLS in a way that it's forgetting factor depends on the prior error and apply it to the beamforming with multiple antennas. This results in minimized error between desired signal and received signal. This

reduction of error provides significant improvement in beamforming and interference cancellation. Further, it speeds up the convergence time of the RLS algorithm and improves the efficiency of beamforming. The comparison has been made between the simple and modified RLS and the accuracy of beamforming, null placing and error reduction have been checked. The performance results simulated in Matlab shows that the modified RLS has increased the performance by approximately 400 percent.

Keywords: *MIMO, beamforming, cellular networks, adaptive filter, mean square error, least mean square error, weiner filter, rls algorithms.*

28. **Khan, Y. D.** (2019). *An Improved Facial Recognition Technique Using Scale and Rotation Invariant Statistical Moments.* Paper presented at the 2019 XIth International Scientific and Practical Conference on Electronics and Information Technologies (ELIT). **(Yaser Daanial Khan (Computer Science/SST)** SJR

Abstract: Forensic experts face substantial encumbrance in finding a criminal in electronic databases given a pencil sketch. The problem complexity greatly surmounts when the image database contains thousands or even millions of images. The general approach is to use the sketch images to find the nearest possible match present in the pre-populated database of images consisting of criminals or individuals and groups in their daily routines. The proposed system present an optimal approach to automate the review and search process based on various image analysis techniques. The mathematical computations on images to find the features help us in identifying the characteristics and features of the face. The dataset stored is pre-populated by feature vector corresponding to each image in image database for fast retrieval. Through the experimental run on all the competitive techniques along with the proposed one, it is concluded that the overall accuracy of the systems is 96.2 %.

Keywords: *facial recognition, scale invariant moments, rotation invariant moments, statistical moments, facial sketches.*

29. Rehman, A. U., **Khan, A. H.,** Aftab, M., Rehman, Z., & Shah, M. A. (2019). *Hierarchical Topic Modeling for Urdu Text Articles.* Paper presented at the 2019 25th International Conference on Automation and Computing (ICAC). **(Ali Haider Khan (Computer Science/SST)** SJR

Abstract: Digital text is increasing rapidly on the Internet with the excessive use of social media. For this reason, it is very challenging to extract effective information from the digital text due its high dimensionality, sparseness and big data. In this paper, we study the powerful nonparametric Bayesian topic model which is Hierarchical Latent Dirichlet Allocation (hLDA). We deal the issue of learningtopics hierarchies from Urdu text data. The presented Topic Model for Urdu is combined withpreprocessing activities, hLDA model, and Gibbs Sampling (GS) algorithm. We present hLDA base topic model called Urdu Hierarchical Latent Dirichlet Allocation (uhLDA). Empirical study showed that uhLDA effectively learns the topics hierarchies from 5000 Urdu text documents. Furthermore, we evaluated the results using Pointwise Mutual information (PMI) and it shows that uhLDA outperforms as compared to existing standard topic model LDA.

Keywords: *hierarchal topic model, hierarchal lda, urdu topic model, urdu hierarchal lda, natural language processing, gibbs sampling.*

30. **Nadeem, M. W., Hussain, M.,** Khan, M. A., & **Awan, S. M.** (2019). *Analysis of Smart Citizens: A Fuzzy Based Approach.* Paper presented at the 2019 International Conference on Electrical, Communication, and Computer Engineering (ICECCE).**(Muhammad Waqas Nadeem, Muzammil Hussain, Shahid Mahmood Awan (Computer Science/SST)** SJR

Abstract: Advancement in the technology is drawing an positive and prosperous impact on human life. Thus, the development of smart city applications and services enhances the way of life style in the contemporary cities. The citizens are the real stakeholders of smart city and to maintain the life standard of citizens is a key challenge. Citizens–centric and less technology oriented approaches have become proliferating interest in

smart cities. Therefore, there is need of an effective approach to explore the standard of individuals in smart cities. Consequestnly this research article investigates the standard of citizens by providing a fuzzy based smart system. The proposed smart system is an efficient tool to analyze the standard of citizens based upon different parameters such as, safety, health, education, quality of houses, and so on. The proposed system analysis the standard of citizens with high accuracy and confirms that the selected parameters have immense impact on standard of life in smart cities.

Keywords: *smart city, fuzzy logic, smart system, smart citizenship, internet of things.*

31. **Bqa, R., Shakeel, T., & khan, Y. D.** (2019). *A Pedagogical Approach towards Theory of Computation*. Paper presented at the Proceedings of the 2019 8th International Conference on Educational and Information Technology, Cambridge, United Kingdom. https://doi.org/10.1145/3318396.3318430.**(Rabranea Bqa, Tanzeela Shakeel, Yaser Daanial Khan (Computer Science/SST)** SJR

Abstract: Theory of Computation is of core significance in any Computer Science curriculum. It holds a great deal of importance in laying basis for various computer science applied areas such as Compiler Construction, Text processing, Hardware Design and Artificial Intelligence. The authors hope that this article can remarkably assist the instructor as an instructive instrument for delivering concepts of Theory of Computation. Furthermore, it offers a solid foundation for the sequential flow in which Theory of Computation notions can be rightfully delivered for convenient understanding. It encompasses concepts pertaining to formal languages and the computational models sufficiently powerful to decide each set of languages.

Keywords: *methodology, formal languages and automata theory, education, fsm, turing machine.*

32. **Shaheen, M., Anees, T., Hussain, N., & Obaid, I. (**2019). *A Research on SOA in the IT Industry of Pakistan*. Paper presented at the 5th International Conference on Computer and Technology Applications (ICCTA), Istanbul, Turkey. **(Momina Shaheen, Tayyaba Anees, Nisar Hussain, Iqra Obaid (Computer Science/SST)** SJR

Abstract: Many architectural patterns and styles are used for bringing in quality in software's such as client-server, component-based, event-driven and data-centric architectures. Service-oriented architecture (SOA) is a new trend for improving the quality attributes of software such as interoperability and availability Although, research studies claim that SOA adaption is widely used in practice, it is not very clear that is it used in the same way in under developed countries such as Pakistan. This research study analyzes the usage of SOA by the IT industry of Pakistan. In this paper, several opinions of professionals are collected from IT industry who belongs to different companies from all over the Pakistan. Questionnaires and semi-structured interviews helped as investigation tools for this research and the outcomes are analyzed on their responses. Results indicate that 76 % of the IT companies in Pakistan are using SOA. Most of the companies are using tool-based approach for development. Results also indicate a rising tendency of SOA adoption by Pakistan IT industry in upcoming years.

Keywords: *SOA (service-oriented architecture), Pakistan IT industry, web services, restful services.*

Book/Book Chapters

1. **Iqbal, S., Hussain, M., Munir, M. U., Hussain, Z., Mehrban, S., & Ashraf, M. A.** (2019). Crypto-Currency: Future of FinTech *FinTech as a Disruptive Technology for Financial Institutions* (pp. 1).**(S. Iqbal, Muzammil Hussain, Muhammad Umar Munir, Zunair Hussain, Sobia Mehrban, Muhammad Adeel Ashraf, Salah-u-din Ayubi (Computer Science/SST)**

Abstract: This chapter sheds light on the future of crypto-currencies in the world as they have become a major part of trading and are now being adopted by leading investment firms as a new way of buying and selling. Despite the substantial security risk in crypto-currency trading, it has become the most traded

commodity. Many new crypto-currencies are being introduced that attract investors. Banking institutions in USA and other leading countries have started to take part in investments in crypto-currency as it has revolutionized financial technology.

Keywords: *not available.*

2. **Hussain, M., Nadeem, M. W., Iqbal, S., Mehrban, S., Fatima, S. N., Hakeem, O., & Mustafa, G.** (2019). Security and Privacy in FinTech: A Policy Enforcement Framework *FinTech as a Disruptive Technology for Financial Institutions* (pp. 81-97): IGI Global. **(Muzammil Hussain, Muhammad Waqas Nadeem, S. Iqbal, Sobia Mehrban, Syeda Nisar Fatima, Owais Hakeem, Ghulam Mustafa (Computer Science/SST)**

Abstract: Financial technology (FinTech) has dramatically changed the way of banking and financial services. Computer programs and other technology which used to provide and enable financial services is named as FinTech. However, these services face several security and privacy issues while providing financial services to the users. These services and applications must be secured to enhance the acceptance and usability of these services among the users. The main aim of this research is to provide a policy framework to ensure the security and privacy of user information in financial technology, since FinTech applications and services carry quite sensitive data of its users. This policy framework provides a comprehensive set of policies to secure FinTech services. These policies must be implemented in each organization providing FinTech services.

Keywords: *not available.*

Conference Papers

1. **Ashraf, F., Naseer, A., & Iqbal, S. (**2019). *Comparative Analysis of Unstructured P2P File Sharing Networks*. Paper presented at the ICISDM 2019: Proceedings of the 2019 3rd International Conference on Information System and Data Mining. https://dl.acm.org/doi/abs/10.1145/3325917.3325952.**(Mehr-un-Nisa, Fasiha Ashraf, Ateeqa Naseer, Shaukat Iqbal (Computer Science/SST)**

Abstract: Numerous P2P networks are available covering different areas of P2P technologies. Since P2P network overlays are good for creating large scale content distribution and data sharing applications, an ample amount of effort has been made to improve the performance of these networks. Moreover, rapid development of P2P technologies has left older technologies far behind. The goal of this paper is to study and present a comprehensive overview of some of these networks. Furthermore, a comparison of Unstructured P2P file sharing wired networks with their distinct characteristics has been presented. In this paper, various features of P2P networks have been studied that results in understanding the behavior of these protocols under different circumstances. A critical analysis of the state of art P2P networks has been made taking care of various significant features for both wired. The analysis presents the effectiveness of different systems in different circumstances. This research aims to provide a comprehensive comparative analysis of P2P file sharing protocols of wired networks.

Keywords: *peer-to-peer unstructured protocols, bittorrent, freenet.*

2. Ishaq, K., Zin, N. A. M., Rosdi, F., **Abid, A.,** & Farooq, U., (2019). *Effectiveness of Literacy & Numeracy Drive (LND): A Students' Perspective.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC), Lahore, Pakistan, 2019, pp. 1-6, doi: 10.1109/ICIC48496.2019.8966738.**(Adnan Abid (Computer Science/SST)**

Abstract: This paper discussed the effectiveness of English language software Literacy & Numeracy Drive (LND) used in the public sector primary schools of Punjab province, Pakistan. A mobile based application named as “Literacy & Numeracy Drive (LND)” is currently in use to teach students of Grade 03 on a tablet for learning English, Urdu and Mathematics. An official named as “Monitoring & Evaluation Assistant (MEA)” visits every school allocated by authorities once in a month and selects 07-10 students randomly to evaluate

them on his own tablet by recording answers of multiple questions related to English, Urdu and Mathematics. After the evaluation, MEA uploads the results of respective school on official portal. A quantitative research was adopted to conduct this study in which 300 participants from different schools of district Sheikhupura were selected to measure the effectiveness of LND. The results reveal that LND application was not found effective due to the issues in terms of nonavailability of technology at home, language, content, assessment, usability and design. Further, students recommended game based learning consisting of interactive interface, phonics, animations, relevant content and assessment.

Keywords: *LND, MEA, English as a second language, TESL, primary school, tablet.*

3. Ishaq, K., Zaki, F., Azan, N., Mat Zin, N. A., **Abid, A.,** Farooq, U., & Ijaz, M. (2019). I*mpact of Social Media on Student's Health: A Study of Public Sector Universities in Punjab.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC), Lahore, Pakistan, 10.1109/ICIC48496.2019.8966689. **(Adnan Abid, Mustansar Ijaz (Computer Science/SST)**

Abstract: In the present world of technology, social media is used to communicate, share information or linked within the Global field of the world. In this research, to find out the physical, psychological & sexual health impact by using social media is focused. Social Networking websites have an adverse influence on students' lives and students browse social websites and got to know some complex stuff before their age. Purposive sampling technique was used in this research and questionnaire was administered from 300 students to collect the data using survey. According to research findings, there is no association between social media and students Health. The main reason was that students were addicted to browsing of social media, even they do not aware of suffering from the bundle of physical and psychological health issues. They also browse to get health-related information which may be prohibited stuff like sexual health. Some hackers also use students as a tool to diverse their belief as pupils spend most of their time using social media. Lastly, it is stated that Social Media is like a "DEEP OCEAN", which have an intense impact on students from each aspect of their lives.

Keywords: *social media, social networking sites, physical health, psychological health, sexual health.*

4. Ishaq, K., Zaki, F., **Abid, A.,** Abid, K., Farooq, U., & Ijaz, M. (2019). *Impact of Social Media on Students' Academic Performance & Generation Gap: A Study of Public Sector University in Punjab.* Paper presented at the *2019 International Conference on Innovative Computing (ICIC)*, Lahore, Pakistan, 2019, pp. 1-9, doi: 10.1109/ICIC48496.2019.8966688. **(Adnan Abid, Mustansar Ijaz (Computer Science/SST)**

Abstract: Social Media websites are continuing to grow in popularity. It is our premises Social Media is playing a vital role in students' lives particularly in their academic performance and in the field of their socialization. In fact, today's Social Media is running in the life of students. It continually detracts students from their studies as they feel comfort in wasting most of their time in Social Media. The leading task of this research is to find out the impact of Social Media on students' academic performance and leading trend of generation gap. In our research field purposive sampling technique was used to get to know the interest of students. This study was gender specified and 306 female students were participated that were used as sample tool in research methodology. The main findings of research is that Social Media has positively and continuous impact on students' academic performance and leading towards the generation gap. As students suffered from low grades and prefer to waste their study hours in browsing Social Media websites. Contrary Social Media is leading a source of income by the concept of online earning. Unfortunately, Social Media is not only an electronic connection it also has become an addiction which is leading to a parent's student's gap. Students feel easy to share their feelings on Social Media rather than share it with their elders.

Keywords: *social media, social networking websites, academic performance, generation gap.*

Department of Software Engineering

Research Articles

1. Shahzad, B., **Awan, K. M.,** Abdullatif, A. M., Lali, M. I., Nawaz, M. S., Ayesha, U., & Khan, M. (2019). Quantification of Productivity of the Brands on Social Media With Respect to Their Responsiveness. *Ieee Access, 7*, 9531-9539. doi: 10.1109/access.2019.2891081.**(Kinza Mehr Awan (Software Engineering/SST) Web of Science JCR Listed (IF: 4.098)**

   Abstract: Social online marketing is expanding fast with the evolution and recent development in the information and communication technology. Investigating how companies are exploiting social media for marketing, advertisement, and consumer's engagement is gaining more and more interest. In this paper, brands/companies data on Twitter is collected and analyzed to compute the overall company response on Twitter. Responsiveness of a company is inferred from three features: company popularity, average company replies, and average followers' replies. Twitter network features are used in calculating the posting frequency for companies and their followers. It is shown that the proposed approach can be used in finding the responsiveness of companies and their followers. Furthermore, useful links for a brand consumer is extracted and the posting behavior of brands and their followers is determined with the help of Twitter network features, such as retweet count and geolocation. This paper contributes to the literature on how Twitter data and its network structure features can be exploited in finding the responsiveness and posting behavior of companies and their followers. We believe that this approach can be used effectively in developing prediction and information-filtering systems, particularly the personalized-recommendation systems.

   Keywords: *twitter, brands, followers, company response, retweet count.*

2. Sheri, A. M., Rafique, M. A., **Hassan, M. T.,** Junejo, K. N., & Jeon, M. (2019). Boosting Discrimination Information Based Document Clustering Using Consensus and Classification. *Ieee Access, 7*, 78954-78962. doi: 10.1109/access.2019.2923462.**(Malik Tahir Hassan (Software Engineering/SST) Web of Science JCR Listed (IF: 4.098)**

   Abstract: Adequate choice of term discrimination information measure (DIM) stipulates guaranteed document clustering. Exercise for the right choice is empirical in nature, and characteristics of data in the documents help experts to speculate a viable solution. Thus, a consistent DIM for the clustering is a mere conjecture and demands intelligent selection of the information measure. In this work, we propose an automated consensus building measure based on a text classifier. Two distinct DIMs construct basic partitions of documents and form base clusters. The consensus building measure method uses the clusters information to find concordant documents and constitute a dataset to train the text classifier. The classifier predicts labels for discordant documents from earlier clustering stage and forms new clusters. The experimentation is performed with eight standard data sets to test efficacy of the proposed technique. The improvement observed by applying the proposed consensus clustering demonstrates its superiority over individual results. Relative Risk (RR) and Measurement of Discrimination Information (MDI) are the two discrimination information measures used for obtaining the base clustering solutions in our experiments.

   Keywords: *consensus clustering, discrimination information, document clustering, evidence combination, knowledge reuse, mining methods and algorithms, text mining.*

3. **Shah, A. A.,** Mustafa, G., Ali, Z., & **Anees, T.** (2019). Video Stitching with Localized 360 degrees Model for Intelligent Car Parking Monitoring and Assistance System. *International Journal of Computer Science and Network Security, 19*(5), 43-47.**(Asghar Ali Shah, Tayyaba Anees (Software Engineering/SST) Master Journal List**

Abstract: Exploring the new avenues in the domain of video surveillance is a key aspect to maintain a secure environment by enabling several monitoring and security systems having ranges from home solution to border surveillance. Combining multiple cameras view to integrate one large view is far better than looking at each view individually. Car parking is a critical and time-consuming issue in congested cities. This study proposed a model to monitor and assist for car parking by stitching multiple videos and creating a 360 degree localized view. A complete model is proposed and steps are defined for each module including video acquisition, stitching and 360 degrees localized view. A single view is created from all individual cameras. When a car enters into a parking area, the driver is to be guided towards free slot by proposed monitoring and assistance system.

Keywords: *video stitching, 360-degree view, car parking, monitoring and assistance.*

4. **Ahmed, S. B., Ali, S. F., Ahmad, J., Adnan, M.,** & Fraz, M. M. (2019). On the frontiers of pose invariant face recognition: a review. *Artificial Intelligence Review*. doi: 10.1007/s10462-019-09742-3.**(Sheikh Bilal Ahmed, Syed Farooq Ali (Software Engineering/SST) Jameel Ahmad, Muhammad Adnan (Electrical Engineering/SEN) Web of Science JCR Listed (IF: 5.095)**

   Abstract: Computer vision systems open a new challenge to recognize human faces under varied poses in similar capacity and capability as human-beings perform naturally. For surveillance applications, pose-invariant face recognition (PIFR) will become a major break-through by presenting the solution of this unique challenge. In recent decade, several techniques are presented to address this challenge over well-known data-sets. These efforts are divided chronologically into seven different approaches say geometric, statistical, holistic, template, supervised learning, unsupervised learning and deep learning. Among these deep learning techniques have shown more promising results and have gained attention for future research. By reviewing PIFR, it is historically divided into five eras based on 160 referred papers and their cumulative citations.

   Keywords: *pose invariant, face recognition, pattern recognition, deep learning.*

5. Ather, S., Muslin-Ud-Din, H., **Nabeel, M., Ahsan, M., & Hassan, B.** (2019). Several Adaptive Replica Synchronization Approaches for Distributed file System. *VAWKUM Transactions on Computer Sciences, 16*(1), 01-08. doi: http://dx.doi.org/10.21015/vtcs.v16i1.542.(**Muhammad Nabeel, Muhammad Ahsan, Bilal Hassan (Software Engineering/SST) Not HEC Recognized**

   Abstract: This survey paper explained the different approaches of synchronization of replicas of files placed on distributed systems. The survey tells some older and latest techniques of synchronization. Some techniques are by the interference of metadata servers and some are without any intrusion of MDS. In former technique SS storage servers are used for synchronization among replicas. To maximize the performance, scalability and reliability CEPH is a distributed file system. It makes distinction between meta data and data management by object storage file system run on object file systems. Excellent I/O and metadata management is done on CEPH. Commodity servers and disks are used for multitier distributed systems. Performance reliability, I/O rate, workload in writes operations and less overhead in synchronization are the main focus while synchronization of replicas. Hadoop and Google file system are the distributive file systems. Hadoop ensures the better input and output performance with minimal synchronization in replicas, data intensive applications and provides fault tolerance. Some strategies are used for data intensive applications. Parallel file system is type of distributed file system. Analysis enforces the best performance on small and large input output requests. Pattern direct and layout replication technique is one of the most optimized techniques for parallel file system. Data access performance, reliability, data consistency, centralized synchronization, less workload, less overhead is the main focus of all the techniques. Some other file systems like SOFA and frangipani do focus on data consistency and reduce of bandwidth.

   Keywords: *adaptive replica synchronization, file systems, ceph, gmei, MDS.*

6. Ali, U., Shamsi, M. H., **Nabeel, M.,** Hoare, C., Alshehri, F., Mangina, E., & Odonnell, J. (2019). Comparative analysis of prediction algorithms for building energy usage prediction at an urban scale. *Journal of Physics: Conference Series, 1343*, 012001. doi: 10.1088/1742-6596/1343/1/012001. **(Muhammad Nabeel (Software Engineering/SST)** SJR

Abstract: Strategic planning for efficient and sustainable urban environments necessitates identification of scalable energy saving opportunities for the buildings sector. A possible resolution is the analysis of building energy use data at urban scale, although the available data is often sparse, inconsistent, diverse and heterogeneous in nature. Over the past decades, predictive modeling using sparse data has aided with the forecasting of building energy use. However, most studies of energy use prediction focus on individual buildings. This paper proposes the integration of building archetypes simulation, parametric analysis, and machine learning techniques as a solution to accurately predict individual building energy use at an urban level. The aim of the research described in this paper is to achieve accurate prediction of building energy performance, which will allow stakeholders, such as energy policymakers and urban planners, to make informed decisions when planning retrofit measures at large scale. The methodology generates synthetic building data for training the predictive model and predicts building energy use at urban scale with limited resources. The experimentation focuses on Dublin city through the development of synthetic building dataset using parametric analysis on previously identified key variables of two distinct building archetypes. Having compared different prediction algorithms, we show that the Gradient Boosted Trees algorithm gives a better prediction when compared to other algorithms.

Keywords: *not available.*

7. **Awan, M. J.,** Rahim, M. S. M., Salim, N., Ismail, A. W., & **Shabbir, H.** (2019). Acceleration of Knee MRI Cancellous bone Classification on Google Colaboratory using Convolutional Neural Network. *International Journal of Advanced Trends in Computer Science and Engineering, 8*, 83-88. doi: 10.30534/ijatcse/2019/1381.62019. **(Mazhar Javed Awan, Hassan Shabbir(Software Engineering/SST)** SJR

Abstract: The field of Biomechanical engineering and Orth ology is related to knee bone tissue in which cancellous bone lies. The cancellous bone also called spongy bones has greater surface area for this it causes Osteoporosis (OP), Osteoarthritis (OA), and knee cartilage and knee replacement. The knee bone images are measured mostly by Magnetic Resonance Imaging (MRI).In this paper we presented deep learning model on cancellous bones (tiff type) MRI through Convolutional Neural Network (CNN) to predict the image classification which achieved 99.39 % accuracy. The sample size of images are 185 cancellous MRI and 185 tiff images. Further we trained our model on cloud service that is Google Colabaratory (Colab) which is Graphical Processing Unit (GPU). The accuracy of this model is same but the execution time per min decreases on GPU environment. We increased the no of epochs 20 then 50 its execution time is 10 times less than CPU. The execution time on GPU google Colab is 2.23 (mins) and on CPU its 24.23(mins).

Keywords: *Image Classification, Deep learning, MAgnetic REsonance Imaging, Convolutional Neural Network, Google CoLab, Cancellous bone.*

Conference Proceedings

1. **Ferooz, F., Ashraf, M. A., Hussain, W., Butt, A. H., & Khan, Y. D.** (2019). *Person Fall Recognition by using Deep Learning: Convolutional Neural Networks and Image category classification using bag of feature.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Faria Ferooz (Software Engineering /SST) (Adeel Yaqoob, Muhammad Adeel Ashraf, Ahmad Hassan Butt, Yaser Daanial Khan (Computer Science/SST)** SJR

Abstract: —The rate aging people living alone at home are increasing day by day. Fall is one of the major risks for elderly people. Most of the elder people may get into severe harm to their backbone and that may lead

to loss of life. Most of the time in post fall condition the person is lying on ground for many hours once the fall event occurred. This is very significant aspect for person fall detection system to know the seriousness of event. The different techniques are proposed to detect person fall like sensor based, accelerometer and other is camera based. In this paper, two techniques are used to detect person fall such as the deep learning technique convolutional neural networks along with that the image category classification using bad of features is used. The algorithm is providing the promising results as compared to the previously used techniques. The suggested algorithm is described in detail. The algorithm accuracy leads to 100% level on most of the testing measures.

Keywords: *convolutional neural networks, feature extraction, cross validation.*

2. **Khan, A. G., Zahid, A. H., Hussain, M., Farooq, M., Riaz, U., & Alam, T. M.** (2019). *A journey of WEB and Blockchain towards the Industry 4.0: An Overview.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Abdul Ghaffar Khan, Amjad Hussain Zahid, Muzammil Hussain, M Farooq, Usama Riaz,Talha Mahboob Alam (Software Engineering/SST) SJR**

Abstract: Today the WEB is growing and expanding with the unexpected high speed and recently it gained extensive attention. The world is focusing and working on the web so that it could make more ease in our life. The web start from static pages and goes towards the smart industries and factories. All the industrial machines are augmented and directly connected to the web which leads to connect with different systems. This type of systems visualizes the whole production process and these systems are autonomous to take decisions on its own. Forth industrial revolution is the second name of industry 4.0 which includes the Internet of Things (IoT), Cognitive Computing (CC), Big Data, AI and it is fostering Industrial Internet of Things (IIoT). Advanced web is covering the maximum aspects to encourage the businessman community to make trading using technology. The blockchain version 4.0 is helping the industry to ensure the transparency of supply, immutability of records and it ensures the trust of end to end trading organizations. Supply chain is now using the blockchain technology.

Keywords: *WEB evolution, blockchain, industry 4.0.*

3. **Khan, A. G., Zahid, A. H., Hussain, M., & Riaz, U.** (2019). *Security Of Cryptocurrency Using Hardware Wallet And QR Code.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Abdul Ghaffar Khan, Amjad Hussain Zahid, Muzammil Hussain, Usama Riaz (Software Engineering/SST) SJR**

Abstract: —Today, the privacy and the security of any organization are the key requirement, the digital online transaction of money or coins also needed a certain level of security not only during the broadcasting of the transaction but before the sending of the transaction. In this research paper we proposed and implemented a cryptocurrency (Bitcoin) wallet for the android operating system, by using the QR code-based android application and a secure private key storage (Cold Wallet). Two android applications have been implemented one of them is called cold wallet and the other one is hot wallet. Cold wallet (offline) is to store and generate the private key addresses for secure transaction confirmation and the hot wallet is used to send bitcoin to the network. Hot wallet application gives facility to the user view history of performed transactions, to send and compose a new bitcoin transaction, receive bitcoin, sign it and send it to the network. By using the process of cross QR code scanning of the hot and cold wallet to the identification, validation and authentication of the user made it secure.

Keywords: *blockchain, hardware wallet, hot wallet, cold wallet, qr code, cryptocurrency.*

4. **Hassan, M., Hussain, M., Ayubi, S., & Irfan, M.** (2019). *A Policy Recommendations Framework To Resolve Global Software Development Issues.* Paper presented at the 2019 International Conference on Innovative

Computing (ICIC). **(Mujtaba Hassan, Salah-u-din Ayubi, Maham Irfan (Software Engineering/SST) Muzammil Hussain (Computer Science/SST)** SJR

Abstract: Global software development (GSD) is basically a development which is done through low cost in given time frame by sitting in remote areas within cities, countries and around the globe. The global software development is facing major challenges such as, time zone differences, language barrier, cultural differences, geographical distance, communication gap, coordination problems, lack of project guidance, lack of experienced software testers, customer dissatisfaction, poor project management and so on. These challenges has major impact on software quality in GSD and decreases the acceptability among its users. In recent years, some strategies had been applied to reduce quality related issues that exist in GSD, however there is still a need to develop effective and efficient methods, techniques and best practices that can lead to enhance the quality of software development. The main objective of this article is to highlight the existing issues of GSD and to provide the policy recommendations to mitigate them. Therefore, a quantitative analysis have been performed that provides detailed statistical analysis on data by analyzing and applying nonparametric test (rejected the null hypothesis with less than 0.5 significance) and one sample T-test (with 2-tailed significance difference 0.00) through SPSS. Hence, this work contributes by making strong policy recommendations which is explained how GSD project should be handled by selecting best process, and how to achieve maximum quality of software product for customers to satisfy them, improve the acceptance among its users, bring their trust back to gain more business, and overall development in (software) industry.

Keywords: *global software development, distributed software development, cross-culture issues, software quality issues.*

5. **Farooq, E., Iqbal, S., & Nawaz-ul-Ghani, M. A.,** (2019). *Constructive Alignment: Investigating Student's Use of Mobile Technologies in University Classrooms.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Emmen Farooq, Shaukat Iqbal, M. Ahmad Nawaz-ul-Ghani (Software Engineering/SST)** SJR

Abstract: The purpose of the present study was to inspect the impact of information and communication technologies (ICTs), while attempting to learn from real-time university classroom lectures. The numerous adoptions of mobile phones are one aspect of ICT pleasant appearance. Mobile usage is banned in most classrooms globally. However, students still use them during their lectures and tutorials. It is anticipated that this usage is askew from the motivation of the lectures and classrooms. Synchronizing students' mobile usage in classrooms with the incentives of their academic activities remains a significant avenue of research. A sample of undergraduate nd graduate Computer Science (CS) students and another sample of undergraduate and graduate English literature students were surveyed to establish their frequency of mobile ICT use in the classrooms and the students' motivations and basis for undertaking those activities unrelated to classrooms culture, in UMT Lahore , Pakistan . In spite of mobile usage being banned in class rooms, it was determined that a large number of students use mobile phones during lectures and tutorials. This study helped to revamp classroom activities, to actively involve digital technologies to lend a hand in valuable coalition with the learning outcomes and widen the student learning awareness.

Keywords: *m learning, mobile learning, e learning, education.*

6. **Nabeel, M., Ahmad, F., Din, H. M. U., Ahsan, M.,** Ali, U., **& Asif, A.** (2019). *Joystick Mapping in Virtual Reality Shooting Game.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Muhammad Nabeel, Faiq Ahmad, Muhammad Ahsan, Arslan Asif (Software Engineering/SST) Hooria Muslih ud Din (Computer Science/SST)** SJR

Abstract: A method to use for mapping VR-Box joystick with shooting game input controls that include key mapping of every joystick key from the joystick with the game itself. Key mapping was observed and then the

source code keys we're mapped with the joystick keys. The joystick holds major 4 buttons with a 360-degree moveable joystick with 2 supporting keys making them total of 6 keys. In this paper we will discuss mapping of Google Virtual Reality plugin with First Person Shooting plugin. The integration of joystick with VR-Box helped the gameplay even more controllable. The joystick keys are responsible for invoking key features of game as it can be connected via Bluetooth with the mobile headset to ensure long range wireless connectivity. The device converts the keys triggered from joystick to enable the features inside the game.

Keywords: *virtual reality (VR), augmented reality (AR), three dimensional (3D), two dimensional (2D), user Interface (UI), first person shooter (FPS), digital millennium copyright act (DMCA).*

7. **Awan, K. M., Iqbal, T., Awan, M. M., & Sagheer, S.** (2019). *Quantification of Pakistani Brand's responsiveness on Social Media: Twitter.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Kinza Mehr Awan, Maham Mehr Awan, Sundas Sagheer (Software Engineering/SST) Tahreem Iqbal (Computer Science/SST)** SJR

Abstract: With the recent development in the field of Information and communication technology, online marketing is also escalating in the domain of Social Media Applications. Researchers are paying their interests to exploit how multiple brands are accelerating their business, its marketing, loyal consumer-ship and a lot more. In this study, we conducted an analysis on multiple Pakistani Brands through their Twitter account and figured out their responsiveness towards their consumers. Brand's responsiveness is calculated through its popularity, brand's replies and follower's replies. Tweet's Timestamp is also used to draw the responding pattern for each brand. This study will help in finding the responsiveness pattern of brands through Social Media and to develop a Brand's responsiveness recommender system in future.

Keywords: *tweets, brands, Pakistani brands, consumer, followers, company responsiveness.*

8. **Rafique, I., Hamid, A.,** Naseer, S., **Asad, M., Awais, M., & Yasir, T.** (2019). *Age and Gender Prediction using Deep Convolutional Neural Networks.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Insha Rafique, Awais Hamid, Muhammad Asad, Muhammad Awais (Software Engineering/SST) Talha Yasir (Computer Science/SST)** SJR

Abstract: Age and gender identification have become a major part of the network, security and care. It has a common use in age specific content access for children. Social media uses it in deliveringlayeredadsandmarketingtoextendit'sareach.Face recognition has developed to a great extent that we have tomap it further in getting more useful results having different approaches.Inthispaper,weproposedeepCNNtoimproveage and gender predication from significant results can beobtained andasignificantimprovementcanbeseeninvarioustaskssuch as face recognition. A simple convolutional network architecture is proposed to make a noticeable improvement in this field using existing methods. Using deep CNN, model is trained to an extent that accuracy of Age and Gender become 79% using HAAR Feature-based Cascade Classifiers is an effective method proposed by Paul Viola and Michael Jones. It is a machine learning based approach where a cascade function is trained from a lot of positive and negative images. It is then used to detect objects in other images.

Keywords: *age and gender prediction, deep convolutional neural networks, deep learning, CNN.*

9. **Nawaz-ul-Ghani, M. A., Farooq, E.,** & Asghar, K. (2019). *A Contextual Approach Protecting Online Privacy, A Crucial Need.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(M. Ahmad Nawaz-ul-Ghani, Emmen Farooq (Software Engineering/SST)** SJR

Abstract: In the era of the global world, everyone thrives to share their personal life and credentials online through different sites. The Internet has become an essential use of our daily life in order to email, sharing of documents, research, bank transactions and even basic life activities on different social media mediums.

Since the rapid evolution in the of technology is taking over the globe in last few decades in making human's life easier through easy and rapid actions, there is dire need to be sure of how much our credentials are safe with the parties that we are sharing the data. Internet frauds, cyber-attacks and third parties monitoring the data is the cause of serious concern of the first-hand user of the internet. The basic internet users do not even follow the basic safety precautions or are even unaware of the risk that the internet caring while sharing personal details. This paper suggests the basic internet users minimize the threats and risks that internet caries while sharing the data. Different tools and techniques are discussed in this study that can be used to protect the privacy of user from unauthorized, attackers and third-parties. It is the need of the hour to motivate and educate internet users to safe browsing and to enhance the internet user experience. This paper elaborates the maximum number of precautions the internet user can take to secure and enjoy safe browsing.

Keywords: *privacy, security, protecting security, online security, internet privacy.*

Department of Informatics and System

Research Articles

1. **Iqbal, S., Siddique, I., &** Siddiqui, A. M. (2019). OHAM and FEM solutions of concentric n-layer flows of incompressible third-grade fluids in a horizontal cylindrical pipe. *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, 41(5). doi: 10.1007/s40430-019-1687-x.**(Shaukat Iqbal (INFS/SST), Imran Siddique(Mathematics\SSC) Web of Science JCR Listed (IF: 1.743)**

   Abstract: This paper examines the concentric n-layer flows for incompressible third-grade fluids through a horizontal cylindrical pipe. Such flows of multilayer fluids have a wide variety of applications in petroleum and chemical industries. The approximate solutions for velocity fields of multilayer flows are presented by the application of optimal homotopy asymptotic method and Galerkin's finite element method. Further, it is shown that a unique maximum velocity always exists in the core of the pipe for any number of fluid layers. The effects of suitable parameters on the velocity profiles are presented graphically for multilayer flows.

   Keywords: *n-layer flows, concentric flow, third-grade fluids, OHAM and FEM, approximate solutions.*

2. Younas, H. M., Mustahsan, M., Manzoor, T., Salamat, N., & **Iqbal, S.** (2019). Dynamical Study of Fokker-Planck Equations by Using Optimal Homotopy Asymptotic Method. *Mathematics,* 7(3). doi: 10.3390/math7030264.**(Shaukat Iqbal(INFS/SST) Web of Science JCR Listed (IF: 1.105)**

   Abstract: In this article, Optimal Homotopy Asymptotic Method (OHAM) is used to approximate results of time-fractional order Fokker-Planck equations. In this work, 3rd order results obtained through OHAM are compared with the exact solutions. It was observed that results from OHAM have better convergence rate for time-fractional order Fokker-Planck equations. The solutions are plotted and the relative errors are tabulated.

   Keywords: *fractional calculus, time-fractional order Fokker-Planck equations, approximate solutions, Optimal Homotopy Asymptotic Method.*

3. Manzoor, T., Nazar, K., Zafar, M., **Iqbal, S.,** Ali, M., Kim, W. Y., ... & Manzoor, S. (2019). Analysis of a Thin Layer Formation of Third-Grade Fluid. *Coatings*, *9*(11), 741. **(Shaukat Iqbal (INFS/SST) Web of Science JCR Listed (IF: 2.330)**

   Abstract: In present learning, surface protection layer progression of a third-grade fluid (TGF) is examined. Fluid transport within the micro passage made by the firm bladehas beenpresented. Main system of equations of fluidity have been narrated and streamlined by means of lubrication approximation theory (LAT). Here, approximate solutions of velocity, pressure gradient, and coating depth have been presented. Results of coating and layer forming have been tabulated and discussed as well. It is observed that the

transport properties of third-order fluid delivers an instrument to regulate flow velocity, pressure, and affect the final coated region.

Keywords: *optimal homotopy asymptotic method, non-newtonian fluid, coating, lubrication approximation.*

Conference Proceedings

1. **Iqbal, S.,** Mufti, M. R., Afzal, H., & Sarwar, S. (2019). *Semi analytical solutions for fractional order singular partial differential equations with variable coefficients.* In AIP Conference Proceedings (Vol. 2116, No. 1, p. 300007). AIP Publishing LLC. **(Shaukat Iqbal (INFS/SST) SJR**

   Abstract: Optimal homotopy asymptotic method (OHAM), a semi-analytical process is employed, for solving singular partial differential equations of fractional order to authenticate the usefulness and competence of the procedure. It is observed that the designed procedure is simple to implement, pretty important to knob singular phenomenon and capitulate superb results at low computational cost. The fractional derivatives are expressed in Caputo sense. Some examples with singularities are presented to exhibit the potential and practical utility of the method.

   Keywords: *not available.*

2. **Shouket, T., Mahmood, S., Hassan, M. T., & Iftikhar, A**. (2019). *Overall and Disease-Free Survival Prediction of Postoperative Breast Cancer Patients using Machine Learning Techniques.* Paper presented at the 2019 22nd International Multitopic Conference (INMIC). **(Tahreem Shouket, Sajid Mahmood, Afnan Iftikhar (INFS/SST) Malik Tahir Hassan (Software Engineering/SST) SJR**

   Abstract: Cancer is a disease which is caused by continual unrestrained proliferation of tissues. Breast cancer is a fatal disease commonly found in females. Breast cancer cure is possible with timely diagnosis, prediction of survivability and its treatment. Prediction of survival from breast cancer on basis of patient historical record is a challenging task. The primary goal of this research is to predict the overall survival (OS) and number of years a patient can survive without any symptoms of breast cancer called disease free survival (DFS). For the experimentation, data set of female patients of Pakistan diagnosed with breast cancer have been considered. Six (6) machine learning classifiers have been trained on the data gathered from INMOL hospital of Pakistan. The classifiers include Naïve Bayes, J48 decision tree, SVM, Random forest, AdaBoost and JRip. To the best of our knowledge no such work has been done on the Pakistani female breast cancer data. From the results of experimentation, it has been found that the performance of JRip for both OS and DFS is much better than the others. This prediction will be helpful for patients and paramedical staff (doctors) to foresee and predict the situation which may befall.

   Keywords: *breast cancer, cancer survivability prediction, machine learning techniques, disease-free survival prediction, overall survival prediction.*

3. **Rana, T. S., Usman, H. M., & Naseer, S**. (2019). *Static Handwritten Signature Verification Using Convolution Neural Network.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Tanzeel Sultan Rana, Hafiz Muhammad Usman, Sheraz Naseer (INFS/SST) SJR**

   Abstract: Biometrics are very essential tools for the purpose of identification of the person may contain the basic identification like iris and gesture recognition whereas signature verification is also widely used for the purpose of identification. In this paper, we propose a method of offline signature verification in which convolution is applied to address the maximum accuracy and we present how the problem was being handled in the past few decades. The experimented result reveals the efficiency of algorithm. In this paper we have worked on multiple layers so that good accuracy may obtain in terms of originality of the input images.

   Keywords: *convolution neural network (CNN), written dependent (WD), written independent (WI).*

4. **Chishti, W. A., & Awan, S. M.** (2019). *Deep Neural Network a Step by Step Approach to Classify Credit Card Default Customer.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Waseem Ahmad Chishti, Shahid Mahmood Awan (INFS/SST) SJR**

Abstract: This study and research aimed is to classify and predict the credit card default customers payment by means of contemporary approach of artificial neural network (ANN) known as deep neural network. This paper explains the dataset which signifies Taiwan credit card defaults in 2005 and their previous payment histories taken from popular machine learning dataset resource known as UCI. The paper enlightens each and every concept and step require to build, train, validate and test a deep neural network model for classification task that has never been discussed before. Moreover, we tried to elaborate the relevant and important concepts associated with deep neural network model that must be kept in mind during model building. This paper mainly tries to classify the default payment customer with more than 82% accuracy. For this purpose, various deep neural network techniques with different libraries are used to attain maximum accuracy and we have tried to build a best possible model which can be used for future prediction. This study proves deep neural network is the only one that can accurately estimate the real probability of default. So, by using this network model, which is more complex, sophisticated and most widely used than a simple neural network and logistic regression model, the classification simulation shall have a better performance and accuracy.

Keywords: *artificial neural network, backpropagation, classification, deep neural network, default customer.*

5. **Ali, F., Nazir, Z., Inayat, U., & Ali, S. M. (2019).** *Infrastructure of South Korean Electric Power System and Potential Barriers for the Implementation of Smart Grid:A Review.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC).**(Fahad Ali, Zunaira Nazir, Usman Inayat, Syed Mohsin Ali (INFS/SST) SJR**

Abstract: The day by day increase in Electrical Power demand is making the traditional power grid unable to fulfill this intensive need of energy and humans are in a constant search of alternatives to resolve this problem. In this article different power system architectures of South Korea have been discussed by reviewing the smart grids, integration of Micro-girds, the implementation of energy management system in the current power architecture seems the best possible solution. By monitoring all the business goals and to overcome all the basic hurdles, smart grid concept will implement successfully by the end of 2030.

Keywords: *power-it, micro-grid, smart-grid.*

6. **Kareem, I., & Awan, S. M.** (2019). *Pakistani Media Fake News Classification using Machine Learning Classifiers.* Paper presented at the 2019 International Conference on Innovative Computing (ICIC).**(Irfan Kareem, Shahid Mahmood Awan (INFS/SST) SJR**

Abstract: Identification of Fake News is import now a days because it is affecting our social life and opinions. Public misinformation detection is complicated task especially Pakistani media Fake News classification. We have seen Fake News in every aspect of life like politics, sports, business, entertainment and many more. For identification of fake news, we have done popular news websites scrap and develop our corpus of 344 News articles and labeled it manually Fake or True. We have investigated two feature extraction techniques like Term Frequency (TF) and Term Frequency-Inverse Document Frequency (TF-IDF). Seven different supervised Machine Learning (ML) classification algorithms are used and their results comparison have done. Best performance classifier K Nearest Neighbors (KNN) gives 70 % accuracy and logistic regression gives 69 % accuracy. Results can improved further by increasing number of articles in corpus.

Keywords: *fake news, ml, classifier, bow, tf-idf, nlp.*

7. Abid, R., Aslam, B., Rizwan, M., Ahmad, F., & **Sattar, M. U.** (2019). *Block-Chain - Security Advancement*

in Medical Sector for sharing Medical Records. Paper presented at the 2019 International Conference on Innovative Computing (ICIC). **(Mian Usman Sattar (INFS/SST) SJR**

Abstract: —Block-Chain security is the hot arising topic now-adays. Block-Chain helps to get more secure, accurate and transparent data security in all sectors. In Health Sector, maintaining medical records is crucial, sharing medical records between record room to researcher needs security system for sharing. Here, Block-Chain provides best security in maintaining records and medical reports transmission. In this paper, we discuss the impact of Block-Chain in health sector for increasing security during data transmission from medical Record room to medical Institutions for their research study. We proposed a Block-Chain architecture for managing data of patients. In addition, we discussed the characteristics of the block-chain in medical perspective and then propose Medical Record based architecture for secure transmission of data between connected nodes.

Keywords: *block-chain, medical record, security, cloud.*

8. Rizwan, M., Shabbir, A., Shabbir, M., Ahmad, F., & **Sattar, M. U.** (2019). *A Clustering based Hybrid Mobility in WPAN. Paper presented at the 2019 International Conference on Innovative Computing (ICIC).* **(Mian Usman Sattar (INFS/SST) SJR**

Abstract: — IEEE 802.15.4 is a standard for low rate wireless personal area network (i.e. LR-WPANs) and ZigBee based wireless sensor networks (WSNs). This research presents an analysis of clustering based hybrid mobility in IEEE 802.15.4 PAN. This paper unfolds: (1) performance analysis of IEEE 802.15.4 from little to expansive scale PAN, (2) utilization of clustering mobility on remote node prompts to loss of packets. The hybrid mobility designs (directed and undirected mobility) on a remote node has been researched and claimed to contrast in a variable size network. The simulation results expound the relationship of the arbitrary mobility on remote sensor node with influences over the performance metrics of the network, for example, the end-to-end delay, packet loss, and throughput.

Keywords: *wireless sensor network (WSN), random mobility, directed mobility, controlled mobility, WPANs.*

9. Aslam, B., Abid, R., Rizwan, M., Ahmad, F., & **Sattar, M. U.** (2019). *Heterogeneity Model for Wireless Mobile Cloud Computing & its Future Challenges.* Paper presented at the 2019 International Conference on Electrical, Communication, and Computer Engineering (ICECCE).**(Mian Usman Sattar (INFS/SST) SJR**

Abstract: Mobile cloud computing MCC provide to a certain extent many settlement like battery timing, memory, consistency and scalability. Though, still there some sort essential elements, those should be discussed and make their implementation effective in MCC. Some of its most prominent challenges are Security of Wireless Devices, Cloud Privacy and certainty, data bandwidth and transfer rate, synchronizing and managing the data, battery capacity, Energy Efficiency (EE), and heterogeneity. In this research we present a detailed overview of Mobile Cloud Computing and proposed a Heterogeneity Model for Cloud Computing. The main problem in MCC is security privacy and trust, so we are trying to solve this issue using RSA Cryptographic Algorithms.

Keywords: *mobile computing, cloud computing, heterogeneity model, security algorithm.*

School of Business and Economics (SBE)

Department of Economics

Research Articles

1. Anwar, A., Sarwar, S., Amin, W., & **Arshed, N.** (2019). Agricultural practices and quality of environment: evidence for global perspective. *Environmental Science and Pollution Research*, 26(15), 15617-15630.

doi: 10.1007/s11356-019-04957-x.**(Noman Arshed (Economics/SBE) Web of Science JCR Listed (IF: 2.914)**

Abstract: The study emphasizes to examine the causal relationship among CO2 emission, agricultural value added, industrial production, urbanization, nuclear energy consumption, and economic growth across the panel of 59 countries. The data is collected from World Bank database over the period of 1982-2015. For econometric estimations, we have divided the sample into different income groups: low income, lower middle income, upper middle income, and higher income. In case of higher income countries, empirical results have reported the unidirectional causality from agricultural value added to CO2 emission, whereas, bidirectional causality between nuclear energy consumption and CO2 emission. Upper-middle-income countries have confirmed the bidirectional causality between CO2 emissions and agricultural added, however, unidirectional causality runs from nuclear consumption to CO2 emission. According to Granger causality estimations, agricultural value added and nuclear energy consumption do not cause the CO2 emission in low income and lower-middle-income countries. Long-run estimations have mentioned that higher agricultural value added leads to increase the CO2 emission, in upper middle income and higher income countries. On contrary, in case of low-income and lower-middle-income countries, agricultural value added has inverse relationship with CO2 emission. Higher nuclear energy consumption tends to reduce the CO2 emission, except the upper-middle-income countries.

Keywords: *CO2 emission, agriculture, renewable energy, urbanization, causality.*

2. **Arshed, N.**, Anwar, A., **Hassan, M. S., & Bukhari, S.** (2019). Education stock and its implication for income inequality: The case of Asian economies. *Review of Development Economics,* 23(2), 1050-1066. doi: 10.1111/rode.12585.**(Noman Arshed, Muhammad Shahid Hassan, Samra Bukhari(Economics/SBE) Web of Science JCR Listed (IF: 0.716)**

Abstract: This study develops a quadratic relationship between education and income inequality among Asian developing economies for the period from 1960 to 2015. Panel cointegration and fully modified OLS is applied for the estimation of long-run coefficients. The results show that initial, primary, secondary, and tertiary enrollment increases inequality. However, the effect of education on income inequality becomes negative after a certain threshold level (i.e., 97.5% for primary, 43.5% for secondary, and 11% for tertiary). Thus, this result proves the Kuznets phenomenon of an inverted U-shape relationship for primary, secondary, and tertiary enrollments.

Keywords: *education—income inequality Kuznets curve, panel cointegration, panel FMOLS.*

3. **Kalim, R., Arshed, N., & Shaheen, S.** (2019). Does competitiveness moderate inclusive growth: a panel study of low-income countries. *Competitiveness Review, 29*(2), 119-138. doi: 10.1108/cr-11-2017-0074.**(Rukhsana Kalim, Noman Arshed, Sadaf Shaheen (Economics/SBE) SJR**

Abstract: Purpose In the past few years, the concept of competitiveness developed by the World Economic Forum has become the focal point. Global competitiveness index (GCI) presents the constructs which are possible means of productivity of the country. The purpose of this study is to explore whether boosting the productivity of agriculture, services and industry sector is the possible channel of competitiveness leading to growth. Design/methodology/approach For this, panel GMM moderator model has been used for 16 low-income countries. Findings The results indicate that competitiveness helps agriculture and industry sector to become more growth productive, while it reduces the productivity of services sector. Originality/value This study urges that the gains from following the competition promotion policies overweigh the costs. Hence, low-income countries can break the low productivity trap.

Keywords: *panel GMM, moderation effect, productivity trap.*

4. Kanwal, W., Ahmad, H. R., **Arshed, N., & Gulzar, M.** (2019). Labor supply and demographics: A case of Pakistan. *Journal of Labor and Society, 22*(2), 491-508. doi: 10.1111/lands.12378.**(Noman Arshed(Economics/SBE) Muhammad Gulzar(SCA) Master Journal List**

Abstract: Generally, the labor supply curve oversimplifies the dynamics behind the decision to work. This study is aimed at finding out the cross-section-based determinants of total working hours in Pakistan. The analysis is carried out by using microdata from Labor Force Survey (2010-2011). The data showed that there is a significant share of people who are working for less than 35 hours a week, between 35 and 48 hours a week, and more than 48 hours a week. There is a need to explore the determinants of work hours, because in Pakistan there are 11.9% people who are underemployed and 40.2% people who are overemployed. The econometric analyses described the determinants of total working hours by personal factors (age, gender, education, and marital status), household characteristics (household size and number of siblings), and regional characteristics (such as province and region). For this purpose, the study uses linear regression analysis. Moreover, one of the main contributions of the study is that empirical studies fail to show due interest in depicting the severity of excessive utilization of human capital for a developing country like Pakistan. The present study fills this gap by presenting a detailed descriptive and econometric analysis of total working hours.

Keywords: *not Available.*

5. Pervaiz, S., **Ali, A.,** & Asif, M. (2019). Emotional intelligence, emotional labor strategies and satisfaction of secondary teachers in Pakistan. *International Journal of Educational Management*, 33(4), 721-733. doi: 10.1108/ijem-12-2017-0350.**(Amjad Ali (Economics/SBE) SJR (SKT Campus)**

Abstract: Purpose Emotional intelligence (EI) is crucial to determine the emotional labor (EL) strategies and satisfaction of teachers. The purpose of this paper is to investigate the relationships of EI with EL strategies, emotional exhaustion and teaching satisfaction (TS) of secondary teachers in private schools. Design/methodology/approach A self-administered questionnaire was used to collect data conveniently from 322 secondary teachers working in 22 private schools. Findings Results indicate that teachers' EI positively affect surface acting, expression of naturally felt emotions (ENFE) and TS. Surface acting and ENFE are positively related with TS. Deep acting and ENFE exhibit positive relations with emotional exhaustion of teachers. The study also confirms direct as well as indirect effects of EI on TS through surface acting and ENFE. Practical implications - This study recommends teachers to make a higher use of surface acting and ENFE because they produce the most TS and the least emotional exhaustion. Originality/value This is the first study that examines the mediating role of EL strategies for EI and TS.

Keywords: *emotional intelligence, emotional exhaustion, emotional labour strategies, private schools.*

6. Akram, M. W., Akram, N., Wang, H. S., & **Mehmood, A.** (2019). An Assessment of Economic Viability of Organic Farming in Pakistan. *Custos E Agronegocio on Line, 15*(1), 141-169.**(Ayesha Mehmood (Economics/SBE) Web of Science JCR Listed (IF: 0.390)**

Abstract: Despite the recognised advantages of organic farming, concerns remain over the differences in organic farms' productivity and financial sustainability compared to conventional farming competitors. We analyse primary data obtained from 301 farms-148 organic and 153 conventional-across three districts of central Punjab, Pakistan, in order to assess the aforementioned concern in the specific country context. This is undertaken through evaluating the yield and viability of both farming methods' cultivation of wheat as a major crop under two types of irrigation sources. We identified that cultivating organic crops is at least as advantageous as traditional crops regardless of the former's low yields, given the lower production expenditure and higher commodity prices. Nevertheless, both kinds of farming suffer from a 'middle man' cartel. Furthermore, organic crops' return on investment of organic crops is also significant, indicating that

farmers may obtain loftier returns through transitioning from conventional crops to organic crops. Overall, organic wheat's input costs are 19.09% lower than conventional crops. Moreover, canal irrigation has a significant positive effect on maintaining soil fertility and system sustainability as opposed to ground water. Regarding organic farming's individual and social advantages, we propose that facilitating organic farming can guarantee sustainable agricultural farming methods through enhancing surface water storage and supply. Organic farming's initial acceptance by farmers commercially will be fundamentally affected by organic consumer demand and market prices, which will ultimately determine whether organic farming production endures.

Keywords: *farm input, agricultural investment, agricultural productivity, organic farming.*

7. A Inabo, O. A., & **Arshed, N.** (2019). Impact of health, water and sanitation as key drivers of economic progress in Nigeria. *African Journal of Science Technology Innovation & Development, 11*(2), 235-242. doi: 10.1080/20421338.2018.1551832.**(Noman Arshed (Economics/SBE)** **SJR**

Abstract: This study examined the role of quality of health, water and sanitation as key drivers of economic progress, with a focus on Nigeria from 1990 to 2015. The indicators considered were economic progress (GDP per capita), health (infant mortality rate), access to water and sanitation. The ex-post facto research design was used in this study. Also, the Autoregressive Distributed Lags (ARDL) estimation method was chosen. Empirical findings show that there is a long-run relationship where the quality of health, water and sanitation has a positive effect on economic progress. The results indicate that access to water, sanitation and better health boosts the economic progress of Nigeria. It can be said that these facilities complement labour productivity. While comparing the policy options tested in this study, the improvement of the sanitation facilities has the highest marginal impact in fostering growth in Nigeria.

Keywords: *health, water, sanitation, GDP per capita, economic progress, infant mortality.*

8. Atiq-Ur-Rehman, M., **Hafeez-Ur-Rehman**, & Bashir, F. (2019). Capital Account Liberalization and Domestic Investment: A Panel Data Analysis for Emerging Market Economies. *Pakistan Journal of Social Sciences (PJSS), 39*(3), 817-826.**(Hafeez-Ur-Rehman (Economics/SBE)** **HEC Y CAT**

Abstract: The effects of financial globalization on emerging market economies (EMEs) have been a matter of concern for the policymakers. This study is an attempt to explore the impact of capital account liberalization on domestic investment in 17 major EMEs for the period 1991-2015. Generalized method of moments (GMM) and fixed effects (FE) techniques are employed by using different de facto and de jure measures of capital account liberalization. The empirical results indicate that financial liberalization affects domestic investment positively and significantly only when foreign direct investment (FDI) measure is considered. All the other de facto and de jure measures remain statistically insignificant. FDI facilitates the import of sophisticated production techniques and encourages the propagation of a competitive environment in the EMEs which in turn stimulates domestic investment.

Keywords: *capital account liberalization, foreign direct investment, emerging market economies.*

9. Asghar, N., **Hafeez-Ur-Rehman,** & Ali, M. (2019). Cost Productivity of Healthcare Systems in OIC's Member Countries: an Application of Cost Malmquist Total Productivity Index. *Review of Economics and Development Studies, 5*(3), 461-468.**(Hafeez-Ur-Rehman (Economics/SBE)** **HEC Y CAT**

Abstract: Strengthening healthcare system increases the productivity of healthcare spending. To evaluate changes in cost productivity over a five year period (2011- 2015) in 55 OIC's member states. The cost Malmquist productivity index and bootstrap truncated regression are applied to estimate the dynamics of the cost productivity and its determinants in the healthcare system of OIC's member states. Life expectancy and under 5 child survival rate are used as outputs while doctors, nurses, mid wives and beds per thousand

population are used as inputs. Public health expenditure is used as input price for measuring allocative efficiency change. The results of the study indicate that the cost productivity increases by 7.9% and the classical technical productivity grows by 8.9%. The increase in the cost productivity is mainly driven by an increase in allocative efficiency and technological change. All the determinants except population growth rate of cost productivity are found significant. Literacy rate and Per Capita GDP have come up the main driver of cost productivity growth. The study concludes that the impact of population growth on the overall shifts in the health production frontier is not significant.

Keywords: *total factor productivity, cost malmquist productivity index, health care, OIC's member countries.*

10. **Hassan, M. S., Arshed, N.,** Tahir, M. N., & **Imtiaz, A.** (2019). Economic Prospects of Stock Market Development: A Comparison of Two Worlds. *Paradigms, 13*, 117+.**(Muhammad Shahid Hassan, Noman Arshed, Abdullah Imtiaz (Economics/SBE) HEC Y CAT**

Abstract: The stock market is a crucial component of the financial system of any economy. This study proceeds with dynamic panel data investigation of the effect of development in the stock market on economic progress. The changes in the stock market are estimated using the market capitalization and stock value traded indicators. Based on the Fully Modified Ordinary Least Squares (FMOLS) estimates on selected economies, it is evident that stock value traded had a significant positive effect on the economic progress of both developed and developing economies. While market capitalization had a significant negative effect on the developed economies only. Finally, the study suggests that policymakers may design policies that enhance stock value traded.

Keywords: *stock market, economic progress, dynamic panel data analysis.*

11. **Hassan, M. S., Bukhari, S., & Arshed, N.** (2019). Competitiveness, governance and globalization: What matters for poverty alleviation? *Environment, Development and Sustainability*. doi: 10.1007/s10668-019-00355-y.**(Muhammad Shahid Hassan, Samra Bukhari, Noman Arshed (Economics/SBE) Web of Science JCR Listed (IF: 1.676)**

Abstract: Currently, poverty and food deficiency are prevalent in the region where two-thirds of the population is resided according to World Bank estimates [Klytchnikova (2017). Counting calories: the data behind food insecurity and hunger. The World Bank Data Blog. Available at http://blogs.worldbank.org/opendata/counting-calories-data-behind-food-insecurity-and-hunger?CID=POV_TT_Poverty_EN_EXT]. This panel data study is set to analyze the effect of competitiveness, governance and globalization on poverty in case of 73 developing countries from 2005 to 2016. The indicators of governance are extracted from World Governance Indicators, and an overall index is constituted using factor analysis. This study has estimated eight models with different proxies of governance and one without governance. The results estimated using feasible generalized least squares approach which confirmed that all governance indicators have a negative impact on poverty. Similarly, globalization, competitiveness and development expenditures also assist in poverty alleviation.

Keywords: *poverty gap, governance, globalization, competitiveness, FGLS, developing countries.*

12. **Hafeez-ur-Rehman**, Nadeem, M., & **Saeed, M. I.** (2019). Dilemma of Punishment Policies in Controlling Crimes in Pakistan: An Empirical Analysis. *Pakistan Journal of Social Sciences (PJSS), 39*(1), 341 – 349.**(Hafeez-Ur-Rehman, Muhammad Ibrahim Saeed (Economics/SBE) HEC Y CAT**

Abstract: The main objective of this study is to analyze the impact of the use of punishment policies in controlling crime in Pakistan. The study uses ARDL approach on annual time series data for the period 1981-2016. The results of the study reveal that punishment policies particularly the use of torture, extra judicial killings and disappearances incite more crime rather than controlling them. Furthermore, political

imprisonments are found to be helpful in reducing crime and judiciary has no significant impact on crime in Pakistan. This brings up the need to address the root cause rather than symptoms of crime. The study suggests that the accountability of politicians and reforms of judicial system may be helpful in reducing crimes in Pakistan.

Keywords: *ARDL, crime, punishment policies, time series.*

13. Asghar, N., **Hafeez-ur-Rehman,** & Mujaddid, H. G. (2019). Efficiency analysis of hospitals in Punjab districts: an application of DEA bootstrap. *Journal of Business Studies - JBS, 14*(1), 120-128.(**Hafeez-Ur-Rehman (Economics/SBE) HEC Y CAT**

Abstract: The main objective of this study is to analyze the efficiency of hospitals of districts of Punjab a province of Pakistan. The study uses output oriented DEA bootstrap technique formeasuring the efficiency of hospitals by utilizing four inputs and two outputs. The results ofthe study reveal that not a single district appears to be fully efficient when bias correctedefficiency technique is used. The overall efficiency which is measured in the form of mean efficiency have shown rising trend in 2011 and afterward little deterioration in 2013. Thestudy identifies the less efficient and highly efficient districts of hospitals of Punjab province of Pakistan. The inference from this study may be helpful for policy makers to formulate and implement policies which help the hospitals of districts of Punjab to perform better throughimproving their efficiency.

Keywords: *technical efficiency, dea bootstrap, output, hospitals.*

14. Maqbool, M. S., **Hafeez-ur-Rehman**, Bashir, F., & Ahmad, R. (2019). Investigating Pakistan's Revealed Comparative Advantage and competitiveness in Cotton Sector. *Review of Economics and Development Studies, 5*(1), 125-134.(**Hafeez-Ur-Rehman (Economics/SBE) HEC Y CAT**

Abstract: Cotton sector, one of the most important sectors of agriculture, plays a pivot role in the socio-economic uplift of Pakistan as its contribution to agriculture value addition is 5.5 % and to GDP is 1 %. It along with low wage cost also ensures the massive availability of raw material for textile industry which enables Pakistan to attain competitiveness in the world market. The aim of present study is ,therefore, to measure the export competitiveness in cotton sector of Pakistan by utilizing a set of Revealed competitive advantage and Revealed comparative advantage (RCA) indices such as RCA, RCA#, Symmetric Comparative index (RSCA), Revealed Import Advantage index (RMA), Net export index (NEI)and Revealed Trade Advantage index (RTA) vis-a-vis world trade. The data was taken from International Trade Center (ITC) UN-COMTRADE Statistics for Pakistani cotton from 2003-17. The results of the study explored that Pakistan had a comparative and competitive advantage in cotton exports, while comparative disadvantage in cotton imports. Moreover, Pakistan had net competitive advantage in cotton sector.The study suggests that there should be more emphasis on Infrastructure, reduction in the cost of production, utilities and finance, use of modern technology, investment in agricultural sector and marketing in international market to boost the exports volume of cotton. Net export index (NEI), Revealed, Symmetric Comparative index (RSCA) (Larsen 1998), Vollrath index (1991) (RCA#), Revealed Import Advantage index (RMA) and Revealed Trade Advantage index (RTA).

Keywords: *competitiveness, comparative advantage, cotton sector, textile, agricultural sector.*

15. **Iqbal, M., Kalim, R., & Arshed, N.** (2019). Domestic and Foreign Incomes and Trade Balance-A Case of South Asian Economies. *Asian Development Policy Review, 7*(4), 355-368.(**Mubasher Iqbal, Rukhsana Kalim, Noman Arshed (Economics/SBE) NOT HEC Recognized**

Abstract: The persistent trade deficit is one of the common issues of South Asia specifically, Bangladesh, India and Pakistan. While an increase in domestic income can help in the movement from import based economy to the economy with export capacity (quadratic effect), but quadratic effect of the world income

must also be evaluated as it creates demand for exports. This study has adapted Kuznets curve hypothesis to propose U shaped and inverted U shaped relationship of domestic income and world income respectively on the trade balance. By estimating Panel ARDL model using the data for three selected economies, this study has confirmed the U shaped and inverted U shaped relationship with respect to domestic income and world income respectively. Further policymakers can moderate domestic income effect to minimize trade deficit by boosting terms of trade and FDI.

Keywords: *income - trade kuznets curve, j curve phenomenon, world demand, panel ardl, quadratic transformation.*

16. **Arshed, N., Hassan, M. S.,** Khan, M. U., **& Uppal, A. A.** (2019). Moderating Effects of Logistics Infrastructure Development and Real Sector Productivity: A Case of Pakistan. *Global Business Review*, 0972150919879307.(**Noman Arshed, Muhammad Shahid Hassan, Arslan Arif Uppal (Economics/SBE) Master Journal List**

Abstract: A well-oiled logistics sector physically moves the economy towards higher growth. A developed logistics infrastructure facilitates backward and forward linkages in global trade and manages the business cost of accessing markets. Logistics sector facilitates sectorwise growth in a way that it eases goods transmissions mechanisms. This study has assessed four indices of logistics which are road, rail, air and sea transport by forming indices using 13 indicators. Auto regressive distributed lag (ARDL)bound approach-based long-run results show that, for the case of Pakistan, development in the road transport has highest potential in growth productivity of agriculture and services sector, while sea transport performed best in industrial sector.

Keywords: *real sector productivity, low productivity trap, moderating effect, logistics infrastructure, factor analysis, structural break test.*

17. Hanif, N., **Arshed, N.,** & Aziz, O. (2019). On interaction of the energy: Human capital Kuznets curve? A case for technology innovation. *Environment, Development and Sustainability*. doi: 10.1007/s10668-019-00536-9. (**Noman Arshed (Economics/SBE) Web of Science JCR Listed (IF: 1.676)**

Abstract: On the eve of depleting energy resources and global warming, there is a sincere push by OECD and other economies toward the sustainable energy consumption. This change of perception is mainly coined with the aim to change in attitude of people for the posterity. This study sets to evaluate the effect of development in human capital on the selection of renewable and non-renewable energy consumption. Further, this study put insights into the interaction effect of technology innovation to propose an early turning point for the energy—human capital Kuznets curve for OECD and non-OECD emerging countries. Panel FGLS model confirms the presence of the Kuznets curve for both OECD and non-OECD emerging countries, and there is an evidence of the supportive moderating role of technology innovation. Further practical implications are discussed.

Keywords: *energy sustainability, human development index (HDI), oil prices, exchange rate.*

18. **Kalim, R., Faiz, I., & Arshed, N.** (2019). Investor Confidence and Asymmetric Effects of Terrorism - A case of Pakistan. *Journal Transition Studies Review, 26*(2), 113-124. (**Rukhsana Kalim, Iqra Faiz, Noman Arshed(Economics/SBE) SJR**

Abstract: Foreign Direct Investment plugs the investment saving gap and a source for transfer of technology and productivity. The major reason for the flow of investment across borders is the difference in the rate of return. But the catch is that foreign investors are more risk averse as compared to the local investors. Investor confidence is sensitive to economic conditions especially like terrorist events which cause capital flight. This study tests the asymmetry in effects of terrorism on FDI, showing that in short run terrorism leads

to increase in FDI, later on, it decreases the FDI and it is the time period where asymmetry between the effects of increasing and decreasing FDI occurs. While in long run, the effect of an increase and decrease in terrorism tend to become almost equal and opposite. This indicates that Pakistan needs to be patient as it will take more time to regain investor confidence.

Keywords: *asymmetric effects ARDL, investor confidence, risk premium, political instability.*

19. Malik, S., Fatima, F., Imran, A., Chuah, L. F., Klemeš, J. J., Khaliq, I. H., **Usman, M., . . .** Bokhari, A. (2019). Improved project control for sustainable development of construction sector to reduce environment risks. *Journal of Cleaner Production, 240*, 118214. doi: https://doi.org/10.1016/j.jclepro.2019.118214.**(Muhammad Usman (Economics/SBE) Web of Science JCR Listed (IF: 6.395)**

Abstract: This study examines how environmental concerns impact the connectivity amid formal, informal control and performance based on data gathered from different 156 construction companies. The empirical outcomes illustrate that behaviour, outcome relationship between variables and clan control affirmatively affect performance on construction projects. However, self-control is unimportantly identified with project execution. This research uncovers that in construction projects, the adequacy of managerial control varies. The results further suggest that interior environmental concerns contrarily moderate the consequence of control of cleaner merchandise enactment during projects. However, external natural hazards emphatically direct the adequacy of project control, showing noteworthy and assorted roles played by different ecological dangers in the assembly of control and project execution. The interactive empirical outcomes between formal control and external environmental hazards are significantly related to project performance($t > 2$, and $p < 0.05$) however the controlling impact of the inner environmental hazard on project control is relatively lower ($\beta = 0.338$, $p > 0.05$). The study concluded the least significant of all controller means towards the enactment of construction projects. Results showed that for complex projects, operative control approaches should be prioritised over ineffective control methods.

Keywords: *leaner project control, construction sector, environmental risk, sustainable development, formal and informal control, project control performance.*

20. Iqbal, W., Altalbe, A., Fatima, A., **Ali, A.,** & Hou, Y. (2019). A DEA Approach for Assessing the Energy, Environmental and Economic Performance of Top 20 Industrial Countries. *Processes, 7*(12), 902. **(Amjad Ali (Knowledge Unit of Business, Economics, Accountancy and Commerce) SJR (SKT Campus)**

Abstract: Due to growing concerns of global warming, reducing carbon emissions has become one of the major tasks for developing countries to meet the national demand for energy policies. The objective of this study is to measure the energy consumption, carbon emission and economic-environmental efficiency in terms of the environmental performance of the top 20 industrial countries by employing a data envelopment analysis (DEA) model from 2013 to 2017. This study used the trilemma of energy efficiency, CO_2 emission efficiency, and environmental efficiency, and also the contribution included the quantitative analysis of 20 industrial countries The results show that the energy efficiency of Australia, China, Japan, Saudi Arabia, and Poland are the best performing countries, whereas Mexico, Indonesia, Russia, and Brazil are identified as least efficient among all 20 countries. Furthermore, Russia's energy intensity has a maximum score while Poland has a minimum score. Additionally, in the case of CO_2 emission efficiency, Brazil, France, and Saudi Arabia are considered as efficient while nine country's scores were less than 0.5. The results show that most countries exhibit higher performance in economic efficiency than environmental efficiency. The study provides valuable information for energy policy-makers.

Keywords: *energy consumption efficiency, CO2 emission efficiency, economic-environmental efficiency, Slack-based DEA, top 20 industrial countries.*

21. Asghar, N., Anwar, A., **Hafeez-Ur-Rehman**, & Javed, S. (2019). Industrial practices and quality of environment: evidence for Asian economies. *Environment, Development and Sustainability*. doi: 10.1007/s10668-019-00547-6. **(Hafeez-Ur-Rehman (Economics/SBE)** SJR

Abstract: The contemporary study takes under consideration some countries of Asia to fnd the cointegration and causal association between industrial growth and environmental degradation. To achieve this object, the data have been collected from 1986 to 2015. Study incorporates panel autoregressive distributed lag model and Pedroni co-integration method. All the variables are found to be stationary at frst diference. In order to explore long-run relationship, we include the estimates of pool mean group. Findings demonstrate that industrialization, energy consumption and trade volume deteriorate the quality of environment in long-run. However, short-run results indicate unidirectional causality running from industry value added per capita to CO2 emission, while energy consumption exhibits bidirectional causality with CO2 emission. The study asserts that there is need of hour to formulate and execute efcient environmental-friendly policies, specifcally in industrial sector.

Keywords: *CO2 emission, industrialization, autoregressive distributed lag model, energy consumption, causality.*

Conference Papers

1. Grant, K. A., Aziz, O., & **Arshed, N.** (2019, 29-30 April 2019). *The impact of entrepreneurial activity on poverty alleviation*. Paper presented at the 39th International Scientific Conference on Economic and Social Development –"Sustainability from an Economic and Social Perspective"-, Lisbon. **(Noman Arshed (Economics/SBE)**

Abstract: Over the last three decades, governments and international organizations such as the World Bank, the IMF, etc. have been trying to reduce poverty. Despite this, today, almost 2.5 billion people still live in poverty. Entrepreneurship is seen by many as a way to reduce poverty in all types of economies. Further, entrepreneurship facilitators can play an important role in creating a suitable environment for business activities, hence increasing entrepreneurial activities. This paper provides an insight into how entrepreneurial activity and entrepreneurship facilitators (Government, Incubators, and Financial Institutions) help in improving the business environment in all countries across the World and hence contributing to poverty alleviation. To investigate this, the Human Development Index (HDI) is used as a surrogate measure for poverty. Secondary data for Entrepreneurship (Entrepreneurial Facilitators, Entrepreneurial Activities, Governance Factors, Social Factors and Economic Factors) and Poverty (HDI)) were collected for the period of 2005 to 2016. Countries analysed are grouped as high-income countries, high medium-income countries, medium-income countries and low-income countries. The study found that there is a positive and significant relationship between entrepreneurial activity and the changes in Human Development Index (HDI) across all countries studied over the 12 year period. It also found that the presence of good entrepreneurial facilitators improves the capacity of entrepreneurial activity which reduces poverty as measured by the HDI. It adds to the body of knowledge by using HDI as a new tool to analyze the impact of entrepreneurial activity in a country. Finally, its findings suggest that entrepreneurial activity may have less impact on poverty alleviation in poor countries.

Keywords: *ease of doing business, enterpreneurial activity, poverty, moderator model, panel, FGLS model.*

2. Zeeshan, S., **Hassan, M. S., & Arshed, N.** (2019, 21 Dec 2019). *Empirics of Violent and non-Violent Crime - The case of Pakistan*. Paper presented at the 15th Islamic Countries Conference on Statistical Sciences, Lahore Insitute of Science and Technology Lahore Pakistan. **(Muhammad Shahid Hassan, Noman Arshed(Economics/SBE)**

Abstract: Literature provides mixed evidence of role of economic development on the deployment of human efforts in criminal activities. This study aims to explore the role of incomes using quadratic function against violent and non-violent crimes for Pakistan between 1981 and 2017. Analysis based on ARDL model proposed inverted U shaped relationship between income and crime while controlling for human capital, population density and urbanization. This study concludes that governments need to find the optimal income level which sways the cost benefit ratio towards the deployment of human efforts in legal market.

Keywords: *crime, education, population, ARDL.*

3. Aziz, O., Grant, K. A., **Arshed, N., & Malik, Z. F.** (2019, 5-8 June 2019). *Entrepreneurship Facilitators and their role in poverty alleviation*. Paper presented at the American Canadian Conference for Academic Disciplines, McGill University, Montreal Canada. **(Noman Arshed(Economics/SBE) Zohair Farooq Malik (School of Commerce and Accountancy/SCA)**

   Abstract: Poverty is a major issue across the world with governments and organizations such as the World Bank and the IMF increasingly looking for ways to reduce its impact. Despite this, almost 2.5 billion people still live in poverty. Entrepreneurial Activity can reduce poverty and can be boosted through the help of Entrepreneurship Facilitators such as Government, Incubators, and Financial Institutions. This study examines the relationship between Entrepreneurial Activity and poverty alleviation using Feasible Generalized Least Square (FGLS). The study found a positive and significant relationship between Entrepreneurial Activity and poverty alleviation as measured by the changes in Human Development Index (HDI) in all 104 countries studied over a 12 year period, and that the presence of good Entrepreneurial Facilitators improves the capacity of Entrepreneurial Activity. It suggests that governments need better business related regulations to motivate entrepreneurs and create ease of doing business.

   Keywords: *ease of doing business, entrepreneurial activity, poverty, moderator model, panel FGLS model.*

4. **Arshed, N.** (2019, 13-14 March 2019). *The Impact of Risk on the Preferences of Islamic Banks*. Paper presented at the Global Forum of Islamic Finance (GFIF), COMSATS University Lahore Campus.**(Noman Arshed (Economics/SBE)**

   Abstract: As is Islamic banking is based of risk-based products of profits and loss. The Islamic banks eagerly try to cover their risk. Thus, this leads them to the preference of low risk products instead of high-risk products by Islamic banks. On the other hand, the ideal goals of wealth distribution can be achieved if Islamic banks prefer select high risk modes of finance such as Musharkha and Mudarbah. But unfortunately, these modes are not in banks preference. Thus, this study will focus on the impact of modes of finance selection and their level of risk regarding to Islamic banks preferences to identify reasons behind banks preferences and provide their solutions. This is research will provide solutions for Islamic banks to mitigate risk in financial products. So, the banks can take financial products of high risk to high preference.

   Keywords: *islamic banking, risk management.*

5. **Arshed, N. & Kalim, R.** (2019, 27-29 Feb. 2019). *Modelling the demand and supply of Ijarah Financing*. Paper presented at the 4th Global Forum on Islamic Economics, Finance and Banking (IEFB), University of Management and Technology, Lahore Pakistan.**(Noman Arshed, Rukhsana Kalim(Economics/SBE)**

   Abstract: There are many studies which worked on the issues and acceptability of Ijarah. But the exploration of demand and supply based determinants of Ijarah is overlooked. This study is designed find such determinants using the bank based from financial statements and macroeconomic data from WDI for the countries which have full-fledged Islamic banks. This study will use Panel FGLS model to estimate demand for Ijarah and Supply of Ijarah models using determinants via theoretical model and empirical literature. The result of the study will be instrumental in determining the equilibrium Ijarah and future trends in terms of

under or over supply of Ijarah. Further this study will identify the price elasticities of demand and supply for the case of Ijarah financing.

Keywords: *ijarah financing, equilibrium modelling, full-fledged islamic banks.*

6. Zahid, T., **Arshed, N., Munir, M., & Hameed, K.** (2019, 27-29 Sept. 2019). *Energy Preferences and Human Development: A Case Study of SAARC Region*. Paper presented at the 15th South Asian Management Fourm, IBA University Sukkur, Pakistan.**(Noman Arshed(Economics/SBE), Mubbasher Munir (Quantitative Methods/SBE), Kamran Hameed (Management/SBE)**

   Abstract: Large number of studies evidenced the role of energy on growth and renewable energy as a cleaner input, which is the need of the hour as because of population and growth the energy demand is on the rise in South Asia region. This study scrutinizes the quadratic effect of the non-renewable and renewable energy consumption mix and its impact on sustainable development while controlling for trade openness, development expenditures and industrialization. This study resorts to feasible generalized least squared model for the estimation of quadratic function for 5 SAARC countries between 1990 and 2017. The results show that the non-renewable to renewable energy mix ratio follows an inverted U shaped relationship with HDI. Further renewable energy must be significantly higher than non-renewable energy in order to ensure that it is development promoting.

   Keywords: *energy mix, Asia, sustainable development.*

7. Fareed, A., **Arshed, N., Hameed, K., & Munir, M.** (2019, 27-29 Sept 2019). *The incidence of Macroeconomic gaps and prevalence of Poverty*. Paper presented at the 15th South Asian Management Fourm, IBA University Sukkur, Pakistan.**(Noman Arshed(Economics/SBE), Kamran Hameed (Management/SBE), Mubbasher Munir(Quantitative Methods/SBE)**

   Abstract: The aspiration to pull people out of poverty started under the program of Millennium Development Goals and Sustainable Development Goals in 1990's and in 2010's. This program worked well, but still, 10.5% of the world are living in extreme poverty. Further alleviation of poverty, especially in developing economies requires tackling resource constraints. Unlike other studies which provide determinants of poverty, this study proposes conventional economic resources gaps like trade gap, fiscal gap and saving-investment gap as binding constraints in efforts of poverty alleviation. Estimates of Panel Feasible Generalized Least Square approach for the data of 2000-2017 points out that the trade gap and saving-investment gap forms inverted U shaped and U shaped relationship respectively. The results of this study are instrumental in forming country-specific policy based on the incidence of economic resource gaps.

   Keywords: *social inclusion, trade deficit, fiscal deficit, saving-investment gap.*

8. Ahmad, W., **Kalim, R., & Arshed, N.** (2019, 27-29 Sept 2019). *Role of Real Sector on HDI: Does Competitiveness Contribute?*. Paper presented at the 15th South Asian Management Fourm, IBA University Sukkur, Pakistan.**(Rukhsana Kalim, Noman Arshed (Economics/SBE)**

   Abstract: This study envisages to explore the role of business competitiveness as a potential moderator in boosting the capacity of real sector to cause development. Hence it is proposed that competitiveness policy can be elementary in increasing development based productivity of the real sector. Using the panel data of 111 countries between 2006 and 2017, the FGLS estimates showed that business competitiveness policy is useful in increase productivity of services sector and agriculture sector of low and low middle income countries while it is useful is increasing productivity of industry sector and agriculture sector of high income countries. It is evident from the estimates that higher income countries are extracting higher returns from the competitiveness policy and surprisingly competitiveness reaps positive externality as the overall model show higher returns to competitiveness as compared to income wise models.

Keywords: *agriculture sector, services sector, industry sector, fgls model, productivity trap.*

Department of Finance

Research Articles

1. Azhar, S. M., **Tashfeen, R.,** Khalid, J., & **Azhar, T. M.** (2019). Dichotomy in ethical perceptions of business students: an emerging country perspective. *Journal of International Education in Business, 12*(1), 43-64. doi: 10.1108/jieb-05-2018-0015. **(Rubeena Tashfeen (Finance /SBE), Tashfeen Mahmood Azhar (Department of Operations and Supply Chain/SBE) SJR**

Abstract: Purpose The Corruption Perception Index (CPI) for 2016 shows Pakistan as among the more corrupt nations in the world with a ranking of 117 among 176 countries surveyed. This situation raises concerns about members of the society and especially about the business communities. This paper aims to examine whether the tendency to corruption is also prevalent amongst business students, the future leaders and executives of business organizations. Design/methodology/approach The study uses survey questionnaires in the manner of Parsa and Lankford (1999) to examine the ethical levels of business students. It uses Levene's (1960) tests for equality of variances and the t-test for equality of means to examine whether there are difference in the ethical perceptions between: bachelors (BBA) and graduate (MBA) students, business students who have taken the ethics course and those who have not, and female and male students. The authors also examine the overall ethical perceptions of business students. Findings The results show that students seem to make a clear distinction in respect of what they consider as acceptable and unacceptable ethical behavior. They would not indulge in behavior that directly falls within the category of stealing, misusing of company's resources and undertaking actions that are wrong or dishonest, which may stem from their religious indoctrination. However, they would consider as acceptable behavior the overlooking of safety violations, not telling on peers, and fudging of the truth to get the job done. The latter attitude appears to be in line with business objectives of achieving targets irrespective of the means employed and that inform business education. We do not find any differences between the behavior of women and men which may be the outcome of the same religious indoctrination and educational perceptions. While there is a difference in the ethical perceptions between students who have taken the ethics course and those who have not, the course is not able to counter the lack of ethics among business students. There is a need for some stronger measures to inculcate a set of ethical values within students. However, we did find that some of the unethical behavior is diluted at the MBA level in comparison to BBA students. Originality/value This study provides new insights into the ethical perceptions of students in an Islamic emerging country. There is a conflict between ethics conveyed through Islamic precepts, and the ethics of business education with a focus on profits/revenues, costs, performance and competition that endorses a Machiavellian attitude of achieving goals at any cost and the love of money (Tang and Chen, 2008). It is the first study to suggest a differentiation in the ethical behavior of business students that exhibit both ethical and unethical behavior. There appears to be a clear segregation between what students deem as acceptable and unacceptable ethical behavior that may result from their personal/religious beliefs, and their business attitudes that strongly informs their ethical behavior. It provides a basis for developing more customized and effective ethics courses in Pakistan and suggests more importantly that ethics needs to be integrated into business concepts imparted in business programs at universities.

Keywords: *religion, culture, business ethics, developing country, business students, gender.*

2. **Khan, T. M.**, Rizvi, S. K. A., & **Sadiq, R.** (2019). Disintermediation of banks in a developing economy Profitability and depositor protection in adverse economic conditions. *Managerial Finance, 45*(2), 222-243. doi: 10.1108/mf-11-2017-049. **(Tahseen Mohsan Khan, Ramla Sadiq (Finance /SBE) SJR**

Abstract: Purpose The purpose of this paper is to investigate how Pakistani banks manage their portfolios (lending vs investment) when the economic indicators are not supportive. This study investigates three aspects of the banking system in Pakistan - prevalence of disintermediation, post-crisis profitability orientation and depositor protection by financial system in unfavorable conditions. Design/methodology/approach This study is limited to identifying the key economic and financial drivers behind disintermediation and its subsequent impact on banks' profitability and depositors' protection. GLS panel regressions and Engle-Granger causality test as specified by the error correction model have been used to test the major hypothesis of this study. Findings This study shows that small banks have been shifting major part of their portfolios toward risk-free investments to be able to maintain their profitability more efficiently and effectively, like large banks. The study also observes that significant pairing causality exists between gross credit loans and investments confirming disintermediation hypothesis for all types of banks except Islamic or Sharia compliant banks, whereas for significant pairing causality, the results are mixed for remaining variables among gross credit loans as a proportion of assets and economic variables that include GDP growth, unemployment, KSE-100 and SBP policy rate. It is also confirmed by the results that disintermediation improves banks profitability and depositor protection, thus providing a good rationale and justification to banks for opting it. Originality/value The study focuses on the impact of structural changes in portfolios only of commercial banks' revenue-generating assets not including other financial institutions as a part of banking system. Furthermore, data are extracted from balance sheets and is the sole property of corresponding author.
Keywords: *profitability, banks, macroeconomic indicators, disintermediation.*

3. **Rafay, A., Yasser, F., & Khalid, Z.** (2019). Revaluation of Non-Current Assets Under IAS-16: Possibility of Any Managerial Inducement: Evidence From a South Asian Economy. *DLSU Business and Economics Review, 29*(1), 93-105. **(Abdul Rafay, Zunera Khalid (Finance/SBE) Farah Yasser (SCA)** SJR

Abstract: The revaluation of non-current assets under IAS-16 has now turned into a usual practice in Pakistan. The obvious reason is to give additional significant information to various stakeholders around an organization's balance sheet. Besides, the management inducement behind this revaluation of assets may differ. The aim of this research is to study the essential management incentives that arise due to the upward revaluation of non-current assets of firms listed on the Pakistan Stock Exchange for the period 2008–2017. Logistic regression and Mann Whitney U-test were used to analyze the data. It was hypothesized that firms take revaluation decisions to reduce the contracting cost, political cost, and the information asymmetry cost. It is concluded that there is a significant relationship between political cost (firm size) and some portion of information asymmetry cost (intensity non-current assets and stock dividend) with the dependent variable. Other variables like information asymmetry cost and growth were found to be insignificant and did not show any significant relationship with the revaluation of non-current assets. Contracting cost was not found to be significantly linked with upward revaluation. It is finally concluded that firms with a larger size, more intensity ratio, and less declaration of the stock dividend will have more chances to do a continual revaluation of non-current assets under IAS-16. This paper especially looks at whether revaluation of non-current assets is connected with the size of a firm and whether firms revalue their assets with an end goal to strengthen their financial position and prospects. Practically, in the light of this study, accounting regulatory bodies must define some preconditions for revaluation policy to stop the usage of creative and abusive reporting. Policymakers should encourage researchers to investigate the impact of revaluation policy on the financial performance of the companies.
Keywords: *information asymmetry, leverage, non-current assets, political costs, revaluation.*

4. **Rafay, A.,** Franco, G., & **Gilani, U. J. (**2019). Measuring competition in banking industry: evidence from Latin American economies. *Pakistan Business Review, 21*(1). **(Abdul Rafay, Usman Javed Gilani (Finance /SBE) HEC X CAT**

Abstract: This study investigates the speed at which the banking sector of Latin American countries adjust to equilibrium levels in the long run. For this purpose partial adjustment process to Panzar and Rosse H-Statistics is used. Markets adjust towards the long-run equilibrium in a non-instantaneous manner. In order to estimate the structure of market the adjustment speed is of crucial importance. In this paper, an empirical model on the basis of partial adjustment model is developed to measure this convergence speed. Empirical results from the Latin American economies suggest that the transition and speed of adjustment towards the long-run equilibrium varies from market to market depending on the profit deviation from market averages. It is suggested that profit deviations should be monitored by the banking regulators and all banks in Latin America should keep an eye on optimization to remain competitive and sustainable in the long run.

Keywords: *banking, competition, efficiency, h-statistics, partial adjustment model.*

5. **Rafay, A., & Farid, S.** (2019). Islamic banking system: a credit channel of monetary policy – evidence from an emerging economy. *Economic Research-Ekonomska Istraživanja, 32*(1), 742-754. doi: 10.1080/1331677X.2019.1579662**. (Abdul Rafay, Saqib Farid (Finance /SBE) Web of Science JCR Listed (IF: 1.381)**

Abstract: Since its inception, Islamic banking in Pakistan has shown remarkable growth and development. Most recent statistics reveal that industry has captured around 13% of the total banking market in Pakistan. This outstanding growth of the industry highlights the crucial role of Islamic banks for monetary policy considerations. This study aimed to evaluate the role of Islamic banks in the monetary transmission process in Pakistan. The study examined the role of two most crucial balance sheet items of Islamic banks in the monetary transmission process: (1) Islamic deposits and (2) Islamic financing. The paper employed time series techniques such as the J.J. co-integration test, Vector Auto Regression, Variance Decomposition Analysis and Impulse Response Function to investigate the role of Islamic banks in the monetary transmission process. The study sample covered the time period 2007–2017. The results revealed the significant role of Islamic banks in transmitting monetary decisions to the real economy. Moreover, the evidence demonstrated the active bank lending channel of Islamic banking in Pakistan. The findings also corroborated the functional role of Islamic banks along with their conventional counterparts for effective formulation of monetary policy in Pakistan.

Keywords: *islamic banks, islamic deposits, large scale manufacturing index (lsmi), monetary policy, irf, vdc.*

6. **Khan, M. M. S., Tashfeen, R.**, & Saghir, S. (2019). Working capital management and performance in manufacturing sector of Pakistan. *Journal of Business and Retail Management Research (JBRMR), 13*(3), 70-82. **(Muhammad Mahmood Shah Khan , Rubeena Tashfeen (Finance/SBE) SJR**

Abstract: Purpose: The main objective of the study is to examine whether there is an effective management over components of working capital in the manufacturing sector of Pakistan.

Design/Methodology: Data is collected from the annual reports of 94 Pakistani non-financial firms listed on Pakistan Stock Exchange (PSX) for the period of 2011- 2016. Fixed Effects methodology is employed in the study after determining the best fit model through the Hausman test, and effectiveness of working capital management is gauged through the impacts on profitability of the firm.

Findings: The results show that inventory turnover, average collection period and cash conversion cycle have an insignificant relationship with profitability, indicating that working capital management (WCM) is not important in the manufacturing sector. It appears levels of current assets are maintained to support current

ratio and solvency to sustain the high levels of debt financing. However, average payment period has a significant negative association with profitability demonstrating that firms may be managing working capital through payables, where reduction in payables increase profitability through better trade and cash discounts and timely supplies. Therefore, it is evidenced that management focuses on the liabilities side of the WCM equation and maintains current assets for other purposes.

Practical implication: The results provide insights into manufacturing sector practice of maintaining levels of current assets as cushion against financial and operational risks, and the managing of working capital requirements through payables. It provides banks and other financial institutions a perspective into the working capital behavior of the manufacturing sector.

Originality statement: The paper provides innovative insights into the manufacturing sector practice of focusing on the current liabilities to manage working capital and maintaining levels of current assets as cushion against risk and to support borrowings. It suggests that in this sector, the conventional working capital practices are not applied.

Keywords: *working capital, inventory turnover in days, average collection/payment period, cash conversion, cycle, gross operating profitability.*

7. **Rafay, A.,** & Singh, N. (2019). Bright Paint Industries: Expansion Through Internationalization. *South Asian Journal of Business and Management Cases, 9*(1), 40-53. doi: 10.1177/2277977919881399. **(Abdul Rafay (Finance/SBE) SJR**

Abstract: One fine evening of February 2018, while sitting on his rocking chair, the CEO of Bright Paint Industries (BPI) recalled the experience of exporting paints to Afghanistan and its financial returns. At the same time, he recalled the exhibitions of UAE in 2015 and 2016. Since 2016–2017, the top management was analyzing growing demands in local and foreign markets and very much concerned about implications of (1) rising competition from unorganized paint sector, (2) the customers' trend towards using alternatives to paints like wallpapers, etc. and (3) ease of doing business in Pakistan due to persistent energy crises and other factors. Keeping in view the above-said issues and its existing presence in paint industry for the last four decades, the company is now considering two options: (1) expand its existing operations in Pakistan and cater the foreign markets by export from here or (2) set up a plant at some foreign location and fulfil orders from there.

Keywords: *business strategy, international business, corporate finance, forecasting, sustainability.*

Book/Book Chapters

1. *FinTech as a Disruptive Technology for Financial Institutions*. (2019). (**A. Rafay** Ed. 1 ed.). Hershey, Pennsylvania, USA: Business Science Reference**. (Abdul Rafay (Finance /SBE)**

Abstract: FinTech as a Disruptive Technology for Financial Institutions is an essential reference source that discusses applications of FinTech in financial institutions in small, medium, and large businesses and through cultural and religious filters. Featuring research on topics such as machine learning, market development, crypto-currency, financial security, blockchain, and financial technology, this book is ideally designed for bankers, business managers, economists, computer scientists, academicians, researchers, financial professionals, and students.

Keywords: *blockchain, crypto-currency, disruptive technology, financial security, financial services, financial technology, high-frequency finance, insurance sector, machine learning, market development, social responsibility, stock market behaviors, stock prediction.*

Conference Papers

1. **Younas, K. & Rafay, A.,** (2019). *Women entrepreneurship and financial literacy - Case of female borrowers in Pakistan*. Paper presented at the Seventh Annual Business Research Conference on Managing Business in Pakistan, Lahore School of Economics, Pakistan.**(Kinza Younas, Abdul Rafay (Finance/SBE)**

   Abstract: Access to finance through financial institutions is highly dependent on financial literacy. The basic purpose of this paper is to examine the women's financial literacy level in Pakistan especially among the women entrepreneurs. This study also tries to determine the effect of financial literacy of women entrepreneurs on their access to finance and subsequent financial decision-making about their businesses. Current research conducted in this study used semi-structured questionnaires, selected interviews and focus groups. Findings show that women entrepreneurs lack proper knowledge of financial terminologies, mechanism of financial access and government initiatives for women entrepreneurs. It is suggested in the light of these findings, that all the relevant stakeholders should work together to enhance financial literacy among current and prospective women entrepreneurs of Pakistan. Strengthening of women entrepreneurship may play a significant role to alleviate poverty among female population of the country.

   Keywords: *financial literacy, women, entrepreneurship, women empowerment.*

2. Farid, S., & **Rafay, A.** (2019). *SME Development: The Tale of Terrorized Economy* Paper presented at the United States Association for Small Business and Enterpreneurship (USASBE) Conference 2019, Florida, USA. . https://whova.com/embedded/subsession/usasb_201901/504991/505345/. **(Abdul Rafay (Finance/SBE)**

   Abstract: For the first time, we empirically investigate the impact of terrorism on financing extended to SMEs by banks in Pakistan.In this study we use SME financing as proxy of SME development in Pakistan and number of terrorist attacks as proxy of terrorism. Additionally, we also include two controlling variables non performing loans of SME sector and counter terrorism funding in our analysis.Our results confirm the existence of short run and long run causal relationship between terrorism and SME growth. Additionally, the evidence also shows that SME financing shows negative response to terrorist activities in Pakistan.

   Keywords: *not available.*

Department of Management

Research Articles

1. De Clercq, D., Haq, I. U., & **Azeem, M. U.** (2019). Workplace ostracism and job performance: roles of self-efficacy and job level. *Personnel Review,* 48(1), 184-203. doi: 10.1108/pr-02-2017-0039.**(Muhammad Umer Azeem (Management/SBE) Web of Science JCR Listed (IF: 1.362)**

   Abstract: Purpose - The purpose of this paper is to investigate how employees' perceptions of workplace ostracism might reduce their job performance, as well as how the negative workplace ostracism-job performance relationship might be buffered by their self-efficacy. It also considers how this buffering role of self-efficacy might vary according to employees' job level. Design/methodology/approach - Quantitative data came from a survey of employees and their supervisors in Pakistani organizations. Findings - Workplace ostracism relates negatively to job performance, but this relationship is weaker at higher levels of self-efficacy. The buffering role of self-efficacy is particularly strong among employees at higher job levels. Practical implications - Organizations that cannot prevent some of their employees from feeling excluded by other members can counter the related threat of underperformance by promoting employees' confidence in their own skills and competencies. This measure is particularly useful among higher-ranking employees. Originality/value - This study provides a more complete understanding of the circumstances in which workplace ostracism is less likely to diminish employees' job performance, by specifying the concurrent influences of workplace ostracism, self-efficacy and job level.

Keywords: *workplace ostracism, job performance, self-efficacy, conservation of resources theory.*

2. De Clercq, D., Ul Haq, I., & **Azeem, M. U.** (2019). Why happy employees help: How meaningfulness, collectivism, and support transform job satisfaction into helping behaviours. *Personnel Review, 48*(4), 1001-1021. doi: 10.1108/pr-02-2018-0052.**(Muhammad Umer Azeem (Management/SBE) Web of Science JCR Listed(IF: 1.362)**

   Abstract: Purpose Drawing from conservation of resources theory, the purpose of this paper is to investigate the relationship between employees' job satisfaction and helping behaviour, and, particularly, how it may be moderated by two personal resources (work meaningfulness and collectivistic orientation) and one organisational resource (organisational support). Design/methodology/approach Quantitative data were collected from a survey administered to employees and their supervisors in a Pakistani-based organisation. Findings The usefulness of job satisfaction for stimulating helping behaviour is greater when employees believe that their work activities are meaningful, emphasise collective over individual interests, and believe that their employer cares for their well-being. Practical implications The results inform organisations about the circumstances in which they can best leverage employees' positive job energy, which arises from their job satisfaction, to encourage their voluntary assistance of other organisational members. Originality/value This study extends research on positive work behaviours by examining the concurrent roles that job satisfaction and several contingent factors play in promoting employee helping behaviour. In particular, it highlights the invigorating effects of these factors on the usefulness of the enthusiasm that employees feel about their job situation for increasing their willingness to extend help to other members, on a voluntary basis.

   Keywords: *quantitative, job satisfaction, perceived organizational support, collectivistic orientation, helping behaviour, work meaningfulness.*

3. De Clercq, D., Ul Haq, I., **Azeem, M. U.,** & Ahmad, H. N. (2019). The Relationship between Workplace Incivility and Helping Behavior: Roles of Job Dissatisfaction and Political Skill. *Journal of Psychology, 153*(5), 507-527. doi: 10.1080/00223980.2019.1567453.**(Muhammad Umer Azeem, (Management/SBE) Web of Science JCR Listed (IF: 1.430)**

   Abstract: This article investigates the mediating role of job dissatisfaction in the relationship between employees' perceptions of workplace incivility and their helping behavior, as well as the buffering role of political skill in this process. Three-wave, time-lagged data collected from employees and their supervisors revealed that employees' exposure to workplace incivility diminished their helping behavior through their sense of job dissatisfaction. This mediating role of job dissatisfaction was less salient, however, to the extent that employees were equipped with political skill. For organizations, this study accordingly pinpoints a key mechanism-namely, unhappiness about their job situation-through which rude coworker treatment links to lower voluntary workplace behaviors among employees, and it reveals how this mechanism can be better contained in the presence of political skill.

   Keywords: *workplace incivility, helping behavior, job dissatisfaction, political skill, conservation of resources theory.*

4. **Shahzad, K.**, Arenius, P., Muller, A., **Rasheed, M. A., & Bajwa, S. U.** (2019). Unpacking the relationship between high-performance work systems and innovation performance in SMEs. *Personnel Review, 48*(4), 977-1000. doi: 10.1108/pr-10-2016-0271.**(Khuram Shahzad, Muhammad Athar Rasheed and Sami Ullah Bajwa (Management/SBE) Web of Science JCR Listed(IF: 1.362)**

Abstract: Purpose The purpose of this paper is to explore the black box between high-performance work systems (HPWS) and innovation performance in small- and medium-sized enterprises (SMEs). Through application of the ability, motivation and opportunity (AMO) framework, the study examines the mediating roles of innovation-specific ability, motivation and voice behaviors between HPWS and SMEs' innovation performance. Design/methodology/approach The hypotheses are tested on data collected through a self-administered questionnaire from 237 SMEs in Pakistan. Findings Findings indicate that human capital, motivation and employee voice fully mediate the relationship between HPWS and innovation performance in SMEs. Research limitations/implications The cross-sectional research design and self-reported measures warrant caution for the interpretation of findings. Future research may consider a longitudinal research design and objective measures. Practical implications SMEs need to invest in the adoption and implementation of HPWS that will develop innovation-specific abilities, motivation and voice behaviors simultaneously among employees that will lead to higher innovation performance. Originality/value This is the first study of its kind utilizing an AMO framework to investigate the underlying mechanism through which HPWS affect innovation performance in SMEs.
Keywords: *innovation, quantitative, employee voice, high-performance work systems, small- to medium-sized enterprises (SME), the ability, motivation and opportunity framework.*

5. **Ayub, M. U., Kanwal, F., & Kausar, A. R.** (2019). Developing knowledge creation capability: The role of big-five personality traits and transformational leadership. *Pakistan Journal of Commerce and Social Sciences, 13*(1), 30-61.**(Umer Ayub, Fizza Kanwal, Abdul Rashid Kausar (Management/SBE)** SJR
Abstract: Current research aims to develop and test a conceptual framework that poses attention to individuals‟ personality as a potential predictor of their knowledge creation capability, considering the mediating effect of transformational leadership. According to an estimate, poor knowledge management costs Fortune 500 companies‟ huge annual losses through taking a toll on their efficiency and productivity. Thus knowledge management is crucial for organizations, and various ways to improve knowledge creation and management need to be studied. In this regard, current research uses Nonaka‟s knowledge creation theory to study the knowledge creation capability in organizations as a consequence of managers‟ personality and leadership style. Cross-sectional data was collected from middle level managers working in thirteen different organizational sectors from Pakistan. Covariance based structural equation modeling was used to test hypotheses. All scales were found reliable, however, measurement models were re-specified to improve the construct validity. Through SEM, this research revealed that openness, agreeableness and extraversion have direct influence on knowledge creation capability. Furthermore, transformational leadership mediates the relationship between all the Big-Five personality traits and knowledge creation capability. Therefore, to develop knowledge creation capability of managers, organizations should rethink their organizational procedures to put in place such recruitment, selection, and training & development practices that are oriented towards managers‟ personalities and their leadership styles. To the best of our knowledge, this is the first study that identifies Big-Five personality traits as antecedents of knowledge creation capability, incorporates transformational leadership in the model, and tests these relationships empirically. It also provides valuable insights in the domain of knowledge management among middle level managers of various Pakistani firms.
Keywords: *knowledge creation capability, openness to new experience, agreeableness, conscientiousness, extraversion, neuroticism, big-five personality traits, transformational leadership.*

6. **Kanwal, F.,** Rathore, K., & Qaisar, A. (2019). Relationship of Benevolent Leadership and Organizational Citizenship Behavior: Interactional Effect of Perceived Organizational Support and Perceived Organizational Politics. *Pakistan Journal of Commerce & Social Sciences, 13*(2), 283-310.**(Fizza Kanwal (Management/SBE)** SJR

Abstract: Benevolent leadership has emerged as a contemporary leadership style that has scantly been studied. To address this gap in literature, current research pursues a threefold objective. First, it validates the measurement scale of benevolent leadership in the context of Pakistan. Second, it tests the effect of benevolent leadership on employees' organizational citizenship behavior (OCB). Third, it studies the role of perceived organizational support (POS) and perceived organizational politics (POP) as potential moderators. Data was collected from a representative sample of 202 information technology companies operating in Pakistan through structured questionnaires. Confirmatory factor analysis via AMOS was conducted to validate the measurement scale. Model fit indices, AVE and Fornell & Larcker criteria provided the evidence of its validity, while reliability was ensured through Cronbach's alpha and composite reliability measures. The analysis through linear regression and PROCESS MACRO revealed that benevolent leadership enhances employees' OCB. Furthermore, POP and POS moderate the relationship between benevolent leadership and employees' OCB.

Keywords: *organizational citizenship behavior, leadership, regression analysis, confirmatory factor analysis, cronbach's alpha, pakistan, benevolent leadership, it companies, perceived organizational politics, perceived organizational support.*

7. Jamil, J., Rathore, K., Qaiser, A., & **Kanwal, F.** (2019). Does perceived organizational support influence organizational citizenship behavior? evidence from telecom sector in Lahore, Pakistan. *Pakistan Vision, 20*(1), 1-21.**(Fizza Kanwal (Management/SBE) HEC Y CAT**

   Abstract: This study examines the relationship among perceived organizational support, employees' affective commitment and organizational citizenship behavior in telecom sector of Lahore, Pakistan. Employing a crosssectional research design and using structured questionnaire based on measures used by previous studies, Data was collected from a nonprobability sample of 230 employees working in 5 telecom companies in Lahore. Results indicate that perceived organizational support is positively related to employees' affective commitment and organizational citizenship behavior, and that affective commitment mediates the relationship between perceived organizational support and OCB at individual and organizational level. It is concluded that telecom companies can realize maximum potential of their employees by offering comprehensive support to them. The study is limited in its generalizability because of the non-probability sampling.

   Keywords: *not available.*

8. Ur Rehman, Z., Khawaja, K. F., & **Ali, S. A.** (2019). Enhancing Absorptive Capacity through Communication: Mediating Role of Trust and Knowledge Sharing: A Case of Virtual Universities. *Pakistan Journal of Commerce & Social Sciences, 13*(2), 358-384.**(Syed Ahmad Ali (Management/SBE) SJR**

   Abstract: This study aims to highlight the importance of communication and absorptive capacity in virtual universities of Pakistan. In this relationship, this study also investigates the mediating role of trust and knowledge sharing. This study applies social exchange theory to understand the relationship among variables. Some of the relationship between variables was also supported through theory of knowledge creation. For this study, data was collected from 267 employees of two virtual universities in Pakistan. After running the reliability & validity tests, this study used PROCESS Macros by Hayes for mediation analysis. The results suggest that communication has a positive and significant impact on absorptive capacity. Results further prove that trust and knowledge sharing sequentially mediate the relationship between communication and absorptive capacity. The findings of the study reveal that greater opportunities of communication, trust and knowledge sharing among virtual employees leads to build their absorptive capacity. This study is useful for virtual organizations, as it provides a mechanism of communication to improve the absorptive capacity of cross-functional virtual employees under behavioral stress i.e. trust and

knowledge sharing. This study suggests that future research may focus on specific team level analysis for innovative behavior etc.

Keywords: *absorptive capacity, trust, knowledge sharing, cross-functional communication, virtual universities.*

9. De Clercq, D., Ul Haq, I., & **Azeem, M. U.** (2019). Time-related work stress and counterproductive work behavior Invigorating roles of deviant personality traits. *Personnel Review, 48*(7), 1756-1781. doi: 10.1108/pr-07-2018-0241.**(Muhammad Umer Azeem(Management/SBE) Web of Science JCR Listed(IF: 1.362)**

Abstract: Purpose With a basis in the conservation of resources theory, the purpose of this paper is to investigate the relationship between employees' experience of time-related work stress and their engagement in counterproductive work behavior (CWB), as well as the invigorating roles that different deviant personality traits might play in this process. Design/methodology/approach Two-wave survey data with a time lag of three weeks were collected from 127 employees in Pakistani organizations. Findings Employees' sense that they have insufficient time to do their job tasks spurs their CWB, and this effect is particularly strong if they have strong Machiavellian, narcissistic or psychopathic tendencies. Originality/value This study adds to extant research by identifying employees' time-related work stress as an understudied driver of their CWB and the three personality traits that constitute the dark triad as triggers of the translation of time-related work stress into CWB.

Keywords: *quantitative, conservation of resources theory, counterproductive work behaviour, dark triad, time stress.*

10. De Clercq, D., Suhail, A., **Azeem, M. U.,** & Ul Haq, I. (2019). Citizenship pressure and job performance: roles of citizenship fatigue and continuance commitment. *Asia Pacific Journal of Human Resources*. doi: 10.1111/1744-7941.12241.**(Muhammad Umer Azeem(Management/SBE) Web of Science JCR Listed (IF: 0.891)**

Abstract: This study investigates the relationship between employees' experience of citizenship pressure and job performance, as well as the mediating role of citizenship fatigue and moderating role of continuance commitment. Multisource, time-lagged data from employees and their supervisors in Pakistan reveal that employees' beliefs that they have no other choice than to take on allegedly voluntary activities undermine their job performance, due to energy depletion evoked as citizenship fatigue. Their continuance commitment buffers this process, the indirect relationship between citizenship pressure and job performance, through citizenship fatigue, is weaker when employees believe they have limited employment alternatives, because they may perceive expectations of their citizenship as opportunities instead of threats in this case. Human resource managers thus should recognize that excessive organizational pressures for citizenship behaviors can undermine job performance, but less so among employees for whom leaving the organization appears costly.

Keywords: *citizenship fatigue, citizenship pressure, conservation of resources theory, continuancecommitment, job performance.*

11. De Clercq, D., Ul Haq, I., & **Azeem, M. U.** (2019). Role ambiguity and perceptions of unfair performance appraisals: mitigating roles of personal resources. *Asia Pacific Journal of Human Resources, 57*(2), 150-173. doi: 10.1111/1744-7941.12178.**(Muhammad Umer Azeem(Management/SBE) Web of Science JCR Listed (IF: 0.891)**

Abstract: Drawing from conservation of resources theory and attribution theory, this study adds to human resource literature by investigating the relationship between role ambiguity and employees' beliefs that their performance is unfairly evaluated by their organization, as well as the buffering roles of relevant personal

resources. In particular, the presence of unclear role descriptions may spur perceptions of unfair performance appraisals, but this process should be mitigated by organization-specific experience and Islamic work values. Data from Pakistani firms offer empirical support for these hypothesized effects. From a practical perspective, the findings indicate that human resource managers who fail to provide clear role descriptions to employees can mitigate accompanying concerns about the presence of unfair performance evaluations, to the extent that they encourage employees to leverage valuable personal resources.

Keywords: *attribution theory, conservation of resources theory, Islamic work ethic, organization-specific experience, role ambiguity, unfairness.*

12. Bodla, A. A., Tang, N. Y., Van Dick, R., & **Mir, U. R.** (2019). Authoritarian leadership, organizational citizenship behavior, and organizational deviance Curvilinear relationships. *Leadership & Organization Development Journal, 40*(5), 583-599. doi: 10.1108/lodj-08-2018-0313.**(Usman Riaz Mir (Management/SBE) Web of Science JCR Listed (IF: 1.462) (SKT Campus)**

Abstract: Purpose The purpose of this paper is to examine the relationships between authoritarian leadership, organizational citizenship behavior toward one's supervisor (OCBS) and organizational deviance. The authors hypothesized curvilinear relationships between authoritarian leadership and OCBS, and between authoritarian leadership and organizational deviance. Design/methodology/approach The authors analyzed two-source survey data of 240 employee-supervisor dyads collected from seven organizations in Pakistan. Findings Employees exhibited most OCBS and least organizational deviance at intermediate levels of authoritarian leadership. Employees' perception of a benevolent climate at work moderated the curvilinear relations. Research limitations/implications - The authors cannot draw causal inferences because of cross-sectional data. Furthermore, the authors' results may be limited to cultures with high collectivism and high power distance. Practical implications - This study envisions and illuminates a new avenue of curvilinear relationships among authoritarian leadership, OCBS and organizational deviance. Originality/value The two sources (employee-supervisor dyads) data collected from seven organizations supported a unique curvilinear relationship between authoritarian leadership, OCBS and organizational deviance.

Keywords: *organizational deviance, authoritarian leadership, curvilinear, benevolent climate, supervisor-directed OCB.*

13. **Bajwa, S. U., & Kitchlew, N.** (2019). Evaluating Result Based Management and the Need for Complexity Aware Management Approach for International Development Agencies. *Pakistan Journal of Commerce & Social Sciences, 13*(3), 620-634.**(Sami Ullah Bajwa, Naveda Kitchlew (Management/SBE) SJR**

Abstract: Result Based Management (RBM) is a widely used management approach in international development agencies. During the last two decades, there have been growing concerns regarding the rigidity of this approach, and both the scholars and practitioners have been calling for an alternate complexity aware adaptive approach. However, there remains a lack of empirical evidence to support this criticism. The objective of this study is to contribute towards this end by undertaking an empirical evaluation of the efficacy of the RBM approach and assessing the need for a flexible and adaptive approach. Since the tool to measure the implementation of RBM is not available, we at first developed and validated a tool for measuring the implementation of RBM. Subsequently, by collecting data from 206 middle and senior levels employees of development agencies, the relationship between RBM and the ability of agencies to adapt has been tested. The validity of the instrument was established through exploratory factor analysis and hypotheses were tested by regression analysis. The findings showed that RBM negatively affects the adaptability of development agencies and hence calls for developing an alternate flexible and adaptive approach hold merit.

Keywords: *result based management (RBM), international development agencies, complexity aware management approach (CAMA), evaluation of development initiatives, project complexity.*

14. **Yazdani, N., & Abbas, Z.** (2019). Civilization as a Theoretical Framework to Study and Analyze Organization Theory with Islamic Way Forward. *Journal of Islamic Thought and Civilization, 9*(1).**(Naveed Yazdani, Zamin Abbas (Management/SBE) SJR**

Abstract: This paper posits civilization as a theoretical construct to study and analyze organization theory. Contextualization of organization theory has mostly centered on the constructs of culture and society and civilization is not posited as an organization theory episteme. This paper conceptualizes civilization as its foundational values or core essence or deep cognitive roots. The paper employs civilization as a theoretical Construct in the backdrop of ethical, institutional, population ecology, and diffusion of knowledge theories of organization theory. It also seeks to posit civilization as an organizational metaphor and knowledge paradigm. It also presents a four-tiered conceptual framework which captures the value hierarchy of each of its four constituent components: civilization, culture, organizational systems and management models. After analyzing traditional organization theory along with its various faces it raises the question of what is way forward for traditional organization theory (*TOT*) and presents Prophetic (*SAW*) Organization Theory (*POT*) as a strong, viable alternative with supporting arguments of great scholars of East and West with special focus on Islamic, Western and Chinese civilizations.

Keywords: *civilization, organization theory, theoretical construct, culture, society, values, traditional organization theory, prophetic organization theory, Islamic civilization, Chinese civilization, western civilization.*

15. **Ali, S. A.,** Ahmed, M., Bhatti, O. K., & **Farooq, W.** (2019). Gratitude and Its Conceptualization: An Islamic Perspective. *Journal of Religion and Health*. doi: 10.1007/s10943-019-00850-6.**(Syed Ahmad Ali, Waqas Farooq (Management/SBE) Web of Science JCR Listed (IF: 1.253)**

Abstract: Employees constitute an integral part of every organization, and their behaviours cultivate success or failure for the entire industry. Each organization should be cognizant of its employees' behaviours that can be translated through their behavioural outcomes. One of such outcomes is the level of gratitude (Shukr in Islamic perspective) that can be conceptualized further by establishing its link with employees' social or pro-social behaviours using lens of Islamic philosophy. The literature from the perspective of Holy Quran and Sunnah (Prophet's practices) suggests that a good number of employees working in different industries have an element of dissatisfaction reflected through various factors including lack of Shukr (gratitude). This calls for a conceptual undertaking along with its subsequent empirical assessment as the former needs a robust and holistic understanding before proceeding to the latter. The study begins with a strong conceptualization by comparing conventional and Islamic perspective of Shukr and to synthesize key factors which can later help in scale development of Shukr. After a careful comparison between conventional and Islamic viewpoints, three components (dimensions) of Shukr were conceptualized such as Shukr bi'l-qalb (gratitude expressed by inner feelings), Shukr bi'l-lisan (gratitude expressed by tongue) and Shukr bi'l-badan wa'l-arkan (gratitude expressed by body and limbs). This conceptualization can potentially serve as a tool to examine the level of contentment, employees exhibit at workplace which eventually leads to life and job satisfaction.

Keywords: *shukr, gratitude, job satisfaction, life satisfaction, islamic values, conceptualization, Pakistan.*

16. **Ahmed, M., Ali,** S. A., Jan, M. T., & Hassan, A. (2019). Development of Islamic banks' brand personality (IBBP) model: a conceptual study in Malaysia. *Journal of Islamic Marketing*.**(Syed Ahmad Ali (Management/SBE) SJR**

Abstract: Purpose: Organizations today strive to differentiate themselves from others with the help of various tools. Aaker's brand personality model is one of them. It comprises five components namely, sincerity, excitement, sophistication, competence and ruggedness. This model has been tested and supported by various scholars in the past. Similarly, it also attracted a lot of criticism especially in terms of generalizability across countries and cultures. The purpose of this paper is twofold: first, to study Aaker's

model from an Islamic perspective, second, considering the dearth of brand personality knowledge in the services sector, to develop Islamic Banks' Brand Personality (IBBP) model.
Design/methodology/approach: To propose IBBP model, traits in Aaker's model have been investigated in the light of selected Quranic verses and sayings of Prophet Muhammad (ahadith). Later on, content validation was conducted as a pilot study with experts from the relevant fields.
Findings: Findings exhibit that Quran and hadith clearly elaborate and support majority dimensions of the existing model. Importantly, three new dimensions, namely, trustworthiness, justice and Shariah compliance, were added to develop a comprehensive IBBP model. Once the dimensions of IBBP model were finalized, the underlying items were content validated from 12 experts. Most of the items were approved, some were recommended for amendments and a few items were eliminated.
Practical implications This research contributes to the branding as well as bank marketing literature as it is the first Islamic banks' brand personality framework. With the help of IBBP model, Islamic banks can create a better brand image, use advertising strategies effectively and ultimately retain existing and attract more potential customers. Social implications This research elaborates the personality traits of Muslim consumer market. Following IBBP model, financial needs of Muslim consumer market can be catered effectively.
Originality/value The IBBP model being first of its kind is significant for Islamic banking industry as it reflects dimensions that are supported by the Quran and hadith, and therefore suits Muslim customer market.
Keywords: *Malaysia, model, brand personality, Islamic bank.*

17. Shuja, A., Qureshi, I. A., Schaeffer, D. M., & **Zareen, M.** (2019). Effect of m-learning on students' academic performance mediated by facilitation discourse and flexibility. *Knowledge Management & E-Learning-an International Journal, 11*(2), 158-200. doi: 10.34105/j.kmel.2019.11.009.**(Memoona Zareen (AMDIP)** **Master Journal List**
Abstract: Conventional classroom instruction had already been transformed in to electronic mode of teaching and learning. Use of mobile technology is evolving in global and local context, as in Pakistan. Gaining insights from Media Richness Theory, the study intends to examine how m-learning pedagogy, opens up avenues for students' learning and enhances their educational performance, endorsed by facilitation discourse and flexibility. In this cross-sectional study, data was collected from students in Private Universities in Lahore Pakistan. Drawing results from structural equation modelling, findings revealed that use of mobile devices is on great demand for providing flexible and discussion-oriented learning to students and lifts up their academic output. Facilitation discourse and flexibility play a robust intervening role in producing pronounced impact of m-learning on learners' effectiveness.
Keywords: *mobile-learning, facilitation discourse, flexibility, students' academic performance, media richness theory.*

18. De Clercq, D., Haq Inam, U., & **Azeem, M. U.** (2019). Perceived contract violation and job satisfaction: Buffering roles of emotion regulation skills and work-related self-efficacy. *International Journal of Organizational Analysis, 28*(2), 383-398. doi: 10.1108/IJOA-07-2019-1837. **(Muhammad Umer Azeem (Management/SBE)** **SJR**
Abstract: Purpose – This paper aims to investigate how employees' perceptions of psychological contract violation or sense of organizational betrayal, might diminish their job satisfaction, as well as how their access to two critical personal resources – emotion regulation skills and work-related self-efficacy – might buffer this negative relationship. Design/methodology/approach – Two-wave survey data came from employees of Pakistani-based organizations. Findings – Perceived contract violation reduces job satisfaction, but the effect is weaker at higher levels of emotion regulation skills and work-related self-efficacy. Practical implications – For organizations, these results show that the frustrations that come with a sense of organizational betrayal

can be contained more easily to the extent that their employees can draw from relevant personal resources. Originality/value – This investigation provides a more complete understanding of when perceived contract violation will deplete employees' emotional resources, in the form of feelings of happiness about their job situation. A sense of organizational betrayal is less likely to escalate into reduced job satisfaction when employees can control their negative emotions and feel confident about their work-related competencies.

Keywords: *perceived contract violation, job satisfaction, emotion regulation skills, work-related self-efficacy, conservation of resources theory.*

19. Haq Inam, U., De Clercq, D., & **Azeem, M. U.** (2019). Can employees perform well if they fear for their lives? Yes – if they have a passion for work. *Personnel Review, 49*(2), 469-490. doi:10.1108/PR-01-2019-0030. **(Muhammad Umer Azeem (Management/SBE) Web of Science JCR Listed (IF: 1.362)**

Abstract: Purpose–With a basis in conservation of resources theory, the purpose of this paper is to investigate themediating role of championing behaviour in the relationship between employees'fear of terror and their jobperformance, as well as the buffering role of their passion for work, as a personal resource, in this process.Design/methodology/approach–The tests of the hypotheses rely on three-wave, time-lagged datacollected from employees and their supervisors in Pakistan.Findings–An important reason that concerns about terrorist attacks diminish performance is thatemployees refrain from championing their own entrepreneurial ideas. This mediating role of ideachampioning is less salient, however, to the extent that employees feel a strong passion for their work.Practical implications–For human resource managers, this study pinpoints a key mechanism–areluctance to mobilize active support for entrepreneurial ideas–by which fears about terrorism attackscan spill over into the workplace and undermine employees'ability to meet their performancerequirements. It also reveals how this mechanism can be better contained by the presence of adequatepersonal resources.Originality/value–This study adds to burgeoning research on the interplay between terrorism andorganizational life by specifying how and when employees'ruminations about terrorism threats mightescalate into diminished performance outcomes at work.

Keywords: *quantitative, passion for work, conservation of resources theory, job performance, championing behaviour, fear of terror.*

20. De Clercq, D., Haq, I. U., **Azeem, M. U.,** & Hassan, A. How career plateau beliefs and leader interpersonal unfairness harm job performance in dysfunctional organizational settings. *Canadian Journal of Administrative Sciences / Revue Canadienne des Sciences de l'Administration, n/a*(n/a). doi: 10.1002/cjas.1560.**(Muhammad Umer Azeem(Management/SBE) SJR**

Abstract: Building on social exchange theory and attribution theory, this study unpacks the relationship between employees' perceptions of organizational politics and job performance, considering the mediating effect of career plateau beliefs and the moderating effect of leader interpersonal unfairness. The findings provide empirical support for the theoretical predictions. An important reason for which perceptions of dysfunctional organizational politics reduce job performance is that employees develop beliefs that opportunities for their career development are limited. This mediating role of career plateau beliefs is particularly salient to the extent that employees are exposed to organizational leaders who treat them with disrespect. Organizations can mitigate the risk that highly politicized decision-making processes lead to negative performance outcomes by stimulating fair interpersonal relationships.

Keywords: *attribution theory, career plateau, job performance, leader interpersonall unfairness, organizational politics, social exchange theory, politique organisationnelle, plafonnement professionnel.*

21. **Riaz, H.,** & Hassan, A. (2019). Mediating role of organizational creativity between employees' intention in knowledge management process and organizational performance: Empirical study on pharmaceutical

employees. *Pakistan Journal of Commerce and Social Sciences, 13*(3), 635-655. **(Hira Riaz (Management/SBE) SJR**

Abstract: Companies try to put efforts in upgrading the intellectual capital and leveraging them to develop and sustain competitive advantage in the business. Considering this view, the study unpacks the relation between knowledge management process (KMP) and organizational performance with the mediation effect of organizational creativity. The employees/users of this system have a pivotal role in the success of the process. This study encompasses the literature by examining the impact of knowledge management process (creation, storage, transfer, usage) from user perspective and study the process with the intention of employees involving to create new products/services to improve organizational performance in the context of Pakistani region. Quantitative research strategy was used and data collected from respondents via survey technique from Pharmaceutical organizations with a sample size of 203 employees. Structural equation modeling was used to check the causal relationship and Haye's process was applied for mediation test. It appeared that organizational creativity plays a mediation role and leads towards invigorating organizational performance. Pharmaceutical professionals should consider that employees' intentions towards KMP are critical to serve the purpose of the system. This research reveals the significance of user intention in KMP and add value to the literature in the context of Pakistan's pharmaceutical sector.

Keywords: *knowledge management process, knowledge creation, knowledge sharing, knowledge usage, pharmaceutical sector.*

22. De Clercq, D., Haq, I. U., & **Azeem, M. U.** (2019). Dissatisfied employees, diminished helping: Using psychological capital to buffer the damaging effects of job dissatisfaction on helping behaviours. *Journal of Management & Organization*, 1-15. doi: 10.1017/jmo.2019.51. **(Muhammad Umer Azeem (Management/SBE) SJR**

Abstract: Drawing from conservation of resources theory, this study considers how employees' job dissatisfaction might reduce their engagement in helping behaviour, whereas their psychological capital might enhance this behaviour. The negative relationship between job dissatisfaction and helping behaviour in turn might be buffered by psychological capital. Data from Pakistani organizations provide empirical support for these theoretical predictions. The findings indicate that organizations with employees who feel unhappy about their job situation can still enjoy productive helping behaviours, to the extent they develop adequate personal resources within their ranks.

Keywords: *helping behavior, job dissatisfaction, psychological capital, conservation of resources theory*.

23. De Clercq, D., Haq, I. U., & **Azeem, M. U.** (2019). Threatened but Involved: Key Conditions for Stimulating Employee Helping Behavior. *Journal of Leadership & Organizational Studies*, 1548051819857741. doi: 10.1177/1548051819857741. **(Muhammad Umer Azeem (Management/SBE) SJR**

Abstract: This article examines the relationship between employees' job involvement and helping behavior directed toward coworkers, as well as how this relationship might be augmented when employees encounter adversity, whether due to malicious leadership (abusive supervision) or threats to their physical integrity (workplace hazards, fear of terrorism). Drawing on a two-wave survey research design that collected data from employees and their supervisors in Pakistan, the results reveal that job involvement increases the likelihood that employees go out of their way to help their coworkers, and this relationship is strongest when they have to deal with the hardships of malicious leadership or threats to their physical safety. For organizations, these findings indicate that employees perceive their own allocation of positive work energy, derived from their job involvement, to helping behaviors that assist other members as particularly useful when they also experience significant adversity, inside or outside the workplace.

Keywords: *helping behavior, job involvement, abusive supervision, physical safety, conservation of resources theory.*

Conference Papers

1. **Bajwa, S. U., & Kitchlew, N.** (2019). *Result based management (RBM) as distinctive management approach for international development agencies: An integrated literature review*. Paper presented at the Global Work, Quality Work 33rd Annual Airaanz Conference, RMIT University, February 2019. **(Sami Ullah Bajwa, Naveda Kitchlew (Management/SBE)**
   Abstract: Not available.
   Keywords: *not available.*

2. **Hameed, K., Arshed, N., Yazdani, N. & Munir, M.** (2019, 19 Nov 2019). *National Strategy of Innovative Performance of the Businesses: A Panel Data Study using Dynamic Capability Framework*. Paper presented at the 1st FAST Business Research Conference, FAST NU Lahore Pakistan. **(Kamran Hameed (Management/SBE) Noman Arshed**, **Naveed Yazdani(Economics/SBE) Mubbasher Munir(Quantitative Methods/SBE)**
   Abstract: National strategic dynamic capabilities refer to the ability to acquire, develop, and transfer national resources (human capital and tacit knowledge) into innovative performance. This would help to provoke firms and individuals' capabilities to sense, seize, and transform into innovative performance of human capital in response to environmental changes which is beneficial for sustainable competitive advantage. This study suggests that dynamic capabilities in a country have a significant relationship with innovative performance of human capital resides in a country. Data of 62 countries is taken from World Bank and World Economic Forum, and panel moderator model is used to reveal how national efforts boost human capital into innovative performance. The results confirm that sensing and seizing significantly explain the innovative performance while cost of business negatively moderate sensing. Governments can intervene the innovative performance by exploring the models of sensing and seizing.
   Keywords: *national strategic dynamic capabilities, knowledge management, panel data, moderator model.*

3. **Hameed, K., Arshed, N., & Munir, M.** (2019 , 28 April 2019). *Knowledge Creation and absorptive capacity: a panel data study of innovation*. Paper presented at the 3rd FCCU Economics Research Conference on Sustainable Economic Development: Dynamics and Prospects, Forman Christian College University Lahore, Pakistan. **(Kamran Hameed (Management/SBE) Noman Arshed (Economics/SBE) Mubbasher Munir(Quantitative Methods/SBE)**
   Abstract: Knowledge acquisition refers to ability of firms to create new knowledge that start from individuals, to integrating the firms, and overall economy. This study suggests that knowledge acquisition in a country has a significant relationship with innovative performance. Data of 48 highly HDI countries is taken from World Bank and World Economic Forum. Based on 480 country-year observations in panel mediator model, it is revealed that national effort of boosting knowledge acquisition influences the firms' innovative performance. Further it is found that absorptive capacity in terms of employability of knowledgeable workers work as a mediator in between knowledge acquisition and innovation.
   Keywords: *absorptive capacity, innovation, knowledge acquisition.*

4. **Hameed, K., and Ghaffar, A.** (2019). *The Downside of Family Motivation, Impact of Family Motivation on Job Burnout through Emotional Labor.* 8th International Conference on Management and Economics, 565–588.**(Kamran Hameed, Abdul Ghaffar (Management/SBE)**
   Abstract: Extending the efforts of earlier researchers, the current study investigated the relationship between family motivation and job burnout through a mediating mechanism of emotional labor by using the conservation of resource (COR) theory as a framework. Therefore, the study contributes to the existing

literature by exploring relatively new phenomena of family motivation, and also by explaining that employees' family motivation distracts them to perform their duties, and consequently force them to exert more effort to do emotional labor, which in turn increase their job burnout. Data (N = 189) was collected from full-time employees, working in both public and private sector organizations in Pakistan. The findings revealed that family motivation is positively related to job burnout, and this relationship is mediated by emotional labor at the workplace. The findings of the study are discussed in terms of its theoretical and practical implications.

Keywords: *conservation of resource theory, emotional labor, family motivation, job burnout.*

Department of Marketing

Research Articles

1. **Rashid, Y.,** Rashid, A., **Warraich, M. A., Sabir, S. S., & Waseem, A.** (2019). Case Study Method: A Step-by-Step Guide for Business Researchers. *International Journal of Qualitative Methods, 18*, 1-12. doi: 10.1177/1609406919862424.**(Yasir Rashid, Muhammad Akib Warraich, Sana Sameen Sabir, Ansar Waseem (Marketing/SBE) Web of Science JCR Listed (IF: 2.257)**

   Abstract: Qualitative case study methodology enables researchers to conduct an in-depth exploration of intricate phenomena within some specific context. By keeping in mind research students, this article presents a systematic step-by-step guide to conduct a case study in the business discipline. Research students belonging to said discipline face issues in terms of clarity, selection, and operationalization of qualitative case study while doing their final dissertation. These issues often lead to confusion, wastage of valuable time, and wrong decisions that affect the overall outcome of the research. This article presents a checklist comprised of four phases, that is, foundation phase, prefield phase, field phase, and reporting phase. The objective of this article is to provide novice researchers with practical application of this checklist by linking all its four phases with the authors' experiences and learning from recently conducted in-depth multiple case studies in the organizations of New Zealand. Rather than discussing case study in general, a targeted step-by-step plan with real-time research examples to conduct a case study is given.

   Keywords: *case study, step-by-step guide, abduction, checklist.*

2. **Rashid, Y., Waseem, A., Akbar, A. A., & Azam, F.** (2019). Value co-creation and social media: A systematic literature review using citation and thematic analysis. *European Business Review*.**(Yasir Rashid, Ansar Waseem, Ahmad Ahsan Akbar, Fatima Azam (Marketing/SBE) SJR**

   Abstract: Purpose–The purpose of this paper is to deliver a summary of the influential work regarding value co-creation in the context of social media. Although, research on the role of social media in co-creation and newproduct development is growingfield, the extant literature is still in developing stage, which needssystematization and categorization to comprehend its current stage and previous research.Design/methodology/approach–For this purpose, existing literature on social media and co-creation wasstudied. Initially, a citationanalysis was conducted of influential papers correlated with the topic to identify threestreams of research. Later, thematic analysis was carriedout to explore specific themes within these categories.Findings–Through citation analysis three research streams namely customer's co-creation on new productdevelopment,firm specific capabilities for knowledge sharing, absorption and processing and new opportunitieswere identified. Later, total four categories were identified through thematic analysis which contains different sub-themes such as test of theories, proposed theoretical frameworks, lead users characteristics, customer's motivationand experience regarding co-creation, online communities of customers and open innovation.Research limitations/implications–This study also categorizes and systemizes the extant literatureexploring role of social media in value co-creation. Such systematic review of the extant literature will help theacademicians to understand the previous stream of work and pursue a particular line

of enquiry in furtheringthe understanding of interaction between social media and co-innovation.Practical implications–This work is particularly useful for practitioners as morefirms are moving thebusiness online. Thesefirms are actively using social media and user-generated content to gain insight intocustomer's preferences. By increasing the participation of customers and lead users through onlinecommunities,firms can also increase customer's commitment.Originality/value–The paper adds to the extant literature by identifying research streams and themes inthe extant literature on the role of social media in value co-creation. Later, these themes are abductively linkedto develop a theoretical framework.

Keywords: *social media, innovation management, thematic analysis, citation analysis, value co-creation, co-creation, new product development, co-innovation.*

3. **Waseem, A., Rashid, Y., Warraich, M. A., Sadiq, I., & Shaukat, Z.** (2019). Factors affecting e-commerce potential of any country using multiple regression analysis. *Journal of Internet Banking and Commerce, 24*(2), 1-28.**(Ansar Waseem, Yasir Rashid, Muhammad Akib Warraich, Imran Sadiq, Zeeshan Shaukat (Marketing/SBE) SJR**

Abstract: The advancement of Information Technology and Telecommunication has opened new avenues for business. These astonishing developments have led to rapid diffusion of e-commerce which is gaining popularity around the globe and it is contributing to the economic growth of country. This study aims to develop an integrative model based on different factors which can affect the growth of ecommerce in any country. For this purpose, data of 145 countries for year 2014 was obtained from different sources. Nine different Multiple Regression Models were proposed by combination of different factors in order to analysis their relative effect on growth of e-commerce. Result of the study show that the sensitivity of the ecommerce potential was highest for GNI per Capita and Readiness Sub-Index respectively. Similarly, other factors such as education level, urbanization and social media user were also found significantly associated with e-commerce potential. However, Cyber Security and Business Prospects were found to be statistically insignificant in few of the models. The paper concludes with few suggestions for government and policy makers to increase e-commerce growth in the country.

Keywords: *financial reporting quality, managerial accountant, standards of ethical, extractive and mining, Jordan.*

4. **Zeeshan, M., Rashid, Y., Ayub, U., & Waseem, A.** (2019). Quantifying value co-creation: examining the relationship between realised value facets and customer experience in a B2B context. *International Journal of Services Operations and Informatics, 10*(1), 43-64. doi: 10.1504/ijsoi.2019.100616.**(Muhammad Zeeshan, Yasir Rashid (Marketing/SBE) Umer Ayub, Ansar Waseem (Management/SBE) SJR**

Abstract: Value co-creation has become central and one of the most researched topics among marketing scholars worldwide. This study discusses the relationship between value realisation facets and customer experience that emerges from a value co-creation process. With assumptions of a positivist paradigm, this study is responding to the call for quantification of value co-creation concept by developing a multidimensional scale to measure value co-creation in the context of information and communication technology (ICT) industry. Multivariate data analysis techniques like exploratory factor analysis (EFA), Cronbach's alpha and multiple regressions were used to check the reliability and validity of scale and test the hypothesis. The study finds that experience value (EV) is significantly and positively influenced by monetary value (MV), relationship value (RV) and functional value (FV). Moreover, it was also found that customer is more inclined towards RV and FV than that of MV to evaluate EV.

Keywords: *value co-creation, S-D logic,customer experience, value in use.*

5. **Waseem, A., & Rashid, Y.** (2019). Exploring The Role Of Phronesis In Social Innovation: A Case Study Of Dr. Ruth Pfau. *Pakistan Journal Of Applied Social Sciences, 9*, 1-18.**(Ansar Waseem, Yasir Rashid (Marketing/SBE) HEC Z CAT**

Abstract: Although recent literature on social innovation proclaims its virtue in addressing unmet social needs. Yet little is known about the relationship between phronesis and social innovation. This paper aims to explore how a social entrepreneur uses phronesis in addressing a social problem. Taking case study as qualitative research inquiry, this paper uses the interviews and life account of Dr. Ruth Pfau (Late) on how she incorporated her phronesis in treating patients suffering from leprosy. The empirical evidences collected were analyzed using GIOIA data analysis. The results of the data analysis show that a social entrepreneur employs his/her practical wisdom, experiential knowledge, and value judgment in combating a social issue, and in doing so, uses phronesis in addressing a social problems and creating social innovation.

Keywords: *phronesis, practical wisdom, value judgement, social innovation.*

6. Zahra, N., **Qayyum, A., & Rashid, Y.** (2019). Traveller's Empowerment: Travelling website service quality, attitude towards UGC and booking intentions of travellers. *Business & Economic Review, 11*(4), 1-28.**(Ayesha Qayyum, Yasir Rashid (Marketing/SBE) HEC X CAT**

Abstract: The word of mouth is known to be the best resource for a traveller. For years, travelling companies are finding ways to promote review and user generated content to attract more future travellers. The Web 2.0 which is referred as next generation of the Internet characterized by the dynamic user-generated content facilitates users to create and share content and in consequence travellers are more empowered. This technological breakthrough has transformed customers into participative agents. The Travel & Tourism industry has been seriously challenged by Web 2.0 where travel customers are browsing websites for travel planning and hotel booking. Such travel agency websites provide information and booking facilities and travel customers also share their experiences, pictures and advice known as User-Generated Content (UGC). The same trend is approaching Pakistan having an immense potential for online travel companies. Travel & Tourism industry of Pakistan is experiencing a thriving growth since the terror attacks have reduced exponentially hence qualify for a scholarly attention. This study explores the effects of website quality of travel agencies through E-SERQUAL on the attitude of Pakistani travel customers towards UGC and hotel booking. It is a survey-based quantitative study. The data is collected through questionnaires from university 339 students and Structural Equation Modelling (SEM) is used to provide insights into Pakistani customers' attitude and behavior towards booking intentions. It is established that unlike other countries, Pakistani travellers are least concerned about website safety and security whereas website functionality, information content and quality are leading factors affecting attitude towards UGC followed by website appearance and presentation. It is concluded that website service quality plays a major role in adoption of UGC that directly affects the hotel a booking intentions of travel customers.

Keywords: *user generated content (UGC), eservqual, web 2.0, website quality, hotel booking intentions.*

Department of Information Systems

Research Articles

1. **Sattar, M. U.,** Palaniappan, S., Lokman, A., **Hassan, A., Shah, N., & Riaz, Z.** (2019). Effects of Virtual Reality training on medical students' learning motivation and competency. *Pakistan Journal of Medical Sciences, 35*(3), 852-857. doi: 10.12669/pjms.35.3.44.**(Mian Usman Sattar, Nauman Shah, Zurabia Riaz (Information Systems/SBE) Atif Hassan(SPA) Web of Science JCR Listed (IF: 0.834)**

Abstract: Objectives: To determine the need of contemporary immersive approaches (Virtual Reality) in teaching and training at medical sector. The main objective of this study was to explore the effects-of text, video and immersive technologies learning methodologies for participants' learning in public and private

medical colleges and universities of Pakistan. Methods: In this quantitative research 87 medical students of 4th year from three public and five private medical colleges and universities participated. A laparoscopy operation was selected in consultation with senior medical consultants for this experiment. The experimental material was arranged in virtual reality, video and text based learning. At completion of each of which, participants completed a questionnaire about learning motivation and learning competency through the different mediums. Results: Statistical t-test was selected for the analysis of this study. By comparing the mean values of virtual reality, video, and text based learning methodologies in medical academics, result of virtual reality is at top of others. All performed model are statistically significant (P=0.000) and results can be applied at all population. Conclusion: Through this research, we contribute to medical students learning methodologies. In medical studies, both theoretical and practical expertise has a vital role, while repetition of hands-on practice can improve young doctors' professional competency. Virtual reality was found best for medical students in both learning motivation and learning competency. Medical students and educationist may select virtual reality as new learning methodology for curriculum learning.

Keywords: *virtual reality (VR), video based learning (VBL), text based learning (TBL).*

2. **Ghafar, A., Shah, N.,** & Iqbal, M. M. (2019). Gender Recognition for Urdu language Speakers Using Composite and Multi-Layer Feature Approaches with Fuzzy Logic. *Technical Journal, 24*(02). **(Abdul Ghaffar, Nauman Shah (Information Systems/SBE) HEC Y CAT**

   Abstract: Gender recognition by voice is one of the most demanding phenomena in speech analysis. With increasing use of digital communication channels, many speech analysis techniques are being used to identify gender by acoustic features of speaker's voice. In this paper, an algorithm is presented to develop a tool using Praat Script to classify speaker's gender by analysing sound features such as pitch, formants, and MFCC coefficients with various speech processing techniques broadly categorized into composite and multi-layer feature approaches. Euclidean distance and Naïve Bayes are implemented to compare cumulative feature vector containing fundamental frequency, formant frequencies, and MFCC coefficients, with base vector of aforementioned sound features that is obtained through supervised training using Texas Instruments and Massachusetts Institute of Technology (IMIT) speech corpus. Techniques are further refined to get more accurate outcome by applying fuzzy logic rule base by aggregating their results. Algorithm is also designed to make it efficient in terms of processing time, accuracy, and reliability by eliminating the frames having undefined F0 and removing outliers while identifying sound features. Multi-layer feature approach achieves 98% accuracy in gender recognition as compare to composite approach which returns just 77% with sample dataset of 133 Urdu language speakers' voices, obtained through Pakistani Urdu dramas.

   Keywords: *gender recognition by voice, gender recognition of urdu speaker, acoustic & mfccs analysis, naïve bayes classifier, fuzzy.*

3. **Wajid, B.,** Iqbal, H., Jamil, M., Rafique, H., & Anwar, F. (2019). MetumpX—a metabolomics support package for untargeted mass spectrometry. *Bioinformatics*. doi: 10.1093/bioinformatics/btz765. **(Bilal Wajid (Information Systems/SBE) Web of Science JCR Listed (IF: 4.531)**

   Abstract: Metabolomics is a data analysis and interpretation field aiming to study functions of small molecules within the organism. Consequently Metabolomics requires researchers in life sciences to be comfortable in downloading, installing and scripting of software that are mostly not user friendly and lack basic GUIs. As the researchers struggle with these skills, there is a dire need to develop software packages that can automatically install software pipelines truly speeding up the learning curve to build software workstations. Therefore, this paper aims to provide MetumpX, a software package that eases in the installation of 103 software by automatically resolving their individual dependencies and also allowing the users to choose which software works best for them.MetumpX is a Ubuntu-based software package that

facilitate easy download and installation of 103 tools spread across the standard metabolomics pipeline. As far as the authors know MetumpX is the only solution of its kind where the focus lies on automating development of software workstations.https://github.com/hasaniqbal777/MetumpX-bin.Supplementary data are available at Bioinformatics online.

Keywords: *not available.*

Conference Proceedings

1. Mazhar, F., **Wajid, B.,** Anwar, F., Mazhar, N., AlShawaqfeh, M. K., & Serpedin, E. (2019, 21-24 March 2019). *Prevalence and Accuracy Measures of Diagnostic Tests for Metabolic Syndrome in Multi-ethnic Groups.* Paper presented at the 2019 16th International Multi-Conference on Systems, Signals & Devices (SSD). **(Bilal Wajid (Information Systems/SBE)** SJR

   Abstract: Metabolic syndrome (MetS) is a collection of several risk factors like elevated blood pressure, sugar, excessive body fat and abnormal triglyceride or cholesterol levels which collectively enhances one's risk of heart disease, stroke and diabetes. Due to its complex and heterogeneous nature, the prevalence rate of this disease is highly variable across the globe. Additionally, ethnic and regional variations affect this disparity. This paper investigates these demographic trends in MetS's diagnostic tests based on four widely used definitions, as defined by the World Health Organization (WHO), the International Diabetes Federation (IDF), the European Group for the study of Insulin Resistance (EGIR) and the National Cholesterol Education Programs Adult Treatment Panel III (NCEP-ATPIII). The study included 3581 patients (48% men and 52% women) from USA aged 12 or more. Several ethnic groups were included in the population: Mexican American, Hispanic, Non-Hispanic White and Black. Statistical measures like Student's t test, Likelihood Ratios, Receiver Operating Characteristics (ROC) curves and Youden's index were used to assess the accuracy of diagnostic tests within each ethnic group. WHO presented higher sensitivity, whereas IDF was found to exhibit least specificity. WHO was found to be a better measure for non-Hispanic black men and Mexican American women. Alternatively, NCEP-ATPIII was a better accuracy measure for Hispanic men and non-Hispanic white Americans. These results were quite stable for both genders. Results indicate that accuracy of diagnosis of MetS can be compromised by using a single consistent definition criterion over a population without considering the multi-ethnic differences.

   Keywords: *metabolic syndrome, diagnosis, accuracy, sensitivity, specificity, ethnicity.*

2. Alshawaqfeh, M., Gharaibeh, A., & **Wajid, B.** (2019). *A Hybrid Feature Selection Method for Classifying Metagenomic Data in Relation to Inflammatory Bowel Disease*. Paper presented at the Proceedings of the 2019 3rd International Conference on Advances in Artificial Intelligence, Istanbul, Turkey. https://doi.org/10.1145/3369114.3371675**. (Bilal Wajid (Information Systems/SBE)** SJR

   Abstract: Due to the recent advances in high throughput metagenomic sequencing technologies, Microbial abundance profiles of environmental samples have become publicly available. Increasing number of metagenomic studies has associated the imbalance of bacterial abundance to health and disase state of the host. This suggests utilizing the bacterial profiles as a diagnostic tool to identify the bacterial-related disease state of individuals. However, the high dimensional nature of metagenomic datasets renders this process a challenging task. Therefore, an efficient framework that enables accurate classification of metagenomic samples belonging to different classes is of central important. In this work, a hybrid feature selection technique that combines the advantages of filter and wrapper feature selection algorithms is proposed. The experimental results demonstrate that the proposed algorithm outperforms widely used feature selection techniques in terms of classification accuracy and provide a significant reduction in the computation time.

   Keywords: *metagenomics, classification, hybrid feature selection.*

Conference Papers

1. **Sattar, Mian.** (2019). *Motivating future doctors through vr training in medical sector*. Paper presented at the The 6th International SEARCH Conference, 2019 "NEW MEDIA AND DIGITAL INCLUSION: EMBRACING THE 4th INDUSTRIAL REVOLUTION", At Taylor's University, Lake Site Campus, Malaysia, June 2019.**(Mian Usman Sattar (Information Systems/SBE)**

   Abstract: Contemporary immersive approaches of training in the medical sector aimed at attaining of complex professional skill set to both personal and technical aspects of health care. The capability to create medical simulation through virtual reality (VR) environment may help to attain the ultimate goal. The main objective of the study is to explore the effect of the text, video, and immersive technologies learning methodologies at medical participants' learning. These immersive technologies improve the learning environment, which directly impacts learning motivation and learning competence of medical students. The purpose of this paper is (1) to explore of participants' learning motivation and learning competency during text, video and virtual reality and (2) compare the effects of participants' learning motivation and learning competency during text, video and virtual reality of medical students in public and private sector medical colleges and universities of Pakistan.

   Keywords: *virtual reality (VR), augmented reality (AR), video-based learning (VBL), text-based learning (TBL).*

Department of Operations & Supply Chain

Research Articles

1. Qasim, H., Yan, L., Guo, R., **Saeed, A.**, & Ashraf, B. N. (2019). The Defining Role of Environmental Self-Identity among Consumption Values and Behavioral Intention to Consume Organic Food. *International Journal of Environmental Research and Public Health, 16*(7). doi: 10.3390/ijerph16071106.**(Amer Saeed (Operation and Supply Chain/SBE) Web of Science JCR Listed (IF: 2.468)**

   Abstract: Consumption values and self-identity are the essential antecedents of consumer sustainable behavior. By integrating the theory of consumption values and self-identity approach, this research explores the relationship among consumption values (functional, social, conditional, epistemic and emotional), environmental self-identity and the behavioral intention to consume organic food. The data was collected from 406 organic food consumers through a structured questionnaire in Lahore (Pakistan). Using the PLS-SEM approach, we find that conditional value, emotional value, epistemic value, and functional value quality have a significant positive influence on consumers' behavioral intention to consume organic food. We further find that environmental self-identity significantly mediates the structural relationship between consumption values and the behavioral intention to consume organic food. Our results imply that the interventions targeting environmental self-identity are a promising way to promote sustainable consumption behavior. Our findings also have important implications for the development of the organic food market based on consumption values and self-identities.

   Keywords: *organic food, consumption values, environmental self-identity, behavioral intention.*

2. Sandhu, M. R. S., & **Azhar, T. M.** (2019). Barriers to Branding in SMEs: An Exploration at Surgical Industry of Sialkot, Pakistan. *Paradigms, 13*(1), 134-142. doi: 10.24312/1900056130120.**(Tashfeen Azhar(Operation and Supply Chain/SBE) HEC Y CAT**

   Abstract: Despite the fact that SMEs have been playing a significant role, both in national and international trade, it has been a fact that most SMEs operate without product brands. This study has explored the barriers to branding as faced by SMEs using a qualitative research approach in the context of Surgical Instruments Industry of Sialkot, Pakistan. The study contributes to important factors that hinder SMEs from having own product brands in the international market.

   Keywords: *SMEs, branding, government support, intellectual property, national culture, risk aversion.*

3. **Aslam, H., Waseem, M., & Khurram, M.** (2019). Impact of Green Supply Chain Management Practices on Corporate Image: Mediating role of Green Communications. *Pakistan Journal of Commerce & Social Sciences, 13*(3), 581-598.**(Haris Aslam,Maimoona Waseem, Muhammad Khurram (Operation and Supply Chain/SBE) SJR**

   Abstract: The study aims to determine the corporate brand image developed by the green supply chain management affected by the green purchasing, green communications, the customer cooperation, eco-design, internal environment management and investment recovery extent. This research adopts a positivist paradigm using quantitative techniques of data collection through surveys and applying a deductive approach to answer the research problem. The population for this research was based upon the entire list of manufacturing companies that are listed on Pakistan Stock Exchange. Out of these companies a representative sample of 120 was selected. This study confirms the impact of ecofriendly activities, inventory, green supply chain, internal environment and customer cooperation on the image of a corporation through a mediating variable green communications. This study has this limitation of being a cross-sectional study as the data was collected through convenient sampling and Secondly, this study is only conducted in one country Pakistan and is only restricted to one sector.

   Keywords: *green supply chain management, corporate image, internal green practices, external green practices, green communication.*

4. **Rashid, K., Malik, S., & Waseem, M.** (2019). Adoption of Reverse Logistics in Food Companies: A Case of Pakistan. *Sukkur IBA Journal of Management and Business, 6*(2), 24-57. doi: 10.30537/sijmb.v6i2.440.**(Kamran Rashid, Shaheer Malik, Maimoona Waseem (Operation and Supply Chain/SBE) HEC Z CAT**

   Abstract: This research highlights the importance of Reverse Logistics in Food Companies and explains its implementation level in food companies of Pakistan. Reverse Logistics is the process by which products are brought back to the producer due to some problem in the products. This study describes how food companies are dealing with returned items, their packaging material waste and the food and packaging material waste created at the consumers' end. The other significant aspect of this research is the exploration of hindrances due to which companies do not perform the activities of RL especially in food companies. This study has focused on two local food companies operating in Lahore, mainly dealing in confectionary items such as breads, patties etc., sweet meats, soft drinks and milk. The research has employed Semi structured interviews as a tool to gather data which is then analyzed using NVIVO software. The results have shown that both of the companies have implemented different aspects of Reverse Logistics and the problems they face while developing a Reverse Logistics process are more or less the same. This study would be forerunner in highlighting the current status and the problems faced by the companies.

   Keywords: *reverse logistics, pakistanfood companies, food waste, food recycling.*

Conference Papers

1. **Mustafa, U., Yusuf, I., & Waseem, M.** (2019). *Proposed operational framework to overcome procurement barriers for enhanced procurement performance: A case of ABC feed mill*. Paper presented at the 3rd International Conference on Business, Economics and Management -- 3rd ICBEM 2019, Sukkur IBA University, April 2019. **(Usman Mustafa, Ijaz Yusuf, Maimoona Waseem (Operation and Supply Chain/SBE)**

   Abstract: This study proposes an operational framework of internal procurement barriers for enhanced procurement performance. The paper adopts a case based approach with the aim of understanding the operational framework and highlighting internal procurement barriers for enhanced procurement performance. By using triangulation of data it is found that internal procurement barriers directly affect company's procurement performance. The effect of each barrier on procurement performance varies from

each other. The research adds value in literature by proposing the operational framework highlighting internal procurement barriers for enhanced procurement performance. It guides the higher management and the managers about internal procurement barriers which affect the company's repute and profitability: such as financial constraints, management interest, purchasing activities, procurement policies, IT dependence, and lack of coordination.
Keywords: *not available.*

2. Rasheed, A. **Aslam, H. & Rashid, K.** (2019).*Pro-environmental Behavior of Supply Chain Managers.* Paper presented at the 7th Annual Business Research Conference, At Lahore, Pakistan, April 2019. **(Haris Aslam, Kamran Rashid (Operation and Supply Chain/SBE)**
Abstract: The purpose of this study is to understand the antecedents of pro-environmental behavior (PEB) at the workplace. We develop a research model hypothesizing a direct role of employee private green behavior, subjective norms, personal and organizational level barrier as major factors influencing employee PEB intentions. In addition, we analyze the impact of these behavioral intentions on actual workplace PEB. A survey of managers working in supply chain and related functions from manufacturing firms in Pakistan was conducted. The research model was tested using structural equation modeling. The results of the study show that employee personal barriers significantly influence employee behavioral intentions and those behavioral intentions then predict actual employee behavior. However, employee private green behaviors do not spill over to their workplace. Further employee organizational-level barriers and subjective norms might reverse an individual's intention to go green. The contribution of this study lies in identifying the role of organizational, personal, and social factors in modifying supply chain manager's intentions. This research also identifies the barriers that need to be mitigated in order to make supply chains greener. It further highlights the role of intentions in accurately predicting employee actual PEB.
Keywords: *Pro-environmental behavior, private green behavior, subjective norms, personal barriers, organizational barriers, behavioral intentions.*

3. **Ramish, A.** (2019). *Developing the services supply chain framework: An Empirical Investigation of performance measurement in education supply chain of Pakistan.* Paper presented at the Putra Business School Research Colloquium 2019 (PURE), At Selangor, Malaysia, June 2019. **(Asher Ramish (Operation and Supply Chain/SBE)**
Abstract: Not available.
Keywords: *not available.*

4. **Aslam, H.,** Mukhtar, I. **& Rashid, K.** (2019). *Supply Chain Quality Practices and Performance: An Empirical Study.* Paper presented at the 8th Asian Management Research and Case Conference 2019 (AMRC 2019) "social responsibility, sustainability and Management: Issues and Strategies in Asia", United Arab Emirates University, Al Ain, March, 2019. **(Haris Aslam, Kamran Rashid (Operation and Supply Chain/SBE)**
Abstract: Not available.
Keywords: *not available.*

Department of Quantitative Methods

Research Articles

1. Ali, S., Khan, H., Shah, I., **Butt, M. M.,** & Suhail, M. (2019). A comparison of some new and old robust ridge regression estimators. *Communications in Statistics-Simulation and Computation*. doi: 10.1080/03610918.2019.1597119.**(Muhammad Moeen Butt (Quantitative Method/SBE)** **Web of Science JCR Listed (IF: 0.490)**

Abstract: Ridge regression is used to circumvent the problem of multicollinearity among predictors and many estimators for ridge parameter are available in the literature. However, if the level of collinearity among predictors is high, the existing estimators also have high mean square errors (MSE). In this paper, we consider some existing and propose new estimators for the estimation of ridge parameter k. Extensive Monte Carlo simulations as well as a real-life example are used to evaluate the performance of proposed estimators based on the MSE criterion. The results show the superiority of our proposed estimators compared to the existing estimators.

Keywords: *multicollinearity, ridge regression, monte carlo simulation.*

2. Qureshi, S. A., Shafeeq, A., Ijaz, A., & **Butt, M. M.** (2019). Development and Regression Modeling of Dirt Resistive Latex Facade Paint. *Coatings, 9*(3). doi: 10.3390/coatings9030150.**(Muhammad Moeen Butt (Quantitative Method/SBE) Web of Science JCR Listed (IF: 2.330)**

Abstract: A highly dirt-resistant paint for building facades without chemicals harmful to nature and the environment would resolve the unattractive disfigurement of building walls caused by dirt. The current ranking of Pakistan in terms of air pollution is 139th. A set of dirt-resistant paint formulae was constructed with the aid of computer programming. From this set, the best dirt-resistant paint formula was explored and identified. The final determination of the optimum formulation was based on statistically planned experiments conducted in the laboratory and in a natural environment. In order to achieve high-quality results, the best available laboratory equipment were used. The results obtained were analyzed and conclusions were drawn using appropriate statistical techniques. The procedure started with the selection of appropriate raw materials and generation of a target population of 543,143 paint formulations by adopting Basic Language computer programming. The average pigment volume concentration (PVC) percentage was computed using theory and found to be 54.98% for the target population paint formulations, verifying the literature results. Experimentation and statistical analysis were performed to compare the classical conventional agitator with the latest lab equipment such as a nano mill, and it was concluded that the nano mill performs better on average than the conventional agitator in the preparation of paint formulations. Hence, the sample of paint formulations was prepared on a nano mill and tested in the laboratory using advanced available technology for the analysis and comparison of paint properties to determine the best paint formulation. The results were analyzed using the Analysis of Variance (ANOVA) technique, and it was concluded that the newly developed paint has the highest dirt resistance on average. The final selected formula, No. 50 (the newly developed paint), was compared with the three best conventional paints available in the Pakistan market in a natural environment for a period of almost one year. A regression model was also constructed to study the effect of environmental factors like time, temperature, and humidity on the dirt resistance of paints. It was found that the newly developed paint formulation is the most environmentally friendly. It performs equally well as one conventional paint and has higher dirt resistance than two other conventional paint formulations containing harmful chemicals. The regression model of dirt resistance involving variables including time, temperature, and humidity shows that these factors significantly affect the dirt resistance of a given paint at a 5% level of significance. For a given paint, 95.34% of the variation in the dirt resistance is due to and explained by the given factors. The regression model is useful for predicting the average dirt resistance of a given paint with a certain level of confidence. The project exemplifies the work of applied research from conceptualization to successful commercialization in the paint industry.

Keywords: *agitator, dirt, humidity, nano mill, temperature, time.*

3. Rasool, S. F., Samma, M., Anjum, A., **Munir, M.,** & Khan, T. M. (2019). Relationship between modern human resource management practices and organizational innovation: Empirical investigation from

banking sector of China. *International Transaction Journal of Engineering, Management, & Applied Sciences & Technologies,* 10(17). doi: 10.14456/ITJEMAST.2019.231.**(Mubbasher Munir (Quantitative Method/SBE)** **Master Journal List**

Abstract: The study examines the effect of modern human resource management (HRM) practices on organizational innovation (OI) in the banking sector of China. A questionnaire survey was used in this study. The correlation and regression analysis are used to test the hypotheses with a sample of 140. The results indicate that modern human resource management practices have a positive relationship with OI. The finding highlights among all modern HRM practices performance management has a strong, positive effect on OI. However, our study indicates that a higher level of performance management provides a higher level of OI in
the banking sector of China.

Keywords: *modern HRM practices, organizational innovation, performance management.*

4. Ali, S., **Raza, S. M.,** Aslam, M., & **Butt, M. M.** (2019). CEV-Hybrid Dewma charts for censored data using Weibull distribution. *Communications in Statistics - Simulation and Computation*, 1-16. doi: 10.1080/03610918.2018.1563147.**(Syed Muhammad Muslim Raza, Muhammad Moeen Butt (Quantitative Method/SBE)** **Web of Science JCR Listed (IF: 0.490)**

Abstract: In this article, a conditionally expected value (CEV) hybrid double exponentially weighted moving average (DEWMA) (named as CEVHDEWMA) control chart for monitoring the mean of Weibull distribution assuming type-I censored data is introduced. The average run length (ARL) is used as the performance assessment criterion for the new proposal. In addition to proposing CEVHDEWMA chart, we also compare its performance to simple hybrid DEWMA chart for censored data and show that the new proposal is more efficient for the detection of an out-of-control situation under different censoring rates. Effect of estimation on the in-control and out-of-control ARL is also studied in this article. To show the application of the proposal in practice, two real-life examples are also a part of this study.

Keywords: *conditional expected value, censored data monitoring, censoring rate, hybrid double, exponential weighted moving average chart, weibull distribution.*

5. Baazizi, R., Mimoune, N., Mokhefi, M. H. E., **Raza, M.,** Chahed, A., & Hussain, T. (2019). Knowledge and behavior of cattle and sheep owners and herders regarding foot-and-mouth disease in Northern Algeria. *Veterinary world, 12*(8), 1285-1290. doi: 10.14202/vetworld.2019.1285-1290.**(Syed Muhammad Muslim Raza (Quantitative Method/SBE)** **SJR**

Abstract: BACKGROUND AND AIM: Foot-and-mouth disease (FMD) has been occurring in Algeria since 2014, when an outbreak was announced in Setif, a district in the eastern region of the country. The problem was apparently resolved with the help of vaccination. However, in 2015, 2016, and 2018, FMD recurred. The veterinary authorities and media educated breeders on how to recognize the clinical signs and how to report the disease. This study aimed to evaluate the knowledge and recognition of FMD by farmers and breeders. Moreover, an assessment of the behavior of cattle and sheep owners and herders following FMD cases is examined. MATERIALS AND METHODS: A cross-sectional survey was conducted from June to October 2018 to evaluate the perception of cattle and sheep owners and breeders regarding FMD in the Northern regions of Algeria, using questionnaires. RESULTS: One hundred questionnaires were distributed, 71 were collected. Data showed that all the responders claimed to know about the disease, while more than half of the owners/herders claimed that they knew the clinical symptoms of FMD and mentioned fever, hypersalivation, lameness, and vesicles. Fewer than half (42%) (30/71) took some measures to prevent the disease, while more than half (58%) (41/71) did not take any measures in 2018. No one claimed to have reported the disease to authorities in 2018, while more than half had done so in 2014. CONCLUSION: It appears that

experienced farmers recognized the clinical signs of FMD, while an academic background was not conclusively necessary for the identification of the clinical signs of the disease. Concerning the assessment of risk-associated behavior in the event of FMD occurrence, the responses of the breeders were not significantly different from those of risk-associated behaviors in the event of an epidemic. Farmers and breeders expressed similarity in terms of communicating the appearance of the disease in their livestock, the majority of them seemed to be aware of the importance of reporting the disease to local authorities, especially in 2014, when the disease first occurred. This behavior is encouraged by refund and technical assistance policies by the veterinary authorities, but in 2018, no disease was reported due to fear of slaughtering and economic loss.

Keywords: *cattle and sheep farmers, clinical signs, foot-and-mouth disease, knowledge and seniority, survey.*

6. Shaheen, S., Jaffer, M., Khalid, S., Khan, M. A., Hussain, K., **Butt, M. M.,** . . . Khan, F. (2019). Microscopic techniques used for the identification of medicinal plants: A case study of Senna. *Microscopy Research and Technique, 82*(10), 1660-1667. doi: 10.1002/jemt.23332.**(Muhammad Moeen Butt (Quantitative Method/SBE)** **Web of Science JCR Listed (IF: 1.327)**

Abstract: Background The use of quality control tool for adulteration of Senna (Cassia augustifolia) a pharmaceutically very important. They were used for multiple health disorders such as constipation, indigestion, epilepsy, asthma, piles, migraine, and heart problems. Two different species of same family or same genus used commercially in Indo-Pak using the same medicine name Senna. One named as Senna (C. augustifolia) and its adulterant named as Sickle Senna (Cassia obtusifolia). Methodology These two plants were analyzed using classical microscopic techniques light microscopy and the modern chemotaxonomic traits scanning electron microscopy, fluorescence studies and phytochemical studies. Results The C. augustifolia L. had found to be a perennial herb with trilobed pollen, diacytic, paracytic, and anisocytic stomata having smooth walled epidermal cells, whereas the C. obtusifolia stands out as a perennial shrub with spheroidal and circular pollen and paracytic type of stomata having irregular shaped epidermal cells. The powdered drug of C. augustifolia is dark grayish green, whereas the powdered drug of C. obtusifolia is light green in color. Investigation and other techniques used in this project provided the basis for the authentication of this species.

Keywords: *adulteration, Cassia augustifolia, Cassia obtusifolia, fluorescence studies, LM phytochemical studies, SEM.*

7. Hashmi, A. A., **Sial, M. H.,** Akram, W., & Hashmi, M. H. (2019). Assessing Food Insecurity Trends and Determinants by using Mix Methods in Pakistan: Evidence from Household Pooled Data (2005-2014). *Sarhad Journal of Agriculture, 35*(1), 87-101. doi: 10.17582/journal.sja/2019/35.1.87.10.**(Maqbool Hussain Sial (Quantitative Method/SBE)** **SJR**

Abstract: In this study, we try to indirectly quantify the welfare of people in Pakistan through measuring the food insecurity, malnutrition during last decade (2005-14). This study takes lead from earlier studies, in a sense, it covers two food price hike periods (2007 and 2011). So, it is important to understand, how food insecurity status and nutrition are affected by these shocks during this period. Thus, we use nationally representative data called as Household Income and Expenditure Survey (HIES) from 2005-2014. Pakistan Bureau of Statistics collects this data in five rounds, 2005-06, 2007-08, 2010-11, 2011-12, and 2013-14 comprised 81102 households. Results from the headcount ratios suggest that over the period food insecurity trends of the households raised from (58%) to (77%). we find urban households are more food insecure over the time as compared to rural households. Whereas, in qualitative terms of food insecurity, we use two food diversification measures, one is dietary diversity score and second one is share of staple food in total calories consumed by household, suggest that households dietary diversity score is good on average that is 9 out of

10 food groups and on the whole it is slightly improved from (8.8%) to (9%) in previous 10 years. Interestingly, when we analyze the share of staple food in total calories, results suggest that major portion of a household's diet is consisting of staple food (wheat), (53%) and increased to (57%) from 2005 to 2014. We use the Heckman Approach to find out determinants of food insecurity. Results suggest that female headship plays a significant positive role in caloric intake, among the other variable head education, households' member with basic education and higher education, live stock ownership, consumption of livestock produced at home, farming, consumption of food crop produced at home and foreign and domestic remittances plays a significant positive role in caloric intake of food insecure households.

Keywords: *food insecurity, poverty, determinants, Pakistan.*

8. Sarwar, G., **Sial, M. H.,** & Muhammad, M. S. (2019). Determinants of Household Investment in Education in Pakistan. *Journal of Education & Social Sciences, 7*(2), 67-78.**(Maqbool Hussain Sial (Quantitative Method/SBE) HEC Y CAT**

   Abstract: The purpose of this study is to examine the factors affecting investment in education at household level in Pakistan. The study utilizes household-level data from Pakistan Social and Living Standards Measurements survey. The findings show that household income, educational awareness, age and gender of household head, number of school going children, area and province of residence are the key determinants of household investment in education in Pakistan. There exists an inverted U-shaped relationship between investment in education and household total income confirming Engle's law for education expenditure in Pakistan. More importantly, household-level educational awareness has important implications for intergenerational educational mobility hence the income inequality.

   Keywords: *educational investment, household, engle curve, tobit model, Pakistan.*

9. Khan, N., Aslam, M., **Raza, S. M. M.,** & Jun, C.-H. (2019). A new variable control chart under failure-censored reliability tests for Weibull distribution. *Quality and Reliability Engineering International, 35*(2), 572-581. doi: 10.1002/qre.2422.**(Syed Muhammad Muslim Raza (Quantitative Method/SBE) Web of Science JCR Listed (IF: 1.609)**

   Abstract: In this paper, we propose a new variable control chart under type II or failure-censored reliability tests by assuming that the lifetime of a part follows the Weibull distribution with fixed and stable shape parameter. The purpose is to monitor the mean and the variance of a Weibull process. In fact, the mean and the variance are related to the scale parameter. The necessary measures are given to calculate the average run length (ARL) for in-control and shifted processes. The tables of ARLs are presented for various shift constants and specified parameters. A simulation study is given to show the performance of the proposed control chart. The efficiency of the proposed control chart is compared with a control chart based on the conditional expected value under type II censoring. An example is also given for the illustration purpose.

   Keywords: *average run length, control chart, failure-censored, life test, the Weibull distribution.*

10. **Mehmood, Q., Sial, M. H.,** Riaz, M., & Shaheen, N. (2019). Forecasting the production of sugarcane in Pakistan for the year 2018-2030, using Box-Jenkin's methodology. *JAPS, Journal of Animal and Plant Sciences, 29*(5), 1396-1401.**(Qaisar Mehmood, Maqbool Hussain Sial (Quantitative Method/SBE) Web of Science JCR Listed (IF: 0.529)**

    Abstract: Sugarcane is a major cash crop of the Pakistan. This study was present to forecast the production of sugarcane crop in Pakistan. Historical data for the production sugarcane from Pakistan Bureau of Statistics (PBS) and various issues of Economic Survey of Pakistan for the year 1947-2017, were used to predict the production of sugarcane for the years 2018-2030, using Box-Jenkin's (1976) methodology. A suitable ARIMA (2, 1, 1) model was proposed to forecast the production of Sugarcane crop from the year 2019-2030, which

show a significant increase, from 75394 tons to 86792 tons. These forecast values are useful for Government, Sugar mills, researchers and business men for information and planning their resources as well as farmers decisions regarding the production of Sugarcane crop in Pakistan.

Keywords: *autoregressive integrated moving average, model, error, production, forecast.*

Conference Proceedings

1. Rafi, A., Makhdum, M., & **Munir, M.** (2019). *Determination of risk factors that cause antisocial behaviour among the students of public sector universities in lahore.* Paper presented at the Proc. 17th International Conference on Statistical Sciences, Theme: Sustainable Development Goals (SDGs) and Data Gap Challenges, National College of Business Administration & Economics Lahore (Pakistan).(**Mubbasher Munir (Quantitative Method/SBE)**

Abstract: The study of antisocial behavior problem was conducted to determine the prevalence and severity of antisocial behavior problem and identifying factors influence the risk of antisocial behavior problem. A sample of 500 students selected randomly from three public sector Universities of Lahore, Pakistan. The data was collected by using well designed questionnaire. The age ranged from 16 to 25 years. The STAB scores were computed. The anti-social behavior was found to be prevalent in one fifth of the population. It was more prevalent in boys as compare to girls. The test of association was performed to test the significance of different risk factors and antisocial behavior problem. To determine the effect of different factors on antisocial behavior, the binary logistic regression model was applied on all data. The factors low supervision of parents, complex with friends, poor medium of instruction and carelessness about studies are risk factors which were found to be significant contributors towards anti-social behavior among youth.

Keywords: *not available.*

Conference Papers

1. **Butt, M. M., Mueen-ud-Din-Azad** (2019). *Estimators under stratified ranked set sampling design using auxiliary variables*. Paper presented at the 17th International Conference on Statistical Sciences, National College of Business Administration & Economics, Lahore (Pakistan).**(Muhammad Moeen Butt, Mueen-ud-Din-Azad (Quantitative Method/SBE)**

Abstract: Access to finance through financial institutions is highly dependent on financial literacy. The basic purpose of this paper is to examine the women's financial literacy level in Pakistan especially among the women entrepreneurs. This study also tries to determine the effect of financial literacy of women entrepreneurs on their access to finance and subsequent financial decision-making about their businesses. Current research conducted in this study used semi-structured questionnaires, selected interviews and focus groups. Findings show that women entrepreneurs lack proper knowledge of financial terminologies, mechanism of financial access and government initiatives for women entrepreneurs. It is suggested in the light of these findings, that all the relevant stakeholders should work together to enhance financial literacy among current and prospective women entrepreneurs of Pakistan. Strengthening of women entrepreneurship may play a significant role to alleviate poverty among female population of the country.

Keywords: *financial literacy, women, entrepreneurship, women empowerment.*

School of Social Science & Humanities (SSSH)

Department of English Language and Literature

Research Articles

1. **Kanwal, S., & Garcia, M. I. M.** (2019). Representation of Gender Through Framing: A Critical Discourse Analysis of Hillary Clinton's Selected Speeches. *International Journal of English Linguistics, 9*(2), 321-331. doi:

10.5539/ijel.v9n2p321.**(Safina Kanwal & Maria Isabel Maldonado García (English Language and Literature /SSSH)** **Master Journal List**

Abstract: Foucault's theory of power and discourse has opened new horizons in the various fields of linguistics. It has brought the working of the power of discourse into the focus of research. Critical Discourse Analysis looks at this relationship between language and power. Language is taken as a patent tool for exerting power and for building identity (Foucault, 1998). Critical discourse analysis (CDA) reveals the ways by which discourse is manipulated for the construction of various domains such as identity, ethnicity, ideology, cultural differences and gender. The most wide-ranging and most influential work in CDA is of Norman Fairclough. He takes language as a social practice. He makes it clear that the power of discourse is used for depiction of ideology and gender representation. The present study used Critical Discourse Analysis (CDA) as an approach to find out the working of frames for representation of gender identity. The current study analyzed the campaign speeches of Hillary Clinton for finding out her projection of gender identity through frames. The data of the study consists of her opening primary campaign speech which is the Campaign Launch Speech and her last speech for Primary campaign that was delivered in the American presidential election of 2016. The theoretical framework for the present study is Fairclough's Three Dimensional Model (2015) and the tool applied on this model for looking into the working of frames is the Frame Problem Tool of Gee (2014). The results of the study revealed that Hillary used the technique of framing for projecting her gender identity. She used the fight and family frames for the modification of the boundaries of American presidency with respect to gender. Through her political discourse she framed herself as a brave and bold woman who had she become the president of the United States would have fought for the rights of all Americans irrespective of their creed, sect, religion, gender and nationality.

Keywords: *critical discourse analysis (CDA), framing, gender, discourse, family.*

2. **Khaliq, F. A., & Garcia, M. I. M.** (2019). A Deictic Analysis of Pakistan's National Identity Representation in the Indigenous English Newspapers. *International Journal of English Linguistics, 9*(2), 307-320. doi: 10.5539/ijel.v9n2p307.**(Faiqa A. Khaliq, Maria Isabel Maldonado García (English Language and Literature /SSSH)** **Master Journal List**

Abstract: The goal set for the present study is to investigate the temporal and spatial deixis which are used to represent and build the national identity of Pakistan in the two leading indigenous English newspapers. The study investigates how the WAR and NATION frames are used in the opinion articles of The News and DAWN to project the negative image of Pakistan by using temporal and spatial deixis. The data collection is based on the ten years of opinion articles from 2007-2017. The political situation of Pakistan in the year 2007 was crucial and it is marked as a step towards the revival of civilian democracy through the announcement of general election in Pakistan during the ongoing war on terror. Purposive sampling technique is used in the selection of data. The theoretical foundation is based on the Anderson's (1991) Imagined community. The empirical framework is based on Harts' (2014) Critical Cognitive Discourse Analysis. Both qualitative and quantitative methods are employed. Antconc is used to generate the frequencies and concordance lines of the text. The data analysis shows that journalists mostly projected the negative image of Pakistan by utilizing different deixis and by linking the events of past from shared memories with the present and the future events by conceptualizing WAR and NATION Frames.

Keywords: *cognitive linguistics, imagined communities, national identity of Pakistan, critical cognitive discourse analysis, temporal and spatial deixis, the print media of Pakistan.*

3. **Zaheer, F.,** & Din, K. U. (2019). American Dream or Avaratia: Critical Circumspectis of American Dream Through Ages. *International Journal of English Linguistics, 9*(3), 57-67. doi: 10.5539/ijel.v9n3p57.**(Faiza Zaheer (English Language and Literature/SSSH)** **Master Journal List**

Abstract: This paper is an attempt to apply Jacques Derrida's theory of Deconstruction to American Dream and its treatment in the language of Edward Albee's play American Dream and other American Playwrights. Different deconstructive terms have been applied to understand and analyze the language of Albee's The American Dream. Deconstructive terms, Differance, Erasure and Aporia have been applied to the language used by Albee to analyze the concept of American dream and its relation to its context of old American Dream as envisaged by the founding fathers and the new American Dream as defined by James Truslow Adams. These deconstructive terms will help readers to understand the themes and language of postmodern and post war American drama in general and those of Albee's in particular. This, in turn, makes the reader realize that American dream as depicted in modern American Playwrights is materialistic, illogical, futile and bizarre: Albee's play reflects modern American society and its sensibility. Language of modern is simple yet it communicates multi-faceted interpretations and those interpretations have been explored in the light of all these deconstructive terms. The basic purpose of involving these deconstructive terms in analyzing the language of Albee's The American Dream and the other major postmodern American plays is not only to understand the mutability and fluidity in the diction but also to expose absurdity and apparent meaninglessness in it.
Keywords: *deconstruction, American dream, individual, language, illogical, futile.*

4. Shaheen, U., **Rafi, M. S.,** Aziz, S., & Noor ul, A. (2019). Meeting diversity in ESL classroom: a pedagogical model for a globalized milieu. *Journal of Teaching English for Specific and Academic Purposes, 7*(2), 237-253. doi: 10.22190/jtesap1902237s. **(Muhammad Shaban Rafi (ILA\SSSH)** **Master Journal List**
Abstract: Globalization demands dynamism in English as a Second Language (ESL) pedagogy to address the needs of students from diverse cultural, educational and linguistic backgrounds. Students hailing from different countries with varied levels of English proficiency present a serious challenge to instructors. The challenge to meet the needs of diverse students from Afghanistan and Pakistan, for instance, within the same teaching faculty, prompted this study. It attempts to explore Afghan and Pakistani students' expectations of the first module of English introduced at undergraduate level, i.e., English Comprehension and Composition (ECC) at a Pakistani university, by applying the Expectancy Disconfirmation Model of Satisfaction (Oliver 2015,120). Students' expectations have been a neglected area of research despite being a significant factor in behavior and performance. This study aims to find out how far the Pakistani and Afghan students' expectations have been met with Negative Disconfirmation (non-fulfillment), Zero Disconfirmation (fulfillment) or Positive Disconfirmation (enhanced fulfillment). The findings reveal that the Afghan students were enrolled in the Pakistani university as a result of a mutual agreement between the Pakistani and Afghan governments under the Higher Education Commission (HEC)scholarship "Award of 3000 Scholarships to Students from Afghanistan under the Prime Minister's Directive" had concerns with the advanced level grammar and reading exercises, while Pakistani students complained about insufficient class time, consecutive lectures and lack of adequate practice provided in the classroom. The study suggests a pedagogical framework for the students focusing on Contextualized Task Based Language Teaching (CTBLT) method in combination with Input-oriented approach for the desired academic outputmentioned in the objectives of the course/module.
Keywords: *ELT, negative disconfirmation, zero disconfirmation, positive disconfirmation, contextualized task-based language teaching.*

5. Saddiqa, A., & **Anwar, N.** (2019). Objectified Migrant Identity Through Multimodal Critical Discourse Analysis. *Global Social Sciences Review, IV*(I), 270-281.**(Nadia Anwar (English Language and Literature /SSSH)** **HEC X CAT** **Abstract:** The images of migrants have inundated our media lately. However, migrant representation has been largely done through the lens of 'others', mostly by the foreign-media, whereas the discourse on the

localized version of reality is unaccounted for. This search for self-narrative led us to the analysis of photographic work of Aziz Hazara, an Afghan student of Fine Arts, who envisions migrants as equal to the 'made-to-migrate', 'used' and sometimes even 'deformed' toys from the flea market. The article highlights the portrayal and identity construction of migrants through the lens of an Afghan visual artist by excavating the discourse informing the analogy between the toys and the migrants along with the application of Paul Gee's identity tool. A multimodal critical discourse analysis of the data reveals that toys ventrilocate the condition of the migrants characterized by deformity, subversion, and discontentment.

Keywords: *Afghan migrants, identity, mcda, toys.*

6. **Ali, N., & Anwar, N.** (2019). Vicissitudes of Aphasic Identity: Discourse Analysis Under James Paul Gee's Identity Framework. *International Journal of English Linguistics, 9*(1), 97-110.**(Nadir Ali & Nadia Anwar (English Language and Literature/SSSH)** **Master Journal List**

Abstract: Patients with post-stroke aphasia experience inability to communicate fluently, which is associated with an injury in the language areas of the brain. While much literature is available on the impact of aphasia suffered by the patient on family and important others, there is a dearth of data concerning the aspects of identity construction of the patient after the disastrous consequences of aphasia disorder. A discourse analytical framework was used by employing James Paul Gee's framework of identity perception with the aim of understanding the vicissitudes of identity in patients with aphasia. Data were obtained from semi-structured interviews of three participants and their partners. The interviews were video-recorded, transcribed and analysed using Paul Gee's Toolkit of doing discourse analysis, including four perspectives of identity driven by nature, institution, discourse and affinity. All these aspects were recognised as a negative construction of identity after aphasia disorder except some instances of positive construction in Affinity-Identity. The study concluded that post-stroke reconstruction of identity was an important challenge for the patients, family and healthcare services. In most of the cases, this reconstruction was negatively managed by the patients with aphasia and people surrounding them. Therefore, the present study has suggested the need to develop physical and virtual aphasia groups, such as aphasia clubs, aphasia tea houses and Facebook/WhatsApp aphasia groups, so that patients with aphasia can construct a positive Affinity-Identity within their affinity groups and general identity in other aspects of life. Moreover, a sound and effective training is recommended at social level to sensitize people about patients with special needs.

Keywords: *identity construction, patient with aphasia, communication, discourse analysis, rehabilitation.*

7. **Chohan, M. N., & Garcia, M. I. M**. (2019). Phonemic Comparison of English and Punjabi. *International Journal of English Linguistics, 9*(4), 347-357. doi: 10.5539/ijel.v9n4p347.**(Muhammad Nadeem Chohan, Maria Isabel Maldonado García (English Language and Literature/SSSH)** **Master Journal List**

Abstract: English and Punjabi are languages which do not belong to the same families of languages. English is one of the West Germanic languages whereas, Punjabi is a part of the Indo-Aryan family. Punjabi is spoken by various nations on the globe, especially Pakistan and its province Punjab as well as in Indian Panjab. Both English and Punjabi manifest themselves through various dialects on the basis of diversified geographical areas. English is used as the first language by 379,007,140 speakers and further 753,359,540 speakers use it as a second language in more than 104 nations. So, the total speakers of English around the globe are 1,132,366,680 (Ethnologue, 2019). The importance of Punjabi cannot be denied being the 10th most widely used language on the globe (Ghai & Singh, 2013). According to Ethnologue (2019), the total number of Punjabi speakers is 125,326,840. In Pakistan, it is the language of the majority of the people residing in the most populous province of Pakistan, Punjab. It is among twenty-two languages that have obtained official status. Unfortunately, no considerable work has been done on its phonology. This study is an attempt to describe the phonemic differences between English and Punjabi by using the theoretical framework of the

Levenshtein algorithm. The index of differences and similarities is determined through the inventories of both languages. The inventories are used as data in this research paper. The Levenshtein algorithm (Levenshtein, 1965) is used to analyse the inventories to calculate the ratio of differences and similarities. The outcome of the current research shows that both English and Punjabi have a phonemic similarity level of 56.25% whereas the index of difference is 43.75%.

Keywords: *Punjabi, Majhi, dialect, phonemic differences, phonetics, levenshtein algorithm, English.*

8. **Habib, M. A., & Khan, A. A.** (2019). Vowel Epenthesis in Loanword Integration: A Study of English Consonant Cluster at Onset. *International Journal of English Linguistics, 9*(4), 332-346. doi: 10.5539/ijel.v9n4p332.
(Muhammad Asad Habib (English Language and Literature/SSSH) Arshad Ali Khan (ICCS) Master Journal List
Abstract: This study examines the process of vowel epenthesis used by the Punjabi speakers to integrate the English consonant cluster at onset position of the syllable. English and Punjabi are two different phonological system where English allows consonant cluster and complex consonants at onset while Punjabi only allows complex consonants. Hence for the integration of syllables with consonant cluster, Punjabi speakers have to insert a vowel to make the consonant configuration according to Punjabi phonotactics. The data for this study are collected from recordings of focus group discussions, interviews and video clips. The data are analyzed by using CV phonology and Distinct Feature theory. The results suggest that Punjabi speakers insert vowels to modify the English consonant clusters according to Punjabi phonological environment. Thus, they add another vowel node and resyllabify the consonant clusters. The mid central /(sic)/ vowel is the default epenthetic vowel while in some cases /e/ is also used before the consonant clusters.
Keywords: *epenthesis, anaptyxis, prothesis, resyllabify, declusterize, phonotactics.*

9. Habib, M. A., **Bhatti, Z. I., Akbar, A., & Khan, Z.** (2019). A study of Communicative Language Teaching Methods in Islamic institutes in Pakistan. *Al-Qalam, 24*(1), 57-71.**(Zafar Iqbal Bhatti, Anila Akbar, Zarmeena Khan (English Language and Literature/SSSH)** HEC Y CAT
Abstract: The aim of this study is to conduct action research in the ESL classroom in Islamic institutions in Lahore, Pakistan. This research is conducted to find out the usefulness of Communicative Language Teaching method to teach English by taking into consideration their cultural values and norms. Culture plays a vital role in implementing the CLT methodology. For this purpose 8 male and 7 female students were selected purposefully. The results show that CLT proves to be a good source of learning as the students showed that it is increasingly interesting and effective for building language skills. However, the lack of skilled teachers is hampering the process. Although it was a new thing for the students still they took part in all the activities and seems to enjoy. This reduced their shyness and makes them feel that they are equal stakeholders in the classroom. Students also showed preference to those things which are culturally close to them.
Keywords: *not available.*

10. Junaid, A., & **Rafi, M. S.** (2019). Communication barriers between doctors, nurses and patients in medical consultations at hospitals of Lahore Pakistan. *Pakistan Armed Forces Medical Journal, 69*(3), 560-565.
(Muhammad Shaban Rafi (English Language and Literature/SSSH) HEC Y CAT
Abstract: Objective:Theobjectivewastoidentifythe barriers between doctors, nurses and patients that they perceive while communicating with each other in outdoor departments of army and public healthcare hospitals, Lahore, Pakistan.Study Design:Exploratory and descriptive.Place and Duration of Study:The study was conducted in the Combined Military Hospital (CMH)and Jinnah Hospital Lahore, Pakistan, for a period of 3 weeks.Material and Methods:Semi-structured interviews of doctors, patients and nurses(2 each, one male and one female in each category) were conducted and analyzed through Interpretative Phenomenological Analysis (IPA).Snowball sampling technique was used to recruit the participants from

various socio-economic strata, experience and age. Results:The study reveals linguistic, cultural, behavioral and management barriersin doctornursepatient communication from the perceptions of the participants. In addition to this, lack of training of medical professionals inhibits the interpersonal communication between them and patients. Conclusion:The results suggest that the quality of healthcare can be improved by introducing interventions in doctornursepatient communication.The hospitals should introduce communication skills training programme in medical practices, with a focus on the linguistic and cultural diversity prevailing in the country and how to improve management skills.

Keywords: *communication barriers, ipa, out-patient departments, perceptions, thematic analysis.*

11. **Rafi, M. S.** (2019). Cyberbullying in Pakistan: Positioning the Aggressor, Victim, and Bystander. *Pakistan Journal of Psychological Research, 34*(3), 601-620. doi: 10.33824/PJPR.2019.34.3.33.**(Muhammad Shaban Rafi (English Language and Literature/SSSH)** **SJR**

Abstract: This study explores cyberbullying prevalence, causes, reasons, and preventive measures from the perspective of victims and bystanders. The data were gathered from 329 male and female students of different age groups through an open-ended questionnaire and cyberbullying confession pages. Constructivist thematic framework was applied to look for commonly emerging patterns in the data. The study revealed that the likelihood to become a victim to cyberbullying decreased with an increase in age. However, there was no association between gender and cyberbullying. The study showed that various linguistic resources were exploited by the aggressors to victimize the participants. However, being sophomoric users of social media sites and having offline disputes were the core reasons of cyberbullying among a majority of victims. The participants valued the support of parents and friends, and showed faith in the preventive measures taken by educational institutes and Federal Investigation Agency, Pakistan against cyberbullying assaults. Findings from this study contribute to the research on cyberbullying, which is still in its infancy in Pakistan and may help in formulating cyberbullying prevention program.

Keywords: *cyberbullying, prevalence, causes, reasons, and preventions, Pakistan.*

12. **Bhatti, Z. I., Khan, Z., Akbar, A.,** & Mahmood, Q. (2019). English Language Teaching in Religious Institutes of Pakistan. *Al-Qalam, 24*(1), 1-14.**(Zafar Iqbal Bhatti, Zarmeena Khan, Anila Akbar(English Language and Literature/SSSH)** **HEC Y CAT**

Abstract: The current paper is an attempt to explore the nature of English language teaching as a Second or a foreign language as it is taught and used in Pakistani educational institutes. It is argued that English is not only a colonizing language but also being used as a lingua franca in the every nook and corner of the world. English used in Pakistani perspective reflects Islamic values and embodies sensitive domains of social life. A gap has been bridged between English language teaching and religious institutes through analysis of the current debates on the issues of Englishlanguage. The developed framework can be used to analyze the connection between Islamic values and English language.

Keywords: *not available.*

13. **Riaz, M., & Rafi, M. S.** (2019). Gender-based socio-semiotic analysis of honour killing in Pakistani paintings. *Pakistan Journal of Women's Studies: Alam-e-Niswan, 26*, 125+.**(Mehvish Riaz, Muhammad Shaban Rafi (English Language and Literature/SSSH)** **HEC Y CAT**

Abstract: Episodes of ideological concern related to honour norms and construction of social meanings depicted through paintings are pertinent in foregrounding the social realities of Pakistan. This paper analyzes the grammar of paintings from the perspective of gender roles assumed in the context of honour. The grammar of the visual design of five paintings painted by male and female Pakistani painters belonging to

different areas of Pakistan have been qualitatively studied in the light of the social semiotic framework suggested by Kress and Leeuwen (2006). The results show that women are represented as helpless, outcast and oppressed beings, while men have been depicted, indirectly through signs, as oppressors. Paucity of research in this area and implications of the analysis for gender studies, anthropological linguistics, violence studies and visual literacy, make it a significant contribution to the existing literature.

Keywords: *honour killing, social semiotic analysis, Pakistani paintings, gender representation, visual grammar.*

14. **Bhatti, Z. I.,** Hasan, W., & **Abid, F.** (2019). Greetings in the Holy Quran, A Socio-Pragmatics Study. *Al-Qalam, 24*(S. 1), 1-16.**(Zafar Iqbal Bhatti, Faiza Abid (English Language and Literature/SSSH)** **HEC Y CAT**

Abstract: The paper aims to scrutinize about the tasks of socio-pragmatics in breaking down greetings salutations relevantly inside the structure of the Holy Qur'an. It ponders Quranic greetings inside the structures of Austin's and Searle's discourse analysis. To accomplish the motivation behind the investigation, some verses of greetings have been browsed from the Holy Qur'an, gathered and interpreted. At that point, the expressions have been characterized and investigated by the Quranic clarification. Those models have been isolated by addresser, recipient, and incidents in different ways and means. In this study five kinds have been selected, at first greetings by Allah Almighty, secondly, greetings for Angles, thirdly greetings for Prophets, fourthly greetings for Muslims and fifthly orders for heathens. In the wake of having studied a genuinely delegate group of significant writing, the specialists have found greetings in the Holy Quran are utilized to pass on different capacities, for example, applauding, respecting, inviting, supplicating, conveying happy news, acknowledging, good notice, rich reward, consolation, setting up companionship and closeness between individuals who don't have any acquaintance with one another, producing shared love, and a feeling of connection.

Keywords: *Holy Qur'an, socio-pragmatics, Islamic, greetings, speech act theory.*

15. **Rafi, M. S.** (2019). Honour-based crimes in Pakistan: narratives of victims, aggressors and bystanders. *Pakistan Journal of Women's Studies: Alam-e-Niswan, 26*, 61+**.(Muhammad Shaban Rafi (English Language and Literature/SSSH)** **HEC Y CAT**

Abstract: The study explores the causes of honour-based crimes through the narratives of victims, aggressors and bystanders, which were unfolded in documentary films: A Girl in the River: The Price of Forgiveness (2015) and Saving Face (2012). Selected narratives are interpreted by taking the sociocultural perspectives that draw on the cultural manifestation of honour crimes. The study shows that the 'ideology of honour' is one of the major causes of honour- crimes in Pakistan. Unlike Western discourses, which empower a woman institutionally to resist honour crimes, Pakistani women are either hushed or forced to compromise despite the presence of law to punish the aggressors. The study recommends that state and nonstate institutions play an effective role through the local councils of Pakistan in dealing with honour crimes and rehabilitation of victims
through the provision of remunerative work.

Keywords: *honour-based crime, victim, aggressor, bystander, Pakistan.*

16. **Naeem, W., & Rafi, M. S.** (2019). Linguistic Realization of Legitimation of Power by Zia ul Haq and Pervez Musharraf during the Afghanistan Wars. *Journal of Political Studies, 26*(1), 31-57.**(Waqasia Naeem, Muhammad Shaban Rafi(English Language and Literature/SSSH)** **HEC Y CAT**

Abstract: This research aims at revealing the linguistic realization of legitimation in the discourses of Zia and Musharraf during the Afghanistan wars for the periods of 1979- 1988 and 2001-2008. The data comprises of their official discourses on Afghanistan war during their respective regimes as head of the state. Using the

Nomination strategies suggested by Discourse Historical Approach by Wodak and Meyer (2001) and Van Leeuwen‟s Social Actors Representation model (2008), this study reveals the linguistic realization of legitimation through the dichotomous construction of self and Other representation. Moreover, it is argued in the study that different social actors have been constructed in their discourses through the categorization of Inclusion/Exclusion and Activation/Passivation to rationalize the perspective of self/ in-group, in order to justify their respective policies on Afghanistan issue.

Keywords: *discourse historical analysis, Zia ul Haq, Pervez Musharraf, political discourse, language, legitimation, Afghanistan war.*

17. Habib, M. A., **Bhatti, Z. I., Khan, Z., & Akbar, A.** (2019). Madaras in Pakistan: Challenges and Reformation in 21st Century *Al Qalam, 24* (S.1).**(Zafar Iqbal Bhatti, Zarmeena Khan, Anila Akbar (English Language and Literature/SSSH) HEC Y CAT**

Abstract: The study focuses on presenting the true condition of the madaras in Pakistan. The study dismisses the claims of extremism and militancy attached with all the madaras. It traces back the history of madaras and under the light of previous literature brings to lime light the real factors behind instilling the militancy in very few madaras in Pakistan. Then it presents the actual conditions and the needed reformation in Pakistani madaras. For this, data is collected through interviews and observations. The participant of the study are 14 ulmas and 37 students taken from 8 different madaras. The study also gives some suggestion for the betterment of this rich legacy.

Keywords: *not available.*

18. **Bhatti, Z. I., Chohan, M. N., Khan, Z., & Akbar, A.** (2019). Towards pragmatic integration of linguistics with Islamic studies. *Al-Qalam December, 24*(2), 137-147.**(Zafar Iqbal Bhatti, Muhammad Nadeem Chohan, Zarmeena Khan, Anila Akbar (English Language and Literature/SSSH) HEC Y CAT**

Abstract: There is a remarkable binding between Islamic Studies and the Arabic languagesince the advent of Islam and development of the Classical language. From the time of Panini, special care had been taken regarding phonetics and phonology of respective religions especially Hinduism, Islam and Judaism, etc.Thepresent paper provides a detailed perspective of dissoluble correlationbetweenlinguistics specially phonetics and religion. As Arabic is recognized the language of Islamwhich is distinguished from other prophetic languages around the globe.Somereligious scholar's rendervery remarkableplace to Arabic language as the most sacred language in the history of human kind. The authors highlight therole of written tradition ofthe field of Islamic studies. They have also analyzed the significance of the text of the holy Quranin connection with perspective of Islamic civilization.The comprehension of the polyphony of the sacred text of the holy Quran, provides the concept of undividable concord of its form and content. Thecontent of the holy Qur‟an is the specialphenomenonwhichis a multidimensionalobjectthat ought to be contemplated from various perspectives.

Keywords: *Arabic, linguistics, religion, Islamic Studies, Quran.*

19. **Abid, F., Ashfaq, N., Sarfraz, R., & Bhatti, Z. I.** (2019). A Socio-pragmatic Perspective of Hudaibiya Treaty in the light of Grice's Maxims. *Al Qalam, 24*(1), 32-41. **(Faiza Abid, Naheed Ashfaq, Rida Sarfraz, Zafar Iqbal Bhatti (English Language and Literature/SSSH) HEC Y CAT**

Abstract: The present research will analyze the presence of Grice's maxims in the treaty of Hudaibiya. The perfect idea of communication is that people will cooperate with each other during a conversation. Treaty has a lot of historical value as it suggests and reflects the cooperation of two leaders for the benefit of their people. It is a qualitative research but descriptive approach will be used for the analysis. Paul Grice's (1975) Cooperative Principle: maxim of quality, maxim of quantity, maxim of relation, maxim of manner will be used

to draw inferences. It was found that treaty follows all the maxims. All the points of the treaty are reality based and no compromises over religion have been made. Treaty is without any ambiguity, false or vague statements by using appropriate and relevant phrases and words. Furthermore, it promotes peace, prosperity, freedom and security of the people of that time which shows the socio-pragmatic culture of Islam.

Keywords: *treaty hudaibiya, socio-pragmatics, grice's maxims.*

20. **Junaid, A., Rafi, M. S.,** Khan, J. S., & Khan, N.-U.-S. (2019). A narrative inquiry of nurse-patient communication. *Pakistan Armed Forces Medical Journal, 69*(1), 123-129. **(Ayesha Junaid, Muhammad Shaban Rafi (English Language and Literature/SSSH) HEC Y CAT**

Abstract: Objective:Identify to the explores: the main causes of verbal abuse of patients by nurses and nurses by patients and tosteps needed to promote positive nurse-patient interaction at hospitals.Study Design:Aqualitative study.Place and Duration of Study:The studywas conductedin the University of Health Sciences, Lahore for a period of one week, in Aug 2017. Materialand Method:A sample of six senior nursespursuing Master degree in Health Sciences was selected to address the research questions. In addition to this, a sample comprising six patients and faculty memberswas taken to counter checkthe narratives told by the senior nurses. Results:The study revealedthat verbal abuses by nurses and/or patients are situational and fragmented.Lackof time and space, lack of resources andlack of training were the predisposing factors leading up to the verbal abuse of patients by nurses. Conclusion:The study recommends introducing professional training program of nurses in communication skills for nurse-patient conflict resolution. Moreover, the State must provide an environment complete with resources that can be conducive for an efficient health care delivery.

Keywords: *nurse-patient communication, narrative inquiry, verbal abuse.*

21. **Amjad, I., & Rafi, M. S.** (2019). Sociolinguistic Construction of Women's Identity by Solicitors in Murder Trial Arbitration. *Pakistan Journal of Criminology, 11*(2), 95-106. **(Iram Amjad, Muhammad Shaban Rafi (English Language and Literature/SSSH) HEC Y CAT**

Abstract: This study examines the sociolinguistic construction of women's identity by solicitors in five murder trial arbitration at the magistrate courts located in Lahore, Rawalpindi and Multan of Punjab, Pakistan murder trials. Ryan's (2004) narrative inquiry and Shi-xu's (2005) Socio cultural Communication Approach (SCA) were taken as theoretical lens to interpret how far the narratives of solicitors are motivated by cultural dynamics. The study reveals that the solicitors constructed the socio legal identity of women such as weak and submissive, caregivers and respectable. Furthermore, they constructed socio cultural tethered narratives, which in many ways tend to empower women in the legal discourses. The study has attempted to unfold the socio cultural dynamics which are used to exploit the judicial discourses in the favor of women as victims or victimized in the murder trial cases.

Keywords: *sociolinguistic construction of gender, murder trial discourses, women identity in courtroom.*

22. Rashid, F., & **Rafi, M. S.** (2019). Superimposition of metanarrative through counter narrative in political tweets of Maryam Nawaz. *Journal of Media Studies, 34*(2). **(Muhammad Shaban Rafi (English Language and Literature/SSSH) Not HEC Recognized**

Abstract: This study aims at investigating superimposition of metanarrative by counter narratives in the political tweets of Maryam Nawaz. The data was confined to the tweets of Maryam Nawaz over the period of two months (February and March 2018). The thematic framework of Riessman et.al (2008) was used as a theoretical lens to interpret the data. The study reveals that Maryam Nawaz is inclined to develop counter narratives in her communication through Tweets. These narratives eclipse the often claimed, propagated and

manipulated metanarrative (declared in the party Manifesto) in the pursuit of her personal interests. The study shows that the counter narratives are perpetuated against rival parties, institutions and sometimes against the party Manifesto to generate conflict and to instigate the followers for protests. The study also reveals that metanarrative of the party was not communicated by Maryam Nawaz even during significant political events. Not speaking of the party manifesto/metanarrative, she has been using the virtual space interaction to counter attack her rival political parties. This study provides a direction to future studies to investigate the role of social media in helping Pakistani politicians for getting their voice out to a larger community mostly a direct appeal to their voters for information, persuasion and mobilization.
Keywords: *twitter, counter narrative, metanarrative, Maryam Nawaz, PML(N), politics of social media.*

23. **Rafi, M. S.** (2019). Language of politics and youth activism on social media: Implications for political discourse of Pakistan. *Pakistan Journal of Languages and Translation Studies, 7*. **(Muhammad Shaban Rafi (ILA\SSSH) HEC Y CAT**
Abstract: Not available.
Keywords: *not available.*

24. **Tanvir, M. F.,** Anwar, W., & Raza, A. (2019). Postmodern Ambivalence of Identities, Moralities and Law (lessness): The Detective-Criminal Continuum in Caleb Carr's The Alienist. *Journal of Research (Humanities), LV* 121-140. **(Muhammad Furqan Tanvir (English Language and Literature\SSSH) HEC Z CAT**
Abstract: This paper aims at highlighting a major pattern of differences between classic realist and postmodernist detective fiction by arguing that whereas the former, in spite of occasionally foreshadowing future developments in this respect, generally tends to retain an ideological split between people operating from the right and the wrong side of the moral/state law, the latter derives its narrative force from a sweeping and tumultuous ambivalence functioning at the core of the ideology of these two supposedly heterogeneous categories of characters. A preliminary survey of a few selected texts shall denote the premise of the proposed distinction between classic and postmodern detective fiction, followed by a comparatively detailed analysis of this trope in Caleb Carr's critically acclaimed historical thriller The Alienist (1994) to illustrate how the merging of identities of the detective and the criminal in a continuum contributes to a substantial problematization of value system in postmodern detective fiction.
Keywords: *postmodernism, detective fiction, caleb carr, the alienist, narrativity, ambivalent identities and morality.*

25. **Sarfraz, R., Abid, F., & Ashfaq, N.** (2019). Discourse analysis of the speeches of Michael Obama: a reflection of pronouns and identity. *Journal of social sciences & interdisciplinary research, 8*(1), 37-42. **(Rida Sarfraz, Faiza Abid, Naheed Ashfaq (English Language and Literature/SSSH) HEC Z CAT**
Abstract: This paper aims to analyze the speeches of Michael Obama in the light of Van Dijk CDA model. The fine relation between identity and pronouns, and the way they are being implemented are the focal points investigated in the paper. Teun Van Dijk is quiet a known name in discourse studies, and his model of CDA analysis is one of the powerful approaches in the domain. His model involves three dimensions of ideology analysis, namely, discourse, sociocognition and social analysis. Two of the speeches of Michelle Obama have been selected randomly. First speech has been addressed to "Democratic National Convention" (2012) and the second speech is taken from "Democratic presidential nominee's campaign rally in Salem, N.C. To evaluate her speeches discussion has been done by using CDA model of Van Dijk. (2001) and qualitative approach has been used. Speech has been analyzed at different levels. It has been found that Micheal Obama uses a lot of pronouns like "I", "You" and "We" etc in a variety of ways that reflects identity and a strong sense of belonging. She is trying to endorse values and ethics by using powerful and watchfully chosen

pronouns which reveal identity and leave therapeutic effects on her audience. She smoothly drifts from "My" to "Our" and "I" to "You" to demonstrate a strong connection between people and her life, particularly by using real life examples. She skillfully uses repetition in her speeches to leave mark on her audience's mind. Thus, it proves that, a politician's pronominal use of pronoun explains about one's diverse identity, particularly one's combined and shared identity. This also strongly reflects a politician's aim to connect to the audience by certain sociocognition practices, to which they can relate. The schema of this research is to demonstrate the fine amalgamation of identity and pronoun through the prism of Van Dijk CDA model. Furthermore, this study will open doors for the innovative entities in terms of analyzing speeches through a different dimension. Basic purpose is to seek meaning via certain grammar tools mentioned above as well as to build a certain paradigm in order to clarify certain vistas with regard to probe the meaning under the surveillance of Van Dijk CDA model.

Keywords: *identity, pronoun, CDA, speech, discourse.*

26. **Saddiqa, A., Garcia, M. I. M., & Ali, N.** (2019). Proliferation of Multi-Cultures Through Globalization: Is It Promoting the Indigenous Culture or Global Culture? *International Journal of English Linguistics, 9*(2). **(Ayesha Saddiqa, Maria Isabel Maldonado García & Nadir Ali (English Language and Literature/SSSH) Master Journal List**

Abstract: The purpose of the study was to highlight the impact of multicultural proliferation through globalization on the adolescents of Lahore, Pakistan. A way to measure part of the impact is to have an understanding of how they have internalized foreign holidays and/or festivals which belong to other cultures. The data were collected from 200 male and female participants, of ages 13 to 19 years. The sample was subdivided into two groups of 100 participants each based on their parents' income level and the type of their institution (public or private). The medium of instruction in the private institutions of Lahore is English. English is, clearly, the language of globalization. In this regard, the hypothesis is that those students who study in private schools are more affected than those who study in public schools and whose medium of instruction is Urdu. A survey design was used to collect data regarding their perceptions about foreign cultural and religious festivals such as "Christmas", "Holi", "Valentine's Day", etc. Hamelink's Cultural synchronization theory provided the theoretical lens to the study. The analysis procedure was based on content analysis. The findings reveal a vivid difference between the perceptions of both groups. The adolescents who belong to the lower socio-economic status (who attend public schools) do not favour the celebration of foreign festivals. However, a tendency towards celebrating "Black Friday", "Valentine's Day" and "Basant" has been noticed. On the other hand, the adolescents of higher socio-economic background (who attend private schools) look forward to celebrating these festivals and perceive their celebration does not harm their cultural values. Even if this effect is partially due to globalization, the speedy influence on one stratum of the young generation of Pakistan may lead to a rapid assimilation to the global culture in the forthcoming times and also an opposition to the other strata. The study suggests a national media campaign as well as an institutional policy with an emphasis on indigenous cultural, social and religious values. There is a need to be more tolerant towards "others", and know how to co-exist but at the same time be able to retain the elements of the home culture of Pakistan, rather than adopting foreign practices.

Keywords: *cultural invasion, festivals, globalization, multi-cultures, Pakistani teenagers.*

27. **Sobia, I.** (2019). Power Dynamics in Wole Soyinka's 'The Trials of Brother Jero'. *International Journal of Linguistics, Literature and Translation, 2*(2).**(Sobia Ilyas (English Language and Literature/SSSH) Not HEC Recognized**

Abstract: The paper draws upon Wole Soyinka's play 'The Trials of Brother Jero' to explore the power dynamics within a discourse of power which has its foundations in suppression, poverty, deprivation and a

formidable colonial past and where power is not restricted to any homogenous group but is rather conditioned by culture, feminism and sexuality and is thus perpetually changing in form and structure. The play is a harsh depiction of how the Yoruban ecclesiasts manipulate the gullible working class to exercise power and gain control over a small fishing community with the effect of creating power relations that are hinged on oppression and resistance and where power is constantly changing hands between the state and the subjects. The paper suggests a Foucauldian analysis of the play by exploring the concepts of 'bio power' and 'pastoral power' within a 'regime of truth' which accepts physical and psychological coercion by the religious authorities as an essential pre requisite to salvation and where religion is manipulated to dehumanize individuals into slavish followers who are in turn, menacing breeders of revolt and resistance and posse the power to dislodge and overpower any type of institutional authority.

Keywords: *power, resistance, bio power, pastoral power, state, subjects.*

28. **Mubarik, S., & Anwar, N.** (2019). Lexical and Conceptual Language Compression/Decompression through Antonymic Construals in the Qur'ān. *Journal of Islamic Thought and Civilization (JITC), 9*(2), 65-87.**(Shaheen Mubarik, Nadia Anwar (English Language and Literature /SSSH) SJR**

Abstract: This study investigates the lexical and conceptual compression/decompression of the Arabic language brought about by means of antonymic construals in the selected category 'Signs of Allah's Magnanimity and Omnipotence' of the Qur'ān. It aims to have an insight into the usage based and context dependent functions of antonymy in creating compression and decompression of language though dynamic construal approach to antonymy. The data were gathered by using purposive sampling technique. 861 verses were selected as the universe for this research. Eighty four verses were then taken as the content or population for the study. Further, through two tiered sampling we selected eight verses as the sample to answer the research question i.e., to what extent the context affects language compression and decompression that take place in the selected category i.e., 'Signs of Allah's Magnanimity and Omnipotence' through antonymic construals? The study finally concluded that the context plays a central role to cause language compression and decompression through the antonymic pairs in the Qur'ān.

Keywords: *antonymic construals, language compression, language decompression, context dependent, non-gradables.*

29. **Naeem, T., & Anwar, N.** (2019). Injurious Effects of Hate Speech Acts in The Bluest Eye. *International Journal of English Linguistics, 9*(6), 106-115.**(Tamsila Naeem, Nadia Anwar (English Language and Literature/SSSH) Master Journal List**

Abstract: This qualitative study aims to investigate the effects of hate speech acts of powerful agencies, which are used to establish and maintain power relations by influencing the psyche of minorities or weaker groups to assign them a subordinate position. In the light of Judith Butler's notions presented in her famous book Excitable Speech (1997) it is found that such acts are used as a linguistic weapon in the process of social domination. Hate Speech acts have an injurious effect on the psyche of the weak which prompts them to obey the commands of the speakers, the powerful. For this purpose, relevant excerpts were taken through purposive sampling technique from Toni Morrison's novel, The Bluest Eye (1970), which depicts the tragic conditions of a black family living in a race conscious society of America. They are considered inferior to the white at social, moral, economic and political levels. The analysis of the selected texts is done at both micro and macro levels. At the micro level, the lexical semantic features of the utterances are studied and at the macro level, the socio-political environment in which the black characters are victimized and then psychologically subjectified is discussed. It is seen that the feeling of being ugly has multiple and terrible influences on the mind and body of the subjects. The selected episodes from the novel are the manifestations of their wounded psyche in the white-dominated America. They unconsciously think

themselves as agents of darkness, sin, crime, wickedness, immorality and evil. The findings of the study also reveal a taxonomy of newly emerging hate speech acts which may prove useful to analyze the communicative patterns of race-driven societies.

Keywords: *hate speech acts, power relations, injurious effects, wounded psyche.*

Conference Papers

1. Perveen, A., & **Anwar, N.** (2019). *My History is not your Playground Uncle Sam: Kamila Shamsie's Burnt Shadows as a Cosmopolitan Critique of Terror*. Paper presented at the ICDELL 2019 International Conference of Department of English Language and Literature, UMT, C-II Johar Town, Lahore, Pakistan.**(Nadia Anwar (English Language and Literature/SSSH)**

   Abstract: Kamila Shamsie's Burnt Shadows presents a critique of the US discourses about war on terror by tracing the phenomenon of growing threats of terror in a globalized world over the course of history in the name of freedom-fighting, socio-political and religious rights, and state exigencies. In contemporary literature, 9/11 turns out to be a signifier of terror and counter terror discourses. However, revisiting history is important to better understand one's present. The study aims to reinterpret aspects like colonization and world wars as forms of terror through Shamsie's critique of such events in Burnt Shadows. Using a historiographic approach, and through her mouthpiece Hiroko, Shamsie compares the enormity of 9/11 terrorist activities with the magnitude of American (counter) terrorist activities after 9/11, the genocides during Holocaust and atomic attacks on Hiroshima and Nagasaki. She bridges the past and the present by representing British colonization of India, WWII, Indo-Pak partition, Zia's Islamization, and the impact of war on terror on Afghanistan and Pakistan. Thus, the phenomenon of terror is presented as scaffolded by history, (trans) nationalism and globalization, which augments Shamsie's cosmopolitan vision and inspires her to create counter discursive strategies. Kwame Anthony Appiah's critique of cosmopolitanism and his emphasis on ethics and human dignity will be used as a theoretical framework for this qualitative study. In her novel, Shamsie bitterly criticizes nationalism that takes the shape of state terrorism and justifies terror as self-defense like post 9/11 wars waged by the US or WWII. The study concludes that despite the increasing transnationalism in our globalized world, the terror networks have increased in implicit or explicit forms and the world needs to revitalize itself by practicing similar ethics for global north and south by undermining political interests of the hegemonic groups and upholding human dignity irrespective of diverse religious or cultural ideologies.

   Keywords: *not available.*

2. **Garcia, M. I. M.** (2019). *Building a Second Language Learner Profile: The Pakistani Nationality Applicants of Spain.* Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Maria Isabel Maldonado García (English Language and Literature/SSSH)**

   Abstract: Not available.

   Keywords: *not available.*

3. **Jajja, A. A.** (2019). *An Analysis of Negative and Positive Politeness Practiced by Pakistani Federal Government Officers at the Workplace.* Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Abdul Ahad Jajja (English Language and Literature/SSSH)**

   Abstract: Not available.

   Keywords: *not available.*

4. **Nadir, A.** (2019). *The language barriers found in multicultural doctor-patient communications in the private clinics of Lahore: How much are Afghan refugees integrated?.* Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Nadir Ali (English Language and Literature/SSSH)**
   Abstract: Not available.
   Keywords: *not available.*

5. **Rehan, N.** (2019). *Flaubert's Parrot and the Problem of Faith.* Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Naveed Rehan (English Language and Literature/SSSH)**
   Abstract: Not available.
   Keywords: *not available.*

6. **Siddiqui, M. Z.** (2019). *Islamic Feminism or Western Feminism: A Way to Emancipate the Modern Women.* Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Muhammad Zaid Siddiqui (English Language and Literature/SSSH)**
   Abstract: Not available.
   Keywords: *not available.*

7. **Sahar, N.** (2019). *Muslim Women and the Challenges of Double Bind in Contemporary Politics.* Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Naila Sahar (English Language and Literature/SSSH)**
   Abstract: Not available.
   Keywords: *not available.*

8. **Nasir, Z.** (2019). *Crimes of Power against Women in the Context of Nadeem Aslam's Post 9/11 novel, The Wasted Vigil.* Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Zakia Nasir (English Language and Literature/SSSH)**
   Abstract: Not available.
   Keywords: *not available.*

9. **Haider, M.** (2019). *Role of Diacritics in Understanding of Urdu Text and Problems Children Face in Reading.* Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Muzmmal Haider (English Language and Literature/SSSH)**
   Abstract: Not available.
   Keywords: *not available.*

10. **Khan, A.** (2019). *Linguistic Analysis of Apparel Brands Advertisements.* Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Ayesha Khan (English Language and Literature/SSSH)**
    Abstract: Not available.
    Keywords: *not available.*

11. **Hussain, R.**, Zeb, S. (2019). *Anti-Islamophobia T-Shirts Slogans: A Sententious Discourse Analysis.* Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Rashid Hussain (English Language and Literature/SSSH)**
    Abstract: Not available.
    Keywords: *not available.*

12. **Mahmood, K.** (2019). *A Linguistic Analysis of Gulf War as Media Hyperreality.* Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Khalid Mahmood (English Language and Literature/SSSH)**
    Abstract: Not available.
    Keywords: *not available.*

13. **Shahid, F.** (2019). *Social Control in Media Discourse: A Quantitative Analysis of Morning Shows.* Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Faiza Shahid (English Language and Literature/SSSH)**
    Abstract: Not available.
    Keywords: *not available.*

14. **Ammara, Um-e, Javaid, N., Anjum, R. Y.** (2019). *A Corpus Based Halliday's Transitivity Analysis of the Novel To the Lighthouse.* Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Um-e-Ammara, Maryam Javaid, Rehana Yasmin Anjum)** **(SKT Campus)**
    Abstract: Not available.
    Keywords: *not available.*

15. **Shafiq, Z.** (2019). *Political Hate Speech on Twitter as an Emergent of E-Political Discourse.* Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Zunaira Shafiq (English Language and Literature/SSSH)**
    Abstract: Not available.
    Keywords: *not available.*

16. **Ilyas, M. R., Anjum, R. Y., Azam, S.** (2019). *Effectiveness of Learner Autonomy in Developing Reading Comprehension among ESL Learners.* Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Muhammad Rizwan Ilyas, Rehana Yasmin Anjum, Sadia Azam)** **(SKT Campus)**
    Abstract: Not available.
    Keywords: *not available.*

17. **Ali, Q., Asghar, Z.** (2019). *Relationship between Personality Traits and Language Learning Strategies used by Pakistani ESL Students.* Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Qasim Ali, Zaheer Asghar (English Language and Literature/SSSH)**
    Abstract: Not available.
    Keywords: *not available.*

18. **Azam, A.** (2019). *An Analysis of Metaphor and Metonymies in Classical Urdu Poet Mirza Assadullah Ghalib.* Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Arhamna Azam (English Language and Literature/SSSH)**
Abstract: Not available.
Keywords: *not available.*

19. **Tanvir, M. F.** (2019). *Crime and the Ethic of Law(lessness): The Nature of Multiple Criminalities in Gerald Seymour's The Untouchable.* Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Muhammad Furqan Tanvir (English Language and Literature/SSSH)**
Abstract: Not available.
Keywords: *not available.*

20. **Mubarik, S, Anwar, N.** (2019). *Lexical and Conceptual Language Compression/Decompression through Antonymic Construals in the Quran*. Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Shaheen Mubarik, Nadia Anwar (English Language and Literature/SSSH)**
Abstract: Not available.
Keywords: *not available.*

21. **Ishfaq, S., & Khan, A. I.** (2019). *A Subaltern Perspective of the Pearl that Broke Its Shell by Nadia Hashmi: A Feminist Analysis*. Paper presented at the An International Conference, 'Voices from Periphery: Literature & Language' at Forman Christian College on 17th-18th October, 2019**. (Sadia Ishfaq, Arshad Ali Khan (English Language and Literature/SSSH)**
Abstract: Afghanistan is a country traumatized by legacy of hard times and affected by a history of endemic pugnaciousness. It is a country wounded by warfare, repression of inhabitants especially women, changing identities and tormenting tales that add to the political, economic, and social ambiance that hovered in the background .The research attempts to show how Nadia Hashmi, an Afghan-American descendent sheds light on the political havoc in the country, phallocentric hegemony, the norms of patriarchal society which cast a shadow of oppression over female folk. The paper explores the subjugation of women, gender discrimination, identity crises and women as others who are in desire to gain self-freedom. The research sheds light on practicing the time-honored tradition of 'bacha posh' as a resistant drive of freedom in women to thrive in male-privileged society. The purpose of this research is to show struggles of Afghan women against their marginalization in a culture affected by gender discrimination. The research explores how two women who are generations apart practice tradition of 'bacha posh' as a way to seek independence that was previously difficult. The research uses theoretical framework of Spivak and Mohanty to analyze the subalternity of female characters and analyses novel from a subaltern perspective. The research concludes that subalterns can speak but voices of these marginalized characters were not heard. The 'othering' of marginalized characters highlights the struggles of these Afghan women to search for freedom in society trapped by patriarchal chains.
Keywords: *gender discrimination, marginalization, phallocentric hegemony, freedom, others.*

22. **Ishfaq, S.,& Inayat, N.** (2019). *Teachers' Perceptions and Practices of Reflective Portfolio Work in Professional Development of English Language Teachers.* Paper presented at the 7th International Conference on Education

(ICE7), 'Research and Development in Education for Sustainable Future, University of Education, Township Campus on April 10-11, 2019**. (Sadia Ishfaq, Nusrah Inayat) (English Language and Literature/SSSH)**

Abstract: The study aims to explore teachers' beliefs and practices of reflective journals keeping in professional development practices of English language teachers. The study also seeks to discover reflective teaching practices of teachers at Public sector schools. The research uses qualitative approach to study. The sampling population consists of ten English language teachers from two public sector schools in Pakistan. The constructivism paradigm is used and sampling population is determined via convenient sampling. The data collection instruments comprise of semi-structured interviews and reflective journals. The semi-structured interviews are transcribed for analysis and themes are generated manually. The document analysis of reflective journals is carried out. The quality criterion of research is determined by ensuring 'trustworthiness' of qualitative research. The results of study showed that there is 'lack of awareness' among teachers about reflective teaching practices and 'dearth of skilled practitioners'. Although teachers' at public sector schools possess a love of teaching profession and make use of students' feedback as self-evaluation tool but there is teachers' dissatisfaction such as lack of government's support and dearth of professional development training that deter the execution of ground breaking teaching methodologies. The teachers at public sector schools are in a dire need of professional development. The reflective journal keeping proved beneficial for teachers' to develop 'enhanced pedagogical skills', 'awareness about students' needs' and break from monotonous teaching routines.

Keywords: *professional development, reflective teaching, reflective journals, teachers' awareness, pedagogical skills.*

23. **Ishfaq, S.** (2019). *English language teachers' perceptions and practices of professional development at Pakistani public sector schools.* Paper presented at at 1st National Conference on TESOL, Linguistics and Literature, UMT, March 20-21 ,2019**. (Sadia Ishfaq) (English Language and Literature/SSSH)**

Abstract: The research aims at exploring English language teachers' perceptions and practices of professional development at Pakistani public sector schools. The research intends to ascertain teachers' awareness about preeminence of reflective teaching approach that leads to staff development and enhanced learner outcomes. The research uses a qualitative approach to study. The paradigm used is constructivism which allows the researcher to construct meaning through shared experiences with respondents. The sample size consists of ten English Language teachers selected via convenient sampling from two public sector schools. The research tools comprise of semi-structured interviews and reflective journals. A descriptive analysis of semi-structured interviews is carried out and themes are generated manually. The document analysis of reflective journals is carried out to determine three levels of reflections as proposed by reflective teaching model of Taggart and Wilsons. The quality criterion of research is ascertained via ensuring 'trustworthiness' of qualitative research. The results of study showed that although teachers' at public sector schools possess a love of teaching profession and occasionally make use of students' feedback as self-evaluation tool but are unaware of innovative pedagogical practices. The teachers at public sector schools are in a dire need of professional development and need to 'develop personality' to justify the role of teacher as nation builder. The practice of reflective journal keeping enabled the teachers to determine the needs of students which leads to increased teacher' effectiveness. The reasons behind dearth of professional development practices at public sector schools are lack of government's support, dearth of financial resources, lack of shared vision by government in catering to professional development needs of teachers, gaps in design and actuality of teacher training policies at government's end. Although there is formulation of teacher training policies but there is deterred execution of them.

Keywords: *professional development, reflecting teaching, teacher's awareness, learner outcomes, teacher training.*

24. **Tanvir, M. F.** (2019). *Reconsidering Psychoeducation: The Deconstruction of Preventative Strategies into Fallacious Disorders.* Paper presented at the 2nd International Conference Preventative Strategies in Clinical Psychology**. (Muhammad Furqan Tanvir (English Language and Literature/SSSH)**
Abstract: Not available.
Keywords: *not available.*

25. **Tanvir, M. F.** (2019). *Three Paradoxes Concerning Narratology: A Perspective on the Self's Fragmentation in Selected Twentieth Century Poems.* Paper presented at the National Conference on TESOL, Linguistics and Literature, ICCS, UMT**. (Muhammad Furqan Tanvir (English Language and Literature/SSSH)**
Abstract: Not available.
Keywords: *not available.*

26. **Tanvir, M. F.** (2019). *Postmodern Apprehension of Lived Experience: Art as Resistance to Life in Shane Rhodes' Holding Pattern.* Paper presented at the Geographies of Resistance: Literature, Language and Culture, University of Lahore, Lahore**. (Muhammad Furqan Tanvir (English Language and Literature/SSSH)**
Abstract: Not available.
Keywords: *not available.*

27. **Tanvir, M. F.** (2019). *Decentring of Grand Narratives of Tradition: Allusions in Elizabeth Smither's The Legend of Marcello Mastroianni's Wife.* Paper presented at the Voices from the Periphery: Language and Literature, Forman Christian College, Lahore**. (Muhammad Furqan Tanvir (English Language and Literature/SSSH)**
Abstract: Not available.
Keywords: *not available.*

Department of Gender Studies

Conference Papers

1. **Salahuddin, A.** (2019). *The feminist archetype in Pakistani Fiction: Exploring works by women writers*. Paper presented at the 6th International Conference on Gender and Women's Studies, 2019, Kuala Lumpur, Malaysia.**(Ambreen Salahuddin (Gender Studies/SSSH)**
Abstract: This paper explores the works of women fiction writers of Pakistan to ascertain the presence of feminist arche type in their works. This is a qualitative study. Data from fiction is collected through theoretical sampling and themes are extracted from collected text. The Pakistani women fiction writers have transformed living experiences of women into images that are mostly feminine or female but also at times, a few have tried to shatter the mould i.e. the form a society gives to a woman, and hence there is the presence of the feminist archetype in their works. The data, however, presents a rare occurrence of feminist consciousness in the works of few authors while the feminine consciousness is present in abundance in these works. It was observed during the reading of fiction produced by Pakistani women writers that the imprint of the age-old traditions of this region coupled with wrongly interpreted religious norms and customs have made the general attitudes of women of this region crippled to a major extent. It was observed that notions of liberty and freedom are highlighted all along in fiction by women writers but the true liberal self is found in the writings of only a selected few. It is also seen that the symbolic representation of the feminist archetype is depicted through bodily expressions of dancing, swimming and running.
Keywords: *not available.*

2. **Salahuddin, A.** (2019). *Myth of Empowerment and Economic Participation: Second Glass Ceiling for Women Entrepreneurs*. Paper presented at the 2nd International interdisciplinary conference on Gender, Work and Society, LUMS.**(Ambreen Salahuddin (Gender Studies/SSSH)**

Abstract: Glass ceiling phenomenon is recognized widely as it hinders the growth of women in corporate sector by becoming an invisible barrier. Much research has been done on this aspect and women have reported about the existence of this ceiling in the corporations that they work in. This paper, however, explores the existence of a second glass ceiling for women entrepreneurs who escape the corporate world to work in independence but get trapped by another glass ceiling. The main objective is to explore the existence of a second glass ceiling for women entrepreneurs as this phenomenon has not been explored in Pakistan. This study is conducted for an in-depth understanding. This is a qualitative study and uses phenomenological approach. Semi-structured in-depth interviews with women entrepreneurs of Lahore were conducted. This paper, apart from explaining what second glass ceiling is, through interviews brings out the proof for existence of second glass ceiling for women entrepreneurs, and tries to find solutions to break this ceiling.

Keywords: *Glass-ceiling, second glass-ceiling, entrepreneurship, women entrepreneurs, empowerment, emancipation, gender bias, economic participation.*

3. **Shafique, S., & Salahuddin, A.** (2019). *Complexities of intersect marriages: Reflections from Lahore*. Paper presented at the 1st National Conference on Debates in Contemporary Gender Issues, Department of Gender Studies, University of Management and Technology, Lahore.**(Sehar Shafique, Ambreen Salahuddin (Gender Studies/SSSH)**

   Abstract: This study concentrates on the problems that are faced by women in intersect marriages in Lahore. This research explores complexities of Shia-Sunni marriages. The primary objective is to investigate issues and challenges that are being faced by women in Shia-Sunni marriages through qualitative interviews. The study is conducted in Lahore. For this purpose ten Shia-Sunni couples were selected from all ten towns of Lahore with the help of purposive sampling for interviews. The results show that the different religious practices usually initiate conflicts and joint families also contribute to the complexity of situation. The lack of awareness about the other sect raise adjustment issues, lack of social acceptance and sometime females are forced to follow the practices of the husband's sect and they don't have liberty to follow their own will.

   Keywords: *Intersect marriages, Shia-Sunni Marriages, religion, sect, marriage issues.*

4. **Akram, A., & Salahuddin, A.** (2019). *Stigmatization of Women Police Officers: Perceptions from Lahore*. Paper presented at the 1st National Conference on Debates in Contemporary Gender Issues, Department of Gender Studies, University of Management and Technology, Lahore.**(Asma Akram, Ambreen Salahuddin (Gender Studies/SSSH)**

   Abstract: Women have always played a significant role in positive development of society and with their efforts and skills they have proven that their participation can lead any organization to achieve positive outcomes for both men and women.The study primarily aims to explore the type of social pressures that lead female towards missing out career opportunities in the Police Department by labeling policing inappropriate profession for women by the society. The major area of concern of the study is to highlight the false conceptions related to policing as a profession for women and to highlight the reasons of labeling this profession, not suitable for women and also its effects on women who are working in this department. The research investigate the perception that how stereotypical behavior of society regarding male dominating work places leads women towards a complex situation where they feel that they will not adjust within the particular environment. Ten qualitative interviews of female police officers working in different police stations of Lahore were carried out to investigate the causes of labeling profession of policing inappropriate for women in their career building. The study challenges the fact that regardless of active participation of women in this male oriented department, women are facing stereotypical behaviour from society and due to that, their career building in this department is facing challenges on daily basis. These challenges involve societal and familial pressures related to their personal and social life, i.e. as regards to marriages, due to bad

reputation of this department, women working here are labeled as corrupt. The study concludes that the concept of community policing is now playing a positive role in changing these myths and stereotypes. With hiring of educated female staff as front desk officers, Punjab police is trying to change its image by overcoming the gap between general public and police. In addition, the findings match with the hypothesis that these are the cultural barriers that become a hurdle in career building of women in policing.

Keywords: *gender stereotype, policing, labeling, gender stereotyping of professions, social barriers.*

5. **Amjad, Z., & Salahuddin, A.** (2019). *Gendered insight into problems of inclusion for students with special needs*. Paper presented at the 1st National Conference on Debates in Contemporary Gender Issues, Department of Gender Studies, University of Management and Technology, Lahore. **(Zofishan Amjad, Ambreen Salahuddin (Gender Studies/SSSH)**

   Abstract: The present study is carried out to explore gender differences in students with visual and physical disabilities. Disability is a state which makes one unable to live a normal life and limits one's physical, mental or sensory abilities and affects them psychologically and emotionally. Disabled people suffer more than non-disabled. Equal opportunities are not provided to them in education, health, and employment. Social relations and interactions are affected. Personal attributes like self-esteem, confidence and quality of life suffers because of disability. Men and Women have a different kind of exposure to society. As everyone is different, so life and experiences are also different. Human perception, interpretation, behavior, and attitude differ from person to person.The purpose of conducting this research was to explore the difficulties of university students having different disabilities (sensory and physical) with gender lens. The objectives of the study were to explore personal issues of the disabled students and analyze the gender differences in facing these issues and to explore the differences in experiences of the disabled students at micro, meso and macro level interactions and potential issues. In this study as a human being is the subject, the ontological stance is of Interpretivism and epistemological stance is of Social Constructivism. The study was conducted in Lahore. Students with disabilities were selected through purposive sampling from two public and two private universities of Lahore. The sample consisted of 4 male and 4 female students making it a collective sample of 8 undergraduate students.It was found that both the genders have had some difficulties while growing up but disabled females are more prone to marginalization. They have negative self-image and self-esteem as compared to male disabled students. Society's role in making one realize their disability was also discussed. Mobility of disabled females was the biggest concern of both genders. Policies are helping them getting education and jobs but the deep rooted perceptions about disabled especially of disabled women are still there. The classification that society has created on the basis of gender, race, disability and other social identities is doing nothing good to people but only creating discrimination. The study highlighted various differences of disabled male and female under different themes e.g. marriage, employment, marginalization and others. More research and inclusion of disabled people by encouraging and motivating them is important for their better quality of life.

   Keywords: *disabilities, gender, interpretivist, social constructivism, special students.*

6. **Salahuddin, A.** (2019). *The Paramount Mythological Narrative of South Asia: Goddesses from Hindu Mythology in Fiction by Pakistan Women Writers*. Paper presented at the International Conference of Department of English Language and Literature, Department of English, University of Management and Technology, Lahore.**(Ambreen Salahuddin (Gender Studies/SSSH)**

   Abstract: This paper looks at archetypes in fiction of Pakistani women writers inspired by goddesses of Hindu mythology. This is a qualitative study and uses grounded theory as methodology of textual analysis. It is evident from the data that women fiction writers of Pakistan have used multiple archetypes of goddesses from Hindu mythology in their works abundantly. They have taken the notions of motherhood, sisterhood,

boundaries, constraints and emancipation attached with these deities and connected these notions meaningfully to their stories.

Keywords: *not available.*

Department of Political Science and International Relations (DPSIR)

Research Articles

1. Amir-ud-Din, R., **Sajjad, F. W.,** & Aziz, S. (2019). Revisiting Arms Race between India and Pakistan: A Case of Asymmetric Causal Relationship of Military Expenditures. *Defence and Peace Economics*. doi: 10.1080/10242694.2019.1624334.**(Fatima Waqi Sajjad (DPSIR/SSSH) Web of Science JCR Listed (IF: 1.062)**

   Abstract: Pakistan and India have been arch-enemies since their independence from the British Rule. There have been over four full-fledged armed conflicts, countless border skirmishes and cross-border ceasefire violations between these neighbouring countries. Their mutual relationships have often nosedived to a point where the nuclear conflagration seemed real possibility. While India is among the five largest military spenders in the world, Pakistan spends a disproportionately larger share of its GDP on defence to neutralize the Indian military advantage. While Pakistan's military expenditure is largely India-specific, it is not clear if the reverse is also true. Therefore, this study explores if the military expenditure of India and Pakistan are causally associated with each other or the arms race is asymmetric. Using the maximum entropy bootstrapping method and a series of robustness checks, we find that while military expenditure of Pakistan is shaped by the Indian military expenditure, the military expenditure in India is not Pakistan-specific. This study has important policy implications for the region because Pakistan may explore alternative strategic relationships with India. A revision of strategic relationship between the two South Asian neighbours may help in the resolution of the long-standing political, social and economic problems of both the countries.

   Keywords: *arms race, military expenditure, nuclear capability, Indo-Pak rivalry.*

2. **Pervez, M. S.** (2019). Strategic culture reconceptualized: the case of India and the BJP. *International Politics, 56*(1), 87-102. doi: 10.1057/s41311-017-0142-9.**(Muhammad Shoaib Pervez (DPSIR/SSSH) Web of Science JCR Listed (IF: 0.693)**

   Abstract: In this paper I argue that strategic culture is shaped by the ideology of a political party and is carried through elites' practices. A state's decision to become a nuclear power is often explained by rational choice theories. These theories assume states as rational actors and explain their behavior by cost-benefit calculation, keeping in mind the material cost involved in such decisions. The problem with such approaches is that they usually underemphasize the impact of other influences like culture. One such variable is the role of a political party's ideology that influences the identities of state elites and helps shape their strategic behavior. Therefore, strategic culture is appropriately explained by looking at intervening variable of elite socialization that stems from the persuasive power of socially constructed norms of political parties.

   Keywords: *strategic culture, practices, ideology, elites' socialization, norms, social constructivism.*

3. **Askari, M. U.** (2019). China's Territorial Disputes in the South China Sea: A Prologue from Past to Present. *Journal of the Research Society of Pakistan, 56*(1), 101-108.**(Muhammad Usman Askari (DPSIR/SSSH) HEC X CAT**

   Abstract: Territorial disputes in the South China Sea are again under the international spotlight. Presence of huge untapped hydrocarbon reserves, conflicting sovereignty claims, rising nationalism, grey areas in the UNCLOS, strategic location and the busiest sea lines of communications in the sea, have made every

claimant state to adopt hardening positions against each other. This research tries to find the answer of question that why, despite the increased economic interdependence, the claimant states have failed to resolve their territorial disputes in the region. Theoretically, realist construct of National Interest is being used as a lens in the study. Historical approach of qualitative research methodology is employed to track the record of conflicts, stances and strategies being used by the claimants. This study arrives at the conclusion that the joint
mechanism for managing the assets of this sea could only be a viable option to maintain peace in the region.
Keywords: *China, South China sea, paracel, spratly, vietnam, Philippines, UNCLOS.*

4. Ahmad, S., & **Sajjad, F.** (2019). Musharraf's Policy of "Enlightened Moderation": An Analysis of Conflicting Perspectives in Pakistan. *FWU Journal of Social Sciences, 13*(1), 54-66.**(Fatima Waqi Sajjad (DPSIR/SSSH) SJR**
Abstract: In the wake of 9/11, 2001 religious extremism became a major concern of international security agencies. Pakistan, in particular, became a focus of academic discourse on radical religious extremism and militancy. It was during these times that the President of Pakistan Pervez Musharraf presented the idea of "Enlightened Moderation". According to him, the Muslims would have to adopt the modern path and the world should promote justice to get rid of extremism. This study examines President Musharraf's policy of "Enlightened Moderation" and its different interpretations by the national print media. The study finds that despite President Musharraf's efforts to explain this idea at length, it was interpreted in multiple, often conflicting ways by scholars in Pakistan.
Keywords: *double standards, enlightenment, Islamic values, representation, terrorism.*

5. **Pervez, M. S.** (2019). The association of South East Asian Nations (ASEAN): a galactic security community? *South East Asia Research, 27*(2), 182-195. doi: 10.1080/0967828X.2019.1618639.**(Muhammad Shoaib Pervez (DPSIR/SSSH) SJR**
Abstract: The term ?security community? refers to the development of a regional consensus of shunning war as a means of settling disputes among participant states. Assuming this basic premise of a security community, this article positions ASEAN as a unique security community by arguing that it is contingent upon the socio-cultural norms practiced in ASEAN member states? societies. The conceptual framework of a traditional security community is inapplicable to ASEAN as it does not have any supra-national institutions which can bind its members to compliance towards regional norms. The societal norms of member states give ASEAN a regional identity consciousness that is based upon informality and a unique normative structure. The intention of this article is to deconstruct these societal or popular socio-cultural norms and examine how they influence decision making at the elite level.
Keywords: *Identity, security community, socio-cultural norms, elites practices.*

6. **Shabbir, M. O.,** Bashir, R., & **Saleem, S.** (2019). Geo-Strategic Importance of Indian Ocean: Clash of Interests between China and India. *Journal of Indian Studies, 5*(1), 47-60.**(Muhammad Omer Shabbir, Sara Saleem (DPSIR/SSSH) HEC Z CAT**
Abstract: Indian Ocean owns a unique location. In the present era, states are hungry of energy to make their economies boost and are vigilant about the routes through which trade is conducted. India and China want to retain their control over the Indian Ocean. Both states are doing economic, military and infrastructure efforts to assert influence in Indian Ocean Region. The growing ties of China with neighboring states drag India in difficulty and India is getting worried about China's growth in its backyard. To contain China, India is making informal defense, military alliances with USA, Japan, Russia and Australia. This game of influence indulges China-India in a rift. This competition can disturb whole South Asia region as small states are used as

cards by China and India to balance each other. The International players are looking the situation with hawk eyes as they cannot see any disruption in their trade routes. The paper will unfold the power politics between China and India through the spectrum of Balance of Power perspective that by what means both the states are endeavoring to neutralize each other's influence.

Keywords: *geostrategic, Indian Ocean, China, India, clash, interests*

7. **Ahmed, R., & Sajjad, F.** (2019). A Comparative Framing Analysis of the Red Mosque Incident in the Coverage of Local Right Wing and Western Print Media (June-Aug 2007). *Journal of Political Studies, 26*(2).**(Rohail Ahmed, Fatima Waqi Sajjad (DPSIR/SSSH) HEC X CAT**

   Abstract: The purpose of this research is to analyze how a crucial incident of Pakistan's recent political history - the Red Mosque military operation of 2007 has been reported and narrated by selected Western and Local Right wing newspapers. How these media forums framed the news stories about the Red Mosque incident in their respective contexts. This study explains the news framing trends using framing analysis of Western and Pakistani Local Right wing media. At the first phase, Framing Analysis elucidates the language of the news stories of two factions through framing forms/tools which are based on rhetoric sense. Then, at second phase, comparative analysis technique elaborates the major frames of two newspapers. The study finds how various frames used by Pakistani Local Right wing media (The Daily Islam, The Daily Jasarat & The Takbeer Weekly) and selected Western media (The Guardian, The Washington Post & The Economist) to describe the story of the Red Mosque incident in 2007.

   Keywords: *framing analysis, red mosque incident, extremism, pakistani media, western media.*

8. **Owais, M.** (2019). US President Trump Policies towards South Asia with Particular Reference to Afghanistan, India and Pakistan. *Journal of Indian Studies*, *5*(2), 245-254. **(Muhammad Owais (DPSIR/SSSH) HEC Z CAT**

   Abstract: President Donald Trump's announcement of revision of policies towards South Asia in August 2017 gave a new strategy for Afghanistan, India and Pakistan. This policy has resemblance with that of Obama in many spheres but deviates from Obama's as well, especially in the case of India. South Asia is now in the position of constant change, and this flux is getting complexed by Trump's policy. Trump's approach towards Islamabad is skeptical and harsh, and his idea of broader role must be played by New Delhi in the matters of Afghanistan is very much concerning, and more precisely threatening for the national interest of Islamabad. It seems that Donald Trump's practical policy application has been different from the one he had verbally conveyed. This paper thoroughly describes every aspect of the policy of Trump towards South Asia in the light of his speech made regarding South Asia. It has also description that why South Asia is important to America, and how the policy of Trump could not be favorable for the region and can create a further increased divide into this least integrated region.

   Keywords: *Trump, India, Pakistan, Afghanistan.*

Conference Papers

1. **Sajjad, F.** (2019). *Rethinking Higher Education Policy Vision and Extremism on Campus : A Case for Promoting Critical Literacy and Critical Pedagogy*. Paper presented at the *International Conference on Contemporary Education and CVE Practices in Pakistan* at UMT (March 27-28)**. (Fatima Waqi Sajjad (DPSIR/SSSH)**

   Abstract: Not available.

   Keywords: *not available.*

2. **Sajjad, F.** (2019). *Transcending Religious and Secular Education Divide in Pakistan: An exploration of Students' Perceptions*. Paper presented at the Thirteenth Humanities and Social Sciences Conference Critical

Interventions: Mapping Emerging Scholarship on South Asia at Lahore University of Management Sciences (LUMS) (April 10-11). **(Fatima Waqi Sajjad (DPSIR/SSSH)**
Abstract: Not available.
Keywords: *not available.*

3. **Sajjad, F.** (2019). *Feminist Perspective in International Relations: Representation in Pakistani Academia*. Paper presented at the 1st National Conference on Debates in Contemporary Gender Issues, Department of Gender Studies, University of Management and Technology, Lahore**. (Fatima Waqi Sajjad (DPSIR/SSSH)**
Abstract: Not available.
Keywords: *not available.*

Book/Book Chapters

1. **Sajjad, F. W.** (2019). Countering Radicalization through Education: Global Policy Trends and the Case of Pakistan. In M. Hasan, K. Isezaki & S. Yasir (Eds.), *Radicalization in South Asia: Context, Trajectories and Implications* (pp. 198-225): Sage Publishing. **(Fatima Waqi Sajjad (DPSIR/SSSH)**
Abstract: Not available.
Keywords: *not available.*

Department of Islamic Thought & Civilization

Research Articles

1. Khan, S. Z., & **Mustafa, T.** (2019). Causes of Befalling Calamities on Muslim Society. *Pakistan Vision, 20*(1).**(Muhammad Tahir Mustafa (Islamic Thought & Civilization/SSSH)** **HEC Y CAT**
Abstract: Not available.
Keywords: *not available.*

2. Malik, Z., & **Iqbal Sheikh, H. S.** (2019). Islamic Civilisation (Possible Factors of globalisation, moderation, and renaissance). *Istidrak - Journal of Dept. Of Islamic Learning, University of Karachi, 1*(2), 32-5. **(Sajid Iqbal Sheikh (Islamic Thought & Civilization/SSSH)** **Not HEC Recognized**
Abstract: This paper explores three significant aspects of Islamic civilization, Universality, Moderation and Renaissance in their historical context and futuristic perspectives. Among diverse global and historical civilizations, Islamic civilization plays a prominent role in all aspects of human life and inspires major populations round the globe. Intrinsically, present scholarship on civilizational debate demands an intensive work to unfold the issues of above mentioned aspects of Islamic civilization. Applying hermeneutics method of qualitative paradigm, this study focuses on the cutting edge approaches of Muslim scholars on the issue. The study unfolds the infinite view of Islamic civilization and concludes that true Islamic solutions to the major challenges of present world are quite pertinent and accomplished enough to restore harmony.
Keywords: *islamic civilisation, harmony, universality, universality, moderation, renaissance.*

3. **Mustafa, M. T.,** & Mujahid, A. B. (2019). Mutala-e-Seerat main Asma-e-Rasool ki Ahmiyat or Fazeelat. *Al Qalam, 24*(1), 96-111. **(Muhammad Tahir Mustafa (Islamic Thought & Civilization/SSSH)** **HEC Y CAT**
Abstract: The study of seerah a Rasool(p.b.u.h) make us familiar to the different aspects of Muhammad's life.The sacred names of Rasool Allah(p.b.u.h) which are an an integret part of seerah shows us deeply the unique personality of last Rasool of Allah almighty.These sacred names which are pesonal and titles mention also in Qura'n play the main character to make understand the seerah. These sacred names are role models not only for Muslimummah but also for whole humanity.These sacred names are acctually the

golden chapters from Shumail-e -Rasool(p.b.u.h) great prophetic ethics and also from practicle character of Rasool-e- kareem.We as Muslims should adopt the perfact meanings of these names in our routine life.These sacred names introduced the seerah Rasool(p.b.u.h)and at the same time these sacred names created many chapters of seerah study and these names are splendid part of seerah.

Keywords: *seerah, sacred names, aspacts, role models, prophatic ethics, golden chapters.*

4. **Basharat, T.**, & Shaukat, M. A. (2019). A Critical Analysis of Some Ideals of Postmodernism in Various Fields of Knowledge and Morality. *Journal of Islamic Thought and Civilization (JITC), 9*(2), 260-275. **(Tahira Basharat (Islamic Thought & Civilization/SSSH) SJR**

Abstract: Postmodernism was born under Western episteme and is based on the rejection of the narratives given by modernity. The first and foremost characteristic of postmodernism is the rejection of absolutism including absolute truth and it propagates relativism in every field as the only possible solution. Moreover, it does not endorse absolute values and beliefs, contemplates human identity as the construction of society and denies essentialism. It does not endorse the idea that values are a source of development and rejects the idea that human actions are influenced by predetermined ideals. The texts that have been the source of change and guidance for millions of people throughout the history have been devoid of all their sacredness and authenticity using the theory of deconstruction. This theory gives every reader the right to interpret every text according to his own will and liking. Postmodern debates have influenced every field of knowledge. Even the morality and the value system endorsed by postmodernism is relative and subjective instead of absolute and objective. This research paper is based on the descriptive method and provides a critical examination of postmodernism and its impact on various fields of knowledge.

Keywords: *epistemology, meta-narratives, pluralism, postmodernism, relativism, values.*

5. **Ali, F., & Ahmad, H. (2019).** Contextualizing Christian theology in South Asia. *Journal of Islamic Thought and Civilization (JITC), 9*(2), 272-297. **(Farman Ali, Humaira Ahmad (Islamic Thought & Civilization/SSSH) SJR**

Abstract: South Asian region has largely been under the influence of Indian, Chinese and Arabic cultures. All of the religious traditions have been strongly localized and tolerated various forms of folk cultures. Christianity in this region came in the early sixteenth century and flourished in the colonial era. It is normally assumed that it escaped from the process of adaptation and syncretism. However,this is not the case,asthere were a number of missionaries not interested in Europeanizingtheir converts as in the case of Jesuits missionaries in India. Here in this article an attempt has been made to explicate the early attempt of western missionaries and local Christian to localize Christianity. To achieve this goal this paper has been divided into three sections. First section shedslight upon the overall attitude of early missionaries to the indigenous cultures and religions of India. Second section deals with the early efforts of contemporization in Indian Subcontinent. Third section will illustrate the situation church had to face after the partition of India, and howthis partition impeded the process of contemporization movement. As a method, this articlereviews the efforts of both native Christians and missionaries to indigenize Christianity in Indian first chronologically and then thematically.

Keywords: *South Asian christianity, indian christianity, contextualization, malabarcontroversy, jesuitsin india, religion and culture.*

6. Rasheed, S., & **Ahmad, H.** (2019). Discourse on Nationalism: Political Ideologies of Two Muslim Intellectuals, Maulana Hussain Ahmad Madani and Allama Muhammad Iqbal. *Journal of Islamic Thought and Civilization, 9*(2), 127-147. **(Humaira Ahmad (Islamic Thought & Civilization/SSSH) SJR**

Abstract: The chief purpose of this paper is to understand and compare the politicalideologies of twokeythinkers and leaders of twentieth century Muslim Indiaon the question of nationalism. These thinkers are DrMuhammad Iqbal(1873-1938)andMaulanaHussain Ahmad Madani(1879-1957).Firstly,concept of nationalism has been explored in the political writingsand statementsof these thinkers. Secondly, debate between Muhammad Iqbal and MaulanaMadani over their conceptions of "nation"hasbeen discussed. Thirdly these theories of nationalism have been compared in the historical contextas well as in the overall conceptual framework of these thinkers.Finally,the study has been concludedby discussing what the contemporary Muslim world can learnfrom the intellectual heritage of Iqbal and MaulanaMadani.

Keywords: *Nationalism, Muslim Nationalism, South Asia, Iqbal, HussainAhmad Madani, South Asian Muslims, Muslim Ummah, Millet, Muslim India.*

7. Al-Azhari, Z. U., & **Khan, M. K. U.** (2019). Radicalization and Academia: Its Impacts on Students and Counter-Radicalization Strategies. *Journal of Islamic Thought and Civilization, 9*(1), 1-9. **(Muhammad Kalim Ullah Khan (Islamic Thought & Civilization/SSSH) SJR (SKT Campus)**

Abstract: Radicalization has a long history which has different aspects. Modern societies and academia are characterized by diversity. However, in Pakistan,the situationis different because neither our society nor our academia is diverse in nature. Radicalization,in one sense,is theopposite of pluralism. However, in another sense it is compatible with polarization because it makes the society polarized, bothinternally and regionally. As a result, two different social classes emergein society. Although both radicalization and polarizationhave their respective historical background, radicalization mainly emerges in the absence of religious pluralism. This paper focuses on radicalization in academia, the researcher discussesin detail the causes of polarization which lead toradicalization. The public in general and students in particular were made polarized and almost reached the doorstep of radicalization. This inattentivenessresulted in extremism that in turn leadstoviolence and terrorism. Radicalization and its central issue is polarization and the existence of non-pluralistic society.This paper suggests more moderation in society throughmodernism and mobilization of the moderates in society and academia. Moderates can be more resilient to be de-radicalized. Moreover, this paper does not propose conductingconferences and seminars on radicalization to promote awareness about it but it also focuses on the waystudents provideinsights intothissubject. This article is based on grey literature, library sources and other secondary sources.

Keywords: *extremism, polarization, radicalization, religious pluralism, violence.*

Department of Sociology

Research Articles

1. **Jamil, M. F., & Sohail, T.** (2019). Group Conformity and Individuals' Behavior towards Adopting Sectarian Identities. *Burjis, 6*(1), 1-30.**(Muhammad Faizan Jamil, Tayyaba Sohail (Sociology/SSSH) Not HEC Recognized**

Abstract: Religion is considered as an integral part of individuals' daily routine practices in the society. People perform religious obligations very rigorously and avoid all the religiously declared prohibited acts. This current study aims, to identify the role of group conformity towards adopting sectarian identities by individuals with the emphasis of exploring the practices of sectarian identities that causes an environment of inter-group disintegration in the community. This study will be significant in recommending initiatives that can create an environment of harmony between people belonging to different sectarian believers. Qualitative research

method was applied to analyze group conformity and individuals' behavior towards practicing sectarian identities. Population was based on rural setup of Manddi Faiẓ Abad. Twelve participants were selected

through purposive sampling technique. Structured interview guide was used as data collection tool and themes
was extracted to describe existing trends and patterns regarding group conformity and sectarian identity construction. Results revealed efficacious role of group conformity to encourage individuals towards adopting and practicing any particular sectarian identity in the society. Results highlighted that, desire of getting religious hegemony and supremacy with the courtesy of group conformity that make individuals intolerant on sectarian grounds and creates an environment of disintegration in the society. Sectarian difference not only creates religious boundaries among people but also causing socio-cultural cracks between individuals having different sectarian identities. Current study stated positive communication and paying respect to everyone without considering others' sectarian identity can terminate sectarian based hostility in the society.

Keywords: *group conformity, identity construction, intra-group harmony, sectarian disintegration, Manddi Faiz Abad.*

2. **Bano, S., & Haq, I.-u.** (2019). Poly-symbolic Religiosity and the Dilemmas of American Sufism, an Ethnographic Study of Zikr at a Sufi Shrine in Manhattan. *Journal of Islamic Thought and Civilization (JITC), 9*(1).**(Shermeen Bano, Inam ul Haq (Sociology/SSSH)** SJR

Abstract: This ethnographic endeavor seeks to explore the ritual of Zikr and its association with the shift and dilemmas in American Sufism at a Sufi Shrine in Manhattan, The United States of America. The study highlights the ways in which Islam accommodate socio- cultural change without losing its traditional identity: It has not changed in essence. Also, it throws light on the ways such monotheistic religions create social relevance for their followers in a culture alien to universalizing discourses and identities. The paper argues that esoteric versions of traditional monotheistic religions, like Sufism are more suited to postmodern religious consciousness of modern day individuals. The study employs the conceptual lens of postmodern religiosity. Four formal interviews of the Sufi followers (dervishes) alongside field jottings that expanded from January 2012 till December 2012 were conducted. The analysis was thematic in nature. The structure of the Zikr ritual was elaborated followed by offering prayer the 'Sushi' way. This form of prayer ensures convivial co-existence amongst intra-religious collectivities. The study concluded that the concept of religiosity is poly-symbolic in nature. The Zikr ritual acts as a distinct plain that invokes a sense of belonging for the participants in diverse settings. American Sufism is multifaceted in essence and in spirits.

Keywords: *American sufism, zikr, ethnography, sufi shrine, manhattan, poly symbolic, religiosity.*

3. McGarry, J., **Hussain, B.,** & Watts, K. (2019). Exploring primary care responses to domestic violence and abuse (DVA): operationalisation of a national initiative. *The Journal of Adult Protection, 21*(2), 144-154. doi: 10.1108/JAP-10-2018-0025.**(Basharat Hussain (Sociology/SSSH)** SJR

Abstract: Purpose In the UK, the Identification and Referral to Improve Safety (IRIS) initiative has been developed for use within primary care to support women survivors of domestic violence and abuse (DVA). However, while evaluated nationally, less is known regarding impact of implementation at a local level. The purpose of this paper is to explore the effectiveness of IRIS within one locality in the UK.Design/methodology/approach A qualitative study using interviews/focus groups with primary care teams and women who had experienced DVA in one primary care setting in the UK. Interviews with 18 participants from five professional categories including: general practitioners, practice nurses, practice managers, assistant practice managers and practice receptionists. Focus group discussion/interview with seven women who had accessed IRIS. Data were collected between November 2016 and March 2017.Findings Five main themes were identified for professionals: Team role approach to training, Professional confidence, Clear pathway for referral and support, Focussed support, Somewhere to meet that

is a “safe haven”. For women the following themes were identified: Longevity of DVA, Lifeline, Face to face talking to someone, Support and understood where I was coming from, A place of safety.Practical implications IRIS played a significant role in helping primary care professionals to respond effectively. For women IRIS was more proactive and holistic than traditional approaches.Originality/value This study was designed to assess the impact that a local level implementation of the national IRIS initiative had on both providers and users of the service simultaneously. The study identifies that a “whole team approach” in the primary care setting is critical to the effectiveness of DVA initiatives.

Keywords: *domestic violence, intervention, women, primary care, health care professional, IRIS.*

4. **Farooq, A., & Sohail, T.** (2019). Conceptualization of Religious Belonging of Christian Youth in Higher Education. *Journal of Islamic Thought and Civilization (JITC), 9*(2), 253-271. **(Amna Farooq, Tayyaba Sohail (Sociology/SSSH) SJR**

Abstract: A phenomenological study was conducted to explore the lived experience of Christian students in HEC recognized private Higher Education Institutions (HEIs) to find out how the religious belonging of Christian youth influences their lives within their university. Qualitative research method was used for this study. Using phenomenology as the strategy of inquiry, in-depth interviews were conducted with a total of six participants including three girls and three boys currently studying in the University of Management and Technology (UMT), Lahore. The findings of the study revealed that the university did not ask the students about their religion, specifically. So, the students did not experience any discrimination at the time of admission. However, due to the lack of information about religious minority students, they were compelled to study Islamic studies as a subject. Due to their religious belonging Christian students experienced stereotypical behavior, such as some Christian students reported that their Muslim fellows avoided them and hesitated to share their meals with them after knowing their religious affiliation. Majority (4 out of 6) of the students did not experience any biased behavior from their teachers but some students did face biased behavior after revealing their religious affiliation. So, this study suggests that universities should ask students about their religious belonging and considering the needs of religious minority students, curriculum should seek input from religious minority groups. In order to promote religious tolerance at HEIs, universities should design curriculum for all students incorporating contents of interreligious harmony. Higher Education Commission (HEC) should ensure the implementation of policy regarding religious minorities at institutional level.

Keywords: *affiliation, belonging, Christian, higher education, students, youth.*

Department of Special Needs Education

Research Articles

1. **Akbar, S., & Hameed, A.** (2019). Awareness of teachers towards child rights provision, protection and participation in framework of United Nation child rights convention. *Pakistan Journal of Social Sciences (PJSS), 39*(2), 709-723.**(Shabbir Akbar, Abdul Hameed(Special Needs Education/SSSH) HEC Y CAT**

Abstract: The aim of this study was to explore the awareness level of teachers towards human rights specifically child rights in secondary schools and its implications for educational policy in Punjab-Pakistan in order to layout ways of improvement for child rights. This paper investigated the problems with reference to national perspective and was delimited to only teachers working in secondary schools of Punjab, Pakistan. Using cross sectional and quantitative method design a survey was distributed to 1350 teachers (9th & 10th class). Simple random sampling method was used to select the sample. The response rate of teachers, was 95% (1277). The data were analyzed by applying descriptive and inferential statistics. The results of t-test and ANOVA applied on teachers’, scale who sensitized statistically different perceptions (KAPKnowledge, Attitude and Practice), in terms of provision, protection and participation (3Ps) about child rights (UNCRC) in

secondary schools of Punjab. The subjects which are having children with them had perceived almost equally as compared to those without children in terms of provision, protection and participation of child rights. ANOVA results based on different age, academic qualification and service experience of teachers had shown statistically different views about 3Ps of child rights.

Keywords: *child rights, experts, teachers, provision, protection, participation, knowledge, attitude, practice, secondary school.*

2. Faiz, Z., **Arif, A.,** & Zia, S. (2019). Challenges Faced by Teachers during Teaching Students with Developmental Disability at Primary School Level in Lahore. *Journal of inclusive education, 3*(1), 19-32.(**Amna Arif (Special Needs Education/SSSH) HEC Y CAT**

Abstract: Purpose of this study was to examine the challenges faced by the teachers during teaching students who are intellectually disabled, suffering from Autism Spectrum Disorder, Learning Disability, and Attention Deficit and Hyperactivity Disorder (ADHD) at primary school level. The study was descriptive in nature and cross-sectional survey method was used to collect data. The sample of the study comprised of 258 (43 maleand 215 female) teachers from the special education institutes of Lahore district selected through proportionate stratified random sampling technique. A self-developed questionnaire comprising 14 closed-ended items was the research tool. The results of the study showed that teachers faced many problems during teaching. The majority of the participants face challenges during group activities, to control hyperactivity of the students and misbehavior of students. It is concluded that there was a significant difference between male and female teacher's perceptions about the challenges faced during teaching to developmental disable students. Furthermore, there was a significant difference in the perceptions of teachers regarding challenges faced during teaching students with developmental disabilities in term of teachers' age and area of specialization. The study recommends pre-service and in-service teacher training was recommended.

Keywords: *intellectual disability, autism spectrum disorder, adhd, learning disability, teachers of primary school level, children with developmental disability.*

3. Nazir, F., & **Hameed, A.** (2019). Reflection of Voices of Out of School Children: Implications for Education Policy. *Journal of Research and Reflections in Education, 13*(2), 320-338. **(Abdul Hameed (Special Needs Education/SSSH) HEC Y CAT**

Abstract: This study was aimed to explore and document the voices of out of school children in order to identify some implications for education policy. Using a qualitative thematic analysis with some frequency counts, 216 interviews were conducted from those children who never attend any school. The researcher also conducted a focus group discussion of 7 parents in a supportive context to strengthen the viewpoint of children. Video recordings of interviews and discussion were transcribed and thematically coded. Four themes emerged from data. These were cultural factors, demographic factors, psychological factors, and socioeconomic factors that make unable children go to school. Poor design and implementation of education policies may limit literacy. Overall, the findings of study revealed that jobless fathers', fear of sexual harassment, long-distance and incidents of girl child rape, parents tend to marry their children at early age, large size families, low income with no savings, low parental motivation, financial problems and domestic conflicts, high inflation rate were the main causes for being out of school. Furthermore, on the base of results, some implications were suggested for education policy.

Keywords: *reflection, voices, out of school children, implications, education policy.*

4. Manzoor, A., & **Hameed, A.** (2019). Hopes of Out of School Children with Disabilities for Educational Inclusion. *Journal of Research & Reflections in Education (JRRE), 13*(1), 122-133. **(Abdul Hameed**

(Special Needs Education/SSSH) HEC Y CAT

Abstract: Hopes to attend school is the most effective means to overcome the burden of disability and become a self-reliant productive citizen. The objectives of the study were to develop a valid and reliable scale to measure hopes of out of school children with disabilities and find an association between hopes and various demographic factors such as type of disability, gender, socio-economic status and locale etc. Child Hope theory by Snyder (2003) was used as a framework to develop a measure for the hopes of children. According to this theory, hope is defined as a set of cognition that includes self- perception which establish routes to achieve desired goals (pathways) and motivation for achieving the goals (agency). By applying this theory Inclusion Hope Scale was developed and validated. The data were collected from 361 out of school children with disabilities living in three districts (Lahore, Sheikupura, Kasur) of Lahore Division by using the cluster sampling technique. Findings of the study indicated that children with intellectual challenges were more hopeless as compared to other types of disabilities. Similarly, children living in urban areas have better hopes for inclusion in school. However, no gender disparity was found in terms of being hopeful to attend schools. The study also includes recommendations to improve hopes for educational inclusion among out of school children with disabilities.

Keywords: *out of school children, disabilities, hopes for inclusion.*

5. Akbar, S., **Hameed, A.,** Khan, M. M., & Siddiqui, K. (2019). Sensitivity level of educational administrators towards child rights. *Review of Economics and Development Studies, 5*(1), 67-78. **(Abdul Hameed (Special Needs Education/SSSH) HEC Y CAT**

Abstract: The Sensitivity level of administrators towards human rights specifically child rights in secondary schools needs to be explored. This sensitivity level towards child rights in terms of provision, protection and participation under United Nation Child Rights Convention (UNCRC) was assessed through knowledge, attitude and practice (KAP) model. The cognizance of this need necessitates to layout ways of improvement for child rights. This study therefore, articulated and empirically validated the problems through educational administrators working in secondary schools of Punjab, Pakistan. This cross sectional study used quantitative method design for data collection from 233 educational administrators (CEO, DOs and Head teachers) selected through simple random sampling method from each division with a response rate of 100%. The analysis of data showed that administrators have high sensitivity level about knowledge, attitude and practice of child right provision, protection and participation. This study is useful for researchers, practitioners, and policy makers.

Keywords: *CEOs and DOs, head teachers, provision, protection, participation, knowledge, attitude, practice, secondary school Punjab, Pakistan.*

Conference Paper

1. Chudhry, N., & **Hameed, A.** (2019). *Acceptability and Use of Different Adaptations by Teachers in Inclusive Classrooms of Punjab.* Paper presented at the 7th International Conference on Research in Education, ICORE 2019, Institute of Education and Research, University of the Punjab, Lahore. http://icore-ier.com/img/Abstract-Book-ICORE-19.pdf. **(Abdul Hameed (Special Needs Education/SSSH)**

Abstract: Present study was aimed at discovering use and acceptability of different modifications by teachers having children with special needs in their classrooms in Punjab. Study was quantitative in nature, through survey method data was collected from 124 teachers working in 11 districts of Punjab. Findings of the survey revealed that there was no significant difference in acceptance and use of different modifications by teachers working in rural or urban areas or teachers from different clusters of sample. It was also indicated that teachers who accepted modifications also practiced modifications in their classrooms. Mostly modifications considered appropriate for most or all students and often used by the teachers were in areas of presenting

content, pacing instruction, engaging students in learning and modifying learning environment. Adaptations in performance evaluation were neither most accepted nor mostly used by the teachers, possible reason could be strict grading policies of school systems and lack of training in differentiating assessment. Another important finding was that teachers accepted that all students can benefit from flexible grouping and cooperative work but they were not frequently using these in practice possibly due to inflexible physical layout of classrooms, administrative constraints and lack of training.

Keywords: *inclusive education, adaptations, modifications, Punjab, students with special needs.*

2. **Zafarullah, T., Anis, F.** (2019). *A Comparative Study on the Quality of Education in Public and Private Schools of Students with Visual Impairment in Punjab.* Paper presented at the 7th International Conference on Research in Education, ICORE 2019, Institute of Education and Research, University of the Punjab, Lahore. http://icore-ier.com/img/Abstract-Book-ICORE-19.pdf. **(Tahira Zafarullah, Faisal Anis (Special Needs Education/SSSH)**

Abstract: Quality of education is the main key to achieve the sustainable development goals (SDGs). Aim of the present study was to compare the quality of education in public and private schools of students with visual impairment in Punjab. Descriptive research design of quantitative approach was adopted to conduct this study, a cross-sectional survey method was used to collect data. The Population was all visually impaired students from all public and private schools of grade 7 to 10. The sample was comprised of 200 visually impaired students of public and private schools from 10 schools of 4 cities like Lahore, Gujranwala, Faisalabad and Rawalpindi. Sample was selected through convenient sampling technique which is specific type of non-probability sampling. Self-developed questionnaire was used which was comprised of 35 closed ended items. Collected data were analyzed through descriptive and inferential statistical techniques. Results indicated that overall quality of education in private schools was better than in public schools. It is recommended that stimulating learning environment of public schools need to be improve and also the assessment and evaluation methods.

Keywords: *quality of education, enrolled middle and secondary visually impaired students, public and private special education institutes.*

3. **Anis, F., Muhammad, Y., & Masood, S**. (2019). *Students' preferences for conducting research at graduate level*. Paper presented at the National Conference-Cum Symposium on Research in Pakistan Universities: Standards and Practices, Virtual University Lahore. **(Faisal Anis, Yaar Muhammad, Sajid Masood (Special Needs Education/SSSH)**

Abstract: This study explored the preferences and rationale of higher education students towards conducting research. Using purposive sampling technique, this study included twenty higher education students from a private university. A semi-structured interview protocol was constructed which was validated through experts' opinion. The respondents were asked about their preferences and rationale about major aspects of research process such as research approach, sources for literature review, sampling technique, type and nature of research instrument, data collection methods and data analysis methods. Thematic analysis was applied on obtained interview data. The results revealed that most of the higher education students prefer quantitative research because of its generalizability. They tend to prefer probability sampling technique, mainly due to its objectivity. As far as research instrument is concerned, they prefer self-developed questionnaire considering it easy to administer and they like to collect data personally for valid and timely responses. This study recommends development of students' research literacy related to qualitative and mixed methods paradigms. This may help in influencing their preferences and in ensuring applications of diverse research approaches to generate in-depth knowledge for the solution of problems.

Keywords: *qualitative method, students' preferences, graduate research, research approach.*

4. **Alvi, I. B., Hameed, Abdul (**2019). *Analysis of Phonological Errors in Written Language of 8th Grade with Hearing Impairment.* Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Iram Batool Alvi, Abdul Hameed (Special Needs Education/SSSH)**
   Abstract: Not available.
   Keywords: *not available.*

Department of Education

Research Articles

1. Asghar, M. Z., Gul, F., Hakkarainen, P. S., & **Tasdemir, M. Z.** (2019). Validating Entrepreneurial Intentions Questionnaire to Assess the Impact of Entrepreneurship Education. *Egitim Ve Bilim-Education and Science*, 44(197), 383-399. doi: 10.15390/eb.2019.6105.**(M. Zeki Taşdemir (Education/SSSH) Web of Science JCR Listed (IF: 0.607)**
   Abstract: Entrepreneurship education plays an important role in social and economic development of a society through providing self-employment and job opportunities for others. Entrepreneurship education can catalyse entrepreneurial mindset through developing entrepreneurial intentions of graduates. Current study aims to validate entrepreneurial intentions questionnaire in order to study the impact of entrepreneurship education on student's intentions to become an entrepreneur. The question under study is "does entrepreneurship education impact entrepreneurial intentions of the students?" Study has the following objectives, 1) to study the impact of entrepreneurship education on attitude of the students to become an entrepreneur, 2) to find out perceived behavioural control of the entrepreneurship education students to become an entrepreneur, 3) to understand the impact of subjective norms on entrepreneurship education students to become an entrepreneur, 4) to assess the impact of entrepreneurship education on entrepreneurial intentions of the students. This study will utilize theory of planned behaviour as theoretical framework of the study. According to theory of planned behaviour entrepreneurial intentions of a person are formed through a complex process with some antecedents. The antecedents of entrepreneurial intentions are comprised of attitude of the persons towards entrepreneurship, Subjective norms of a person towards entrepreneurship, and perceived behavioural control of a person towards entrepreneurial intentions. It is a quantitative study based on casual comparative research design. Entrepreneurial Intentions Questionnaire was developed based on theory of planned behaviour. It was pilot tested on students (n=60) for reliability and validation tests. It was validated to make a comparison between technology education students' (n=240) who have participated in entrepreneurship education and technology education students' (n=302) who have not participated in entrepreneurship education. The findings of the study have shown appropriateness of theory of planned behaviour to measure entrepreneurial intentions of the students. Students who have participated in entrepreneurship education have shown higher intentions than non participants. Study was concluded with the fact entrepreneurship education does not impact directly to the intentions of the students but it has influence on entrepreneurial intentions of the students through antecedents of intentions. The questionnaire validated for study can be useful for further measurement of entrepreneurial intentions of the students. Cronbach's Alpha was used to test reliability of questionnaire. Factor analysis was used to test validity of the questionnaire. t-test was applied to find out difference in intentions between entrepreneurship education participants and non participants. Structural equation model (SEM)was used to find out relationship between entrepreneurship education and antecedents of entrepreneurial intentions. This study was knowledge addition about entrepreneurial intentions of the students in Pakistani context and impact of entrepreneurship education. Future study can be conducted to study the new venture creation process of the students with high entrepreneurial intentions.

Keywords: *entrepreneurship education, entrepreneurial intentions, questionnaire, theory of planned behaviour, structural equation model.*

2. **Murtaza, G.** (2019). Family social capital as a predictor for academic achievement for secondary school students in Multan division. *Journal of Research and Reflections in Education, 13*(1), 34-48.**(Ghulam Murtaza (Education/SSSH) HEC Y CAT**

   Abstract: The purpose of the study was to determine the relationship between family social capital and academic achievement of secondary school students. The study was confined to (632) public secondary and higher secondary schools (male and female, urban and rural) in Multan division. The study was confined to 886 urban students (Boys), 785 urban students (Girls), 803 rural students (boys) and 337 rural students (girls). The total sample comprised of 2811 students of 9th class. A self-inventory five-point rating scale was developed for the students. Self- inventory consisted of thirty statements. Self-inventory was based on, education level of the family, family-child relationships, familial monitoring, parenting style (attitude) and Family-school association. Academic achievement of the students was determined from their marks of Board results. Data collected from sample students were analyzed through SPSS-20. Frequencies, Crosstabulation and Chi-square were used to determine the association between various components of family social capital and academic achievement. Through this study, it was found that various components of family social capital, e.g. education level of the family, family-child relationships, familial monitoring, parenting style and the parent-school association had an association with students' academic achievement.

   Keywords: *family social capital, familial-monitoring, family expectations.*

3. **Arif, S., Liaqat, Z., & Afzal, A.** (2019). Quality Assurance & Accreditation of Teacher Education in Pakistan: Scope for Internationalization. *UMT Education Review (UER), 2*(1), 1-21. doi: https://doi.org/10.32350/uer.**(Seema Arif, Zunaira Liaqat, Ayesha Afzal (Education/SSSH) UMT Journal**

   Abstract: This semi-structured qualitative study aimed to explore the perceptions of the faculty of education departments in various universities about the quality assurance and accreditation process and their willingness to initiate this process in their respective departments. A mixed item questionnaire comprising close and open ended questions was used to collect data from 152 faculty members teaching in the education departments of 16 universities of Pakistan. The faculty members serving at various positions were purposively selected for the study. Triangulation was achieved through content analysis of the survey, document analysis of NACTE manuals and HEC directives. Finally, thematic analysis was completed to arrive at conclusions. The study concluded that the faculty of education departments lacks awareness about the quality assurance and accreditation process. Moreover, findings also suggest that universities are not prepared in many aspects for the achievement of national accreditation. However, in spite of their unwillingness to initiate efforts for internationalization, the faculty demonstrated a keen interest in learning about the accreditation process itself. It is recommended that National Accreditation Council for Teacher Education must set new targets to meet the goals of the accreditation of teacher education in Pakistan.

   Keywords: *globalization, internationalization, national accreditation, quality assurance, teacher education.*

4. **Arif, S., Iqbal, J., & Khalil, U.** (2019). Factors Influencing Students' Choices of Academic Career in Pakistan. *FWU Journal of Social Sciences, 13*(1), 35-47.**(Seema Arif, Javed Iqbal, and Usman Khalil (Education/SSSH) HEC X CAT**

   Abstract: Choice of career is a very complicated decision for students because i t establishes the kind of profession they plan to chase in their future life. Mostly, students make career choice during their secondary schooling. The problem they face is matching their career choices with their interests and academic

performance while accommodating their parental wishes at the same time. This study aims to identify the factors which play a major role in the choice of academic careers students are currently pursuing in the university, and how certain personal characteristics and academic support may shape their prospective choices for future profession and career. Case study was the chosen approach and the University of Management and Technology (UMT) the selected case. Correlation research was the methodology used to collect and analyze the data. A survey was conducted with three hundred students of UMT randomly selected from three schools and eight undergraduate programs taught in these schools. Selfconstructed questionnaire comprising 30 items was used as a tool for survey. Exploratory factor analysis and regression were applied on the data recorded in SPSS 21 to determine the student satisfaction levels with their career choices both in retrospect and prospect. The results indicated that social and peer group factor is stronger than family factor in retrospect of career choices, the economic factor remains neutral, whereas, academic support and self-efficacy build the prospect of continuing the same academic career as a profession. The study identifies the challenges faced by the students in Pakistan of matching their career choices with their abilities extending the research literature regarding the career choices of students in a Pakistani perspective.

Keywords: *academic support, career choices, case study, economic factor, family.*

5. **Arif, S.,** & Omar, I. (2019). Effectiveness of Flipped Classroom in Teaching Basic English Courses. *Yüksekö¤retim Dergisi / Journal of Higher Education (Turkey)*.(**Seema Arif (Education/SSSH) Not HEC Recognized**

Abstract: Universities all over the world are in search of innovative methods to ensure purposeful learning such as. Declarative accelerated blended learning (DABL) and flipped classrooms. No such interactive technology has so far been used in the higher education institutions of Pakistan. A pilot was carried out in the social sciences faculty of a private university to measure the effect of DABL on student learning in the Basic English courses. The aim of this quantitative study is to explore the effectiveness of innovative learning design and use of flipped classroom by using Transparent Language Online (TLO) in teaching of basic English courses to undergraduate students. A needs-specific learning design was crafted integrating pedagogy with computer-mediated technology that can effectively cater to students' individual deficiencies rather than adopting a universal, one-sizefits-all model. A standard assessment task (involving the identification and correction of 12 common errors in English language) was implemented. The study was conducted with 270 students, composed of 90 students from each of three different sections. Random stratified sampling was used for the selection of the student sections of each course, and census sampling was used for the selection of students from each section. The results reflected heightened student interest and motivation in learning, resulting in improved academic performance. The study concludes that need-based learning design with integration of technology works best to teach basic English courses to undergraduate students.

Keywords: *computer-mediated technology, declarative accelerated blended learning, flipped classrooms, teaching & learning at higher education, transparent language online (TLO).*

6. Amjad, H., & **Muhammad, Y.** (2019). Teaching Students with Down Syndrome: Perspectives of Special School Teachers & Psychologists. *Journal of Inclusive Education, 3*(1), 127-143. **(Yaar Muhammad (Education/SSSH) HEC Y CAT**

Abstract: Imparting education to students with Down syndrome is a difficult process since it requires the use of a variety of pedagogical strategies. This study used qualitative case study method and aimed to develop an understanding of the learning difficulties faced by students with Down syndrome through the perspectives of special school teachers and psychologists. This study also aimed to understand the pedagogical practices used by teachers to manage the learning difficulties of students with Down syndrome. The criterion sampling technique was used to select participants. Data were gathered through a self-constructed semistructured

interview guide containing seven dimensions. Qualitative content analysis of these seven dimensions clearly showed that teachers and psychologists perceived that students with Down syndrome certainly face many problems and hurdles in their learning such as lack of required skills, low IQ level, memory storage issues, communication problem, behavior problems, passivity, and distraction issues of students with Down syndrome. Moreover, the findings also showed that these teachers and psychologists employ a variety of pedagogical strategies to teach and manage students with Down syndrome. However, some aspects need to be addressed to make the education of these students effective.

Keywords: *perspectives, qualitative case study, learning difficulties, students with down syndrome, special school teachers and psychologists.*

7. **Muhammad, Y., Masood, S., & Anis, F.** (2019). Global Identity, Curricular Reform and Pakistan Studies Textbooks: Understanding Teachers' Perceptions and Beliefs. *Journal of Educational Sciences & Research, 6*(1), 65-78. **(Yaar Muhammad, Sajid Masood & Faisal Anis (Education/SSSH) HEC Y CAT**

Abstract: Teachers play a significant role in the construction of global identity of students by providing them knowledge of the world and by cultivating positive attitude towards the global world. However, many aspects of curriculum reform related to global identity theme may be viewed and treated as a source of resistance by teachers working in a conservative context. The purpose of this study was to explore teachers' beliefs and perceptions regarding global identity theme of Pakistan Studies curriculum policy and textbooks in order to develop and understanding of the ground level realities of curriculum changes in in the secondary schools in Punjab. For this, semi-structured interviews were conducted with twenty-seven Pakistan Studies teachers recruited from public and private schools in one district of Punjab province in Pakistan. Analysis of data revealed that in many ways curriculum policy by these Pakistan Studies teachers' beliefs and perceptions show compliance as well as resistance to various aspects of curriculum reform related to global identity curriculum policy.

Keywords: *textbook, curricular gatekeeping, global perspectives, national identity, cultural diversity.*

8. **Muhammad, Y.** (2019). Pakistani National Identity, Curriculum Reform and Citizenship Education Textbooks: Understanding Teachers' Perspectives. *Journal of Research & Reflections in Education (JRRE), 13*(1). **(Yaar Muhammad (Education/SSSH) HEC Y CAT**

Abstract: This study investigated teachers' perspectives on the thematic area of Pakistan national identity in relation to the curricular reform (2006) and the subsequently revised Citizenship Education (Pakistan Studies) textbooks introduced in the secondary schools in Punjab in 2012. Semi-structured interviews were conducted with twenty-seven Pakistan Studies teachers from secondary schools. Using a framework based on three conceptions of Pakistani national identity, that is, the Islamist, the pluralist, and the nation–statist, data were analysed—which revealed that teachers had different interpretations of what Pakistan Studies should be and what kind of Pakistani national identity it should promote. However, most of the teachers' perspectives indicated that they subscribed to an Islamic model of Pakistani national identity more than to the pluralistic, liberal-democratic one. It is argued that there is a need for introducing teachers to a Pakistan Studies curriculum that is faithful to, and respectful of distinctive history, Islamic heritage and diversity of Pakistan.

Keywords: *national identity, cultural diversity, curriculum reform, teachers' perspectives, textbooks.*

9. **Shah, M.,** & Haseeb, M. A. (2019). Relationship between Job Autonomy and Job Stress among Public Secondary School Principals. *International Journal of Learning and Development, 9*(4). **(Madiha Shah (Education/SSSH) Not HEC Recognized**

Abstract: School principals play a dynamic role in schools' administrative processes where independent decision-making is inevitable. The present study investigates the level of job autonomy as experienced by public secondary school principals of Punjab, Pakistan. The study further determines the relationship

between job autonomy and job stress among school principals. The study uses a survey research design where two scales i.e., Job Autonomy Scale by Breaugh (1985) and Organizational Stress Index by Shrivastava and Singh (1984) were used to measure job autonomy and job stress respectively. The study comprises the sample of 145 public secondary school principals, working in a district of Punjab, Pakistan. The research questions are addressed by conducting descriptive as well as inferential statistics. The study identifies a positive and moderate relationship between job autonomy and job stress among secondary school principals. It is found that school principals perceive themselves more autonomous in method autonomy and scheduling autonomy while less autonomous in criteria autonomy. The results exhibit that school principals suffered from greater stress because of low self-esteem. The current study suggests that school principals should be provided with middle-level job autonomy to mitigate their job stress.

Keywords: *job autonomy, job stress, school principals, secondary schools.*

10. **Nasreen, S., & Shah, M.** (2019). Effect of Instructional Supervisory Practices on Teacher Motivation in Private Secondary Schools of Lahore, Pakistan. *Advances in Social Sciences Research Journal, 6*(11), 192-203**. (Shahida Nasreen, Madiha Shah(Education/SSSH) Not HEC Recognized**

Abstract: Research in the area of school leadership proves that effective leaders accomplish the role of instructional leaders (Zheng, 1996). The main objective of an effective principal is the supervision of classroom instructions (Hoy, & Hoy, 2006). This paper examines the effect of instructional supervisory practices of the school leaders on teacher motivation in private secondary schools of Lahore, Pakistan. Twenty four schools from three different school types (low-income schools, middle-class schools, and elite schools) were selected using stratified random sampling. A questionnaire comprising of two scales, Instructional Supervisory Practices Scale (ISPS) and Work Extrinsic and Intrinsic Motivation Scale (WEIMS), was used to collect data from 530 teachers. Descriptive as well as inferential statistics were used to obtain results. The teachers' perceptions regarding their leaders' instructional supervisory practices and the level of teacher motivation were determined by computing mean and standard deviation. The Pearson Correlation (r) was computed to explore the relationship between six sub-scales of instructional supervisory practices and teacher motivation. The results of the study indicated a significant positive relationship between instructional supervision and teacher motivation. It is concluded that instructional supervision significantly contributes to teacher motivation.

Keywords: *instructional supervision, teacher motivation, private school, Pakistan.*

11. **Muhammad, Y., Akhtar, M., & Lala, G.** (2019). Exploring Online Peer Harassment Experiences of Female University Students: A Qualitative Study. *Journal of Educational Research, Dept. of Education, IUB, Pakistan, 22*(2), 109-124. **(Yaar Muhammad, Mumtaz Akhtar, Gul e Lala (Education/SSSH) HEC Y CAT**

Abstract: In the recent decade, there has been an increase in the use of the internet in Pakistan, and increasingly more female students are using it to communicate with others. However, female students are also facing disproportional harassment via the internet. This study aimed to explore female university students' experiences related to online harassment victimization, bystander behavior, and perpetration. This study was conducted in a private university in Pakistan, and a basic qualitative study research design was used. Semi-structured-interviews were conducted with 14 graduate and postgraduate students to gather the meaning these participants gave or extracted from the online peer harassment experiences. Data were analyzed using qualitative content analysis. All data related to fourteen participants were coded. Clustering similar codes helped in identifying sub-categories from data. Several assertions were developed by comparing and contrasting various categories and sub-categories. Analysis of the data revealed that all the participants had been victims of online harassment. Moreover, all participants had witnessed online harassment as a bystander. However, they did not interfere considering it others' matters, especially when

the person causing the problem was unknown to them for fear of harassment. Interestingly, some of them had also been a perpetrator of online harassment. This study has helped in developing an understanding of the prevalence of cyber-bullying and online harassment among female university students using a small sample. The knowledge produced can help us in developing a digital citizenship curriculum, which is a tool to prepare students for using the technology in a positive and informative way so that female university students' online experiences can be made better.

Keywords: *online peer harassment, cyber-bullying, victimization, bystander behavior, perpetration.*

12. **Tariq, B., Dilawar, M., & Muhammad, Y.** (2019). Innovative Teaching and Technology Integration: Exploring Elderly Teachers' Attitudes. *International Journal of Distance Education and E-Learning, 5*(1), 1-16. **(Bazila Tariq, Maria Dilawar, Yaar Muhammad (Education/SSSH)** **HEC Z CAT**

Abstract: To stay current in this dynamic age, innovation and adaptability is not only considered a key to success, rather it is deemed a significant tool of survival. The field of education has metamorphosed with the shift of focus from teachers' teaching to students' learning. This change implies that teachers consistently update their practices and innovate in order to meet the needs of students with diverse skills. With the introduction of student-centred classrooms, project based learning, practical discovery and technological integration, the traditional lecture methods and the idea of passive students is becoming obsolete. However, the attitude of teachers towards innovation varies. The aim of this study was to explore attitudes of elderly teachers towards innovative teaching strategies. This study used qualitative phenomenological study method and criterion sampling technique to select four participants aged 45 years and above. Data were gathered through a self-constructed semi structured interview guide containing three dimensions. Phenomenological data analysis of these three dimensions showed the presence of some cognitive, behavioural and affective resistance to change among teachers. Therefore, it is suggested that certain aspects of training and guidance need to be provided to elderly teachers in order to make the process of innovation easy to adopt.

Keywords: *resistance, teaching methods, innovation, perceptions, elderly teachers.*

13. **Naseer, H., Arshad, N., & Muhammad, Y.** (2019). Teachers' Perspectives on the Cultivation of Moral Values among Twenty-First Century College Students. *Kashmir Journal of Education, I*(II), 81-93. **(Hamna Naseer, Naeem Arshad, Yaar Muhammad (Education/SSSH)** **Not HEC Recognized**

Abstract: The purpose of this study was to explore teachers' perspectives on the need to cultivate moral value among college students, their lived experiences in doing so, and the challenges faced by them in the context of twenty-first-century students. For this, researchers on the basis of availability and purposive sampling technique recruited four male Islamic Studies college teachers in Lahore. In-depth and detailed interviews were conducted, resulting in the collection of rich data, which was then analyzed using phenomenological methods in order to develop patterns and themes and extract the essence of all the lived experiences, which developed our understanding of the perspectives of teachers regarding the core phenomenon. The analysis revealed that the interviewed college teachers' saw an immense need to cultivate moral values, especially among college boys, being more reluctant to ethical development due to social media challenges of this century. Moreover, teachers' lived experience enlisted three major moral values to be inculcated for developing distinctive moral character, that is, truthfulness, respect, and modesty (Hayah). However, this study highlighted the need for combining teachers' own moral values, parents' awareness, and students' willingness for effective nurturing of moral character.

Keywords: *moral values, college students, twenty-first century, teacher's perspectives.*

14. Riffat, M., & **Muhammad, Y.** (2019). Exploring Research Students' Experiences related to Supervisory Support: A Cross-Case Analysis. *Kashmir Journal of Education, I*(II), 94-116. **(Yaar Muhammad**

(Education/SSSH) Not HEC Recognized

Abstract: The main purpose of this qualitative case study was to develop an understanding of the perspectives of research students on supervisory support. This study employed the interpretive case study methodology, and the criterion sampling technique was used to select participants. Eleven research students of the Department of History and Pakistan Studies who were currently enrolled at MPhil level and who had experienced the supervisory support for at least 3-6 months participated in this study. Semi-structured interviews were conducted to understand the perspectives of the participants. All research students provided rich descriptions about supervisory support approaches. They all reported that their supervisors provided support related to directing, research planning, attaining resources, and project management. Most of the research students reported that their supervisors made efforts to introduce them to the disciplinary community, that is, provided the material for the research study and motivated them to participate in conferences, seminars, and workshops. Few research students gave negative responses to it by saying that their supervisors never talked about participation in any conferences or seminars. All eleven participants provided strong perspectives about the critical thinking approach. They stated that their supervisors helped them critically evaluate research literature related to their topics. Some students did not see the emancipation approach as an ideal. Some students' categorized their experiences as non-friendly and harsh. From the perspectives of research students, it can be inferred that Exploring Research Students' Experiences related to Supervisory Support Kashmir Journal of Education kje@miu.edu.pk every supervisor used five approaches of supervisory support with an unequal emphasis on each approach. Moreover, the supervisors were more inclined towards helping research students in project management and coaching but less in developing skills related to evaluation, argument analysis and emotional intelligence.

Keywords: *research students, supervisory support, cross-case analysis, perspectives, qualitative research.*

15. Tatlah, I. A., **Masood, S.,** & Amin, M. (2019). Impact of Parental Expectations and Students' Academic Self-Concept on Their Academic Achievements. *Journal of Research & Reflections in Education (JRRE), 13(2). 170-182.* **(Sajid Masood (Education/SSSH) HEC Y CAT**

Abstract: This study aimed to investigate the effect of parental expectations on students' academic achievement mediated by the students' academic self-concept. This study was guided by the pragmatist paradigm thus used mixed methods explanatory design having quantitative phase followed by the qualitative part. The sample for the quantitative phase was comprised of 400 male and female secondary school students randomly selected the public and private schools. Sample for the qualitative phase was comprised of 80 parents purposively selected for the study. The researchers adopted the academic self-concept scale for the collection of quantitative data. The researchers developed the second questionnaire to measure students' perceptions regarding parental academic expectations which consisted of 12 items. The students' summative evaluation scores were used to measure their academic achievement. Qualitative data regarding parental expectations were collected from parents through a semi-structured interview. The descriptive statistics and Hierarchical regression were used for quantitative data analysis. Whereas, qualitative data were analyzed by thematic analysis. Quantitative analysis revealed that parental expectations and students' academic self-concept statistically predicted students' academic achievement Further, the secondary qualitative data validated the primary quantitative findings well that parents have high expectations regarding their children's academic achievement. Parents are expected to extend high expectations about the academic achievements of their children.

Keywords: *not available.*

16. Saleem, A., **Muhammad, D. Y. & Masood, S.,** (2019). Negative Emotions and Self-Created Challenges of Novice Public-School Teachers in Managing Classroom. *Journal of Elementary Education*, *29*(2), 178-195. **(Yaar Muhammad, Sajid Masood (Education/SSSH) HEC Y CAT**

Abstract: Teachers often struggle with their negative emotions and attempt to regulate these emotions during disciplining of their disruptive students. This study was designed to develop an understanding about the perceptions and experiences of novice public-school teachers regarding challenges they create for themselves because of their negative emotional expressive behavior in classroom. This study explored the variety of self-regulation strategies that teachers use to manage their vocal and physiological expressions of negative emotions. This study used basic qualitative research design. Purposive sampling technique was used to select twenty novice teachers from public-elementary schools in Lahore, all having less than three years of experience. The data were collected through semi-structured interviews from the participants. Thematic analysis of the interview data revealed that the teachers were aware of the fact that many classroom management challenges were created by their own negative emotional expressive behaviors. They were also aware of role of consistent anger and humiliating language of teachers in creating classroom management challenges for teachers. Moreover, they believe that non-seriousness towards teaching and snubbing certain students create challenges for teacher themselves. Majority of teachers agreed that they had been creating challenges for themselves in their class because of their negative emotional expressive behavior in classroom. However, few believed that they create challenges for themselves due to high tendency of anger in their class. This study recommends in-service professional development of novice teachers with respect to the management of emotions as well as development of support mechanism for novice teachers within schools for ensuring effective teaching-learning environments in classrooms.

Keywords: *not available.*

17. **Masood, S., & Hameed, A.** (2019). Effect of Examination on Instructional Practices of Elementary School Teachers: A Mixed Methods Study. *Pakistan Journal of Education*, *36*(2), 23-41. **(Sajid Masood, Abdul Hameed (Education/SSSH) HEC X CAT**

Abstract: Examinations conducted by the Punjab Examination Commission (PEC) at grade VIII are important as intended and unintended consequences are associated with examination results influence the teaching and learning processes in schools. A mixed methods sequential explanatory study was conducted to investigate the effects of the examinations conducted by the PEC on instructional practices of teachers at the elementary level in seven districts of the Punjab. In the quantitative phase survey data was collected from 521 elementary school teachers teaching in seven districts of the Punjab selected through multistage random sampling. The quantitative results were used to select participants for the study's qualitative phase through a maximum variation strategy of purposive sampling. The quantitative phase indicated that female teachers perceived more effects of examinations on their instructional practices. Moreover, teachers belonging to age group 42-48 experienced most of the effects of examination on their instructional practices as compared to teachers belonging to other age groups. Similarly, teachers belonging to district 3 (Okara) experienced more effects of the examination on their instructional practices as compared to teachers serving in other districts. The qualitative data indicated that instruction was driven by the examination. Teacher-centred instructional strategies were dominant. Paper patterns defined the instruction and tests were extensively practiced in class. Teachers used strategies for helping students to attempt MCQs. One of the objectives of the PEC was to improve teaching and learning and in light of the present study it remains hard to achieve. The findings of the study pose several challenges for the examination board, curriculum and educational authorities in the Punjab.

Keywords: *consequences, accountability, instructional practices, practicing test, teacher-centered pedagogy.*

18. **Nadeem, M., Arif, S.,** & Asghar, M. Z., (2019). Effectiveness of the Teacher Appraisal System in Public Higher Secondary Schools of Punjab (Pakistan). *Global Regional Review (GRR), IV*(I), 22. (**Muhammad Nadeem, Seema Arif (Education/SSSH) HEC Y CAT**

Abstract: Quantitative research was conducted to find out the effectiveness of the existing performance appraisal system (PAS). A survey research design was planned to determine the level of awareness of the teachers with the existing teacher appraisal system, moreover, the effectiveness was determined by the level of satisfaction or dissatisfaction of teachers with PAS and its probable effect on teaching practices. A random sampling technique was used to access the target population. A self-constructed questionnaire was distributed among 78 principals of public higher secondary schools and the reliability of the instrument was found to be .862. Step-wise regressions inform us dissatisfaction of teachers is associated with the transparency of the appraisers. Management support and motivation were not found to be significant predictors need for improvement. The results further highlighted that a lack of awareness about PAS negatively affects motivation to perform better. A lot of improvement is needed to make the appraisal process more effective.

Keywords: *effectiveness, performance appraisal system, public higher secondary school teachers, school principals.*

19. Jabbar, N., **Ali, U.,** (2019). Education as self-government: the Minhaj Education Society's answer to managing violence in Pakistan. *Postcolonial Studies, 22*(4), 523-544, DOI: 10.1080/13688790.2019.1697414. (**Usman Ali (Education/SSSH) Web of Science JCR Listed (IF: 0.894)**

Abstract: Development thinking and planning consistently identify religious markers of self-development as inimical to social cohesion in the Global South. Practitioners in the field see any educational philosophy that emphasises the disciplined formation of character by non-secular means as an undesirable reaction to modernisation. Religious or madrasa education is identified as an intrinsically regressive aspect of the indigenous social order that limits the transition to an open-access-order society. Using qualitative data from interviews with the managers of an NGO and a political-reform movement in Pakistan, we explore this conclusion and ask whether the secular norms of citizenship, often insisted upon by the international donor community, are strong enough to challenge residual violence. If they are not strong enough, what resources are available within traditional precepts about self-government such that Pakistanis do not need to learn lessons from Europe to protect minorities from communal predation?

Keywords: *education, Islam, madrasa, secularism, Pakistan.*

20. **Naz, F., & Murad, H. S.** (2019). Innovative Teaching: An Effective Ingredient for Educational Change at University Level. *Pakistan Journal of Education*, *36*(2), 115-135. (**Farah Naz, Hasan Sohaib Murad (Education/SSSH) HEC X CAT**

Abstract: Educational change is inexorable for societal growth. Education and its demands are changing every day. Educational change in higher education institutions gravely needs an effective and innovative teaching methodology inside and outside classrooms. It is voice of the time, the innovative methods in teaching can not only meet the individual needs of the students but can produce high quality future professionals. To review the current status of teaching in universities, a quantitative study has been conducted. A survey based on innovative teaching practices and educational change linked with these practices have been done from the sample of 400 students of BS / MPhil / PhD and 200 teachers of BS/ MPhil /PhD level. The results have shown that still there's a long way to go to encounter the fast changing scenario of education at higher level. Majority of the higher education teachers are accepting change but at the same time, they are more comfortable with the conventional teaching methods. The results are also found to be insignificant for top management involvement in the process of change.

Keywords: *educational change, innovative teaching, ingredient, university level.*

21. **Naz, F., Yousaf, A., & Arshad, N.** (2020). Analysis of Early Childhood Education Practices in Public and

Private Sector of Lahore. *Journal of Early Childhood Care and Education (JECCE), 3, 43-57*. (**Farah Naz, Amna Yousaf, Naeem Arshad (Education/SSSH) HEC Y CAT**

Abstract: This study aimed at analysis of ECE practices in education at school level. The goal of this study was to investigate the ECE amenities, current does &don'ts and discovering the prevailing position of ECE in government and other schools in Pakistan. This level of education influences the whole life of every individual in his/her academic and non-academic achievements. This is also the basic stage to improve the literacy rate of future leaders so that children can enter in schools of our society successfully. The population of the study was all teachers of ECE from schools of both segments. The number of total respondents was 200 (Public= 100, private=100). Convenience sampling was used by selecting model town Tehsil of Lahore. Adopted questionnaire was used to collect the data from respondents. Fifty questions were used to collect data in the questionnaire. The finding of the study concludes that there was no significant difference between public and private pre-schools.

Keywords: *early childhood education, classroom practices, public and private schools.*

Book/Book Chapters

1. **Muhammad, Y.,** & Brett, P. (2019). Addressing Social Justice and Cultural Identity in Pakistani Education: A Qualitative Content Analysis of Curriculum Policy. In J. Gube & F. Gao (Eds.), *Education, Ethnicity and Equity in the Multilingual Asian Context* (Vol. 32, pp. 235-253). **(Yaar Muhammad (Education/SSSH) (Book Chapter)**

Abstract: Pakistan was set up as a relatively egalitarian and democratic state. However, the trend has been for successive governments to create a more theocratic/Islamic, less inclusive, and less democratic state especially during the Zia regime. This led to the dominance of a relatively narrow and exclusionary conception of Pakistani national identity-based on the aspirations of the dominant Sunni Punjabi ethnic group. This increased the difficulties of the remaining ethnic and religious groups, whose cultural diversity was less clearly recognized either politically, socially, or educationally-and indeed there was a distinct prejudice practised against them. In the early twenty-first century, the Musharraf regime tried to make changes to this approach through policies based on enlightened moderation-a variant of liberal democracy. Against this background, this chapter presents the findings from a qualitative content analysis of some of the key education policy and secondary school curriculum documents produced during the Musharraf regime. The aim of this analysis was to understand how these policy documents addressed social justice and cultural diversity issues in Pakistan.

Keywords: *not available.*

Conference Paper

1. **Arif, S., & Ramzan, M.** (2019). *Status Of Academic Emotions & Self-Regulated Learning Practices Among Higher Secondary School Students Of Punjab*. Paper presented at the 1st National Conference on Education Policy Development (NCEPD 2019) The University of Punjab. Lahore. Pakistan. **(Seema Arif, Muhammad Ramzan (Education/SSSH)**

Abstract: Opportunity of good employment depends upon quality education whereas quality education depends upon the effectiveness of students' academic learning. Teachers have been making efforts to understand the factors underlying students' learning and desire to engage in and regulate their learning strategies as well as academic emotions. Survey was planned to examine state of academic emotions in the students of higher secondary school students, as well as, identify their self-regulated learning strategies adopted for better academic and behavioral engagement in schools. Data was collected from 400 students studying in public higher secondary schools in two districts of Punjab selected through multi-stage sampling. Predefined scales for academic emotions, self-regulated learning, and engagement were used to collect data.

The responses were organized and recorded on SPSS 21 and both descriptive and inferential statistics was applied to reach results. The results indicate that the status of academic emotions and self-regulated learning is very poor among students. Mostly negative emotions prevail upon students in academic set-ups, in classroom, and in examination hall. Students lack the basic capacity to set goals and plan their own learning and regulate personal emotions and motivations that will lead them to become an independent and organized learner and member of society. Keeping these results in view the researchers suggest modification in pedagogic strategies to suit the needs of 21st century learners. Keywords: Academic emotions, innovative pedagogy, public secondary school students, self-regulated learning, student engagement.
Keywords: *not available.*

2. **Arif, S., & Nisa, M.** (2019). *The Effect of Quality Teaching on Knowledge Skills & Attitudes of Student Teachers*. Paper presented at the 1st International Science, Education, Art & Technology Symposium Buca Faculty of Education, Dokuz Eylul University Izmir, Turkey. **(Seema Arif, Mehru Nisa (Education/SSSH)**
   Abstract: Quality Teaching is one of the most complicated jobs in teacher education. Not only it demands wide knowledge of subject matter, curriculum, and standards, enthusiasm, but it necessitates caring attitude, a will to make a difference in the lives of students, and spirit for continuous improvement. ISO 90001 provides 9 key performance indicators to determine quality of teacher educators, teachers are developer of course, designer and deliverer of instruction, evaluator, researcher, team builder, manager, instructor and guide. Every teacher is a change agent who exercises influence to bring change in the knowledge, skills and attitudes of students. This correlational research was conducted to know the perceptions of students of teacher education about the interactive effect of 9 KPIs on their knowledge, skill, and attitude. Students of teacher education enrolled in education departments/faculties of both public and private universities of Lahore, Pakistan were the population of the study. Data was collected from 500 participants from three public and four private universities. A self developed questionnaire consisting of 53 statements set on five-point Likert type scale was used to collect responses. The data were organized, recorded, and analyzed using SPSS 21. Regression analysis informed that teachers‟ performances as course deliverer and evaluator are the most important in determining their quality teaching in teacher education.
   Keywords: *quality education, teacher educator, professional development.*

3. **Arif, S., & Iqbal, S.** (2019). *Teachers' Construction of Identity in a Gendered Environment*. Paper presented at the One Day National Conference on Debates in Contemporary Gender Issues, Department of Gender Studies (SSSH) University of Management & Technology Lahore, Pakistan.**(Seema Arif, Safia Iqbal (Education/SSSH)**
   Abstract: Female teachers‟ construction of their „self‟ or identity is a much ignored area of research in Pakistan. It is established through previous research that identity construction depends on a variety of factors including emotional, ideological and cultural. Power, as a crucial phenomenon in identity construction provides the very condition of its trajectory, whereas, the emotional components forming teacher identity yield a rich understanding of the teacher self. Teachers in public schools of Pakistan work in mix gendered environment, where supervisors who monitor and evaluate their performances are mostly male. Constant negotiation and compromises in this power relationship pose serious challenge to the identity construction of female public school teachers in Pakistan. Therefore it is important to know what happens to teachers, do they identify themselves as victims of the situation or they take the challenge positively demonstrating resistance and self-transformation. Qualitative research was carried out to develop an in-depth understanding of the phenomenon. Sample was selected purposively from 45 public school teachers studying in MPhil and PhD in UMT and working in education and special education of Punjab. Although all of them

were sent consent letter to join the research, only 35 of them agreed. Initially an open ended proforma comprising 10 lead questions was sent to the participants. This data was used for themes generation. The selected themes were explored by initiating a discourse in a WhatsApp group. Only 15 public school teachers extensively participated in this discourse. The chat continued for one week so that maximum participation might be invoked. By remaining focused on the research themes, "rich" data with thick descriptions was achieved providing sufficient content for discourse analysis. The findings indicate that teachers construction is diverse and context and culture dependent. Teachers may label themselves as „will-less labor‟ to „heroic victims‟ or professional and highly dedicated passionate teachers.

Keywords: *discourse analysis, identity construction, gendered environment, power relationships, public school teachers.*

4. **Arif, S.,** & Omer, I. (2019). *New framework for studying access to higher education*. Paper presented at the 1st International Science, Education, Art & Technology Symposium Buca Faculty of Education, Dokuz Eylul University Izmir, Turkey.**(Seema Arif (Education/SSSH)**

Abstract: Research in the area of access to higher education has often been critiqued by lack of theoretical grounding arguing it is restricted to the quality of infrastructure or pedagogic quality to some extent. The study proposes a conceptual framework for purposeful access to higher education for measuring the interactive effect of factors influencing pedagogical access (Teacher Pedagogic Quality, Teaching Learning Environment, and Teacher-student Relationship) upon factors leading to student success (student satisfaction and student engagement). The researchers assume that a meaningful and purposeful access is created for diverse population entering higher education only by providing ‗epistemological pedagogical access' to the students ensuring student success. The study was quantitative in nature and correlational research design was used following positivist paradigm. The researcher used multi-stage sampling technique and the study sample comprised 400 students from two universities (one public and one private) from Lahore, Pakistan. The data were collected using closed ended questionnaire and advanced statistical techniques like MANOVA, correlations, and regressions were applied using SPSS. The study concludes a model of epistemological pedagogical access leading to success for the university students of Pakistan. Furthermore, the results of this pilot study also share the predictive value of pedagogical access to ensure student success.

Keywords: *epistemological pedagogical access, student success, student-teacher relationships, teacher pedagogic quality, teaching and learning environment.*

5. **Arif, S., & Iqbal, S.** (2019). *Male hegemony vs. Women empowerment: Case of school teachers*. Paper presented at the 2nd International Interdisciplinary Conference on Gender, Work and Society "Gender, work and leadership: Bringing together feminist and postcolonial insights", Suleman Dawood School of Business (SDSB) Lahore University of Management Sciences (LUMS) Lahore, Pakistan.**(Seema Arif, Safia Iqbal (Education/SSSH)**

Abstract: A qualitative phenomenological study was conducted to understand the gendered conflict created in mixed gendered environments. Phenomenon was explored among public and private schools of Pakistan, especially in cases where teachers and head teachers are females and their supervisors are males, serving the mandatory role of school inspectors monitoring the presence of teachers and head teacher is schools. The gender theory of Connell (1995) and her followers have been used to investigate this male vs. female phenomenon who argues that gender is invigilated and guarded in traditional societies firmly focused on power relationships, and people are managed through gender, creating a patriarchy safeguarding male dominance and pushing women to submit to male interests. The research was conducted in 2 phases, critical incident technique was used for data collection and analysis in the first phase. The results disclosed that

school teachers are never made part of any decision making, regardless of their qualification and experience. They serve as robots satisfying the whims of bureaucratic administration. Males at workplace are dominant and display typical "masculine hegemony." Teachers‟ human rights for dignity and self-esteem are highly compromised. The 2nd phase of research was conducted by using structured interviews with 15 participants of the 1st phase who gave consent to share their personal experiences in detail and depth. Results disclose that male hegemony still exist causing dissatisfaction and burnout among female teachers. The government must take active steps to implement anti-harassment policy in schools to safeguard self-respect of teachers.
Keywords: *critical incident technique, gendered environment, harassment, male hegemony, school teachers.*

6. Amir, A., **& Muhammad, Y.** (2019). *Competency based national curriculum for English language in Pakistan: Provisions, practices and barriers*. Paper presented at the 7th International Conference on Education, University of Education, Lahore. **(Yaar Muhammad (Education/SSSH) Abstract:** With the emergent influence of twenty-first century skills in education, Pakistan introduced school curricula in 2006 that were underpinned by competency-based education. The overall aim of this qualitative research study was to identify the gaps between the competencies embedded in national curriculum of English (Grades VI-VIII) and teachers' perceptions and practices regarding implementation of these competencies. To achieve this research aim, qualitative content analysis of the official curriculum was conducted to identify the features of competencies incorporated. Additionally, detailed interviews were conducted with a purposefully selected sample of ten teachers from a district in Punjab. The instrument used for research was semi-structured, open ended interviews with school teachers. The analysis of data revealed that development of critical thinking, communication and problem-solving skills largely lack in teaching. Book based written tasks are dominating largely but emphasized through the use of tailored made notes, key books or dictated texts. As a result, learners hardly get any opportunity to practice language skills in the classrooms. Memory driven exam system has directed teachers for rote learning practices. The research study also identified reasons behind this approach to the teaching of English are: Week monitoring of teaching practices, Lack of teachers training programs and substandard assessment and examination system.
Keywords: *not available.*

7. **Jamil, M., & Muhammad, Y.** (2019). *Secondary School Science Teachers' Practices for Developing Critical Thinking Skills: Some Evidences from Observational Data*. Paper presented at the 7th International Conference on Research in Education, ICORE 2019, Institute of Education and Research, University of the Punjab, Lahore. http://icore-ier.com/img/Abstract-Book-ICORE-19.pdf. **(Muhammad Jamil, Yaar Muhammad (Education/SSSH)**
Abstract: National curriculum policy documents recommend different pedagogical practices like questioning, discussion, cooperative learning, etc. for the production of independent, rationale and critical thinkers. The aim of current qualitative case study was to analyze secondary school science teachers' practices for developing critical thinking skills among secondary school students. Six classrooms (2 from each Physics, Chemistry and Biology) were selected as cases. Observations were conducted through video recording of four lessons from each classroom. Thus in total 12 observations were conducted each observation lasting for 35 minutes. Data were analyzed through qualitative content analysis. Findings of the observations revealed that all the teachers heavily relied on lecture method to cover the content within the specified time and there was no much focus on developing critical thinking skills of the students. In few of the classrooms, the students remained active and engaged with the teacher. The teachers mostly used whiteboards as audio-video aid for the topics they taught. To some extent, questioning and daily life examples were used for the conceptual understating of students. We recommend that professional development of teachers should be

conducted so that they could focus on developing critical thinking skills through pedagogical practices recommended by the national curriculum policy.

Keywords: *critical thinking, pedagogy, curriculum policy, analysis, secondary level.*

8. **Sadiq, R., & Jamil, M.** (2019). *Challenges faced by Head Teachers at Primary Level in Punjab*. Paper presented at the 7th International Conference on Research in Education, ICORE 2019, Institute of Education and Research, University of the Punjab, Lahore. http://icore-ier.com/img/Abstract-Book-ICORE-19.pdf. **(Rashida Sadiq, Muhammad Jamil (Education/SSSH)**

Abstract: Leadership plays a vital role in accomplishing the educational goals and school improvement. The current quantitative study aimed at to investigate the actual experiences of primary school head teachers regarding the challenge faced by them in performing administrative tasks. The sample of the study comprised of 100 Head Teachers (Male=55, Female=45), selected through simple random sampling technique from public primary schools of district Lahore in Punjab. Self-developed 5 points likert type questionnaire with 10 indicators was used for data collection. Data collection was administered by the researchers themselves. For data analysis, SPSS version 20 was used. Descriptive statistics was adopted with frequency, mean, and SD. to analyze the opinions of the respondents regarding challenges faced by them. Challenges faced by head teachers for the quality education were terrible working conditions, workload of teachers, lack of teaching staff, overcrowded & under-furnished classrooms, parents' less respect for teachers, teachers' lack of commitment & cooperation, overloaded curriculum, students' absenteeism, high rates of teachers' burnout and frequent transfers of teachers. The higher authorities should observe these factors for better and desired positive leadership. Further studies may be conducted with more sample size and at different levels.

Keywords: *leadership, head teacher, challenges, primary level.*

9. Khokhar, A. J., & **Muhammad, Y.** (2019). *Analysis of Language Textbook Studies in Pakistan: Exploring New Avenues of Research*. Paper presented at the 7th International Conference on Research in Education, ICORE 2019, Institute of Education and Research, University of the Punjab, Lahore. http://icore-ier.com/img/Abstract-Book-ICORE-19.pdf. **(Yaar Muhammad (Education/SSSH)**

Abstract: The multiple aspects and issues related to textbooks have been investigated and continue to be investigated and this shows the continuous interest of academics in this field. The textbooks give an insight into the classroom pedagogy, encapsulate the culture and provide understanding of the hidden curriculum promoted through them. Textbooks in Pakistan, the only artefacts of language teaching in Pakistani classrooms, have been under strict scrutiny for the last two decades. This study focusses on studies conducted from 2010-2018 period about language textbooks used in Pakistan (private and public sector), published in journals in Pakistan (HEC recognized journals) and outside Pakistan. The data were collected using Google Scholar. A combination of phrases was used while searching for articles published between 2010 and 2018. This study used (a) focus of publication, (b) research method, (c) findings, (d) suggestions as analysis criteria. It was found out that culture and gender is the focus of most of the studies, research methods preferred was text analysis and discourse analysis, the findings and suggestions shown in most of studies was of reviewing and rewriting the textbooks to address the issues in them. This study suggests that teachers' role in classroom should also be studied and how they use textbook, what they do and do not do should also be studied as this is the least studied areas in the researches, which are analyzed in this study.

Keywords: *textbooks, English, Urdu, gender, culture, Pakistan.*

10. **Faiz, Z. & Muhammad, Y.** (2019). *Effectiveness of Counseling for Students with ADHD: School Psychologists' Prospective*. Paper presented at the 7th International Conference on Research in Education, ICORE 2019,

Institute of Education and Research, University of the Punjab, Lahore. http://icore-ier.com/img/Abstract-Book-ICORE-19.pdf. **(Zikra Faiz, Yaar Muhammad (Education/SSSH)**

Abstract: School psychologists play an important role in the academic life of students with ADHD because counseling provide to them is helpful in positively modifying students' behavior. The aim of the study was to explore the perspectives of school psychologists regarding the effectiveness of counselling for students with ADHD. In this study qualitative approach was adopted. Using basic qualitative research design, semi-structured interviews with selected school psychologists were conducted. For this purpose, a sample comprising of fifteen school psychologists from Lahore was selected by using purposive sampling technique. On the basis of themes identified in literature review, an interview guide comprising of twenty open-ended questions was developed. Semi-structured interviews were conducted with school psychologists each lasting up to 40 minutes. Thematic analysis technique was used to analyze the data by using Nvivo 12. The findings of this study highlight that most of the participants believed in the effectiveness of counseling for the students with ADHD especially for assessment, diagnosis and intervention practices. Furthermore, they believed that without this they could not change the behavior of the child. They also believed that with the help of different therapies, they can reduce the hyperactivity of the child and create socialization as well as academic and social skills. However, they also underscored the complexity of counselling processes which they experienced on daily basis. This study recommends that in public and private special schools, school psychologists must be hired who would work with all the stakeholders collaboratively so that support for children with ADHD in school can be insured.

Keywords: *school psychologists, ADHD students, counseling, effectiveness of counseling.*

11. **Azmat, U. & Muhammad, Y.** (2019). *Framing Effectiveness of Private Tuition Academies for Students' Learning: Perspectives of Academic Managers*. Paper presented at the 7th International Conference on Research in Education, ICORE 2019, Institute of Education and Research, University of the Punjab, Lahore. http://icore-ier.com/img/Abstract-Book-ICORE-19.pdf. **(Urooj Azmat, Yaar Muhammad (Education/SSSH)**

Abstract: Private tuition means the extra coaching which is provided outside the regular institutions. This study explores how managers of tuition academies frame effectiveness of private tuition academies for students' learning. In order to understand this phenomenon, framing theory was used which helps us well in understanding how certain aspects of something is presented to the people and how the presentation may influence the choices of people in the processing of the presented information. The main objectives of this study was: to explore how managers of tuition academies frame: nature of the classroom and private academy practices and private tutoring role in students' learning, especially in the development of critical and creative skills in students. In this study, qualitative research paradigm was chosen and purposive sampling technique was employed to recruit 10 participants. A semi-structured interview guide was designed after discussing with the fields' experts and improving it afterwards according to their suggestions. Managers of tuition academies highlight that private tuition academies have strong and positive effect on students' achievement, which they believed could contribute to the economic enhancement and prosperity of the country. They argue that they mostly use drill methods because of coverage of the syllabus in limited time. Furthermore, they argue that the education system is examination-oriented, therefore, they provide notes and guess papers to students which become helpful in achieving higher mark in examination. This framing has some implication for the education system in Pakistan because this can attract parents and students who are after good grades. However, extra coaching hours and methods used in academies may inhibit students' creative and critical skills, thus damaging the bases of economic development in Pakistan.

Keywords: *framing, effectiveness, tuition academy, students' learning, perspectives.*

12. **Arif, S. & Riasat, L.** (2019). *Teachers' Resistance towards Change in Punjab Public Schools: Implications for School Improvement*. Paper presented at the 7th International Conference on Research in Education, ICORE 2019, Institute of Education and Research, University of the Punjab, Lahore. http://icore-ier.com/img/Abstract-Book-ICORE-19.pdf. **(Seema Arif, Lubna Riasat (Education/SSSH)**

Abstract: Teachers resistance to change has become a perennial phenomenon which educational sector had to deal with because without the active involvement and commitment of teachers, change and reform policies are prone to failure. The urge to explore the reasons behind teachers' resistance towards any change and need to modify some policies to minimize this factor, motivated the researcher to conduct this research. The aim of present descriptive research is to identify reasons for teacher's resistance towards reform agenda introduced by previous government of Punjab (2013-18) and its possible implications for future of school improvement in Pakistan. Using simple random sampling 28 public schools of tehsil Model Town district of Lahore were taken as sample of the study, each school was taken as cluster and all teachers were approached to fill the questionnaire, however, final data constituted only 295 questionnaires. Self-developed questionnaire, comprising 36 items further categorized into eight factors was used as tool. Both descriptive (means & Standard Deviation) and inferential (correlation & regression) were applied. The research has concluded that role of school principal and management's implementation strategy have strong link with positive attitude of teacher towards adapting for change. Hence, it is important that principals must manage doubts and fears of teachers about change to counteract resistance and negative attitude towards change. The article would further provide guidelines for improvement in the light of world literature on the subject.

Keywords: *teachers' resistance, school improvement, leadership, change, public schools.*

13. **Tahira, M. & Muhammad, Y.** (2019). *Early Childhood Teachers' Strategies for Managing Inclusive Classrooms: A Qualitative Study.* Paper presented at the 7th International Conference on Research in Education, ICORE 2019, Institute of Education and Research, University of the Punjab, Lahore. http://icore-ier.com/img/Abstract-Book-ICORE-19.pdf. **(Marryum Tahira, Yaar Muhammad (Education/SSSH)**

Abstract: Inclusive education is presently a new trend in early childhood education around the world. Pakistan is also gradually adopting inclusive education in the early schools. Teachers' proper awareness of inclusive education can improve the students' learning experiences. However, generally speaking, there is inadequate awareness of strategies for managing inclusive classroom among early childhood teachers. Teachers directed strategy, peer mediated strategy and selfdirected strategy to manage inclusive classrooms can help teachers in achieving positive outcomes for all students This qualitative research study explored the strategies used by early childhood teachers in inclusive classroom. This research used case study research design and explored experiences from the perspective of the inclusive education schools' teachers. Semistructured interviews were conducted with purposefully selected sample of 12 early childhood inclusive teachers teaching inclusive classrooms in Lahore. Data were analyzed using qualitative content analysis. The findings suggests that teachers mostly use teacher mediated strategy believing that the most beneficial strategy than the other two in enhancing the students' learning experiences. This study is an addition in existing literature as well as it will be beneficial in developing guidelines for education department and teachers, especially for highlighting teachers' perspectives about management of inclusive classroom and for improving strategies of early childhood teachers.

Keywords: *inclusive education, teachers perspective, early childhood, managing inclusive classroom.*

14. Amjad, H., Iqbal, J., & **Muhammad, Y.** (2019). *A Phenomenographic Study of Secondary School Head Teachers' Conceptions of their Leadership Styles' Links with Students' Academic Achievement.* Paper presented at the 7th International Conference on Research in Education, ICORE 2019, Institute of Education and Research,

University of the Punjab, Lahore. http://icore-ier.com/img/Abstract-Book-ICORE-19.pdf. **(Yaar Muhammad (Education/SSSH)**

Abstract: Head teachers' leadership styles influence students' academic achievements. Therefore, Head teachers must keep in view school and classroom environment, staff condition and students' academic skills in choosing their leadership style. Purpose of this study was to develop an understanding of conceptions of Head teachers towards a relationship between their leadership styles and students' academic achievements at secondary level. Three leadership styles studied in this research were Autocratic, Democratic and Laissez-faire. It was a Phenomenographic qualitative research study and data were gathered through semi-structured interviews. Criterion purposive sampling technique was used to select 12 participants (6 males and 6 females) from 12 schools of District Bhimber (Azad Kashmir).Self- constructed 'Interview guide for Head teachers' consisting of 20 open-ended questions was the research instrument used to collect data from research participants. Most of the Head teachers held the conception that use of multiple leadership styles instead of single leadership style is more effective to improve teachers' performance and students' academic achievements. Moreover, these Head teachers were keen to improve academic achievements of the students by using different leadership styles.Data obtained through interviews clearly show that most of Head teachers prefer democratic leadership style instead of Autocratic and Laissez-faire leadership style to use.However, sometimes Head teachers choose other leadership styles in order to improve academic achievement of the students.

Keywords: *phenomenographic study, secondary school, academic achievement, leadership styles, conceptions.*

15. Amjad, H., Shah, A. H., & **Muhammad, Y.** (2019). *Parental Involvement and Students' Academic Achievements: A Case Study Comparing Public and Private Elementary Schools.* Paper presented at the 7th International Conference on Research in Education, ICORE 2019, Institute of Education and Research, University of the Punjab, Lahore. http://icore-ier.com/img/Abstract-Book-ICORE-19.pdf. **(Yaar Muhammad (Education/SSSH)**

Abstract: This qualitative research study compared the role of parental involvement in academic achievement of students in public and private elementary schools. The aim of this research study was to explore perspectives of teachers and parents in order to gain understanding about influence of parental involvement on academic achievements of students. Case study methodology informed by basic interpretive research underpinning was used to conduct this study. For this purpose, two public and private elementary schools in district Gujrat were purposively selected as research sites for this research. In addition, four elementary teachers from each school as well as seven parents of students from each school were purposively selected. Thus there were eight teachers and fourteen parents participants in this study. Two different semi structured interviews were prepared for teachers and parents as instruments of study and were validated using experts' opinion. The data obtained from these interviews were recorded and analyzed. Findings of the perspectives of teachers and parents indicated that in all dimensions (parenting, communicating, volunteering and learning at home) the parents of private school students were more involved than the parents of public school students. Furthermore, the private schools had better system of communication, parents-teachers meetings and involvement of parents. It was recommended that public school parents should ensure their communication with class teachers and school management in order to enhance the academic achievement of their children.

Keywords: *case study, perspectives, comparison, parental involvement, academic achievement.*

16. Zafar, A., Zaka, S., & **Muhammad, Y.** (2019). *A Qualitative Case Study of the Research Supervision Practices at a Public University.* Paper presented at the 7th International Conference on Research in Education, ICORE

2019, Institute of Education and Research, University of the Punjab, Lahore. http://icore-ier.com/img/Abstract-Book-ICORE-19.pdf. **(Yaar Muhammad (Education/SSSH)**

Abstract: The purpose of this qualitative case study was to explore pedagogical practices of research supervisors for providing supervisory support to research students. The study was delimited to four Social Science Departments. Through purposive sampling technique, research supervisors from the four departments were selected for the sample of the study. All supervisors of the selected departments were invited to participate in this study. Ten supervisors who showed willingness to participate in the study were selected from these four departments. Semistructured interviews were conducted to collect data from the supervisors. All audio recorded interviews were transcribed and data were analyzed through qualitative content analysis. Findings show that some of the supervisors just fulfil the only one or two approaches of supervisory support but most of these supervisors use functional approach in their supervision. These supervisors motivate their students to attend the conferences and only few supervisors neglect this. Similarly, most of the supervisors use critical thinking approach to enhance the thinking ability of their students but few of the supervisors do not focus on it. Majority of the supervisors wants to make their students independent scholars. The findings can be helpful for developing supervisory support mechanism for research students in universities.

Keywords: *research supervision, a qualitative case study, practices, public university, lee's framework.*

17. **Arif, K., & Masood, S.** (2019). *Study of Problem Faced by Prospective Teacher during Teaching Practicum in Pakistan.* Paper presented at the 7th International Conference on Research in Education, ICORE 2019, Institute of Education and Research, University of the Punjab, Lahore. http://icore-ier.com/img/Abstract-Book-ICORE-19.pdf. **(Khadija Arif, Sajid Masood (Education/SSSH)**

Abstract: The research was conducted to know the problems faced by prospective teacher during teaching practicum in Pakistan. This was a quantitative study and survey was used to collect data from 400 prospective teachers enrolled in different teacher education programs of a large public university of Lahore. The researchers developed the instrument with the help of literature review and pilot tested prior to data collection. The reliability of the instrument was 0.97. Descriptive (Mean and Standard deviation) and inferential statistics (t-test and ANOVA) were used to determine the problems faced by prospective teacher during their practicum. The data indicated that teachers faced problems from cooperating teachers and schools as they did not facilitate them during the teaching practice. Furthermore, transportation was emerged as another concern of most of the teachers they have to commute by their own. Quality of supervision and feedback during the practicum were also rated as problematic by the respondents. The research has several implications both for teacher training institute and cooperating schools.

Keywords: *teaching practicum, prospective teachers, problems, supervision.*

18. **Iqbal, S.,** (2019). *An Evaluation of M.Phil. Educational Leadership and Management Program at UMT Lahore: A Case Study.* Paper presented at the 7th International Conference on Research in Education, ICORE 2019, Institute of Education and Research, University of the Punjab, Lahore. http://icore-ier.com/img/Abstract-Book-ICORE-19.pdf. **(Safia Iqbal (Education/SSSH)**

Abstract: The purpose of the current case study was to evaluate the effectiveness of M.Phil. in Educational Leadership and Management program at the University of Management and Technology, Lahore. The study tried to evaluate the satisfaction of the teachers and the students regarding M.Phil-ELM program using CIPP Model. It also focused on to provide some suggestions regarding quality enhancement and for the sustainability of the program. Interpretive qualitative paradigm was adopted, case study was the design, and mixed methods was the approach of this study. The population of the study was students studying from Fall-2015 to Spring-2017 in M.Phil-ELM program and teachers teaching in this program at UMT. Purposive,

criterion based sampling technique was used to select students and teachers, only those teachers were selected who had taught more than two courses since the beginning of M.Phil.-ELM program to the enrolled students. Document analysis, interview protocol and survey questionnaire were the major tools to obtain required data. The study found that M.Phil.-ELM program was meeting its desired objectives. Most of the teachers and students were satisfied with teaching courses. The study recommended that proactive steps should be taken for research culture and quality of teaching and learning should not be compromised.

Keywords: *CIPP model, higher education, program evaluation, quality assurance, quality teaching and learning.*

19. **Saleem, A., Muhammad, Y., & Masood, S.** (2019). *Self-Created Challenges of Novice Public-School Teachers in Managing Classroom.* Paper presented at the 7th International Conference on Research in Education, ICORE 2019, Institute of Education and Research, University of the Punjab, Lahore. http://icore-ier.com/img/Abstract-Book-ICORE-19.pdf. **(Ayesha Saleem, Yaar Muhammad, Sajid Masood (Education/SSSH)**

Abstract: Novice teachers are those who have teacher education but they are new in teaching profession. This study was designed to develop an understanding about the experiences of novice publicschool teachers regarding teachers self-created challenges in classroom management. This study explored the variety of self-created challenges that teachers create for themselves through their behaviour and action in managing classroom. This study used qualitative research design. Purposive sampling technique was used to select the participants. The data were collected from twenty novice elementary public-school teachers of Lahore who had less than three years of experience. Qualitative content analysis of the interview data revealed that the teachers were aware of the fact that many classroom management challenges were created by their own action and behaviours. They were also aware of role of consistent anger and humiliating language of teacher in creating challenges for teachers. Moreover, they believe that nonseriousness towards teaching and snubbing certain students create challenges for teacher themselves. Majority of teachers reported that they do not create any challenge in their class. However, few believed that they sometimes created challenges for themselves due to high tendency of anger in their class. This study recommends in service professional development of novice teachers as well as development of support mechanism f or novice teacher within schools for ensuring effective teaching-learning environments in classrooms.

Keywords: *novice teachers, elementary schools and self-created challenges, qualitative study.*

20. **Anwar, S., & Muhammad, Y.** (2019). *Using e-Assessment for assessing students Learning in Higher Education Institutions: University Teachers' Perceptions.* Paper presented at the 7th International Conference on Research in Education, ICORE 2019, Institute of Education and Research, University of the Punjab, Lahore. http://icore-ier.com/img/Abstract-Book-ICORE-19.pdf. **(Sameen Anwar, Yaar Muhammad (Education/SSSH)**

Abstract: Although e-assessment has been identified as the most suitable practice for teaching assessing students' learning in higher education settings, it requires proper planning, patience and foresight to design e-assessment programs. The effectiveness of e-assessment depends upon the administrative support to the teachers through technological readiness, which in return assists them to create authentic e-assessments. This qualitative research study explored university teachers' perceptions of the different methods used for e-assessment of students and interpreted the teachers' perceptions on the effectiveness of e-assessment in evaluating students' performance. Basic qualitative research design was used with the sample size of 10 university teachers from a higher education institution in Lahore. Semi-structured interviews were conducted with the selected teachers. Interview data were analyzed using qualitative content analysis. Findings revealed that the positive interests of teachers in e-assessment but with the minimal managerial support, the teachers are unable to use e-assessment tools. Teachers face adverse challenges while using and designing e-

assessment through applying valuable strategies. Furthermore, teachers are not encouraged to take initiatives for including e-assessment to enhance students learning processes and environment. Some suggestions to promote the use of eassessment are provided such as to provide teachers with hands on experience though ICT professional training and to gain mastery over specific softwares that enable the use eassessment. Moreover, the higher education management personnel should assist in reducing and preventing teachers' fear of change in using e-assessment through creating awareness on the efficiency and affectivity of using e-assessment.

Keywords: *E-assessment, challenges, effectiveness, HEI, teachers' perceptions.*

21. Omar, I., & **Arif, S.** (2019). *Epistemological Access to Higher Education: Comparison of Public and Private Universities in Pakistan.* Paper presented at the 7th International Conference on Research in Education, ICORE 2019, Institute of Education and Research, University of the Punjab, Lahore. http://icore-ier.com/img/Abstract-Book-ICORE-19.pdf. **(Seema Arif (Education/SSSH)**

Abstract: A correlational research was designed to investigate the relationship of 3 factors of epistemological access, organizational factors, pedagogical factors and personal factors, and student success as perceived by undergraduate students of eight universities (4 public & 4 private). The aim of this article is to find the difference between the perceptions of students of public and private universities regarding these 3 factors and their 8 sub-factors (personal competency, participation in university activities, personal willingness and personal efforts for improvement, university efforts to assure equity and quality, teacher efforts for pedagogical access and student success). Multistage sampling technique was used to select the sample for the study. Ultimately the sample of study constituted 1600 under-graduate students of 6thsemester from two faculties (Information and Technology, and Business School) of 8 universities (4private and 4 public) situated in the province of Punjab and Islamabad (Capital Territory) in Pakistan. The data was collected through a self constructed questionnaire comprising 97 items during the academic session 'Fall 2018-2019'. Data was treated statistically, after confirmatory factor analysis, One way ANOVA was conducted to find the difference between perceptions of students of Public and private universities across 8 factors stated above. The results show that significant difference existed between perceptions regarding provision of epistemological access among five out of eight factors. In three cases the perceptions of private students is better than the students of public universities (personal competency, participation in university activities and personal willingness for improvement), whereas, the public university students' perception is better in personal efforts for improvement. No significant difference was found between students of public & private universities regarding university efforts for quality, teacher efforts for pedagogical access, and student success.

Keywords: *epistemological access, service quality, pedagogical access, management effort, personal effort, student satisfaction.*

22. **Awan, M. M. W., Waheed, M. & Azhar, M.** (2019). *Investigating the Constructs of a Quality Classroom: Pakistan's Higher Education Teachers' Understanding of Classroom Management.* Paper presented at the 7th International Conference on Research in Education, ICORE 2019, Institute of Education and Research, University of the Punjab, Lahore. http://icore-ier.com/img/Abstract-Book-ICORE-19.pdf. **(Malik Muhammad Wali Awan, Maira Waheed, Maniyal Azhar (Education/SSSH)**

Abstract: Currently the world is moving towards the ultimate standard of information and knowledge sharing. The debate of quality education is quite pertinent in today's times. The question in this era is raised regarding how well one has the knowledge, in other words, how clear is the understanding of key concepts. The role of the teachers is nonetheless quite crucial in the world of today. Educators are working as a resource person, the purpose of educators teaching is to provide information, remove student's ambiguity

and ensure an effective and full clarity of the students' concepts. Managing the classroom is an art. The emphasis is on standards and strict monitoring with auditing in the form of evaluations is another component of determining the overall outlook of a classroom. The quest for a quality classroom is incomplete without taking in the perceptions of the teachers, who are the key players in the knowledge dissemination process. It is important for a teacher to understand the structure of a quality classroom and its efficient yet effective management. The quest of what makes a quality classroom lead towards this research. The main focus of the study was on the teacher's perception of quality classroom management and the techniques used by educators in the creation of such a learning environment. The research was based on the qualitative methodology. Data was collected in the form of interviews. The target population were the higher education institutions (HEIs) of Pakistan. Four of the premier private universities were selected and the study was delimited to Lahore, Pakistan. The participants were experienced and seasoned teachers. The faculty members and associate teachers comprised of the sample. The semi-structured interview guide was prepared with thematic domains. Convenient random sampling technique was used for assembling the information. The data was collected by interviewing teachers of higher education institutions of Pakistan. The data was analysed thematically by coding the contented yielded. The findings provide instructors with strategies to actually create a quality classroom and remove student's ambiguity by managing.

Keywords: *quality education, classroom, management, teachers, perceptions, pedagogy.*

23. **Yousaf, M. I., & Shah, M.** (2019). *Effect of School Type on Classroom Management in Secondary Schools of Lahore.* Paper presented at the 7th International Conference on Research in Education, ICORE 2019, Institute of Education and Research, University of the Punjab, Lahore. http://icore-ier.com/img/Abstract-Book-ICORE-19.pdf. **(Muhammad Imran Yousaf, Madiha Shah (Education/SSSH)**

Abstract: Classrooms are the places where the diversity of students demands individualization with the best understanding of content strategies (Adelman, & Taylor, 2005). The purpose of this study was to identify the classroom management strategies used by secondary school teachers in Lahore, Pakistan. It further determined the effect of school type (single-gender boys-only, single-gender girls-only, and mixed-gender schools) on classroom management. The study was quantitative in nature where a sample of 206 secondary school teachers was surveyed. Classroom management was measured by using the Behavioral and Instructional Management Scale (BIMS) by Martin and Sass (2010). Data were analyzed using descriptive statistics (means and standard deviation), whereas Multivariate analysis of variance (MANOVA) was used for inferential statistics. Classroom management strategies used by secondary schools teachers were found to be significantly different across the three school types. Recommendations were given to teachers and school administration to improve classroom management.

Keywords: *classroom management, single-gender schools, mixed-gender schools, secondary.*

24. **Nasreen, S., & Shah, M.** (2019). *Differences in Teacher motivation based on Gender, Age, Academic Qualification and Professional Experience in Private Secondary Schools of Lahore, Pakistan.* Paper presented at the 7th International Conference on Research in Education, ICORE 2019, Institute of Education and Research, University of the Punjab, Lahore. http://icore-ier.com/img/Abstract-Book-ICORE-19.pdf. **(Shahida Nasreen, Madiha Shah (Education/SSSH)**

Abstract: Teacher motivation has been directly linked with teacher job performance (Inayatullah, & Jehangi, 2013, Akongo, 2015), classroom effectiveness (Carson, & Chase, 2009), and student learning outcomes (Bennell, & Akyeampong, 2007, Guajardo, 2011). It is a stimulus that decides up to what extent a teacher can engage oneself to teaching activities and teaching profession (Sinclair, 2008). The purpose of the current study was to assess the level of teacher motivation as experienced by the private secondary school teachers of Lahore, Pakistan. The study was further intended to determine the difference in teacher motivation based

on selected demographics such as gender, age, academic qualification, and professional experience. Extrinsic and Intrinsic Motivation Scale (WEIMS) was administered to a sample of 530 teachers in 24 private secondary schools of Lahore using stratified random sampling. The items in this scale are clustered in six sub-scales: (i) Intrinsic Motivation, (ii) Integrated Regulation, (iii) Identified Regulation, (iv) Introjected Regulation (v) External Regulation, and (vi) Amotivation. Descriptive statistics using mean and standard deviation while t-test, One-way ANOVA, and Post Hoc Tests were applied as inferential statistics. The results indicated that the respondent teachers had higher intrinsic motivation as compared to extrinsic motivation. No significant differences were found between male and female teachers and among teachers grouped on the basis of age and academic qualification. However, significant differences were found among teachers with different professional experience.

Keywords: *teacher motivation, private secondary schools, demographic variables awareness campaigns.*

25. **Anees, F., & Ishrat, G.** (2019). *Parental perceptions about Vocational Training for their students with Hearing Impairment.* Paper presented at the 7th International Conference on Research in Education, ICORE 2019, Institute of Education and Research, University of the Punjab, Lahore. http://icore-ier.com/img/Abstract-Book-ICORE-19.pdf. **(Faisal Anis, Ghazala Ishrat (Education/SSSH)**

Abstract: This research aimed to explore the perception of parents of students with hearing impairment about vocational training for their children. Vocational training and skills are needed for a particular job. There are limited opportunities for the students with hearing impairment after secondary education and they have to face many problems like unemployment and underemployment in starting of professional career. Parents don't have exact idea about the market demands for them. So it is very important to know about their perception regarding future concerns of their children. In this descriptive research, a self-developed questionnaire was used by survey method to assess their perception. Population was the parents of the deaf students. Convenient sampling was used to collect the data from the parents who were about to decide about the future of their deaf children at secondary level. Data were collected from 209 parents from colleges of all over Punjab and analysis was done by descriptive and inferential analysis. Parents response was positive towards Vocational Training of their children for the better social and economic adjustments. This research highlighted a new direction for arranging vocational and skill-oriented programs for them and such initiatives will encourage them to live an independent life.

Keywords: *vocational training, career education, unemployment, underemployment.*

26. **Qurat ul Ain** (2019). *Instructional Strategies used in Inclusive Education at University Level.* Paper presented at the 7th International Conference on Research in Education, ICORE 2019, Institute of Education and Research, University of the Punjab, Lahore. http://icore-ier.com/img/Abstract-Book-ICORE-19.pdf. **(Qurat ul Ain (Education/SSSH)**

Abstract: The purpose of the research was to identify effective instructional strategies for students with disabilities in inclusive education system at university level, to find out perception of teachers about instructional strategies which commonly used at university level. Questionnaire was developed for teachers of universities. Questionnaire was validated from experts of the field and pilot tested and their reliabilities were found as 0. 93%. Further, these questionnaires were tested on 153 teachers of different universities of Lahore city. Convenient sampling technique was used for data collection. The study is descriptive in nature. Further it is survey research. Both descriptive and inferential statistical techniques were applied to analyse the collected data. Average mean value of each factor was calculated and on the basis of this average mean value, the factor were rank ordered. The study concluded that the , interactive instructions(cooperative learning, brainstorming, peer-tutoring) is the most effective instructional strategies for the student with disabilities, student with disabilities can learn effectively through these methods and can develop better

understanding through these instructional techniques at university level. Direct instructions (lecture method, scaffolding, pre- teaching) also a useful instructional techniques for the student with disabilities according to the university teachers. Student with disabilities can covered a large amount of content through these instructional methods at university level, while experiential instructional methods (observations, conducting experiments, field work, and field trip) are difficult for the student with disabilities. They feel difficulty in these instructional methods.

Keywords: *inclusive education, instructional strategies, school level.*

27. Shoaib, A**., Akhtar, M.,** Hashmi, A. (2019). *Students' Epistemological Beliefs and its Association with their Academic Achievements at Secondary Level.* Paper presented at the 7th International Conference on Research in Education, ICORE 2019, Institute of Education and Research, University of the Punjab, Lahore. http://icore-ier.com/img/Abstract-Book-ICORE-19.pdf. **(Mumtaz Akhtar (Education/SSSH)**

    Abstract: The purpose of this study was to examine the relationship between students' epistemological beliefs regarding Mathematics curriculum with their academic achievement at the secondary level. Two-stage stratified random sampling was used to select 600 students from 20 public secondary schools. The Mathematics inventory (Grouws, 1994) was adapted to identify the students' epistemological beliefs regarding Mathematics curriculum. In data analysis, independent samples t-test and Pearson Product-Moment Correlation were applied. The findings showed that there was a significant difference among students' scores in epistemological beliefs regarding Mathematics curriculum and positive relationship between students' epistemological beliefs regarding Mathematics curriculum and their academic achievement at the secondary level. Recommendations for mathematics teachers included the assessment and development of students' mathematical epistemological beliefs for tasks based on assessments of students' cognitive capacity.

    Keywords: *Academic achievements, epistemological beliefs, mathematics.*

28. Bukhari, S., & **Muhammad, Y.** (2019). *Motivation of students with hearing impairment towards academic achievement at university level: A qualitative case study*. Paper presented at the 7th International Conference on Education, University of Education, Lahore. **(Yaar Muhammad (Education/SSSH)**

    Abstract: Not available.

    Keywords: *not available.*

29. Ammar, N., Alvi, I., Kalsoom, S., & **Muhammad, Y.** (2019). *Framing school philosophies: An analysis of elite private schools' websites*. Paper presented at the 7th International Conference on Education, University of Education, Lahore. **(Yaar Muhammad (Education/SSSH)**

    Abstract: Not available.

    Keywords: *not available.*

30. **Awan, M. M. W., Azhar, M., Ammar, M., Waheed, M. & Muhammad, Y.** (2019). *Understanding linkages between classroom observation feedback and primary teacher's pedagogical skills: An analysis of teacher's perceptions*. Paper presented at the 10th Post Graduate Students' Conference, Institute of Education and Research University of the Punjab, Quaid-e-Azam Campus, Lahore- Pakistan. **(Malik Muhammad Wali Awan, Maniyal Azhar, Mahwish Ammar, Maira Waheed, Yaar Muhammad (Education/SSSH)**

    Abstract: The idea of quality teaching is incomplete without classroom observations. Teachers perceive the phenomenon as quite integral yet excruciating at times. The unfamiliarity with the format, framework and duration makes many educators uneasy to undergo this herculean task. The study was intended to understand the linkages between the classroom observation feedback and the pedagogical skills of teachers.

The theoretical framework suggested possible relationships of classroom observations with teacher's perceptions, sentiments, readiness for action and behaviour. The focus was on the perceptions of the teachers with respect to classroom observations. The purpose of the study was to explore the linkages between classroom observation feedback and teachers' pedagogical skills. The research study was qualitative in nature using interviews design with semi-structured questions based on the theoretical framework. Purposive sampling technique was used for data collection purposes and a private school in Lahore was selected as a research site. Four teachers were interviewed all with teaching experience of minimum two years and above. The analysis was focused to assess the contents of the classroom observation feedbacks and teacher's respective responses based on their insights. Emergent themes based on the thematic analysis showed that the classroom observations affect the teachers to a larger extent with respect to their perceptions, sentiments, readiness of action and behaviour. Teacher's perceptions regarding the classroom observations were found to be positive. However, the sentiments of the teachers get affected by the classroom observers' lack of proficiency. The results implicated that proper training of the teachers and observers must be conducted prior to the classroom observations. The findings of the study provided a perspective for educators and the management to rethink classroom observation in a more constructive manner.

Keywords: *quality teaching, classroom observations, teachers, perceptions, pedagogical skills, feedback, learning.*

31. **Habib, A., Haq, M. S., Imran, A., Kazmi, S. & Muhammad, Y.** (2019). *Understanding teachers' practices for creating effective competency based ECE classroom: A case study*. Paper presented at the 10th Post Graduate Students' Conference, Institute of Education and Research University of the Punjab, Quaid-e-Azam Campus, Lahore- Pakistan. **(Asim Habib Butt, Muhammad Shujaul Haq, Azka Imran, Sobia Kazmi, Yaar Muhammad (Education/SSSH)**

Abstract: Every child has the right to be nurtured to the fullest potential to transform him/her into a responsible, creative, collaborative and productive global citizen of the society. Competency based learning is a major shift, by making learning effective, meaningful, stimulating and joyful for the child. National Curriculum for Early Childhood Education 2017 not only outlines the competencies required at ECE level for the holistic development of the child but also provides the guidelines for practitioners to achieve the competencies. This case study research was designed to understand the teachers' practices for creating effective competency based ECE classrooms. It explored the awareness and the practices involving curriculum planning, teaching methodologies, conducive learning environment, differentiated learning and assessment for creating effective competency based ECE classrooms. Purposive sample of 4 well reputed premier schools' managers were interviewed and their documents were reviewed to gather information about their best practices. Data were analyzed thematically around 5 themes and several assertions were developed. It was found that though managers were unaware about national curriculum guidelines but holistic development of students and competency based learning were reflected through their effective curriculum planning, teaching methodologies, conducive learning environment, differentiated learning and assessment strategies. Such best practices may be a helpful toolbox for other public and private schools to re-think their systems.

Keywords: *ECE classroom, competency practices, national curriculum of ECE.*

32. **Masood, S., Muhammad, Y., & Anis, F.** (2019). *Perceptions of students about research at graduate level in universities of Lahore*. Paper presented at the National Conference-Cum Symposium on Research in Pakistan Universities: Standards and Practices, Virtual University, Lahore. **(Sajid Masood, Yaar Muhammad, Faisal Anis (Education/SSSH)**

Abstract: Research courses are integral part of scheme of studies at graduate level.Students usually consider research courses very challenging and associate feelings of discomfort, anxiety and joy with research course work particularly quantitative research methods. In current scenario when more focus is on developing research culture in universities and academia the importance of research courses is further highlighted. Keeping this background and personal experiences of the researchers in mind the current study was designed to investigate the perceptions of students enrolled in graduate programs towards research. Population of the study was students enrolled in MPhil programs of one public and one private university of Lahore. The researchers used the scale developed by the Papanastasiou (2005) to collect data from the sample. Sample comprised of 78 male and 259 female students. 53 students were from public university whereas 234 were from private university. About 208 students were enrolled in first semester and rests were in 2nd to 4th semester of their studies. Five hundred questionnaires were distributed among students enrolled in graduate programs of two universities. 350 questionnaires were received back and 337 were used for data analysis. The reliability of the composite tool was .869 and the reliability of its five sub-scales were, research usefulness .766, research anxiety, .809, positive attitude .842, relevance to life, .577 and difficulty of research, .560 respectively. Data was analyzed using both descriptive and inferential statistics. Comparison of sample means indicated that most of the participants are comfortable with research course and did not feel discomfort with it. They consider research useful for their career and found it valuable in their profession. Mean score of male students was high as compared to female students on sub-scale "life relevancy" whereas no significant difference was identified in case of other sub-scales. Age of the participants was associated with their attitudes towards research as significant differences were identified in case of sub-scales 1, 3, and 5. Participants belonged to public and private universities having similar attitudes toward research. Some of the results are in line with findings of similar research conducted in local context.
Keywords: *perceptions, attitudes, anxiety, joy, research course.*

33. **Muhammad, Y.,** & Islam, M. u. (2019). *Understanding social science research students' perspectives on supervisory support at their university: A framework analysis*. Paper presented at the National Conference-Cum Symposium on Research in Pakistan Universities: Standards and Practices, Virtual University, Lahore. **(Yaar Muhammad (Education/SSSH)**

Abstract: In recent decade, the Higher Education Commission, Pakistan has been striving hard to promote a world-class research culture in Pakistani universities, especially in the area of Social Sciences. Coupled with other factors, this has led to the massive influx of research students in universities having diversity of research interests. The lived experiences of social science research students in this situation at one relatively new public university was the focus of this study. The aim of this project was to investigate the perspectives of the social science research students about their research experiences with respect to the supervisory support available to them. Qualitative case study research design was used in this study. A self-constructed interview guide was developed based on the published research in this area, which helped in understanding what meanings of the supervision are constructed by the research students. Data were collected from twenty purposefully selected participants from social science departments. Successful research supervision framework (Lee, 2011) helped in conducting framework analysis of interview data. Analysis revealed that most of the supervisors' practices pay unequal emphasize on all five recommended approaches of the supervisory support as espoused in Lee' (2008) successful research supervision framework. Moreover, most of these supervisors use functional approach in their supervision and this is the most common approach used by the supervisors. Some of the supervisors just fulfil only one or two approaches of supervisory support. Other approaches to supervision such as enculturation, critical thinking, emancipation and relationship development are mostly neglected. Therefore, it is recommended that supervisors should be informed about

the five conceptions of successful supervision through professional development workshops so that Social Science research students' lived experience with respect to supervision can be improved.
Keywords: *not available.*

34. Mumtaz, Z., & **Muhammad, Y.** (2019). *Teachers' practices to develop reading skills of deaf & hard of hearing students at special elementary school in Gujranwala*. Paper presented at the National Postgradute Research Conference in Education, University of Management and Technology, Lahore. **(Yaar Muhammad (Education/SSSH)**
Abstract: Not available.
Keywords: *not available.*

35. **Naseer, H., Arshad, N., Sajid, R., & Muhammad, Y.** (2019). *Cultivating moral values among college students of twenty first century: Teachers' perspectives*. Paper presented at the 10th Post Graduate Students' Conference, Institute of Education and Research University of the Punjab, Quaid-e-Azam Campus, Lahore- Pakistan. **(Hamna Naseer, Naeem Arshad, Romaisha Sajid, Asmat Kanwal, Yaar Muhammad (Education/SSSH)**
Abstract: Being educated is not just about getting a piece of paper for mastering a subject or getting knowledge. Rather along with that it is about grooming, character building, moral development and learning life skills. And teacher is the main source person who plays a vital role in building students' character. The purpose of this study was to explore teachers' perspective about the need of cultivating moral value among college students, their lived experiences in doing so and the challenges faced by them in the context of twenty first century students. For this, researchers on the basis of availability and purposive sampling technique recruited four male Islamic Studies college teachers in Lahore. In depth and detailed interviews were conducted resulting in collection of rich data which was then analyzed using phenomenological method in order to develop patterns and themes and extract essence of all the lived experiences in order to understand perspectives of teachers regarding the core phenomenon. Analysis revealed that college teachers' see an immense need of cultivating moral values, especially among college boys, being more reluctant to ethical development due to social media challenges of this century. Moreover, teacher's lived experience enlisted three major moral values to be inculcated for developing distinctive moral character, that is, truthfulness, respect and modesty (*Hayah*). However, this study highlight the need of a combining teacher's own moral values, parent's awareness and student's willingness for effective nurturing of moral character.
Keywords: *moral values, college students, twenty first century, teacher's perspectives.*

36. **Naveed, H., Azmat, M., Sultana, K., Aslam, A., Hafeez, A., & Muhammad, Y.** (2019). *Motivating secondary school students for learning science: A qualitative analysis of teachers' perspective*. Paper presented at the 10th Post Graduate Students' Conference, Institute of Education and Research University of the Punjab, Quaid-e-Azam Campus, Lahore- Pakistan. **(Hamna Naveed, Maha Azmat, Khadija Sultana, Afza Aslam, Amna Hafeez, Yaar Muhammad (Education/SSSH)**
Abstract: Motivation is a force that drives the learner to be successful. It is a process through which people are induced, energized and inspired to work willingly with enthusiasm to achieve the desired goal. Motivating students to learn science is very important as it enables the learner to accomplish their academic task and stimulate their interest in science subject. The main purpose of this study was to explore the methods and strategies used by secondary school science teachers to motivate their students to make the learning of science more enhanced and long lasting for them. This study is qualitative in nature and purposeful sampling technique was used in the research. Self-made semi-structured interview guide having five different dimensions was used to collect the data from four secondary school science teachers from Lahore city.

Thematic analysis of data revealed that conducting the science exhibitions, giving rewards to the students and giving positive feed back on the students work encourages them to strive for better. They teachers use demonstration and activity-based methods to encourage the learners for class participation.
Keywords: *student motivation, learning science, science teachers, secondary school.*

37. Shahzad, M., & **Muhammad, Y.** (2019). *Teachers' practices to develop reading skills of deaf & hard of hearing students at special elementary school in Gujranwala*. Paper presented at the National Postgradute Research Conference in Education, University of Management and Technology, Lahore. **(Yaar Muhammad (Education/SSSH)**
Abstract: Not available.
Keywords: *not available.*

38. **Siddiqui, M., Fatima, N., Yahya, A., Arif, M., & Muhammad, Y.** (2019). *Maintaining discipline in the presence of no-corporal punishment law in private primary schools of lahore: An analysis of teachers' perspective*. Paper presented at the 10th Post Graduate Students' Conference, Institute of Education and Research University of the Punjab, Quaid-e-Azam Campus, Lahore- Pakistan. **(Malahat Fuad Siddiqui, Nosheen Fatima, Aseela Yahya, Maliha Arif, Yaar Muhammad (Education/SSSH)**
Abstract: Maintaining discipline is considered one of the major teaching competencies that is thought to be affected by the absolute ban on corporal punishment. Since after the law was put into practice, most of the teachers felt helpless in classrooms. Teachers usually female and with little or no class management abilities are more vulnerable to an undisciplined classroom. This study aimed at exploring the classroom management approaches of teachers in the presence of no-corporal punishment law using qualitative case study method. The study also aimed to explore if no-corporal punishment law is challenging a teacher's authority in the classroom. Purposive sampling was used to select the participants. Data were collected from four primary school teachers of a private school in Lahore through a self-constructed semi-structured interview guide exploring three major aspects of effective classroom management. Qualitative content analysis of these three aspects showed that teachers with high professional commitment and good classroom management skills have a lower inclination towards corporal punishment in their classrooms. Moreover, the study showed that though school management is supporting teachers to devise strategies in maintaining discipline while no-corporal punishment law is present. No-corporal punishment law is somehow challenging the teacher's authority in the class room. Therefore, certain steps should be taken in creating a true understanding of corporal punishment in the society without challenging teacher's respect and authority in the classroom.
Keywords: *corporal punishment, No-corporal punishment law, classroom management strategies, teachers' competencies, effective classroom management, maintaining discipline.*

39. **Tariq, B., Dilawar, M., Ahmed, S., Yasin, S., & Muhammad, Y.** (2019). *Elderly teachers' perspectives on adopting innovative teaching methods*. Paper presented at the 10th Post Graduate Students' Conference, Institute of Education and Research University of the Punjab, Quaid-e-Azam Campus, Lahore- Pakistan. **(Bazila Tariq, Maria Dilawar, Samea Ahmed, Sidra Yasin, Yaar Muhammad (Education/SSSH)**
Abstract: In today's ever changing world, innovation is considered a key to success. Education, in this era, is all about innovation and transforming one's practice to meet the requirements of the diverse body of students. Creating a student centered classroom, providing real time learning experiences and integrating technology in teaching and learning activities are the core of today's pedagogical strategies. However, teachers' perspectives vary while adopting change. The aim of this study was to explore the perspectives of elderly teachers about adopting innovative teaching strategies. This study used qualitative phenomenological study method and criterion sampling technique was used to select a sample of four participants aged 45

years and above. Data were gathered through a self-constructed semi structured interview guide containing three dimensions. Qualitative content analysis of these three dimensions showed the presence of some cognitive, behavioral and affective resistance to change among teachers. Therefore, it is suggested that certain aspects of training and guidance need to be provided to elderly teacher in order to make the process of innovation easy to adopt.

Keywords: *teaching methods, innovation, perspectives, elderly teachers, resistance.*

40. **Nasreen, S., & Shah, M.** (2019). *Instructional SupervisoryPractices in Private Secondary Schools of Lahore, Pakistan*. Paper presented at the 7th International Conference on Education (ICE7), Lahore, Pakistan. **(Shahida Nasreen, Madiha Shah (Education/SSSH)**

Abstract: Research in the area of school leadership and management has indicated that principals in government sector in Pakistan mostly focus on administrative roles rather than be engaged in curriculum designing and instructional practices of the schools (Memon, 2003).It has been asserted that one of the main reasons of school ineffectiveness in Pakistan is unavailability of trained and qualified instructional leaders to run educational programmes (Rizvi, 2010).Research claims that supervisors in public primary schools use fault finding and authoritative approach to harass the teachers and do not believe in the concept of supervision as a process of sharing, helping, counseling, dguiding and motivating teachers to solvetheir problems related to classroom teaching (Behlol, Yousuf, Parveen, &Kayani, 2011).In 2015, after a gap of four years, Khan alsoconfirmed similar findings in Pakistani context by conducting a qualitative study. On the other hand, it was found that private schoolsare struggling to provide quality education with the help of effective monitoring and quality instructions (Iqbal, 2012).

The purpose of the study was to assess thelevel of instructional supervisory practices experienced by the teachers of private secondary schools of Lahore, Pakistan. The population of the study comprised of all private secondary school teachers of Lahore. A questionnaire originally designed by Peter Baffour- Awuah (2011) was adapted and administered to530 teachers.To analyze the collected data, a quantitative approach was employed using descriptive statistics of frequency and percentage to indicate the extent of the responses of the teachers.The descriptive analysis of the responses identified thatLeadership Skills (LS) was demonstrated by the supervisors frequently while Professional Development (PD) was practiced the least.

Keywords: *instructional supervision, instructional supervisory practices, private schools.*

41. **Masood, S.,** & Ali, H. (2019). Effect of Non-Teaching Assignments on Performance of Public School Teachers. 4th International Conference on Research and Practices in Education, 19 & 20 February, Allama Iqbal pen University, Islamabad, Pakistan. **(Sajid Masood (Education/SSSH)**

Abstract: Not available.

Keywords: *not available.*

42. **Ali, M.& Masood, S.** (2019). *Impact of Controlling Divergent Behaviors of Students on Achievement in Geography at Elementary Level.* Paper presented at 10th Post Graduate Students' Conference Institute of Education & Research, University of the Punjab Lahore, Pakistan. **(Mohammad Mohsin Ali, Sajid Masood (Education/SSSH)**

Abstract: Teaching style has a great importance in controlling the attention diversion behavior of the students which cover and focuses the areas of inappropriate behavior, on task learning time of students, minimizing external effects on learning and ultimately enhancing the achievement of the students. The purpose pf this experimental study was to investigate the impact of teaching with controlling the attention diversion behavior of students on their achievement in Geography at elementary level. The researchers have used randomized pre-test post-test control group design to conduct this experimental study. The population

of this study was grade eighth students of a very reputed school of Lahore. The sample size comprised of the two sections, for control and experimental group, out of six for which each section comprised of thirty students each. The groups were selected through randomization. Randomization took place on the basis of the prior results, of both the groups, of all the subjects. The researchers developed the pre and post test comprised of items from the content taught in both groups. Data was analyzed by applying independent sample t-test & paired sample t-test. Data analysis revealed significant differences in achievement of the students in Geography at elementary school level on the basis of teaching through controlling the attention diversion behavior of the students. Researchers have recommended that the study is calling the need to have more studies related to teaching learning process particularly classroom interaction patterns.

Keywords: *not available.*

43. **Muhammad, Y.,** Islam, M., **Masood, S., & Anis, F.,** (2019). *Improving Social Science Research Supervision: A Qualitative Analysis of Postgraduate Research Students' Perspectives.* Paper presented at National Conference-Cum-Symposium on Research in Pakistani Universities: Standards and Practices, Virtual University, Lahore. **(Yaar Muhammad, Sajid Masood, Faisal Anis (Education/SSSH)**

Abstract: Postgraduate research prepares students for research career. Supervisors' effectiveness with respect to the preparation of students for challenges of research career is important. However, previous researches have highlighted the ineffectiveness of Social Science research supervision in Pakistani context. There seems a dearth of empirical research that specifically takes input from the university students to understand the ways to improve research supervision. This study is designed to fill this gap. Improvement of research supervision in this study was focused only on six significant dimensions, that is, choosing and assigning of supervisor, supervisory meetings, publishing together, attending conferences together, supervisor feedback and nature of supervisor-supervisee relationship because a preliminary analysis of data and literature review revealed the importance of these dimensions for research students. Qualitative case study research design was used and all the research students (MPhil and PhD) of the Social Science departments at two selected public universities-one old and one relatively new-were invited to participate in interviews. However, semi-structured interviews were conducted with criterion based sample of 40 postgraduate research students. Data were analyzed thematically using Nvivo 12. Analysis revealed that research students show concern related to the way they were being supervised and they expect to be supervised quiet differently. With respect to six dimensions they provide interesting suggestions which have serious implications for supervisory practices in Pakistani universities. Quite interestingly, these suggestions are in line with the international research practices as espoused in theoretical literature. Implementation of these suggestions has the potential to improve supervisors' practices-and ultimately lived experience of postgraduate Social Science research students.

Keywords: *not available.*

44. **Arif, S.** (2019). *When nomads find their home.* In M. O. Uzun & C. Isik (Eds.). Paper presented at the Ali Efe the Nomad International Folk Culture Research Symposium (pp. 981-992). Aydın, Adnan Menderes University, Turkey.https://www.yorukalisempozyum.com/copy-of-oezet-ve-tam-metin-degerlen.**(Seema Arif (Education/SSSH)**

Abstract: The word nomad is essentially associated with freedom, freedom to move, freedom to reside and freedom to fight for one's own values and beliefs. Nomadism has been one of the constant features of human nature and culture, it is familiar to human consciousness since ages. Researchers express consensus that the nomads are the flag bearers of tradition and folk wisdom. If anyone wants to seek purity in traditional art, one should seek it in nomad cultures living closer to nature. It is not only limited to folk tales or folk music only, but history of folk wisdom is also well preserved with them in their spiritual rites and

customs. A researcher's job is not limited to description of folk art and culture exhibited by the nomads of any region, exploring meaningful purpose of life and living relevant to the continuity and sustainability of human life should also be given due importance. This research explores the evolution of nomadic traditions as practiced by Muslim Anatolia over time and its meaning and value, which is still relevant to Muslims all over the world, especially central and South Asia and to some extent Middle East. Although South Asia was a part of Anatolia but Islam had travelled to South Asia through their fighters and rulers. Not only have those pockets of culture still survived in the region, claiming similarity in life style and values. Those who have evolved from nomads to citizens still retain their desires and values expressed in connecting the two extremes of historical nomad culture, Mongol and Muslim Turk, which initiated through wars to begin with, but ultimately, grew to peaceful trade along the Silk Route. The exploratory research which seeks information from secondary data, books, scientific journals, and websites providing pictorial and media related evidence to validate the scope for social and political culture emerging through One Belt One Road Initiative.

Keywords: *media, Muslim anatolia, nomadism, one belt one road initiative. link for proceedings.*

45. **Ali, U., & Ali, A. M**. (2019). *Cultural Intelligence*. Paper presented at the 1st International Science, Education, Art & Technology Symposium Buca Faculty of Education, Dokuz Eylul University Izmir, Turkey.**(Usman Ali, Ahad Muhammad Ali (Education/SSSH)**

Abstract: Pakistan is considered a culturally diverse country, with numerous sub-cultures living under one massive umbrella. It has been observed how these cultures thrive in the age of globalization through intense socialization at a young age, young children are taught much about their culture when they are growing up. This cultural influence is then reinforced within local schools through teachers, curriculum and peer groups. It has also been documented by (Fullinwider, 1994) in 'Ethnocentrism and Education Judgment' that according to various theorist especially involved with multiculturalism education, ethnocentrism and nationalism are constructs which impede cultural pluralism and cross-cultural understanding. Both ethnocentrism and elements of nationalism have been observed within Pakistan and is gaining notoriety among the youth. The research aims at investigating whether the teachers within local schools are 'Culturally intelligent to promote harmony among the youth? Thus the preferred method of investigation for the current study will be qualitative in nature. Phenomenological Interpretation will be suited to understand the phenomena of Cultural intelligence and ethnocentrism and understand the lived experiences of the teachers and how they promote cultural harmony among the students. The chosen area of research will be District Lodhran in Punjab and the preferred means of data collection will be semi-structured interview guides accompanied by in-depth interviews by our chosen participants.

Keywords: *cultural influence, ethnocentrism and education judgment, nationalism.*

Department of Psychology

Research Articles

1. Ashraf, F., **Niazi, F.,** Masood, A., & Malik, S. (2019). Gender comparisons and prevalence of child abuse and post-traumatic stress disorder symptoms in adolescents. *Journal of the Pakistan Medical Association*, 69(3), 320-324. **(Faiza Niazi (Psychology\SSSH)** **Web of Science JCR Listed (IF: 0.642)**

Abstract: Objective: To identify the gender differences, prevalence and cross-association of abuse and post-traumatic stress disorder symptoms in school-going adolescents. Methods: The cross-sectional study was conducted in four government schools of Lahore, Pakistan, from February to June 2016, and comprised students aged 11-18 years who were selected through simple random sampling technique. The Child Abuse Scale: Adolescent Version and Hopkins Symptoms Checklist were used to measure the gender differences, prevalence and cross-association of abuse and post-traumatic stress disorder symptoms. SPSS 22 was used to analyse data. Results: There were 478 participants with a mean age of 15.18 +/- 1.45 years. Of the total,

247(52%) subjects were males and 231(48%) were females. The overall, 130(27%) male respondents reported significantly high abuse than 101(21%) female adolescents (p=0.032). However, 113(23%) females scored significantly high on physical and emotional sub-scales of abuse than 98(21%) males (p=0.031). No significant gender differences in the prevalence of sexual abuse were observed (p=0.431). On post-traumatic stress disorder symptoms, 140(29%) females demonstrated high scores than 102(21%) males (p=0.008). Association of child abuse with post-traumatic stress disorder symptoms was also significant (p=0.008) as 133(28%) subjects reporting high abuse also exhibited high symptoms of post-traumatic stress disorder. Conclusion: Significant association of abuse with post-traumatic stress disorder symptoms emphasise the need for early identification and timely management of abuse and post-traumatic stress disorder symptoms in adolescents.

Keywords: *child abuse, ptsd symptoms, adolescents.*

2. Fatima, S., & **Jibeen, T.** (2019). Interplay of Self-efficacy and Social Support in Predicting Quality of Life in Cardiovascular Patients in Pakistan. *Community Mental Health Journal,* 55(5), 855-864. doi: 10.1007/s10597-018-0361-6. **(Tahira Jibeen (Psychology\SSSH) Web of science JCR Listed (IF: 1.460)**

Abstract: The primary objective of the present study was to assess independent and interactive relations of perceived social support and self-efficacy with four quality of life (QOL) domains namely physical, psychological, social, and environmental in cardiovascular disease (CVD) patients from a South Asian region. Participants were 172 (age 22-60years) patients recruited from three major government sector hospitals from the fifth biggest city of South Asia. It was found that overall CVD patients had a better QOL in psychological and environmental domains compared to social and psychological. Furthermore, findings from hierarchical regression analyses indicated that perceived social support and self-efficacy were positively associated with the four QOL domains. Besides main effects, a synergistic interaction between social support and self-efficacy emerged indicating that perceived social support was strongly associated with physical and social QOL in CVD patients who had higher self-efficacy levels, while, perceived social support was weakly associated with the physical and social QOL in CVD patients who had lower self-efficacy levels.

Keywords: *perceived social support, self-efficacy, quality of life, cardiovascular patients.*

3. **Jibeen, T.,** Baig, M. M. Z., & Ahmad, M. M. (2019). Fear of Negative Evaluation and Communication Apprehension: The Moderating Role of Communicative Competence and Extraversion Personality Trait in Pakistani Academia. *Journal of Rational-Emotive and Cognitive-Behavior Therapy, 37*(2), 185-201. doi: 10.1007/s10942-018-0301-y. **(Tahira Jibeen (Psychology\SSSH) Web of Science JCR Listed (IF: 0.933)**

Abstract: This study examines the moderating role of communicative competence and extraversion personality traits on the relationship between fear of negative evaluation and communication apprehension in Pakistani academics teaching in their second (English) language. One hundred and twenty academics (aged 25-60) completed a demographic information sheet, the Brief Fear of Negative Evaluation Questionnaire (BFNE-11) (Leary in Pers Soc Psychol Bull 9:371-376, 1983), the Personal Report of Communication Apprehension (PRCA-24) (McCroskey in An introduction to rhetorical communication, Prentice-Hall, Englewood Cliffs, 1982), the Self-Perceived Communication Competence Scale (SPCC) (McCroskey and McCroskey in Commun Res Rep 5(2):108-113, 1988) and the Eysenck Personality Questionnaire Revised-Short Form (EPQRS-R) (1985). A sequence of moderated regression analyses showed that communicative competence significantly moderated the relationship between fear of negative evaluation and communication apprehension. The findings have implications for instructors, campus counselors and researchers and academic policy makers wishing to identify factors that may help academics cross communicative barriers, enrich the learning experience and enhance positive psychological functioning.

Keywords: *fear of negative evaluation, communication apprehension, communicative competence, extraversion, academia.*

4. Asif, A., Ayub, S., **Komal, A.,** Noor, S., & Jalal, U. (2019). Prevalence of human immunodeficiency virus and Hepatitis (B & C) among drug users in a tertiary care public hospital. Pakistan Journal of Medical Sciences, 35(2), 459-463. doi: 10.12669/pjms.35.2.500.**(Afreen Komal (Psychology\SSSH) Web of Science JCR Listed (IF: 0.834)**

Abstract: Objective: To find out the prevalence of human immunodeficiency virus (HIV) and Hepatitis (B & C) among the drug users in a tertiary care public hospital. Methods: The study was conducted at addiction ward of Mayo Hospital Lahore. A total of 453 drug users were admitted in drug addiction ward from 1st of August 2016 to 31st of July 2017. Their history was taken using self-constructed case history form and they were screened for HIV and hepatitis (B & C). Additionally three types of screening tests including Unigold, Determine and Bioline were used for HIV screening. Results: Of 402 (100%) drug users, 394 (98%) were male and 8 (2%) were female. Their mean age was 32.2 (8.8) years. Overall prevalence of HIV virus was 21.1%, Hepatitis C 34.3% and Hepatitis B 3.2% in drug users. Among HIV positive drug users, 84.7% drug users took drugs through injections as compared to 15.3% who took drugs orally. Among HCV positive drug users, 68.9% drug users took drugs through injections as compared to 31.1% oral drug users. Relapse rate of drug use among all drug users was also very high as 83.3%. Of these drug users, 47.2% had previously sought treatment while other 52.8% never sought any treatment. Family history of drug abuse indicated that 32.2% drug users had family members who were also drug users. Moreover, about 11.4% drug users had previous history of blood transfusion. Conclusion: HIV and hepatitis B & C were prevalent among drug users specially those who took drugs through injections. Relapse rate was significantly high and history of drug use in family may also predispose an individual towards becoming a drug addict.

Keywords: *prevalence, drug users, human immunodeficiency virus, HIV, hepatitis B, hepatitis C.*

5. Ashraf, F., Nusrat, A., & **Mehboob, D.** (2019). Predictive Role of Personality Characteristics in Positive Emotions and Creativity: A Study of Pakistani Nuns. *Pakistan Journal of Psychological Research, 34*(2). **(Dania Mehboob (Psychology\SSSH) SJR**

Abstract: The present study aimed at exploring the influence of personality characteristics on positive emotions and creativity in a sample of Pakistani nuns. Personality characteristics were hypothesized to have an influence on positive emotions and creativity. The study sample comprised 94 Roman Catholic nuns associated with churches, schools, and hostels in Lahore. Measures of Ten Item Personality Inventory (Gosling, Rentfrow, and Swann, 2003), Kaufman Domains of Creativity Scale (Kaufman, 2012) and Emotional Needs Scale (Culham, 2008) were used to assess personality characteristics, creativity and positive emotions, respectively. The analysis revealed that extraversion personality was the strongest predictor of creativity and positive emotions in nuns. In conclusion, personality characteristics were inferred to be an important factor for facilitating creativity and positive emotions and may well be able to support individuals during unhealthy or difficult circumstances.

Keywords: *personality characteristics, positive emotions, creativity, nuns.*

School of Professional Advancement (SPA)

School of Professional Advancement

Research Articles

1. **Mushtaq, A., Arshed, N., & Hassan, M. S.** (2019). Sources of Banking Sector Development: Case of Pakistan. *Journal of Finance and Accounting Research, 1*(2), 72-93. **(Afia Mushtaq(SPA), Noman Arshed, Muhammad Shahid Hassan (Economics/SBE) UMT Journal**

Abstract: This study intends toexamine the sources of banking sector devel-opment of Pakistan, usingcapital formation, interest rate, trade deficit, general price level, and remittances as the proposed indi-cators.There isalackof studies that investigate the impact of in-vestment and trade deficit on the

development of the banking sec-tor. The empirical data for the study is takenfrom World Develop-ment Indicators for 38 years. For reliable estimates, the ARDL cointegration technique has been used to estimate the long-runde-terminants of the development of the banking sectorand financial inclusion. Domestic credit to the private sector has been usedasaproxy for the banking sector development because of its market orientation. The results showthat an increasein the investment, imports and general price level leads to an increaseintheprovisionof domestic credit which leads to banking sector devel-opment.

Keywords: *ARDL co-integrating bounds, banking sector develop-ment, financial inclusion.*

Conference Paper

1. **Idrees, F.** (2019). *Exploring the Glass Ceiling Factors for Females in the IT Industry of Pakistan.* Paper presented at the Proceedings of the 2nd International Conference on Gender Research.**(Fatima Idrees (SPA)**

Abstract: Despite making up 48% of the population, women in Pakistan represent only 24% of the workforce. Only 3% of these form the top management according to World Bank's report of 2014. The problem studied in this paper revolves around lack of female participation in the management sector of the IT industry, less space for growth of female managers, prevalence of discriminatory practices in organizations. The research aims to explore the factors of the glass ceiling phenomenon and gender discrimination at workplaces in Pakistan. The organizations and the society as a whole is suffering from a lack of potential growth and success as females stay under-utilized as a resource despite having the required skill set and qualifications. A sample of 50 females working in the IT sector from various cities of Pakistan was collected using purposive sampling. A focus group discussion was conducted to gain insights that were used to form a questionnaire survey answered by the 50 respondents. In addition, 3 male CEOs were also interviewed for cross checking of the gathered data. Results are discussed under three categories i.e. the individual/personal, cultural and organizational issues acting as deterrents for females' professional advancement in the IT sector. The most commonly identified barrier is the mindset of the male members of the society that impedes females from progressing smoothly. Discrimination in the organization and lack of opportunities follow as the second most common. Lack of confidence and emotional stability of the female form the personal barriers. The research objective is to help diminish the problem by enumerating factors leading to less participation and issues in career progression, serve as a guide in workplaces to help reduce discrimination and help in empowerment of women and ultimately help create more opportunities for female career growth. It will also facilitate the organizations in devising relevant policies and make changes in system. Moreover the females will be assisted in identifying their shortcomings and guide them how to overcome them in order to succeed in their professional life.

Keywords: *glass ceiling, women in management, glass ceiling in Pakistan, female managers, IT female managers, women's career progression.*

2. **Saleem, I., Ambreen, S., Shahid, M., Wajid, A., & Shujja, A. H.** (2019). *Modeling GUI Widgets from Use Case Elaboration*. Paper presented at the 2019 International Conference on Innovative Computing (ICIC), University of Management and Technology C-II, Johar Town, Lahore, Pakistan.**(Imran Saleem, Shahzadi Ambreen, Mahwish Shahid, Afifa Wajid, Abdul Haseeb Shujja (SPA)**

Abstract: Machine Learning (ML) algorithms have drastically taken technology to the next advanced levels. Therefore, we have proposed a methodology using supervised machine learning algorithm for rapid Graphical User Interface (GUI) development by employing Unified Modeling Language (UML) Use Case (UC) model of Library Management System's case study. Our aim of the study is to reduce the gap between initial phases of (SDLC) for rapid development in terms of time and cost, by minimizing the development efforts, for higher stakeholder's satisfaction. In this paper, we have used extended form of use case descriptions to map and predict the most suitable User Interface (UI) element against each use case. We have categorical data

with known classes and used binary class classification technique to train our dataset. Python is used to create applied predictive models, to predict most appropriate classes against each use-case. We have applied both binary and multi class classification on our dataset. Following classifiers i.e. Naïve Bayes (NB), Decision Tree, Cross Validation (CV), Random Forest (RF) and Logistic Regression (LR) Algorithms used for binary classes to statistically analyze predicted results. We have acquired 94% accuracy, when applied NB and RF Algorithms on data, which concludes that creating UI's from UML UC model can improve efficiency in terms of time and cost.

Keywords: *user Interface (UI), use case (UC) modeling, machine learning (ML), supervised learning.*

3. **Shahid, M., Saleem, I., Wajid, A., Shujja, A. H., & Kamran ul Haq.** (2019). *A Review of Gamification for Learning Programming Fundamental* Paper presented at the 2019 International Conference on Innovative Computing (ICIC), University of Management and Technology C-II, Johar Town, Lahore, Pakistan.**(Mahwish Shahid, Imran Saleem, Afifa Wajid, Abdul Haseeb Shujja, Kamran-ul-Haq (SPA)**

Abstract: the games, nowadays, are extensively used in different fields for learning purposes. They are getting popularity progressively because of their efficacy when used in non-game context, such as in educational and business domain. Game based learning helps the instructors to teach difficult concepts of programming fundamentals to novice students, in order to keep their interest and motivation. Therefore, researchers these days seems quite interested in the field of game based learning i.e. gamification. Hence, this paper presents a review of the existing literature of serious programming games to analyze the researcher's effort in the field and intends to find the possible gaps that exist in the current gamification approaches. Initially, we considered the concepts and knowledge that most of the games have addressed so far pertaining to programming fundamentals. Then we presented important components required for the development of an interactive game by mapping it on (Mechanics, Dynamics, Aesthetics) MDA Framework. Moreover, we presented all the methods that are used for evaluating the effectiveness of games. Based on our review, we concluded our study by identifying the loopholes in the existing literature on game based learning. Furthermore, we identified several open problems in this area and their possible suggestions that will be a contributing factor for future researchers.

Keywords: *gamification, digital game-based learning (DGBL), computer programming, serious games.*

School of Health Sciences (SHS)

Department of Health Science

Research Articles

1. Afshin, A., Sur, P. J., Fay, K. A., Cornaby, L., Ferrara, G., Salama, J. S., . . . Collaborators, **Bacha, U.** (2019). Health effects of dietary risks in 195 countries, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017. *Lancet, 393*(10184), 1958-1972. doi: 10.1016/s0140-6736(19)30041-8.**(Umer Bacha (SHS) Web of Science JCR Listed (IF: 59.102)**

Abstract: Background Suboptimal diet is an important preventable risk factor for non-communicable diseases (NCDs), however, its impact on the burden of NCDs has not been systematically evaluated. This study aimed to evaluate the consumption of major foods and nutrients across 195 countries and to quantify the impact of their suboptimal intake on NCD mortality and morbidity. Methods By use of a comparative risk assessment approach, we estimated the proportion of disease-specific burden attributable to each dietary risk factor (also referred to as population attributable fraction) among adults aged 25 years or older. The main inputs to this analysis included the intake of each dietary factor, the effect size of the dietary factor on disease endpoint, and the level of intake associated with the lowest risk of mortality. Then, by use of diseasespecific population attributable fractions, mortality, and disability-adjusted life-years (DALYs), we calculated the

number of deaths and DALYs attributable to diet for each disease outcome. Findings In 2017, 11 million (95% uncertainty interval [UI] 10-12) deaths and 255 million (234-274) DALYs were attributable to dietary risk factors. High intake of sodium (3 million [1-5] deaths and 70 million [34-118] DALYs), low intake of whole grains (3 million [2-4] deaths and 82 million [59-109] DALYs), and low intake of fruits (2 million [1-4] deaths and 65 million [41-92] DALYs) were the leading dietary risk factors for deaths and DALYs globally and in many countries. Dietary data were from mixed sources and were not available for all countries, increasing the statistical uncertainty of our estimates. Interpretation This study provides a comprehensive picture of the potential impact of suboptimal diet on NCD mortality and morbidity, highlighting the need for improving diet across nations. Our findings will inform implementation of evidence-based dietary interventions and provide a platform for evaluation of their impact on human health annually.

Keywords: *not available.*

2. Imran, S., & **Tanweer, A.** (2019). Postoperative nutritional support of the patient with gut gangrenea-case report. *Journal of Health Population and Nutrition, 38*. doi: 10.1186/s41043-019-0169-1.**(Afifa Tanweer (SHS) Web of Science JCR Listed (IF: 1.828)**

   Abstract: Background: Bowel necrosis is a commonly observed condition in elderly patients with longstanding diabetes. In such condition, intestinal resection is usually performed for the removal of the gangrenous part. Post-surgical dietary management after bowel resection poses several challenges for the health care team. Case presentation: The case presented in this study is that of an elderly diabetic male who developed acute renal failure as a result of neglect in post-surgical feeding after intestinal resection. After the intervention by a trained dietitian, a transitional diet was planned and successfully executed, resulting in reversal of acute renal failure, dehydration, and post-surgical stress. Several complications including hepatic dysfunction and mouth ulcers were resolved through well-planned transitional diet. The patient was finally discharged in a stable health condition and was regularly followed up for any nutritional or medical issues. Conclusion: Neglects in nutritional care of patients can have severe implications including development of medical complications, resulting in increased length of hospital stay, augmenting the disease stress of the patient and family, and finally the preventable drainage of several human and monetary resources. Therefore, recognition of nutritional intervention as an important part of in-hospital health care may have social as well as economic impacts.

   Keywords: *mesenteric ischemia, intestinal resection, postoperative diet, nutritional care.*

3. **Tanweer, A.,** Imran, S., Kaleem, R., & Saeed, A. (2019). Determinants of the Use of Oral Rehydration Solution by Children During Diarrheal Episode. *Topics in Clinical Nutrition, 34*(1), 31-38. doi: 10.1097/tin.0000000000000160. **(Afifa Tanweer (SHS) Web of Science JCR Listed (IF: 0.241)**

   Abstract: Oral rehydration is strongly recommended for the management of childhood diarrhea. To assess factors linked to Oral Rehydration Solution usage, data for the current study were collected from a purposive sample of 322 children younger than 5 years, using an indigenously developed questionnaire. Results showed 60% oral rehydration coverage that was significantly associated with maternal characteristics: age, literacy, and employment status but not with child's gender, birth order, or parent income level. Oral Rehydration Solution and sweetened beverages consumption were negatively correlated. Promotion of oral rehydration remains an area in urgent need to target interventions for reducing the social and economic burdens of childhood diarrhea**.**

   Keywords: *child care, child health, children, dehydration, diarrhea, mortality, oral rehydration.*

4. Stanaway, J. D., Reiner, R. C., Blacker, B. F., Goldberg, E. M., Khalil, I. A., Troeger, C. E., . . . Paratyphoid, **Bacha U.** (2019). The global burden of typhoid and paratyphoid fevers: a systematic analysis for the Global Burden of

Disease Study 2017. *Lancet Infectious Diseases, 19*(4), 369-381. doi: 10.1016/s1473-3099(18)30685-6. (**Umer Bacha (SHS) Web of Science JCR Listed (IF: 27.516)**

Abstract: Background Efforts to quantify the global burden of enteric fever are valuable for understanding the health lost and the large-scale spatial distribution of the disease. We present the estimates of typhoid and paratyphoid fever burden from the Global Burden of Diseases, Injuries, and Risk Factors Study (GBD) 2017, and the approach taken to produce them. Methods For this systematic analysis we broke down the relative contributions of typhoid and paratyphoid fevers by country, year, and age, and analysed trends in incidence and mortality. We modelled the combined incidence of typhoid and paratyphoid fevers and split these total cases proportionally between typhoid and paratyphoid fevers using aetiological proportion models. We estimated deaths using vital registration data for countries with sufficiently high data completeness and using a natural history approach for other locations. We also estimated disability-adjusted life-years (DALYs) for typhoid and paratyphoid fevers. Findings Globally, 14.3 million (95% uncertainty interval [UI] 12.5-16.3) cases of typhoid and paratyphoid fevers occurred in 2017, a 44.6% (42.2-47.0) decline from 25 . 9 million (22.0-29.9) in 1990. Age-standardised incidence rates declined by 54 . 9% (53 . 4-56.5), from 439.2 (376.7-507.7) per 100 000 person-years in 1990, to 197.8 (172.0-226.2) per 100 000 person-years in 2017. In 2017, Salmonella enterica serotype Typhi caused 76.3% (71.8-80.5) of cases of enteric fever. We estimated a global case fatality of 0.95% (0.54-1.53) in 2017, with higher case fatality estimates among children and older adults, and among those living in lower-income countries. We therefore estimated 135.9 thousand (76.9-218.9) deaths from typhoid and paratyphoid fever globally in 2017, a 41.0% (33.6-48.3) decline from 230.5 thousand (131.2-372.6) in 1990. Overall, typhoid and paratyphoid fevers were responsible for 9.8 million (5.6-15.8) DALYs in 2017, down 43.0% (35.5-50.6) from 17.2 million (9.9-27.8) DALYs in 1990. Interpretation Despite notable progress, typhoid and paratyphoid fevers remain major causes of disability and death, with billions of people likely to be exposed to the pathogens. Although improvements in water and sanitation remain essential, increased vaccine use (including with typhoid conjugate vaccines that are effective in infants and young children and protective for longer periods) and improved data and surveillance to inform vaccine rollout are likely to drive the greatest improvements in the global burden of the disease.

Keywords: *not available.*

5. **Asif, M.,** Muhammad, F., & Ali, M. (2019). A comprehensive study on childhood chronic kidney disease among local population of Pakistan. *Indo American Journal of Pharmaceutical Sciences, 6*(5), 10562-10565. doi: 10.5281/zenodo.3159092.**(Muhammad Asif (SHS) Master Journal List**

Abstract: Introduction: Chronic kidney disease (CKD) is a serious, common and costly public health problem and its incidence is on the rise across the globe. Aim and objectives: The basic aim of the study is to analyse the childhood chronic kidney disease among local population of Pakistan. Methodology of the study: This cross sectional study was conducted in University of Management and Technology, School of Health Sciences Lahore during March 2018 to October 2018. The data was collected from 100 children age range for this purpose was 1 to 10 years. For this purpose we make two groups of study. One group was control group and the other group was suffering from kidney problems. For this purpose we collect the blood sample for serum analysis. Urea and Creatinine level of blood serum were also calculated by using enzymatic kits. Results: The data was collected from 100 child patients with mean age range 10.65 +/- 6]5.78 years. According to the K/DOQI scheme, CKD is characterized by stage 1 (mild disease) through stage 5 (ESRD). The inappropriate activation of this system causes hypertension, fluid retention, and inflammatory, thrombotic, and atherogenic effects that may contribute to end-organ damage in the long term. Table 01 shows the values of analysis of statin therapy in patients. It shows the comparison between two groups on the basis of functional values. Conclusion: It is concluded that children with CKD comprise a very small but important portion of the total CKD population. Whereas disorders associated with its development are well delineated, the availability

of valid and widespread information regarding the epidemiology of CKD in children requires additional efforts.

Keywords: *chronic, kidney, creatinine, patients.*

6. **Asif, M.,** Muhammad, F., Khan, M. J., & Rehan, H. (2019). Frequency of primary hyperaldosteronism in young hypertensives: a comprehensive study. *Indo American Journal of Pharmaceutical Sciences, 6*(5), 10559-10561. doi: 10.5281/zenodo.3158964.**(Muhammad Asif (SHS)** **Master Journal List**

Abstract: Introduction: Hypertension is a common disease affecting about 20% of the adult population. Although a great deal is known about the regulation of blood pressure, a specific causal abnormality can be found in only a small percentage of patients. Aims and objectives: The main objective of the study is to assess the frequency of primary hyperaldosteronism in young hypertensives. Material and methods: This cross sectional study was conducted in University of Management and Technology, School of Health Sciences Lahore during December 2017 to September 2018. The data was collected from 100 hypertensive patients. They were considered hypertensives if their diastolic blood pressure was more than 90 mm Hg and the systolic blood pressure more than 140 mm Hg on at least 3 occasions on different days and without taking any antihypertensive medication or estrogen replacement. Results: The data were collected from 100 patients. The mean age of hypertensive patients was 54.1 +/- 11.2 years and normotensive patients were 52.5 +/- 7.3. There were no significant differences in medical history, blood pressure, or measured biochemical variables between patients with a positive or negative fludrocortisone suppression test. The hypertensive patients showed higher levels of SA and SA/PRA ratio than the normotensives. The levels of urinary sodium excretion were similar in hypertensives and normotensives. Conclusion: It is concluded that the ARR could be used as a screening tool for PA in newly diagnosed patients with hypertension, although the possibility to diagnose patients can be expected to be higher in selected patient groups.

Keywords: *not available.*

7. **Tahir, H., Bacha, U.,** Iqbal, S., **Iqbal, S. S., & Tanweer, A.** (2019). Development of prebiotic galactooligosaccharide enriched buttermilk and evaluation of its storage stability: Prebiotic Galactooligosaccharide Enriched Buttermilk. *Progress in Nutrition, 21*(4), 935-942. doi: 10.23751/pn.v21i4.757. (**Hafsa Tahir, Umer Bacha, Syeda Saira Iqbal, Afifa Tanweer (SHS)** **Web of Science JCR Listed (IF: 0.265)**

Abstract: Prebiotic Galacto-oligosacchrides (GOS) is reportedly present in human milk and elicits bacterial growth i.e. beneficial bacteria in human intestines. The aim of the present study was to produce GOS through trans-galactosylation and development of GOS based buttermilk. Trans-galactosylation process was carried out in pasteurized milk (100 ºC) to produce prebiotic GOS. Yogurt was produced from GOS containing milk and then after the churning of yogurt buttermilk was produced from trans-glycosylated milk.Results showed that, enzyme concentration between 400-600µL/5ml can produce GOS in 30min and 1hr samples. Chemical analysis and sensory evaluation of plain/control and GOS containing buttermilk showed no remarkable difference. While shelf life study showed that there was no significant difference between the overall quality of buttermilk in glass and pouch packaging. Buttermilk in pouch packaging maintained its stability for 6 days without adding any kind of preservative.

Keywords: *buttermilk, galacto-oligosaccharides, prebiotic, transgalactosylation.*

8. Global Burden of Disease Cancer Collaboration (2019). Global, Regional, and National Cancer Incidence, Mortality, Years of Life Lost, Years Lived With Disability, and Disability-Adjusted Life-Years for 29 Cancer Groups, 1990 to 2017: A Systematic Analysis for the Global Burden of Disease Study. *JAMA Oncology*, *5*(12), 1749-1768. https://doi.org/10.1001/jamaoncol.2019.2996. (**Umer Bacha (SHS)** **Web of Science JCR Listed (IF: 22.416)**

Abstract: Importance: Cancer and other noncommunicable diseases (NCDs) are now widely recognized as a threat to global development. The latest United Nations high-level meeting on NCDs reaffirmed this observation and also highlighted the slow progress in meeting the 2011 Political Declaration on the Prevention and Control of Noncommunicable Diseases and the third Sustainable Development Goal. Lack of situational analyses, priority setting, and budgeting have been identified as major obstacles in achieving these goals. All of these have in common that they require information on the local cancer epidemiology. The Global Burden of Disease (GBD) study is uniquely poised to provide these crucial data.

Objective: To describe cancer burden for 29 cancer groups in 195 countries from 1990 through 2017 to provide data needed for cancer control planning.

Evidence Review: We used the GBD study estimation methods to describe cancer incidence, mortality, years lived with disability, years of life lost, and disability-adjusted life-years (DALYs). Results are presented at the national level as well as by Socio-demographic Index (SDI), a composite indicator of income, educational attainment, and total fertility rate. We also analyzed the influence of the epidemiological vs the demographic transition on cancer incidence.

Findings: In 2017, there were 24.5 million incident cancer cases worldwide (16.8 million without nonmelanoma skin cancer [NMSC]) and 9.6 million cancer deaths. The majority of cancer DALYs came from years of life lost (97%), and only 3% came from years lived with disability. The odds of developing cancer were the lowest in the low SDI quintile (1 in 7) and the highest in the high SDI quintile (1 in 2) for both sexes. In 2017, the most common incident cancers in men were NMSC (4.3 million incident cases), tracheal, bronchus, and lung (TBL) cancer (1.5 million incident cases), and prostate cancer (1.3 million incident cases). The most common causes of cancer deaths and DALYs for men were TBL cancer (1.3 million deaths and 28.4 million DALYs), liver cancer (572 000 deaths and 15.2 million DALYs), and stomach cancer (542 000 deaths and 12.2 million DALYs). For women in 2017, the most common incident cancers were NMSC (3.3 million incident cases), breast cancer (1.9 million incident cases), and colorectal cancer (819 000 incident cases). The leading causes of cancer deaths and DALYs for women were breast cancer (601 000 deaths and 17.4 million DALYs), TBL cancer (596 000 deaths and 12.6 million DALYs), and colorectal cancer (414 000 deaths and 8.3 million DALYs).

Conclusions and Relevance: The national epidemiological profiles of cancer burden in the GBD study show large heterogeneities, which are a reflection of different exposures to risk factors, economic settings, lifestyles, and access to care and screening. The GBD study can be used by policy makers and other stakeholders to develop and improve national and local cancer control in order to achieve the global targets and improve equity in cancer care.

Keywords: *not available.*

9. **Tanveer, A.** (2019). National nutrition survey of Pakistan, 2011 A critical appraisal. *Proceedings S.Z.P.G.M.I., 33*(3), 1-2. **(Afifa Tanweer (SHS)** **Not HEC Recognized**

Abstract: Not available.

Keywords: *not available.*

School of Food and Agricultural Sciences (SFAS)

Department of Food and Agricultural Science

Research Articles

1. Afreen, A., Ahmed, Z., Ahmad, H., & **Khalid, N.** (2019). Estimates and burden of foodborne pathogens in RTE beverages in relation to vending practices. *Food Quality and Safety,* 3(2), 107-115. doi: 10.1093/fqsafe/fyz007. **(Nauman Khalid (SFAS)** **Master Journal List**

Abstract: Objectives: Growing trend of street-vended food in underdeveloped countries offers low-cost food to many sections of population. Although it provides job opportunities to many urban dwellers, several health hazards are associated with this business. The present study investigates the burden of foodborne pathogens in Ready-To-Eat (RTE) beverages in relation to vending practices among street vendors of Rawalpindi City, Pakistan according to standardized methods and protocols. Materials and Methods: Six densely populated locations of Rawalpindi city were selected. Commonly consumed sugar cane juice (SCJ) and tamarind prune (dried plums) drink (TPD) (locally called as Imli Alu Bukhara sherbet) from five vendors from each location were chosen in summer season where the temperature reaches above 40 degrees C. Mean and the standard deviation were obtained by univariate and bivariate analyses. Association between the study variables was assessed through cross-tabulations, chi-square, and correlation tests. Results: All the samples were found unsatisfactory in comparison to guidelines of aerobic plate count. Total coliform was observed in 86.7 per cent of SCJ and 70.0 per cent of TPD samples. Fourteen samples of SCJ exceeded the limit of > 1100 MPN/ml value, whereas samples of TPD exceeded this limit for Escherichia coli. All of SCJ and 93.3 per cent of TPD samples depicted the presence of Salmonella aureus. Salmonella spp. were found significantly high in 73.3 per cent samples of SCJ and 23.3 per cent samples of TPD. Conclusions: The incidence of high bioloads attributes towards a potential reservoir of foodborne pathogens due to unhygienic vending practices.

Keywords: *ready-to-eat beverages, foodborne pathogens, street vendors, vending practices.*

2. Hanif, J., Khalid, N., **Khan, R. S.,** Bhatti, M. F., Hayat, M. Q., Ismail, M., . . . Janjua, H. A. (2019). Formulation of active packaging system using Artemisia scoparia for enhancing shelf life of fresh fruits. *Materials Science & Engineering C-Materials for Biological Applications, 100*, 82-93. doi: 10.1016/j.msec.2019.02.101.**(Rao Sanaullah Khan, (SFAS) Web of Science JCR Listed (IF: 4.959)**

Abstract: An improved active packaging system was developed for fresh fruits using silver nanoparticles (AgNPs) coupled with calcium alginate (Ca-ALG). For the synthesis of AgNPs aqueous, ethanol and methanol extracts of Artemisia scoparia (AS) were used. These AgNP's were characterized using UV-Vis, SEM, EDS, AFM, FTIR and gel electrophoresis. Ethanol extract of AS (ASE) produced AgNPs with smallest size in comparison to aqueous AS (ASA) and methanol extract of AS (ASM). AgNPs synthesized from ASE had a size range of 12.0-23.3 nm and were tested on Human Corneal Epithelial Cells to evaluate their cytotoxicity. At 0.05 ng/mL of AgNP's concentration, no toxic effects were observed on the evaluated cell line. Therefore, 0.05 ng/mL of AgNPs mixed with edible coating of Ca-ALG were applied on strawberries and loquats as active coating to increase their shelf life. Significant improvement was observed in the quality parameters of strawberries and loquats such as microbial analysis, acidity loss, soluble solid content loss, weight loss and quality decay. Ca-ALG coating incorporated with AgNPs enhanced the shelf life of strawberries and loquats in comparison to no treatment and simple Ca-ALG coatings. This study provides an insight to food industry to extend the shelf life of fresh fruits using AgNP's formulated coatings.

Keywords: *artemisia scoparia, active coatings, calcium alginate, silver nanoparticles, ethanolic extract, shelf life.*

3. Kashif, S., Ahmed, Z., Ahmad, H., Malik, M. K., Majeed, Z., & **Khalid, N.** (2019). Health/nutritional status of immigrant Pakistani laborers working in the Kingdom of Saudi Arabia. *Reviews on Environmental Health, 34*(2), 223-224. doi: 10.1515/reveh-2019-0018.**(Nauman Khalid (SFAS) Web of Science JCR Listed (IF: 1.616) (Letter to editor)**

Abstract: Not available.

Keywords: *Pakistan, immigrants, nutrition health, public health.*

4. **Khan, R. S., Asghar, W., Khalid, N., Nazir, W.,** Farooq, M., Ahmed, I., & Syed, Q. A. (2019). Phalsa (Grewia asiatica L) fruit berry a promising functional food ingredient: A comprehensive review. *Journal of Berry Research, 9*(2), 179-193. doi: 10.3233/jbr-180332. **(Rao Sanaullah Khan, Waqas Asghara, Nauman Khalid, Wahab Nazir (SFAS) Web of Science JCR Listed (IF: 2.379)**

Abstract: Fruit berries are one of the most effective source of bioactive food ingredients with multiple health benefits when consumed regularly. Phalsa fruit (Grewia asiatica L.) a native to the Himalayan region grows equally well in tropical areas of the world yet unexplored with regards to its immense nutritional benefits. The phalsa seed, fruit, and pulp contain numerous functional phytochemicals that can be used to treat various diseases, and have be found to be highly effective in improving respiratory and cardiac functioning. Its cultivation has been limited to subsistence cultivation and it is sold in the form of raw fruit mostly. There are certain challenges as regards to its perishable nature of the berry fruit, and the o Civil Engineering of the crop yield. Therefore, this comprehensive review is designed to highlight its economic and nutritional potential for the food and beverage industry as an effective source of bioactive functional food/beverage ingredients. Further potential area of research and developments have been identified for the subsequent authentication of health effects of phalsa berry fruit. Moreover, issues related to value addition in food product development have been explained along with proposed solutions.

Keywords: *phalsa, bioactive compounds, health benefits, processing challenges, anthocyanins.*

5. Ma, Z. X., **Khalid, N.,** Shu, G. F., Zhao, Y. G., Kobayashi, I., Neves, M. A., . . . Nakajima, M. (2019). Fucoxanthin-Loaded Oil-in-Water Emulsion-Based Delivery Systems: Effects of Natural Emulsifiers on the Formulation, Stability, and Bioaccessibility. *Acs Omega, 4*(6), 10502-10509. doi: 10.1021/acsomega.9b00871. **(Nauman Khalid (SFAS) Web of Science JCR Listed (IF: 2.584)**

Abstract: The effect of natural emulsifiers (whey protein isolate, WPI, modified lecithin, ML, and gum arabic, GA) on the formulation, stability, and bioaccessibility of fucoxanthin-loaded oil-in-water (O/W) emulsions was determined in this study. The fine emulsions were prepared under high-pressure homogenization at 100 MPa for 4 passes, using 2 wt % WPI, ML, and GA, resulting in emulsions with the droplet sizes of 136, 140, and 897 nm, respectively. The chemical stability of fucoxanthin in the emulsions after long-term storage at ambient temperature decreased in the following order: WPI > GA > ML. The release of free fatty acids of fucoxanthin, studied by in vitro digestion, decreased in the following order: WPI > ML > GA > bulk oil. The bioaccessibility of fucoxanthin in emulsions stabilized by WPI, ML, and GA after in vitro digestion were 92.5 +/- 6.8%, 44.6 +/- 0.4, and 36.8 +/- 2.5, respectively. These results indicate that natural emulsifier type and concentration used significantly affects the formulation, stability, lipid digestion, and fucoxanthin bioaccessibility, which may be ascribed to the different properties of each emulsifier. The bioaccessibility of fucoxanthin was improved by using emulsion-based delivery systems.

Keywords: *not available.*

6. Nazir, M., Arif, S., **Khan, R. S., Nazir, W., Khalid, N.,** & Maqsood, S. (2019). Opportunities and challenges for functional and medicinal beverages: Current and future trends. *Trends in Food Science & Technology, 88*, 513-526. doi: 10.1016/j.tifs.2019.04.011.**(Rao Sanaullah Khan, Wahab Nazir, Nauman Khalid (SFAS) Web of Science JCR Listed (IF: 8.519)**

Abstract: Health and wellness are among the core segments of the fast-moving consumer goods (FMCG), with the ever-increasing health consciousness among consumers around the globe. Functional foods and beverages, formulated from natural ingredients with targeted physiological functions, are at the heart of research and development in food industry. However, the novel functional food product development requires extensive research and development activities i.e., clinical efficacy trials, which the food manufacturing companies cannot afford to perform owing to their limited R&D budget and limited technical

know-how in this particular aspect. Further the consumer acceptance of these food products is another area of concern for functional beverages development. For example, among the beverages, one challenging task is to replace sucrose with naturally occurring sweeteners, which could effectively address concerns of sugar intake in patients with diabetes and provide a healthy choice for consumers. However, consumer acceptance of these beverages from the sensory point of view remains challenging. Therefore, to better map the opportunities and challenges associated with functional beverages development, this review focusses on recent trends in the global market and new opportunities that may arise as a result. A detailed analytical discussion on new potential functional beverages and related products has also been presented.

Keywords: *health and wellness, functional beverages, functional foods, fortified beverages.*

7. Timilsena, Y. P., Akanbi, T. O., **Khalid, N.,** Adhikari, B., & Barrow, C. J. (2019). Complex coacervation: Principles, mechanisms and applications in microencapsulation. *International Journal of Biological Macromolecules, 121*, 1276-1286. doi: 10.1016/j.ijbiomac.2018.10.144.**(Nauman Khalid (SFAS) Web of Science JCR Listed (IF: 4.784) (Review)**

   Abstract: Complex coacervation is a highly promising microencapsulation technique that is extensively employed in pharmaceutical, food, agriculture and textile industries. The process involves the interaction of oppositely charged polyelectrolytes in aqueous form. High payload and high encapsulation efficiency (up to 99%), relatively lower cost of processing, ability to use food-grade shell materials and synthesis at ambient temperature makes coacervation an appropriate choice in food and agrochemical industries. Various works have been documented using different polymer systems and core-shell combinations. This review paper intends to summarize some of the recent advances in complex coacervation for use in the food and agriculture areas. Current status and future trends of plant proteins utilization for complex coacervation have been reviewed. It is expected that this review will be a useful resource for material scientists, food technologists and food engineers.

   Keywords: *complex coacervation, emulsion, encapsulation efficiency.*

8. Zhao, Y. G., **Khalid, N.,** Shu, G. F., Neves, M. A., Kobayashi, I., & Nakajima, M. (2019). Complex coacervates from gelatin and octenyl succinic anhydride modified kudzu starch: Insights of formulation and characterization. *Food Hydrocolloids, 86*, 70-77. doi: 10.1016/j.foodhyd.2018.01.040.**(Nauman Khalid (SFAS) Web of Science JCR Listed (IF: 5.839)**

   Abstract: The formulation of complex coacervates between gelatin and octenyl succinic anhydride (OSA) modified kudzu starch was investigated by turbidimetric analysis as a function of pH and ratio of gelatin and OSA-modified kudzu starch. The interaction between gelatin and OSA-modified kudzu starch yielded a dense liquid coacervate phase, leading to phase separation, and the optimum conditions for their coacervation was pH 6.0 and the mixed ratio of 1: 1 (w/w). To characterize the complex coacervates, differential scanning calorimetry (DSC) thermograms revealed that the endothermic peak temperature of coacervates increased due to the interaction between these two polymers, and scanning electron microscopy (SEM) suggested that gelatin and OSA-modified kudzu starch were interconnected, forming a network structure through electrostatic attraction. Moreover, Fourier transform infrared spectroscopy (FT-IR) spectra indicated that coacervates were formulated between the carboxyl groups of OSA-modified kudzu starch and the amino groups of gelatin. The astaxanthin (AST) extract was encapsulated in complex coacervates and its stability was observed during 10 days of storage time. The results revealed higher retention of AST encapsulated in complex coacervates in comparison with gelatin.

   Keywords: *astaxanthin, complex coacervates, gelatin, kudzu starch, octenyl succinic anhydride.*

9. James, S. L., Theadom, A., Ellenbogen, R. G., Bannick, M. S., Mountjoy-Venning, W. C., Lucchesi, L. R., . . . Sp, **Khalid, N.** (2019). Global, regional, and national burden of traumatic brain injury and spinal cord injury, 1990-2016: a systematic analysis for the Global Burden of Disease Study 2016. *Lancet Neurology, 18*(1), 56-87. doi: 10.1016/s1474-4422(18)30415-0.**(Nauman Khalid (SFAS) Web of Science JCR Listed (IF: 28.755)**

Abstract: Background Traumatic brain injury (TBI) and spinal cord injury (SCI) are increasingly recognised as global health priorities in view of the preventability of most injuries and the complex and expensive medical care they necessitate. We aimed to measure the incidence, prevalence, and years of life lived with disability (YLDs) for TBI and SCI from all causes of injury in every country, to describe how these measures have changed between 1990 and 2016, and to estimate the proportion of TBI and SCI cases caused by different types of injury. Methods We used results from the Global Burden of Diseases, Injuries, and Risk Factors (GBD) Study 2016 to measure the global, regional, and national burden of TBI and SCI by age and sex. We measured the incidence and prevalence of all causes of injury requiring medical care in inpatient and outpatient records, literature studies, and survey data. By use of clinical record data, we estimated the proportion of each cause of injury that required medical care that would result in TBI or SCI being considered as the nature of injury. We used literature studies to establish standardised mortality ratios and applied differential equations to convert incidence to prevalence of long-term disability. Finally, we applied GBD disability weights to calculate YLDs. We used a Bayesian meta-regression tool for epidemiological modelling, used cause-specific mortality rates for non-fatal estimation, and adjusted our results for disability experienced with comorbid conditions. We also analysed results on the basis of the Socio-demographic Index, a compound measure of income per capita, education, and fertility. Findings In 2016, there were 27.08 million (95% uncertainty interval [UI] 24.30-30.30 million) new cases of TBI and 0.93 million (0.78-1.16 million) new cases of SCI, with age-standardised incidence rates of 369 (331-412) per 100 000 population for TBI and 13 (11-16) per 100 000 for SCI. In 2016, the number of prevalent cases of TBI was 55.50 million (53.40-57.62 million) and of SCI was 27.04 million (24 .98-30 .15 million). From 1990 to 2016, the age-standardised prevalence of TBI increased by 8.4% (95% UI 7.7 to 9.2), whereas that of SCI did not change significantly (-0.2% [-2.1 to 2.7]). Age-standardised incidence rates increased by 3.6% (1.8 to 5.5) for TBI, but did not change significantly for SCI (-3.6% [-7.4 to 4.0]). TBI caused 8.1 million (95% UI 6. 0-10. 4 million) YLDs and SCI caused 9.5 million (6.7-12.4 million) YLDs in 2016, corresponding to age-standardised rates of 111 (82-141) per 100 000 for TBI and 130 (90-170) per 100 000 for SCI. Falls and road injuries were the leading causes of new cases of TBI and SCI in most regions. Interpretation TBI and SCI constitute a considerable portion of the global injury burden and are caused primarily by falls and road injuries. The increase in incidence of TBI over time might continue in view of increases in population density, population ageing, and increasing use of motor vehicles, motorcycles, and bicycles. The number of individuals living with SCI is expected to increase in view of population growth, which is concerning because of the specialised care that people with SCI can require. Our study was limited by data sparsity in some regions, and it will be important to invest greater resources in collection of data for TBI and SCI to improve the accuracy of future assessments.

Keywords: *not available.*

10. Naveed, M., Ali, Z., Khwar, M., **Nazir, W., & Khalid, N.** (2019). Naegleria fowleri: Swimming with Death as the Major Outbreak in Pakistan. *Iranian Journal of Public Health, 48*(9), 1741-1742.**(Wahab Nazir, Nauman Khalid (SFAS) Web of Science JCR Listed (IF: 1.225) (Letter to Editor)**

Abstract: Not available.

Keywords: *not available.*

11. Melanie, H., Taarji, N., Zhao, Y. G., **Khalid, N.,** Neves, M. A., Kobayashi, I., . . . Nakajima, M. (2019). Formulation and characterisation of O/W emulsions stabilised with modified seaweed polysaccharides. *International*

Journal of Food Science and Technology. doi: 10.1111/ijfs.14264.**(Nauman Khalid (SFAS) Web of Science JCR Listed (IF: 2.281)**

Abstract: In this study, seaweed polysaccharides (alginate and carrageenan) were modified with dodecenylsuccinic anhydride (DSA), and their stabilising properties in oil-in-water (O/W) emulsion system were evaluated. The physicochemical characteristics were determined by droplet size, interfacial tension and zeta-potential and structurally verified by Fourier transform infrared spectroscopy (FTIR). Both CRG-DSA and ALG-DSA applied in O/W emulsion system exhibited smaller droplet sizes over the increasing concentration and were more stable during storage than native ones. The zeta-potential of DSA-modified seaweed polysaccharides has more negative charge compared with their native forms, owing to the additional carboxyl groups from modification reaction. In addition, DSA-modified seaweed polysaccharides decreased the interfacial tension at soybean oil-water interface from 23.1 and 23.9 mN m(-1) to 14.2 and 13.6 mN m(-1), respectively. The successful modification reaction was confirmed by FTIR analysis. This study demonstrated that DSA-modified seaweed polysaccharides may serve as prospective emulsifiers in food, pharmaceutical and other industrial fields.

Keywords: *alginate, carrageenan, dodecenylsuccinic, anhydride, o/w emulsion, physicochemical property.*

12. Lara, G. R., Uemura, K., **Khalid, N.,** Kobayashi, I., Takahashi, C., Nakajima, M., & Neves, M. A. (2019). Effects of acidic treatment on the physicochemical, microstructural, and microbiological properties of fresh-cut lotus root during storage. *International Food Research Journal, 26*(5), 1505-1513. **(Nauman Khalid (SFAS) Web of Science JCR Listed (IF: 0.662)**

Abstract: Freshly cut slices of lotus root are a popular food item in various countries, however, problems such as enzymatic browning affect the storage stability of these products. In the present work, we evaluated for the first time the effect of low pH treatments on the overall quality of fresh-cut lotus root (physicochemical, microbiological, and morphological properties) during storage. The effect of acidic treatment, using citric acid solution at pH 2 or pH 4 at 2% w/w and 0.002% w/w, respectively, will help to improve our understanding of the mechanism of browning and the role of polyphenol oxidase in catalysing browning reactions. Treatments were prepared using citric acid and were applied to 5 mm thick fresh-cut lotus for 2 min. Samples were then stored for 16 days at 5°C. We found that the whiteness values (L*) of pH 2 (68.76) and pH 4 (65.77) treated samples were significantly higher than the control (57.37), suggesting an enhancement of colour quality during storage. We also observed reduced polyphenol oxidase (PPO) enzyme activity for the treated samples as compared to the control (12.5, 16.5, and 17.13 U/min-mL, respectively), as well as reduced total phenolic content (46.5, 44.3, and 57.8 mg/100 g sample) and microbial counts. Despite these promising results, we also observed undesirable effects as a result of the pH treatments 2 and 4, including tissue softening and microstructural changes. However, we believe that our findings will be significant in the development of an optimised formulation for dipping treatments of fresh-cut lotus root products.

Keywords: *lotus root, enzymatic browning, microstructure, storage stability, pH reduction.*

13. Hashmi, M. U., **Khalid, N.,** Alam, T., Hanif, R., & Janjua, H. A. (2019). Comparative safety analysis of bactericidal nano-colloids: Assessment of potential functional toxicity and radical scavenging action. *Colloids and Surfaces B: Biointerfaces, 184*, 110508. doi: https://doi.org/10.1016/j.colsurfb.2019.110508. **(Nauman Khalid (SFAS) Web of Science JCR Listed (IF: 3.973)**

Abstract: Extensive utilization of silver nanoparticles (AgNP) has raised concerns of their safety profile upon interaction with biological system. In past decade, various nanoparticles (NPs) with excellent antimicrobial potential have been synthesized, a majority of which have struggled with the established toxicity in biological systems. The NPs safety is still a hot debate and various strategies are being adopted to overcome this giant

limitation. This paper successfully reports comparative toxicity profiles of previously synthesized antimicrobial NPs in our lab and concludes the effectiveness of biologically synthesized NPs for its safe usage in biological systems. In this study, five of our previously synthesized NPs that showed excellent antimicrobial potential were compared for their in vivo toxicity and corresponding radical scavenging activities. Based on lowest morbidity, mortality, weight loss, toxicity and agglomeration profile, best NPs with highest antimicrobial potentials were screened out and used for further biomedical applications. The previously reported NPs used in this study included Aerva javanica synthesized nanoparticles (AjNPs), Heliotropium crispium synthesized nanoparticles (HcNPs), and violacein capped nanoparticles (VNPs), these showed least toxicity upon in vivo histological analysis. AjNPs among them showed maximum safety and efficacy profile and consistently showed least production of reactive oxygen species, least mortality and morbidity rate as compared to other groups. Present study establishes that all these biologically synthesized NPs and specifically AjNPs can be efficiently employed as antimicrobial agents as they have not exhibited toxic profile and have shown least accumulation into the organs such as liver spleen and kidney.

Keywords: *toxicity, histopathology, nanoparticles, in vivo toxicity, antioxidant activity, reactive oxygen species.*

14. Frank, T. D., Carter, A., Jahagirdar, D., Biehl, M. H., Douwes-Schultz, D., Larson, S. L., . . . **Khalid, N.**(2019). Global, regional, and national incidence, prevalence, and mortality of HIV, 1980–2017, and forecasts to 2030, for 195 countries and territories: a systematic analysis for the Global Burden of Diseases, Injuries, and Risk Factors Study 2017. *The Lancet HIV, 6*(12), e831-e859. doi: https://doi.org/10.1016/S2352-3018(19)30196-1.**(Nauman Khalid (SFAS) Web of Science JCR Listed (IF: 14.753)**

Abstract: Summary Background Understanding the patterns of HIV/AIDS epidemics is crucial to tracking and monitoring the progress of prevention and control efforts in countries. We provide a comprehensive assessment of the levels and trends of HIV/AIDS incidence, prevalence, mortality, and coverage of antiretroviral therapy (ART) for 1980–2017 and forecast these estimates to 2030 for 195 countries and territories. Methods We determined a modelling strategy for each country on the basis of the availability and quality of data. For countries and territories with data from population-based seroprevalence surveys or antenatal care clinics, we estimated prevalence and incidence using an open-source version of the Estimation and Projection Package—a natural history model originally developed by the UNAIDS Reference Group on Estimates, Modelling, and Projections. For countries with cause-specific vital registration data, we corrected data for garbage coding (ie, deaths coded to an intermediate, immediate, or poorly defined cause) and HIV misclassification. We developed a process of cohort incidence bias adjustment to use information on survival and deaths recorded in vital registration to back-calculate HIV incidence. For countries without any representative data on HIV, we produced incidence estimates by pulling information from observed bias in the geographical region. We used a re-coded version of the Spectrum model (a cohort component model that uses rates of disease progression and HIV mortality on and off ART) to produce age-sex-specific incidence, prevalence, and mortality, and treatment coverage results for all countries, and forecast these measures to 2030 using Spectrum with inputs that were extended on the basis of past trends in treatment scale-up and new infections. Findings Global HIV mortality peaked in 2006 with 1·95 million deaths (95% uncertainty interval 1·87–2·04) and has since decreased to 0·95 million deaths (0·91–1·01) in 2017. New cases of HIV globally peaked in 1999 (3·16 million, 2·79–3·67) and since then have gradually decreased to 1·94 million (1·63–2·29) in 2017. These trends, along with ART scale-up, have globally resulted in increased prevalence, with 36·8 million (34·8–39·2) people living with HIV in 2017. Prevalence of HIV was highest in southern sub-Saharan Africa in 2017, and countries in the region had ART coverage ranging from 65·7% in Lesotho to 85·7% in eSwatini. Our forecasts showed that 54 countries will meet the UNAIDS target of 81% ART coverage by 2020 and 12 countries are on track to meet 90% ART coverage by 2030. Forecasted results

estimate that few countries will meet the UNAIDS 2020 and 2030 mortality and incidence targets. Interpretation Despite progress in reducing HIV-related mortality over the past decade, slow decreases in incidence, combined with the current context of stagnated funding for related interventions, mean that many countries are not on track to reach the 2020 and 2030 global targets for reduction in incidence and mortality. With a growing population of people living with HIV, it will continue to be a major threat to public health for years to come. The pace of progress needs to be hastened by continuing to expand access to ART and increasing investments in proven HIV prevention initiatives that can be scaled up to have population-level impact. Funding Bill & Melinda Gates Foundation, National Institute of Mental Health of the US National Institutes of Health (NIH), and the National Institute on Aging of the NIH.

Keywords: *not available.*

15. AL-Kafaween, M. A., **Khan, R. S.,** Hilmi, A. B. M., & Ariff, T. M. (2019). Characterization of biofilm formation by Escherichia coli: An in vitro study. *Journal of Applied Biology & Biotechnology Vol, 7*(03), 17-19. **(Rao Sanaullah Khan (SFAS) SJR**

    Abstract: Objective: The purpose of the present study was to characterize the effects of medium, optical density (OD), and incubation time on biofilm formation by Escherichia coli in brain heart infusion (BHI) and Luria-Bertani broth (LB). Methods: The main procedure involved fixing the bacterial film with 95% ethanol, staining with 0.1% crystal violet, releasing the bound dye with 33% glacial acetic acid, and measuring the OD of the solution at 570 nm using a microplate reader. Results: It was found that 3 and 5 days of incubation are critical for biofilm formation as indicated by the OD values of 0.55–0.35 and 0.70–0.39 in BHI and LB, respectively, at OD 0.05. Similarly, pattern in results was noted for OD 0.1 in both media BHI and LB. Conclusion: It is confirmed that 3 days (72 h) are required for obtaining effective biofilm formation in both BHI and LB at 37°C at OD 0.05 and 0.1.

    Keywords: *biofilm, escherichia coli, brain heart broth, luria broth, optical density.*

Book/Book Chapters

1. **Khalid, N.,** Arif, S., Kobayashi, I., & Nakajima, M. (2019). Lab-on-a-chip techniques for high-throughput proteomics and drug discovery. In H. A. Santos, D. Liu & H. Zhang (Eds.), *Microfluidics for Pharmaceutical Applications: From Nano/Micro Systems Fabrication to Controlled Drug Delivery* (pp. 371-422). **(Nauman Khalid (SFAS)**

    Abstract: Current drug discovery and screening practices necessitate extensive research, preclinical testing, and exhilarating clinical trials where frequent drug failures and rising costs are inevitable. Recent advances in the microfluidic technology are promising to replace various traditional laboratory methods with robust, low-cost, reduced reagent consumption and high-throughput lab-on-a-chip (LOC)-based analyses. Integration of cutting-edge microfabrication techniques with microfluidics and electric components on a single chip gives high flexibility to design miniaturized biomedical devices for multiple purposes. Their remarkable capability to mimic natural tissues and organ morphologies has bypassed the traditional methods in complexity and accuracy. The in vitro LOC devices based on cells, tissues, and organs have eased manipulations and understanding of biological systems and opened a new gateway for their pharmaceutical applications such as drug screening, tissue engineering, and disease modeling. In this chapter, the applications of microfluidic technologies and LOC devices for high-throughput drug screening and validation are discussed in detail.

    Keywords: *lab-on-a-chip, microfluidics, ADME, high throughput, drug screening, proteomics, three-dimensional cell culture, organ-on-a-chip*.

2. Mehmood, A. M. M. T., Iyer, A. B., Arif, S., Junaid, M., **Khan, R. S., Nazir, W., & Khalid, N.** (2019). 5-Whey Protein-Based Functional Energy Drinks Formulation and Characterization. In A. M. Grumezescu

& A. M. Holban (Eds.), *Sports and Energy Drinks* (pp. 161-181): Woodhead Publishing**. (Rao Sanaullah Khan Wahab Nazir, Nauman Khalid (SFAS)**

Abstract: The higher prevalence of obesity and type-2 diabetes especially among the consumers in developed countries are demanding for prevention therapy through functional foods. Milk proteins, that is, whey proteins have gained much popularity in recent research and development due to their ability to regulate blood glucose and improve satiety. Moreover, whey proteins have been found to be effective in postexercise rehydration. It has been recently found that higher protein diets are effective in promoting fat losses in body while enhancing the feeling of greater satiety which is essential in maintaining lean body weight. From the technological function aspect whey proteins are excellent emulsifying and stabilizing agents that can play a crucial role in developing functional stable beverage emulsions. However, these product developments require extensive research and development which food manufacturing industry cannot perform owning to limited resources and technical know-how. Therefore, this chapter will focus on the development of whey protein-based sports and energy drinks covering technological and developmental issues along with highlighting potential health benefits.

Keywords: *obesity, diabetes, whey proteins, satiety, wight loss, functional foods.*

3. Arif, S., Batool, A., Nazir, **W., Khan, R. S., & Khalid, N.** (2019). 8 - Physiochemical Characteristics Nutritional Properties and Health Benefits of Sugarcane Juice. In A. M. Grumezescu & A. M. Holban (Eds.), *Non-Alcoholic Beverages* (pp. 227-257): Woodhead Publishing**.(Wahab Nazir, Rao Sanaullah Khan, Nauman Khalid (SFAS)**

Abstract: Sugarcane (Saccharum officinarum) has been widely known as raw material for white sugar production. Sugarcane juice is relished as a refreshing drink as it is nutritious and rich in vitamins, carbohydrates, and amino acids. The status of sugarcane juice as a nutritional beverage is well established owing to the presence of variable contents of hydrophilic components. In addition, the chemical profile of the sugarcane juice indicates the presence of the several phytochemicals pertaining vast pharmacological research potential. It has been actively used in the traditional Ayurvedic medicines, moreover, the modern research is providing a clear evidence of therapeutic activity of the sugarcane crude extract. The potent biological activities have rendered this juice a promising therapeutic agent for future studies. Therefore, this chapter focused on explaining the physiochemical properties, nutritious value, and health benefits of the sugarcane juice.

Keywords: *sugarcane juice, functional beverages, health benefits, fructose, diabetes.*

School of Architecture and Planning

Department of Architecture

Research Articles

1. Malik, U. M., **Buksh, U. M.,** & Irfan, M. (2019). Improved strength, elastic and adhesion properties of mortars modified with different polymer-cement ratios & effects of reduction in CA (OH) 2 on the properties. *International Transaction Journal of Engineering, Management, & Applied Sciences & Technologies*. doi: DOI: 10.14456/ITJEMAST.2019.1xx.**(Usman Muhammad Buksh (Architecture)**
Master Journal List

Abstract: Polymer-modified mortars (PMMs) are prepared by using dispersible polymer powders or powdered emulsion (powered cement modifiers) and aqueous polymer dispersion (aqueous cement modifiers) with various polymer-cement (P/C) ratios. Specimens are made with the help of moulds and cured. Different tests like compressive strength, flexural strength, tensile strength, maximum deflection, maximum extreme tensile fibre strain, maximum tensile strain and adhesion in tension or bond strength are performed for the cured specimens. Afterward, powder samples are made from the broken specimens,

which are then subjected to X-ray diffraction, differential thermal analysis (DTA) and thermal gravimetric analysis (TGA). From the test results, it is concluded that the formation of calcium hydroxide (Ca(OH)2) is reduced in (PMMs). Whereas, on the other hand, their compressive strength, flexural strength, tensile strength, maximum deflection, maximum extreme tensile fibre strain, maximum tensile strain and adhesion in tension or bond strength have been improved. However, variation in the above- mentioned properties depend upon the P/C ratio and cement modifier used or both. It has been concluded that the reduction of Ca(OH)2 content in PMMs does not cause any detrimental or adverse effect on their strength, elastic and adhesion properties, they are improved.

Keywords: *calcium hydroxide, polymer-modified, cement system, polymer-modified mortar (pmm), mortar strength, adhesion properties, toyoura sand.*

2. **Malik, M. I., Mujahid, B., & Jamil, F.** (2019). Developing Standards for Mosque Design in Lahore, Pakistan. *Journal of Islamic Thought and Civilization (JITC), 9*(1), 141-164.**(Muhamamd Ilyas Malik, Beenish Mujahid, Farah Jamil (Architecture)** **SJR**

Abstract: Mosque has always been the most prestigious and important building for the Muslims.However, no standards or guidelines are available in Pakistan for the design and details of Mosque, therefore, mosques are being designed and built as per the existing examples or personal wisdom of the architects, financers, decision makers, and individuals or groups responsible for its execution. It has been generally observed that there are many flaws found everywhere in terms of plot orientation, placement of different functions of mosque, planning layout , interior spaces , opening of doors/windows, design of ablution area, adequate no. of toilets and shoe storage racks etc. The major problem that worshipers face are related to insufficient width of row (saff) and clearance from walls to perform physical actions of prayer and to carryout ablution in comfortable manner. The aim of this research is to set- out the planning and design guidelines and to develop standards for a religiously and socially acceptable, efficient and comfortable design for all features of a mosque. The methodology includes study of religious literature and survey of existing mosques selected in different localities of Lahore to obtain standards being practiced and comments of end users. Methodology also included physical demonstration to experiment the actual space needed during performance of prayer by worshippers. The paper suggests solutions to some of the issues related to this topic. The developed guidelines/standards would be a source of information for students, practicing architects and academicians. Mosques constructed on the basis of these standards will provide better utilization of space and more comfortable environment to the end users.

Keywords: *mosque, prayer hall, ablution area, saf, guidelines.*

3. **Rashid, M., Malik, A., Gulzar, S.,** & Jalil, A. (2019). The Efficacy of Shading Design in Commercial Buildings in The Semi-arid Climate of Lahore, Focusing on The Geometry of Horizontal Shade. *Technical Journal, 24*(02), 1-10.(**Memoona Rashid, Saima Gulzar, Ayesha Malik (Architecture)** **HEC Y CAT**

Abstract: Building envelope acts as a barrier between outside and inside environmental conditions. Window in the building envelope is an important area as it is least resistant to the outside environmental conditions. An optimal shading device can create a balance in this context. It is important in semi arid climates like that of Lahore. This paper focuses on the geometry of horizontal shade that is desirable in Lahore's climate and its impact on heat gain and daylight level in commercial buildings. Significance of this study is the calculation of depth of horizontal shade that can have a significant impact on heat gain in the climate of Lahore. Simulation is conducted as a next step to evaluate the performance of designed horizontal shade on a window with 40% WWR and double low E bronze glass on east, south and west orientations. Results show the efficiency of horizontal shade is more on south orientation in climate of Lahore.

Keywords: *horizontal shade, heat gain, semi-arid climate, commercial buildings.*

4. **Aslam, S. (**2019). Exploring The Colonial Era Developments of The Mall Road, Lahore. *Journal of Art, Architecture and Built Environment (JAABE), 2*(1), 30-46.(**Seemin Aslam (Architecture) UMT Journal**

Abstract: Lahore, a city with Aurenhammer, is the second largest city of Pakistan. The antiquities of Lahore span over three historic periods including pre-colonial, colonial and post-independence periods. Colonial period laid the foundations of modern Lahore with Indo- Islamic style of architecture. To connect Anarkali with the new British administrative area known as Mian Mir Cantonment, a public road was built that was later named Mall Road. This research paper is a descriptive evaluation of the literature available on Mall Road, Lahore and is an attempt to disclose the concept of this road and to unveil the developments on this promising public road made by the British, hence, it will provide the reader a glimpse of the Mall Road, Lahore. This paper concludes the Mall Road as the representative of a rich urban character and as a hub of different activities which made it the spine of the city during the colonial era.

Keywords: *colonial era Lahore, origin and concept of Mall Road, public road, public square, urban development.*

5. Malik, S., & **Jamil, F.** (2019). The Dynamics of the Psychological Approach in Designing Spaces: A Study of Architecture Students. *Journal of Art, Architecture and Built Environment (JAABE), 2*(1), 47–68.(**Farah Jamil (Architecture) UMT Journal**

Abstract: The psyche of human mind is best expressed through architecture and the interior design of buildings. No doubt, architecture and psychology are interconnected domains of human experience, while building design is the physical illustration of the creative perception of human psyche. Human interaction with the built environment prompts the senses to perceive and react to it in different logical manners, exemplified through unique spatial expression of every single designer. It has been observed that students as future architects, while tackling with the design projects, put forththeir own spatial experiences of interaction with the built environment. For this reason, students of Bachelors in Architecture program at the University of Management and Technology, Lahore, Pakistan were interviewed informally to document their psychological approach regarding spatial thinking and translating it into architectural designs of varying quality. The findings acknowledged that the architectural psychology of the designer and the psychological influences of environment impact the construction and building design industry. The diversity in design driven by the psyche of each student is interesting to note and it establishes the fact that every single design is dominated by the concepts developed during the design process. The study has significance as a vital contribution towards the psychological implications of architects for a well-designed built environment.

Keywords: *architecture, design, psychology, students.*

6. **Shirwani, R., Gulzar, S.,** Asim, M., **Umair, M., & Al-Rashid, M. A.** (2019). Control of vehicular emission using innovative energy solutions comprising of hydrogen for transportation sector in Pakistan: A case study of Lahore City. *International Journal of Hydrogen Energy*. doi: https://doi.org/10.1016/j.ijhydene.2019.02.173. (**Rummana Shirwani, Saima Gulzar,Muhammad Umair, Muhammad Ahmad Al-Rashid (Architecture) Web of Science JCR Listed (IF: 4.084)**

Abstract: Energy, either from non-renewable or renewable sources, is of paramount importance as the progress of a country is gauged on economic development. However, with the use of non-renewable energy resources, the environmental degradation is exacerbating with every passing day in developing countries including Pakistan. On the contrary, the developed countries are resorting to sustainable and renewable energy resources to achieve sustainable development goals. The primary consumer of the non-renewable energy sources is transportation sector in Pakistan, with the total consumption amounting to almost two-third of the total utilization. Keeping in view the existing energy expenditures and its share in environmental pollution by transportation sector, Lahore Metropolitan area has been selected for this research paper. This research analyzed the environmental data collected from multiple road junctions of Lahore City. In light of

the existing data, the research exhibited improvements in overall environmental quality by comparing the existing and proposed energy solutions comprising of Hydrogen in transportation sector. The comparison carried out by utilizing International and National Environmental quality standards. Additionally, research also addresses the energy savings with the transition from non-renewable energy sources to renewable and innovative energy solutions.

Keywords: *energy, environment, Pakistan, hydrogen energy.*

7. **Awan, M. A., Khailat, F., & Jamil, F.** (2019). Role of Geography in Formation of Character of Civilizations Case Studies. *Journal of Art, Architecture and Built Environment (JAABE), 2*(2). (**Muhammad Yusuf Awan, Faiqa Khilat, Farah Jamil (Architecture) UMT Journal**

Abstract: When human race began its activities on Earth, it faced severe challenges of survival. The pursuit of basic necessities like food and shelter advanced them from hunting, to cultivation and food processing. The initiation of agriculture brought qualitative changes in the average human life, following the establishment of permanent settlements, cultures and civilizations. At the beginning of the age of tilling, settlers preferred locations which offered unrestrained water, fertile land and comfortable climate. Every location had its own geographical characteristics, which played a fundamental role in formation of the character and architecture of civilizations. The major early contemporary civilizations include the Egyptian, Mesopotamian and Indus Valley. The natural barren boundaries across the River Nile in Egypt enabled Pharaohs to form a strict slave system. The area accommodating two ancient rivers, Tigris and Euphrates, resulted in a settlement now known as the Mesopotamian civilization. The five rivers of Punjab and Ganges River provided people of the Indus Valley with a large piece of very fertile land. They cultivated land from Himalayan peaks in the north to the Arabian Sea in the south, expanding their civilization and architecture vastly. This paper studies these three civilizations, with reference to their geography, highlighting its effects on the development pattern and architecture. The research will give the apparent picture of how the geography effects the overall growth of civilizations, and also the similarities and dissimilarities from one location to the other.

Keywords: *not available.*

8. **Salahuddin, S., Mujahid, B., Jamil, F. & Javed, N.** (2019). A Comparative Analysis of Reconstruction Strategies Employed in Major Earthquakes of Indo-Pak Region. *Journal of Art, Architecture and Built Environment (JAABE), 2*(2). **(Sarmad Salahuddin, Beenish Mujahid, Farah Jamil, Nasir Javed (Architecture) UMT Journal**

Abstract: Housing is one of the most important needs of mankind to survive. A secure and properly planned house, gives comfort to people using it, keeping them secure from severe environment, un-wanted people and animals. Apart from the human casualties, the other striking and usually most visible effect of natural disaster is majorly the destruction of houses. The loss of houses has a devastating effect on privacy, livelihoods and the dignity of individuals. An effective program for the reconstruction of houses for those affected is critical to ensure restoration of the society's economy, cultural identity and dignity. For many humanitarian organizations, employing professional construction companies is the most common and quickest way of rebuilding houses in the aftermath of a disaster. However every strategy has its own risks and limitations, but there is a growing awareness being shared among countries to mitigate these situations. This study carefully examines the reconstruction strategies employed in earthquake affected buildings of Kashmir, Pakistan and Gujrat, India. The analysis concludes proper fulfillment of the byelaws for seismic resistant construction and enforcing law of training for laborers and local people in redevelopment of earthquake hit area.

Keywords: *not available.*

Department of City and Regional Planning

Research Articles

1. **Malik, S.,** Roosli, R., & **Tariq, F.** (2019). Investigation of informal housing challenges and issues: experiences from slum and squatter of Lahore. *Journal of Housing and the Built Environment*. doi: 10.1007/s10901-019-09669-9. **(Sana Malik, Fariha Tariq (City and Regional Planning(SAP) Web of Science JCR Listed (IF: 1.481)**

   Abstract: The twin problems of uncontrolled urbanization and shortfall of affordable housing for low income groups are the bane of almost all developing countries. This is true in case of Pakistan undergoing rapid urban transformation with 207 million population at present. According to UN resources, half of the country's urban population i.e. more than 27 million people continue to live in informal settlements. Lahore being the second largest city, is home to 11 million people, covering more than 300 informal housing settlements in the form of slums and squatters. Adoption of informal housing is a depiction of poor governance system, showing little concerns for welfare of urban poor. This paper investigates the issues of informal housing based on field research and in-depth interviews of the residents of Karol Ghatti slum and Qalandarpura squatter. The objective of the study is to understand the complex phenomena of informal housing development by digging out respective reasons and their impacts on dwellers as a part of their daily survival challenge. Results confirm that inhabitants of slum and squatters exhibit socio-economic deprivations and lack basic infrastructure. This paper delivers a complete synthesis informal housing issues by providing social, environmental, operational and physical constructs, which can lead to thorough understanding and thus, are viable approaches to tackle the challenge of slums and squatters at a national level.

   Keywords: *squatters, slums, urban poor, informal housing, Lahore, Pakistan.*

2. **Malik, S.,** Roosli, R., **Tariq, F.,** & Yusof, N. a. (2019). Policy Framework and Institutional Arrangements: Case of Affordable Housing Delivery for Low-Income Groups in Punjab, Pakistan. *Housing Policy Debate*, 1-26. doi: 10.1080/10511482.2019.1681018. **(Sana Malik, Fariha Tariq (City and Regional Planning(SAP) Web of Science JCR Listed (IF: 1.786)**

   Abstract: Provision of affordable housing for low-income groups is constrained precariously in Punjab, the largest province of Pakistan, because of a complex institutional framework and overlapping roles of government authorities at federal, provincial, and local levels. This article is a reflexive study that covers a broader aspect of the Punjabi Housing system, drawing a framework of current institutional arrangements in practice for affordable housing provision. Although it draws on an institutional analytical framework, the article is grounded in applying structural analysis to the study of public institutions within the housing sector, which provides a much-needed theoretical framework for analyzing housing institutional arrangements under the current dynamic political environment within the country. The study is an effort to fill gaps in the literature in understanding the intricate practices and processes of public housing institutions with overlapping jurisdictions and roles. The article argues for streamlining the federal, provincial, and local governments to provide an enabling environment to deal with affordable housing policy and provision issues by reexamining the respective institutional structures. Some previous studies relevant to housing policies and projects are also reviewed, followed by an empirical analysis of institutional arrangements, finally, ways forward are suggested toward key policy and empirical implications.

   Keywords: *institutional arrangements, affordable housing, Punjab, Pakistan, low-income groups, policy framework.*

3. **Nawaz, M., Tariq, F., Gul, A., Sheikh, N. B., & Malik, S.** (2019). Evaluation of Environmental & Physical Impacts of Mega Transportation Projects: A Case of Lahore. *Technical Journal*, *24*(04), 8-14. **(Minahil Nawaz, Fariha Tariq, Areesha Gul, Nida Batool Sheikh, Sana Malik (City and Regional Planning(SAP) HEC Y CAT**

Abstract: The environmental effects allied with mega constructions often have remarkable negative bearings on cities. Cities around the globe function better when they have a refined public transportation system. Unfortunately, while developing Asian megacities, governments have failed to develop sustainable transportation system and the cities suffer from serious environmental hazards in the midst of urban growth. The absence of efficient policies regarding public transport is notable cause for such prompt escalation of diverse problems like increase in number of personal automobile, which further causes congestion on the road resulting in air and noise pollution, which ultimately affect the human's health. Therefore, Pakistan, as a developing country, has a foremost crisis on its hands. Traffic congestion in Pakistan is mostly coped by constructing overheads and subways, but constructing these is not the answer. Transportation issues need to be integrated with an inclusive plan that includes better transit and public transport systems. To solve the traffic problems of metropolitan city of Lahore, the projects like Azadi Square, Kalma Intersection, Orange line train and Metro Bus have been undertaken. Such projects aim at reducing automobile dependency, to limit land waste, to address sustainability of transport system and to make the places healthy where people live and work more conveniently. But in reality, the city environment is a lot disturbed because of these projects. There is a lot of nuisance occurring and there are no proper measures to reduce or minimize the environmental harms being caused by these projects. This paper will highlight the hazardous impacts of construction of mega transportation projects on the environment of Lahore. Review of Environment Impact Assessment (EIA) and news-papers upon these projects is carried out which reveals that these mega projects usually do not follow the Environmental impact requirements and standards.

Keywords: *not available.*

4. **Malik, S.,** & Ku Hassan, K. A. (2019). An Investigation of House Designs in Lahore: Transformation of Residential Architecture from traditional to modern. *Journal of Design and Built Environment; Vol 19 No 1 (2019)*. Retrieved from https://ejournal.um.edu.my/index.php/jdbe/article/view/17773. **(Sana Malik (City and Regional Planning(SAP) SJR**

Abstract: Many historic cities display the expression of individual and cultural identity as a common phenomenon in house designs; this paper inspects it in context of Lahore city. Study is focused on architectural transformation of house designs based on lifestyles of different time periods in Lahore. The objective is to highlight the key modifications in designing of houses over time period of half century. It is believed that home is the most endearing structure to be built given the poignant connection of dwellers to their living spaces. In Lahore, houses show diverse architectural profile as a result of socio-economic changes and global influences; these demand to investigate the present prototype of traditional versus modern house design in Lahore. A case study of traditional as well as modern house was conducted using field inspection and typological analysis. Findings of such design focused research provide helpful insights for practitioners and academicians of contemporary architecture in Lahore and other likewise cities, about major spatial and design alterations in order to achieve a balanced approach in residential architecture.

Keywords: *Lahore, residential architecture, transformation, traditional houses, modern houses.*

Conference Paper

1. Malik, S., Roosli, R., **Tariq, F.,** & Salman, M. (2019). *Land Tenure Security and Resident's Stability in Squatter Settlements of Lahore*. Paper presented at the The Academic Research Community publication. https://press.ierek.com/index.php/ARChive/article/view/508. **(Fariha Tariq (City and Regional Planning(SAP)**

Abstract: Squatters have now become integral part of urban centers in most developing countries like Pakistan, with Lahore experiencing growth of such informal settlements at its peak. A myriad of issues and challenges associated with economic, social, spatial, environmental and political contexts within squatters has become a great hindrance towards home improvement and better life style. Tenure security brings a

sense of homeownership to socioeconomically disadvantaged households. Recently, promotion of increased security of tenure of all whether living in formal or informal settlements has been affirmed by New Urban Agenda of Habitat III. Therefore, it is need of the time to look into present tenure types of squatters being offered by the city to solve problem of housing backlog and to provide promote inclusivity ensuring healthy, affordable and sustainable environment for all inhabitants.

Proposed argument has got stronger foundation due to comparative analysis of squatter having secured land tenure with squatter of unsecure tenure. In this paper we explore that tenure security is one of the key factors which leads to resident's stability, through case study approach by investigating two squatters based on their tenure types. The data collected through questionnaire will help us to identify other key factors associated with resident stability in squatters. Study reveals that limited secured tenure options and poor governance in present urban scenario projects as major obstacles in coping with urban sprawl and squatter settlements. Findings help us to understand the phenomena of inter-connection of land tenure security and residential stability of squatters in Lahore, suffering from housing shortage and informal settlements.

Keywords: *land tenure, security, squatters, residents, stability, Lahore (Pakistan).*

2. **Tariq, F.,** Nawaz, M. (2019). *Rural Housing and Development Strategies: Integrated Approach with Planning, Design and Economic Perspectives*. Paper presented at the National Workshop on Affordable Housing Conference held at NED UET Karachi, 09 March, 2019. **(Fariha Tariq (City and Regional Planning(SAP)**

Abstract: Though Pakistan is facing the highest rate of urbanization in its history but unfortunately, poverty has remained country's legacy and its roots have deepened over the years. Poverty is largely concentrated in rural areas. About 35 percent of rural population lies below the subsistence level where economic infrastructure and social services are extremely inadequate. This brings up a range of issues facing rural areas including malnutrition, poor social and physical infrastructure, unemployment, low literacy, high population growth, low production and poor housing. Inefficient internal layouts, improper house facades, open dumping of solid waste, poor sewerage and drainage generate poor living conditions and therefore place rural housing at the core. This study focuses on the strategies to improve rural housing taking in consideration the planning, design and economic perspectives. Keeping the cost in affordable bracket with the best possible derlivery of functional spaces while using the effective material is the core objective of this study. At the first stage, study area as a whole is taken into consideration and strategies for social and physical infrastructure are formularized. On the second level, internal layouts of the houses will be discussed. The study is expected to systematically induce the elements of self-employment, energy efficient design, cost- effective construction into rural housing delivery mechanism of Pakistan. Improved rural housing will help eradicate the poverty and propagate the development in rural areas which in turn will discourage urbanization and strengthen the rural-urban linkages and the regions as a 'whole' will prosper.

Keywords: *not available.*

Institute of Islamic Banking (IIB)

Institute of Islamic Banking

Research Articles

1. Aslam, E., **Kalim, R., & Fizza, S.** (2019). Do Cash Holding and Corporate Governance Structure Matter for the Performance of Firms? Evidence from KMI 30- and KSE 100-Indexed Firms in Pakistan. *Global Business Review,* 20(2), 313-330. doi: 10.1177/0972150918825202.**(Rukhsana Kalim(IIB),Sadia Fizza(SBE)** **Master Journal List**

Abstract: The objective of the study is to investigate the combined impact of cash holding and corporate governance on the performance of non-financial firms. The sample consists of 30 Islamic-based firms from

Karachi Meezan Index (KMI) 30 index and 42 non-Islamic firms from Karachi Stock Exchange (KSE) 100 index in Pakistan over the period of 2010-2014. The results show that corporate cash holding has negative and significant relationship with earnings per share and returns on assets (EPS and ROA), while it has a positive and statistically significant relationship with Tobin's Q and market share price (TQ, MSP) in both KMI 30- and KSE 100-indexed firms. In addition, we find that the structure of corporate governance is poorly performed in KMI 30- and KSE 100-indexed firms. This poor governance structure leads to the firms dispelling cash quickly, which significantly reduces the performance of these firms. So the firms can increase their performance by establishing effective corporate governance structure.

Keywords: *cash holding, corporate governance, firm performance, KMI 30, KSE 100 index.*

2. **Ayaz, M., Shah, H. S., Mateen, A. ul., Shaheen, S**., & Yusuf, J. B. (2019). Islamic Microfinancing by the Banking Sector of Pakistan: Problems and Solutions. *Journal of Islamic Thought and Civilization, 9*(2), 148-171. **(Mohammad Ayaz, Hassan Shakeel Shah, Amat ul Mateen Noor, Sadaf Shaheen (IIB) SJR**

Abstract: This study highlights the obstacles which limitthe penetration of the banking sector in the field of Islamic microfinancein Pakistan,keeping in viewthe practitioners'perspective as to how these obstaclescan be overcome.In Pakistan, where approximately sixty percent (60%)of the population is living below the international poverty line, Islamic microfinancehas the potential to play a vital role inalleviatingpoverty.Unfortunately,the banking sectorof Pakistanis reluctantto contribute in Islamic microfinancedue tosome limitations from the bankers' perspective.Qualitative approach has been followed in this study in whichsemi-structuredinterviews wereconducted with twenty-sixparticipants from all over Pakistan,including fivefrom Islamic,seven from conventional, thirteen from microfinance andonefrom an Islamicmicrofinancebank. Interviews were conducted with theboard of directors, Sharīʿahboard members, senior management,and microfinanceheads.According to the experts, the mindset of bankers, lack of collateral, weak role of the State Bankof Pakistan(SBP)and the government of Pakistan insetting targets, limited availability ofsector targeted products, lack of customer awareness, lack of initialcapital, time consumption and documentation problems are among the issuesfaced by the banking sector.Theseexperts emphasized the crucial role of the SBPand government support to promote Islamic microfinancing through banks.State Bank of Pakistan (SBP) as regulator and other commercial banks, Islamic microfinance banks and their boards of directors, Sharīʿahboard members, senior management, and microfinance heads can implement the outcomes of this study.

Keywords: *banks' practitioners, islamic microfinance, problems, state bank of Pakistan.*

3. **Hussain, T., & Khalil, M. N.** (2019). Shari'ah Issues in Islamic Capital Markets of Pakistan: A Case Study of Sukūk. *Journal of Islamic Thought and Civilization, 9*(1), 1-16. **(Talat Hussain, Muhammad Nadeem Khalil (IIB) SJR**

Abstract: Islamic Capital Markets (ICM) are playing an important role in raising long term funds and thus playing their role in economic growth and development of a country. Sukūk are important Islamic Capital Market instruments through which long term funds are obtained from general public. Sukūk are certificates of equal value representing undivided shares in ownership of tangible assets, usufructs and services, or in the ownership of the assets of particular projects or special investment activities. Sukūk market in Pakistan is regulated by the Securities and Exchange Commission of Pakistan (SECP). Despite the continuous growth of Sukūk market in Pakistan, there are various Shari'ah issues which are still prevalent in the Sukūk structures which need our attention in order to make the Sukūk Shari'ah compliant in true spirit of Islam. The main objective of this paper to discuss and elaborate the various Shari'ah issues prevailing in Islamic Capital Markets of Pakistan, especially related to Sukūk. It is argued that while structuring Sukūk, the various features of conventional bonds are replicated while compromising the various Shari'ah injunctions. The current practices of various financial institutions are discussed and various Shari'ah issues related to different

types of Sukūk are identified and the point of view of various scholars on these issues is also discussed. The various Shari'ah issues related to Sukūk which are identified in this article include purchase undertaking in equity based structures, late payment penalty upon default, ownership status in asset based transactions and trading of debt based Sukūk. So this paper highlights the need for a balance between growth in the Sukūk market and meeting the Shari'ah requirements while structuring Sukūk.

Keywords: *Sukūūk, Shari'ah issues, purchase undertaking, equity based structures, late payment penalty, debt based sukūk.*

School of Textile & Design (STD)

Department of Textile & Design

Research Articles

1. Hussain, S., Glombikova, V., Akhtar, N., Mazari, A., Mansoor, T., & **Khan, K. A. H.** (2019). Liquid moisture transportation properties of functional underwears: Part 1. *Autex Research Journal, 19*(2), 97-103. doi: 10.1515/aut-2018-0030.**(Kanwar Ali Haider Khan (STD) Web of Science JCR Listed (IF: 0.927)**

   Abstract: This study investigates the effect of material composition on moisture management properties. Fiber type has significant influence on the moisture management properties of knitted fabrics. In this article, single jerseys knitted fabric samples with different yarn compositions were prepared. Liquid moisture transportation properties including wetting time, absorption rate, spreading speed, one-way transportation capability, and OMMC were evaluated by Moisture Management Tester (MMT) and vertical wicking was evaluated using thermography system and image analysis. Knitted sample having fine cotton yarns with coolmax and micro denier multifilament polypropylene showed best liquid transportation properties. There is a strong co-relation between OMMC and accumulative one-way transport index with vertical wicking of knitted samples.

   Keywords: *moisture transportation, breathability, moisture management tester, wicking.*

2. Raza, Z. A., **Anwar, F.,** & Abid, S. (2019). Multi-response optimization in impregnation of chitosan nanoparticles on polyester fabric. *Polymer Bulletin, 76*(6), 3039-3058. doi: 10.1007/s00289-018-2523-7. **(Faiza Anwar (STD) Web of Science JCR Listed (IF: 1.858)**

   Abstract: A Taguchi design was employed to optimize the recipe for in vitro antibacterial activity of polyester fabric treated with chitosan nanoparticles (CNPs), which were prepared using sodium tripolyphosphate as cross-linker under ionic gelation method. The CNPs treated polyester fabric with recommended recipe under Taguchi designshowed about 5mm zone of inhibition against E. coli and 5.5mm against S. aureus. Scanning electron microscopy installed with an energy-dispersive x-ray detector was used to observe the morphology and presence of CNPs on the treated fabric. Based on statistical design, it was found that optimum process conditions were 15 g/l of CNPs, 90 g/l of cross-linker and140 degrees C curing temperature. Analysis of variation indicated that the concentration of CNPs and cross-linker significantly affected the antibacterial properties of polyester fabric. Finally, a validation run confirmed the authenticity of proposed recipe. The polyester fabric showed good antibacterial activity with minimum loss of its inherent textile properties.

   Keywords: *antibacterial, chitosan, polyester fabric, nanoparticles.*

3. **Malik, M. H., Akhtar, N.**, Bakkar, A., & **Fraz, A.** (2019). Comparison of cut-resistance performance of gloves made from virgin and recycled Para-Aramid fibres. *IOP Conference Series: Materials Science and Engineering, 507,* 012001. doi: 10.1088/1757-899x/507/1/012001.**(Mumtaz Hasan Malik, N. Akhtar, Ahmad Fraz (STD) SJR**

Abstract: Application areas of high performance fibres are increasing day by day due to their superior physical, thermal and chemical properties. Para-aramid is one of these high-tech fibres which is extensively used for making technical textiles like cut-resistant gloves, cut-protective seat covers, and puncture-resistant fabrics, etc. As the use of this fibre has increased manifold, an attempt has been made to assess the performance of recycled fibres in comparison with the virgin fibres, by opening the para-aramid knitted fabric rags into fibrous state and convert the reclaimed fibres into yarn for making cut-resistant cost effective gloves. Four yarns, each of 70 tex, were spun on a DREF 3000 friction spinning machine. Two yarns were made from 100% virgin para-aramid fibres, the first one was the core-wrapped yarn consisting of a 50 micrometer steel wire in its core and the second one without it. The other two yarns were spun from a blend of 50% virgin and 50% recycled para-aramid fibres, one yarn with a 50 micrometer steel core while the other without it. The test results on the manufactured gloves from these yarns showed that the cut-resistance performance of the gloves made from 50: 50 blend of virgin and recycled para-aramid fibres was comparable with the gloves made from virgin para-aramid fibres.
Keywords: *not available.*

4. **Tusief, M. Q., Malik, M. H.,** Asghar, H. N., Mohsin, M., & Mahmood, N. (2019). Bioremediation of Textile Wastewater through Floating Treatment Wetland System. *International Journal of Agriculture and Biology, 22*(4), 821-826. **(Muhammad Qamar Tusief, Mumtaz Hasan Malik(STD) Web of Science JCR Listed (IF: 0.802)**

Abstract: Textile dye enriched effluents are one of the worst polluters of our water and environmental bodies. Release of these effluents without treatment is not only aesthetically unpleasant but also has damaging impact on flora and fauna. Biological ways of effluents treatment such as floating treatment wetlands (FTWs) are economical, chemical free and environmental friendly. Therefore, this lab study was designed to develop a FTWs system by vegetating two free-floating aquatic plants "Eichhornia crassipes (Mart.) Solms and Pistia stratiotes L. for the remediation of dye enriched textile wastewater. The efficacy of the system was amplified by inoculating two pollutants degrading and plant growth promoting bacteria "Bacillus cereus and B. subtilis" as well. A significant decrease, 16.23% in potential hydrogen (pH), 35.27% in electrical conductivity (EC), 54.69% in total dissolved solids (TDS), 45.32% in total suspended solids (TSS), 57.31% in biological oxygen demand (BOD), 66.82% in chemical oxygen demand (COD) and 56.57% in color concentration percentage (CC%) was noted after 3 days period. The quality of treated water matched the standards set by National Environmental Quality Standards (N.E.Q.S.) of Pakistan and Zero Discharge of Hazardous Chemicals (Z.D.H.C.) for municipal and industrial wastewater, thus, suggesting its safe disposal to environmental sink. In conclusion, bio-augmented FTWs could be a promising approach for textile wastewater treatment.
Keywords: *textile effluents treatment, floating treatment wetlands, plant-bacteria synergism, hydraulic retention time.*

5. **Hussain, Z.,** Arslan, M., Shabir, G., **Malik, M. H.,** Mohsin, M., Iqbal, S., & Afzal, M. (2019). Remediation of textile bleaching effluent by bacterial augmented horizontal flow and vertical flow constructed wetlands: A comparison at pilot scale. *The Science of the total environment, 685*, 370.**(Zahid Hussain, Mumtaz Hasan Malik(STD) Web of Science JCR Listed (IF: 5.589)**

Abstract: Fabric bleaching is one of the most widely used processes of the textile industry that also produces a significant amount of highly polluted wastewater. Previously, expensive and chemically extensive conventional remediation systems were used to treat bleaching effluent. Despite this, the potential of constructed wetlands (CWs) as a treatment system remains un-investigated. Furthermore, most research on the use of CWs for textile effluents are conducted at laboratory scale and therefore further research at field-

scale is timely. This study compares the efficacy of bacterial augmented vertical flow constructed wetlands (VFCWs) and horizontal flow constructed wetlands (HFCWs) for the remediation of textile bleaching wastewater at pilot scale. To this end, CWs macrocosms of 1000 L water capacity were planted with Phragmites australis and inoculated with bacterial strains possessing pollutant degradation and plant growth-promoting traits. The results showed that both variants of CWs were effective in attenuating pollutants from the wastewater, however, the performance of HFCWs exceeded that of the VFCWs for almost every pollutant measure undertaken. For HFCWs, a significant reduction in COD (89%), BOD (91%), TOC (96%), and toxicity was achieved in a period of 72 h during the first month of operation. Bacterial inoculation in CWs further improved the system's performance and these bacteria also exhibited persistence in the rhizoplane (43%), root interior (56%) and shoot interior (29%) of P. australis. This study, therefore, suggests that the bacterial augmented HFCWs is a suitable approach for industrial scale textile bleach wastewater treatment.

Keywords: *textile bleaching effluent, constructed wetlands, phytoremediation, textile wastewater.*

6. **Qamar, M., Mumtaz, H.,** Mohsin, M., Asghar, H., Iqbal, M., & Nasir, M. (2019). Development of floating treatment wetlands with plant-bacteria partnership to clean textile bleaching effluent. *Industria Textila, 70*, 502-511. doi: 10.35530/IT.070.06.1679. **(Muhammad Qamar Tusief, Mumtaz Hasan Malik(STD) Web of Science JCR (IF: 0.504)**

Abstract: Treatment of textile wastewater prior to its discharge into the environment is a highly concerned issue of the industry. The current established methods in textile industry for effluent treatment are typically high in cost, require range of chemicals along with the generation of concentrated hazardous sludge. It is therefore inevitable to look for economical and eco-friendly ways to treat textile wastewater. Hence, the present study was endeavored to develop green, chemical free and sustainable bacteria inoculated plant based technique for remedying textile bleaching effluents. A lab scale floating treatment wetlands (FTWs) system was developed and implemented for remediation of H2O2 based textile bleaching wastewater. This system was designed by vegetating two free floating aquatic plants Eichhorniacrassipes and Pistia stratiotes. The performance of this system was enhanced by inoculating two pollutant degrading and plant growth promoting bacteria, Bacillus cereus and Bacillus subtilis. The efficacy of this bacterial augmented FTWs system was assessed by monitoring physicochemical parameters of treated wastewater. A substantial decrease in pH, EC, TDS, TSS, BOD and COD was noted. This stamped the effectiveness of this sustainable technique to treat textile effluents.

Keywords: *waste water treatment, textile bleaching effluent, floating treatment wetlands, plant-bacteria synergy, plant growth promoting bacteria.*

Conference Paper

1. **Hassan, R.** (2019). *Ignorance towards following fashion trends of Pakistan in designing ready to wear Clothing Line*. Paper presented at the 6th International Conference on Textile and Clothing (6th ICTC), University of Management and Technology, Lahore. **(Rabbia Hassan (STD)**

Abstract: Designers indulge themselves in creating and designing clothes either they belong to an industry or a design house. Nurture themselves by taking inspiration from different fashion trends and themes. Pakistani Fashion designers are supposed to be following international and local fashion trends to design something trendy, unique and salable. Most of the designers who work at a level where they are not at a lead and obey instructions of their immediate design heads. Design ready to wear clothing line by adding embroideries, cut lines and silhouettes but forget to focus on following local fashion trends of Pakistan. Head designers give instructions to their team of designers to design ready to wear clothing line in short time notice. Sometimes they are given a command to produce something traditional by following local fashion trends of Pakistan. Designers become unable to design efficiently with the application of local fashion trends of Pakistan which

comprise Pakistani ideology and culture. They only find this option as practical to add different silhouettes and cut lines by following international western fashion trends.
Keywords: *not available.*

2. **Sitara, A., Abbas, M., Anwar, F.** (2019). *The application of functional finishes on haute couture*. Paper presented at the 6th International Conference on Textile and Clothing (6th ICTC), University of Management and Technology, Lahore. **(Anika Sitara, Mudassr abbas,Faiza Anwar (STD)**
Abstract: Not available.
Keywords: *not available.*

3. **Khalid, A., Masood, A.** (2019). *Utilizing Luxury Textile in Interior Design to replace conventional Architrctural Finishes*. Paper presented at the 6th International Conference on Textile and Clothing (6th ICTC), University of Management and Technology, Lahore. **(Amna Khalid, Adil masood Qazi (STD)**
Abstract: Not available.
Keywords: *not available.*

4. **Anwar, F., Abdullah, A.** (2019). *Ecofriendlyand Sustainable Denim Finishing Techniques*. Paper presented at the International conference Tex Teh IX Advance Textile for a better world, Bucharest, Romania, October 24 - 25, 2019. **(Faiza Anwar, Ahmad Abdullah(STD)**
Abstract: Denim washing is not such an old thing that is not known to us. It is done to get proper aesthetic look of the fabric. Denim washing or somehow called as denim finishing has its own scope in the market or industrial scale as it enhances the functional activity as well as the make fabric aesthetically more appealing This research work focuses on the different washing techniques of denim fabric keeping the environment as major concern with enzyme (Lava Cell NHC, bio-polish (Lava Cell NBP, enzyme and stone, resin (PULCRA STABITEX ETR+dip and resin spray. For this purpose, the leg tubes of 22×22 inches of denim fabric are made and prescribed recipes are applied on the fabric in an automatic tumble TONELLO machine. After that different tests were performed to investigate change in dimensional, pilling resistance, tensile Strength, tear Strength, absorbency and change in shade variation after different washing. And surface morphology of fabric samples after washing was investigate by SEM analysis.
Keywords: *denim, resin, stone wash.*

5. **Sitara, A., Abbas, M., Anwar, F.**(2019). *Decorating Further:Applying Cosmeticfinishesto The Haute Couture*. Paper presented at the International conference Tex Teh IX Advance Textile for a better world, Bucharest, Romania, October 24 - 25, 2019. **(Anika Sitara, Mudassar Abbas, Faiza Anwar (STD)**
Abstract: Research and experimentation becomes salient element for the rising of any country's economic development. Designers are consolidating natural and synthetic materials to enhance the textile surfaces and making something contemporary out-of-the-box. In this high-tech stage of era, functional finishes are becoming part of the textile and fashion world. In this research two decorative functional finishes such as Fluorescent and Phosphorescent (Glow in the Dark) are employed onto cotton substrates to develop haute couture dresses. The main purpose of these finishes is to enhance the aesthetics of the garments rather than decorate them with typical printing materials and techniques. Functional finishes have already been used in past for technical aspects but in limitations. These two major finishes will be utilized with self created print designs on classic theme "Memphis style" .Cut lines are also represent modern era garments for spring season.
Keywords: *textile surface, functional finishes, glow in the dark, fluorescent finish, haute couture, fashion design.*

6. **Tusief, M. Q., Malik, M. H.,** Mohsin, M., & Asghar, H. N. (2019). *Treatment of textilewastewater using microbes' inoculated free-floatingaquaticplantsbased wetlands*. Paper presented at the International conference Tex Teh IX Advance Textile for a better world, Bucharest, Romania, October 24 - 25, 2019. **(Muhammad Qamar Tusief, Mumtaz Hasan Malik (STD)**

   Abstract: Textile wastewater is a big source of aquatic and environmental pollution. Currently, various physicochemical textile effluent treatments are practiced in the textile industry, but they have challenges with respect to cost, maintenance, labour management, chemicals usage and production of additional sludge. The present study was carried out to develop a less expensive, chemicalfree, green and sustainable plant based floating treatment wetlands (FTWs) system augmented with bacteria to remedy the effluents from textile finishing unit. Two free-floating aquatic plants, Eichhornia crassipes and Pistia stratiotes, were vegetated to develop FTWs system and its efficacy was studied with and without inoculating two plant growth-promoting and pollutant- degrading bacteria, Bacillus cereus and Bacillus subtilis. The worth of this system was analyzed by screening physicochemical parameters like potential hydrogen (pH), electric conductivity (EC), total dissolved solids (TDS), total suspended solids (TSS), biological oxygen demand (BOD) and chemical oxygen demand (COD) of wastewater for hydraulic retention periods of 0, 24, 48 and 72 hours. The pH of the treated wastewaters was changed from acidic to neutral/alkaline side while a significant reduction was found in all other physiochemical parameters as per set limits of industrial and municipal wastewater standards as specified by the National Environmental Quality Standards (NEQS) of Pak istan and Zero Discharge of Hazardous Chemicals (ZDHC) program.

   Keywords: *not available.*

7. **Qureshi, A. K.** (2019). *Utilizing Smart Textiles In Interior Design To Replace Conventional Architectural Finishes*. Paper presented at the International conference Tex Teh IX Advance Textile for a better world, Bucharest, Romania, October 24 - 25, 2019. **(Amna Khalid (STD)**

   Abstract: Many architects and designers coincide that fabric structures have an imperative role to play in creating an ecofriendly future. In recent years, the use of smart textiles has been particularly popular in the construction practices. These are hailed as environmentally friendly, deliberated as architecturally aesthetic and are usually cost effective. There is a growing demand for hybrid textile materials that combine strength and functionality in a lightweight product at a competitive price. These materials are developed with advanced technical interventions. This paper aims to conceptualize the idea of using smart textiles in the interior architecture to ensure sustainability by replacing the conventional architectural finishes. The use of smart textiles that fetches the possibilities offered by both textile and interior design in the present world has been highlighted with examples. Studies illustrate that the use of smart textile materials have several benefits in the built environment in terms of weight, transparency, adaptability, indoor climate, atmosphere and acoustics. Examples are taken from the superlative case studies from all across the world. The research combines the versatile information and explores the diversity of smart textiles, presenting a framework of future prospects for the utilization of the materials in the modern interior design concepts.

   Keywords: *smart textiles, fabrics based materials, sustainable textile architecture, conventional architectural finishes.*

Institute of Islamic Perspectives and Guidance

Institute of Islamic Perspectives and Guidance

Research Articles

1. Mahmood, M. R., Ahmad, M. I., & **Jahangir, H. A.** (2019). Aurangzeb Alamgir on Inter Faith Harmony. *Journal of Islamic Thought and Civilization (JITC), 9*(2), 298-311. **(Hafiz Adil Jahangir (IIPG)** SJR

Abstract: Islam provides an absolute religious freedom to the followers of all the religions. The Muslims promoted peace, mutual respect, inter-faith harmony and religious equality in the Sub-Continent in this ideological prospective. The Mughal rulers not only continued this glorious Islamic tradition but also promoted it on a very large scale. Aurangzeb Alamgir is one of those Mughal rulers who not only granted religious freedom to the non-Muslim inhabitants of India rather he honored many non-Muslims especially the Hindus with important public offices. He took special steps for their comprehensive socio-religious welfare and progress. He not only provided security to the contemporary religious worship places of the non-Muslims, but also allowed them to build new religious as well as educational institutions where they wanted. Contrary to the historical facts, some of the partial writers accuse Aurangzeb Alamgir to be prejudiced and cruel towards his non-Muslim subjects, particularly the Hindus. They think that Aurangzeb Alamgir demolished the Hindu temples as well as the Hindu schools. He increased the amount of "Jizya", took some steps for forced religious preaching and the Hindus were expelled from public services and official posts. But, these allegations do not match the historical realities. This research article aims to conduct a thorough and an impartial analysis of these allegations.
Keywords: *Aurangzeb alamgir, inter-faith harmony, islam, mughals, sub-continent*

Institute of Aviation Study (IAS)

Institute of Aviation Study

Research Articles

1. **Asim, A.,** & Ashraf, M. (2019). Design and Development of Secure Mobile Communication over GSM Network Using Open Source Operating System (OS). *VFAST Transactions on Software Engineering, 14*(1), 1-5. **(Arslan Asim (IAS)** **Not HEC Recognized**

Abstract: With the rapidly advancing technology of today, exchange of information and data is a very pertinent matter. The world has just recently witnessed the effects of information leakage through the issue of WikiLeaks. There are huge amounts of data being shared over different platforms nowadays. Global System for Mobile Communication (GSM) is one of the most reliable platforms known to and used by almost all people in the world for text as well as voice communication. With the tools like Android Studio and NetBeans available, it is now possible to encrypt the text that has to be sent over the GSM, so that it can be decrypted at the other end of the communication path. However, the encryption and decryption of voice being transmitted over the GSM network still remains a question. In the domain of real time voice encryption, much of the work being carried out pertains to the voice being exchanged through the Internet Protocol. As compared to the Voice over Internet Protocol (VoIP), voice over the GSM network has not seen much research work related to its security aspects. The purpose of this paper is to document the results of a project aimed at developing a platform for mobile phones in order to communicate over the GSM network in a secure manner. The most suitable method for achieving the above mentioned objective is to use an open source Operating System (OS), so that the source code is easily accessible and usable. In this paper, the Android OS will be under discussion, which is compatible with all the Android mobile phones. In this way, the maximum number of mobile phone users can be benefitted because Android cell phones are being widely used nowadays. The use of cryptographic algorithms for securing the voice communication over the GSM network is also a part of this paper. The work revolves around the Java programming language since the Android application development has been carried out in Java through the use of Android Studio. Also, NetBeans has been employed for developing algorithms for voice encryption.
Keywords: *android operating system, global system for mobile communication (GSM), encryption, decryption, cryptography.*

Conference Paper

1. **Batul, B.,** Sohail, A., **Aizaz, A., & Jamil, Z.** (2019). *Application of Structural Similitude for Scaling of a Pressure Vessel.* Paper presented at the IOP Conference Series: Materials Science and Engineering. **(Beenish Batul, Ahmad Aizaz, Zukhraf Jamil (IAS)**

   Abstract: Pressure vessels find their use in various fields, ranging from gas cylinders used in households for cooking, boilers for steam engines, fuselage of aircraft to solid rocket motors used in missiles and space shuttle. The design of such vessels is validated by performing tests on full scale prototypes. Mostly the testing of such vessels is cumbersome and expensive. This paper establishes the method to reduce the cost for testing the pressure vessels. The theory of similitude is studied to make the testing process easier by establishing structural similitude for a pressure vessel. Using similitude theory a scaled model of the prototype vessel is developed in such a way that when the scaled models' responses are multiplied by a calculated scale factor, behaviour of the prototype could be predicted. By testing on the scaled down model, the cost of manufacturing is reduced. The pressure vessel considered here is representative of the pressures and materials used in high pressure applications. In this paper a 1/10th scaled model of the pressure vessel is developed using structural similitude theory. Buckingham pi-theorem technique has been used for dimensional analysis after studying parameters on which pressure vessel is designed and ANSYS software is used to validate the resulting pi-products. Complete similarity is achieved when predicted prototype results completely map on to prototype results.

   Keywords: *dimensional analysis, pressure vessels, scaled model, structural similitude.*

2. **Khan, F. N., Batul, B**., & Aizaz, A. (2019). *A CFD Analysis of Wingtip Devices to Improve Lift and Drag Characteristics of Aircraft Wing.* Paper presented at the IOP Conference Series: Materials Science and Engineering. **(Fatima Najeeb Khan, Beenish Batul, Ahmad Aizaz (IAS)**

   Abstract: The present study investigates the use of various wingtip devices to analyse the parameters of lift and drag for an aircraft wing. The coefficients of lift and drag are investigated in this research to optimize the wing design for enhancing the aircraft performance. A reduction in the drag produced due to wingtip vortices leads to reduced fuel consumption which contributes to the reduction in fuel emissions. The two-dimensional analysis is carried out for the selection of an apposite aerofoil by comparing the lift/drag characteristics of NACA 0012, 2415 and 23015 respectively at the velocity of 79.16 m/s at the angles of attack of 0°,4°,8°,12°,16° and 20°. The aerofoil section NACA 2415 is used to design the three-dimensional aircraft wing. For the analysis of the various wing tip devices the three-dimensional wing is incorporated with the spiroid winglet, blended winglet, wingtip fence and a mini-winglet. The CFD analysis for the wing designs is carried out for the take-off and landing phases of an aircraft's flight because the effect of vortices is the highest during these flight phases. The angles of attack range from 0° to 20°. The CFD results reveal that for the wing designs, the plain wing produced the highest drag and the blended winglet proved to be the wingtip device with the most beneficial design. The results obtained for the 30° cant angled blended winglet and 60° cant angled wingtip fence produces additional lift when compared to the results obtained for the counterpart designs. The results obtained from the analysis are in close correlation to the established use of the wingtip devices.

   Keywords: *computational fluid dynamics, wingtip devices.*

3. Khan, M. S., Ashraf, M. M., Jamil, L., **Aizaz, A.,** & **Asim, A.** (2019). *Mobile Software Platform for Aircraft Maintenance Engineering Industry* Paper presented at the Sixth International Conference on Aerospace Science and Engineering, NUST Islamabad, Pakistan. **(Ahmad Aizaz, Arslan Asim (IAS)**

   Abstract: Aircraft maintenance engineers constitute a very valuable part of the aviation safety and security. No major aircraft operator can function properly without having a strong aircraft maintenance engineering

setup. Most of the aircraft maintenance industries are following the conventional paper-based system, which requires a lot of shelf space, consumes more time and is not eco-friendly. E- maintenance is a new concept being developed and utilized by very few organizations worldwide. The paper includes a discussion on the various traditional as well as latest methods being used by the contemporary aircraft maintenance industries. The pros and cons of the various methods will also be brought to light. Ideas similar to the one under progress include 'One Powerful Solution' developed by the Boeing Company, 'Maintenance Mobility' launched by the Airbus and Honeywell's Go-Direct solution. The purpose of this paper is to discuss the prospects of replacing the paper-based maintenance activity by a more systematic electronic maintenance management system, whilst proposing a specimen software application using the Android operating system. For this purpose, a survey was conducted among the senior engineering management of the flying clubs at the Walton Airport in Lahore, Pakistan. Their opinions, recommendations and reservations were documented with the intention to develop the application in conformity with their suggestions. The idea was greeted with a lot of alacrity from the professionals. In this paper, the data collected through the survey will also be presented in a succinct form with the objective of highlighting the dire need for the proposed solution in the paper. This paper will also present a prototype of the application. For the application development, Android Studio is being used which implies that the final product will be readily available for use on most Android based devices. Also, the Android operating system is fundamentally an open source operating system which tremendously improves the chances of providing a widespread solution to the paper based system. For the development of the graphical user interface, the Adobe Photoshop CC 2014 was used and a rudimentary design was prepared to be implemented on the Android Studio.

Keywords: *android operating system, e-maintenance, aircraft maintenance engineering.*

Institute of Clinical Psychology (ICPY)

Institute of Clinical Psychology (ICPY)

Research Articles

1. **Rabia, K., Fatima, N., Sadia, S., & Zahid, M.** (2019). Perceived social support and mental health problems in infertile women: A comparative study. *Rawal Medical Journal, 44*(3), 584. **(Rabia Khadim, Fatima Naeem, Sadia Saleem, Zahid Mahmood (ICPY)** SJR

Abstract: Objective: To determine the relationship between perceived social support and mental health problems in women with primary and secondary infertility. Methodology: Using the cross-sectional research design, total number of 150 infertile women (87 primary and 63 secondary) with the age range of 21 to 40 (Mean 28.89&#61617,5.05) were selected from two infertility centers through purposive sampling from August 4, 2017 to December 5, 2018. They were given Multidimensional Scale of Perceived Social Support and Depression Anxiety Stress Scale along with demographic performa. Debriefing sessions were conducted at the end of interview. Results: There was negative relation between perceived social support and mental health problems of infertile women. Women with primary infertility had less social support and more mental health problems as compared to women with secondary infertility. Age, education and family support were predictors of mental health problems. Conclusions: Infertile women suffering from various psycho-social problems indicate the importance of increasing social support, which makes them less vulnerable towards mental health problems. This enhances the need to develop structured programs including counseling of couples and family members, especially of in-laws.

Keywords: *primary infertility, secondary infertility, perceived social support, mental health problems, bio-psycho-social model.*

2. **Ashiq, U., Saleem, S., Jabeen, A., & Mahmood, Z.** (2019). Identity & Emotional Behavioral Problems in Institutionalized Orphans nad Mainstream Adolescents-min. *Journal of Pakistan Psychiatric Society (JPPS), 16* (2). **(Uzma Ashiq, Sadia Saleem, Ayesha Jabeen, Zahid Mahmood (ICPY) HEC Y CAT**
   Abstract: Not available.
   Keywords: *not available.*

3. **Saleem, S., Jabeen, A., & Mahmood, Z.** (2019). Attachment Styles and Self-Concept as Predictor of Depressive Symptoms in Educated Adolescents. *Journal of Pakistan Psychiatric Society (JPPS), 16*(1), 30-35. **(Sadia Saleem, Ayesha Jabeen, Zahid Mahmood (ICPY) HEC Y CAT**
   Abstract: Not available.
   Keywords: *not available.*

4. **Subhan, S., Saleem, S., & Mahmood, Z.** (2019). Mental Toughness in Pakistani Cricketers: A Factor Analytical Approach. *FWU Journal of Social Sciences, 13*(1), 67-78. **(Sara Subhan, Sadia Saleem and Zahid Mahmood (ICPY) SJR**
   Abstract: The aim of this study was to develop a culturally relevant scale of mental toughness for Pakistani cricketers with sound psychometric properties. In order to explore the phenomenology of mental toughness 20 national and international male cricketers were interviewed individually and their responses were recorded in verbatim. All the responses were collated, duplicate and vague items were discarded. The remaining items were transformed into a 4-point likert scale to assess the intensity of each item and altogether 48 items comprised the Cricket Mental Toughness Scale (CMTS). Further, 149 male cricketers with the age range of 16-28 years (M=18.79, SD=3.06) selected through purposive sampling, were given the CMTS final 48 items list, along with the Cricket Mental Toughness Inventory (CMTI, Gucciardi & Gordon, 2009) for concurrent validity. For discriminant validity the Sports Interference Scale (Donohue, Silver, Dickens, Covassin, & Lancer, 2007) and a demographic performa were also included. Exploratory factor analysis yielded 4 factors namely "Resilience", "Preparation", "Emotional Stability" and "Self Belief". The scale was found to have highly internally consistent (a=.92), and split half reliability r=.91with moderate levels of concurrent and discrimanant validity. Results were further discussed in cross cultural context by highlighting its implication for Pakistani cricketers.
   Keywords: *mental toughness, cricket, scale development.*

5. **Mukhtar, S., & Mahmood, Z.** (2019). Prevalence and Associated Factors of Relational Aggression in Educated Adolescents. *Journal of Pakistan Psychiatric Society (JPPS), 16* (2). **(Sonia Mukhtar, Zahid Mahmood (ICPY) HEC Y CAT**
   Abstract: Not available.
   Keywords: *not available.*

6. **Saleem, S., Iqbal, S., & Jabeen, A.** (2019). Assessing Identity in Adolescence: A Psychometric Study. *FWU Journal of Social Sciences, 13*(2), 25-35. **(Sadia Saleem, Shumaiza Iqbal and Ayesha Jabeen (ICP) SJR**
   Abstract: Identity is one the most critical concepts of the developmental psychology, yet it is quite elusive. This paper explores the structure of identity in a sample of adolescents from a collectivistic culture. The construct of identity was explored from 30 adolescents (15 Boys and 15 Girls) with the age range of 13- 18 years through open-ended interviews. A final list of 39 items was piloted on the 20 adolescents. Finally,400 (50% Boys and 50% Girls) with the age range of13-18 years (M=14.37, SD=1.23) adolescents were selected through a stratified sampling and the Identity Scale for Adolescents (ISA), Demographic Performa, the School Children Problem Scale (Saleem & Mahmood, 2011) and the Identity Scale Inventory-V (ISI-V, Berzonsky et

al,. 2013) were given to them. Exploratory Factor analysis of ISA yielded three factors Positive Self Identity, Negative Self Identity, and Arrogant Self Identity. Confirmatory Factor Analysis confirmed the 3 factor solution with 17 items. ISA was found to have a high internal consistency, convergent validity, discriminant validity and split half reliability. Results are discussed in terms of cultural and counseling implications of the construct of identity.

Keywords: *adolescents, identity, reliability, counseling, culture.*

7. **Aslam, S., Saleem, S., & Mahmood, Z.** (2019). The Development of a Mental Toughness Scale for Doctors: A Psychometric Study. *Journal of the Liaquat University of Medical and Health Sciences, 18*(3), 214-218. doi: 10.22442/jlumhs.191830630. **(Saba Aslam, Sadia Saleem, Zahid Mahmood (ICPY) SJR**

Abstract: OBJECTIVE: To develop a scale of mental toughness among medical doctors. METHODOLOGY: In the current study Mixed-Method research design was used, qualitative design was used to elicit the items for mental toughness and quantitative was used to establish psychometrics. This study was carried out in Govt. hospitals of Lahore. The study was carried out from August 2018-April 2019. The construct of mental toughness was explored from 20 post graduate residents and house officers (10 men and 10 women) through a semi structured interview. After excluding the repetition finalist of 40 items was further validated by 10 experts and based on the 50% agreement from the experts, a list of 30 items was finalized and piloted on 40 doctors (20 men and 20 women) for assessing user friendliness. Finally, a sample of two hundred doctors (100 men and 100 Women) between the ages of 22 to 36 (M =26.17, SD =1.83) from different Government. Hospitals of Lahore were given Mental Toughness Scale, Depression, Anxiety, Stress Scale (DASS-21) along with a Demographic form. RESULTS: Exploratory factor analysis through varimax rotation yielded three factors solution named as Determination, Resilience and Optimism. The MTS was found to have sound psychometric properties as split half reliability was .74 test, retest reliability was .75. CONCLUSION: Mental toughness scale was found high psychometric properties, results were discussed in term of counseling and enhancing positive strengths in medical doctors.

Keywords: *mental toughness, culture, medical doctors, scale, mental health.*

8. **Khaliq, N. A., Jabeen, A., Saleem, S., & Mahmood, Z.** (2019). Attachment styles, embitterment and psychosocial issues in eczema patients: A bio-psycho-social comorbidity of a cancerous emotion. *Rawal Medical Journal, 44*(3), 565-568. **(Nida Abdul Khaliq, Ayesha Jabeen, Sadia Saleem, Zahid Mahmood (ICPY) SJR**

Abstract: Objective: To explore the relationship among attachment styles, embitterment and psychosocial issues in eczema patients. Methodology: A sample of 130 patients with the age range 18-35 years was selected from different private dermatologic clinics and government hospitals of Lahore, Pakistan through purposive sampling technique. Attachment Questionnaire for Adults (AQA), Posttraumatic Embitterment Disorder Scale (PTEDS) and indigenously developed Psycho-Social Problems scale for Eczema Patients (PPISE) were used for data collection. Results: A positive correlation was found between embitterment and psychosocial problems in eczema patients. Hierarchical Regression Analysis revealed that Insecure Attachment and Embitterment were significant positive predictors of psychosocial problems in eczema patients. Conclusion: This study has identified avoidant attachment style and embitterment as significant risk factors for psychosocial problems in eczema patients.

Keywords: *skin disease, psycho-dermatology, attachment, embitterment and biopsychosocial model.*

9. **Sarwar, A., & Bashir, U.** (2019). Effectiveness of Rehabilitation Program for Chronic Schizophrenia: A Case Study. *Journal of Liaquat University of Medical & Health Sciences, 18*(02), 181-184. **(Anila Sarwar, Umaiza Bashir (ICPY) HEC Y CAT**

Abstract: Chronic schizophrenia is a longer term state of schizophrenia and it is marked by persistent patterns of distorted perception of reality, thought processes and negative as well positive symptoms. It disrupts the executive functioning of the individual that's why all areas of a person's life turned effected because of this. As an old practice to treat this psychotic disorder only medicines were used but presented case highlighted the importance of psychotherapy (rehabilitation) along with medication for the better management of chronic schizophrenia. It highlighted the significance of Rehabilitation process for regaining the elapsed simpler and smaller but essential life skills for managing schizophrenia. The cultural reservations were there while assessing and managing this case.

Keywords: *chronic schizophrenia, psychotherapy, rehabilitation.*

10. **Ashiq, U., Saleem, S., Jabeen, A., & Mahmood, Z**. (2019). Identity & emotional behavioral problems in institutionalized orphans and mainstream adolescents. *Journal of Pakistan Psychiatric Society, 16*(2), 36-40). **(Uzma Ashiq, Sadia Saleem, Ayesha Jabeen, Zahid Mahmood (ICPY) HEC Y CAT**

Abstract: OBJECTIVE To explore the difference between orphan and mainstream adolescents on identity and emotional behavioral problems. STUDY DESIGN Cross sectional study PLACE AND DURATION OF STUDY The study was conducted in 4 orphanages 2 National NGOs and 2 international NGOs) and 4 government schools (2 boys and 2 girls) of Lahore city in the duration of six months SUBIECTS AND METHODS 200 participants 100 Orphans and 100 Mainstream adolescents) with the age range of 13-18 year (M 14.42, SD 1.47) were selected through purposive sampling technique. The research protocol comprised Identity Scale for Adolescents ISA, (Iqbal SSaleem, 2015) and School Children's Problem Scale SCPS along with a demographic Performa. RESULTS Results showed that Orphan Adolescents scored significantly higher on Negative and Arrogant Identity than the Mainstream Adolescents. On the other hand, Mainstream Adolescents scored significantly higher on Positive Identity. Hierarchical Regression Analysis revealed that gender, age, participants group and Negative Identity were found to be positive predictors of emotional behavioral problems. Results are discussed in terms of cultural influence on orphan hood and implications for clinical and counseling services. CONCLUSION The study concluded that adolescents living in orphanages have negative self identity and more emotional/behavioral problems.

Keywords: *adolescent identity, foster care, orphanages, parents' death.*

11. **Maqsood, S., & Rafiq, M.** (2019). Effect of circle therapy on breast cancer pain management. *Anaesth. pain & intensive care, 23*(1), 63-67**. (Saba Maqsood, Muhammad Rafiq (ICPY) HEC Y CAT**

Abstract: Objectives & Background: Recent studies have shown that alternative non pharmacological approaches have significant effect on pain management. Hypnosis has also been seen effective in pain management including cancer pain. The current study was conducted to assess the effect of novel hypnotic approach, called 'circle therapy' on pain due to breast cancer. Methodology: For this study, 60 females suffering from stage 2 breast cancer, undergoing through chemotherapy, were selected by using purposive sampling technique. An intervention plan for breast cancer patients was developed using a hypnosis technique, the 'circle therapy'. Subjective pain rating scale was used for the pre and post assessment of the pain. Results: Repeated measure ANOVA showed a significant effect of 'circle therapy' on pain caused by breast cancer ($p < 0.05$). Conclusion: On the basis of this current research, it is concluded that hypnosis has significant effect on pain reduction due to breast cancer. This effect is for short duration, however, this positive effect may be prolonged by increasing the number of hypnotic sessions.

Keywords: *cancer pain, hypnosis, psychotherapy, suggestibility, kappasonian hypnosis, circle therapy.*

12. **Hamid, S., Jabeen, A., & Mahmood, Z.** (2019). The Development of a Social Skills Scale for Adolescents. *Clinical & Counselling Psychology Review,, 1*(1), 15–27**. (Sana Hamid, Ayesha Jabeen, Zahid Mahmood (ICPY)** **UMT Journal**

Abstract: The main purpose of the study was to develop an indigenous tool to find out the level and nature of social skills in adolescents. Initially, a pool of 32 items was generated after interviewing 20 participants (both girls and boys). It was reduced later to 25 items excluding repetitions. These 25 items about social skills were administered on 20 new participants as a self-report measure on a 4-point rating scale. Moreover, one item considered ambiguous by participants was dropped and a final list of 24 items was given to 300 girls (50%) and boys (50%, M= 14.9 & SD= 1.07) along with Demographic Proforma and School Children Problem Scale (Saleem & Mahmood, 2011). The sample for the study was selected from government schools using stratified random sampling technique. Exploratory factor analysis revealed three factor solutions which were labelled according to their emerging themes like Getting Along Skills, Social Attributes and the Friendship Skills. The inter scale correlation ranged between (r=.66-.86) and alpha co-efficient showed high reliability (α .80). The tool can be used by school psychologists in assessing and training children with social skills deficits.

Keywords: *adolescents, scale development, social skill.*

13. **Rafiq, M., & Ali, S.** (2019). Diurnal variation of brain derived neurotrophic factor and its importance. *Advancements in Life Sciences, 7*(1), 01-04. **(Muhammad Rafiq (ICPY) Sajed Ali (Knowledge Unit of Science)** **SJR** **(SKT Campus)**

Abstract: Background: Previous studies have shown the importance of Brain Derived Neurotrophic Factor (BDNF) in different cognitive processes including learning and memory. Some previous studies have showed variations of BDNF protein during the day. But still there is no data that shows any circadian variation of BDNF in the brain of rodents. So, this study was aimed to determine any circadian variation of BDNF protein in brain structures involved in cognitive processes.

Methods: Male *Arvicanthis ansorgei* diurnal rats were sacrificed at different zeitgeber times (ZT21, ZT17, ZT13, ZT9, ZT5 and ZT1). ZT12 and ZT0 defining lights off and on respectively. The brains were removed and brain homogenates were prepared from hippocampus and cortex tissues. The amount of BDNF protein was assessed using ELISA technique on the brain supernatants.

Results: Both the structures i.e. cortex and hippocampus showed a circadian variation of BDNF protein. In cortex, two peaks were observed i.e. at ZT5 and ZT17. Post-hoc analysis showed a significant effect between ZT5 and ZT13 ($P<0.05$). Hippocampus, also showed two peaks i.e. at ZT9 and ZT21. Post-hoc analysis showed a significant effect between ZT1 and ZT21 ($P<0.05$).

Conclusion: Our novel results showed that both brain structures of diurnal rodents follow a circadian rhythms of BDNF protein. This study provides a focus for designing experiments and techniques that are based logically how circadian rhythms of different proteins contribute in pathology and how we can treat.

Keywords: *zeitgeber time, cortex, hippocampus, elisa, arvicanthis ansorgei, circadian rhythms, BDNF.*

14. Daud, A. H., **Saleem, S., & Mahmood, Z.** (2019). Differential effectiveness of cognitive behavior therapy and psycho education therapy on khat chewing behavior and associated mental health problems. *Journal of Postgraduate Medical Institute (Peshawar-Pakistan), 33*(4). **(Sadia Saleem, Zahid Mahmood (ICPY)** **SJR**

Abstract: Objective: To compare the differential effectiveness of Cognitive Behavior Therapy (CBT) and Psycho-Education Therapy (PET) on minimizing Khat chewing behavior and associated mental health problems.

Methodology: A randomized controlled trial was conducted on 40 regular Khat consumer men selected through consecutive sampling technique. The participants were randomly allocated to either CBT group or Psycho-education group by lottery method. The CBT group received seven sessions of manualized CBT for

substance abuse and the psycho-education group received three sessions on addiction-related educations. Both therapies were carried out in group format. Depression and Anxiety Stress Scale (DASS) was used for assessing both groups before and after the administration of the therapies. Chi square and t-test were used to calculate the difference between the groups.

Results: The age of participants of CBT and PET groups ranged from 18-25 years (mean 22.15 ±2.32 and 22.30 ±2.20 years respectively). A significant decrease was found in the Khat chewing behavior in CBT group as compared to the psycho-education group. Similarly other mental health problems in the CBT group were significantly reduced.

Conclusion: CBT was effective in decreasing Khat chewing behavior and associated mental health problems.

Keywords: *cognitive behavior therapy, psycho education therapy, khat use, mental health.*

15. **Saleem, S., Asghar, A., Subhan, S., & Mahmood, Z.** (2019). Parental Rejection and Mental Health Problems in College Students: Mediating Role of Interpersonal Difficulties. *Pakistan Journal of Psychological Research, 34*(3). **(Sadia Saleem, Zahid Mahmood (ICPY)** SJR

Abstract: College students are said to have an increasing trend of mental health problems that lead to various negative academic, personal and social outcomes. The current study aimed to determine the mediating role of interpersonal difficulties between parental rejection and mental health problems of college students. A total of 321 college students selected through purposive sampling aged 15to 20 years provided self-report data on EMBU-A (Gerlsma, Arrindell, Van der Veen, and Emmelkamp, 1991), Urdu version of Depression Anxiety Stress Scale (DASS; Aslam, 2007) and Interpersonal Difficulties Scale (IDS; Saleem, Ihsan, and Mahmood, 2014). Pearson Correlation was used to ensure that parental rejection, mental health problems and interpersonal difficulties are related. Results of path analysis revealed that parental rejection has an indirect effect on mental health through interpersonal difficulties. Implications for counselling services are discussed.

Conclusion: CBT was effective in decreasing Khat chewing behavior and associated mental health problems.

Keywords: *parenting, mental health, interpersonal difficulties and college students.*

School of Governance and Society (SGS)

Department of Governance and Society

Research Articles

1. **Azhar, A.,** Malik, M. N., & Muzaffar, A. (2019). Social network analysis of Army Public School Shootings: Need for a unified man-made disaster management in Pakistan. *International Journal of Disaster Risk Reduction,* 34, 255-264. doi: 10.1016/j.ijdrr.2018.11.02.**(Aisha Azhar (SGS)** Web of Science JCR Listed (IF: 2.568)

Abstract: This study evaluates the effectiveness of inter-organizational collaboration in response to the Army Public School (APS) Shootings that happened on December 16th, 2014 in the city Peshawar, Pakistan. After reviewing the major changes in terrorism related policies and frameworks before and after September 11, 2002, this article applies a social network analysis to compare the disaster response networks enacted in the formal disaster management plans with the actual response networks formed during the APS attacks. Data were gathered from content analysis of the APS Shootings incident, national and international newspapers, situation reports and after-action reports. The timely response to shootings is attributable to the long term planning efforts of law enforcement agencies. However, for improved results, the response and relief efforts should have been coordinated with the national disaster management framework under the National Disaster Management Authority (NDMA) - the lead authority for disaster management in Pakistan.

Keywords: *terrorism, man-made disaster management in Pakistan, coordination and collaboration, national action planlaw enforcement agencies, army public school shootings.*

2. **Azhar, A.,** & Yang, K. (2019). Workplace and Non-workplace Pro-environmental Behaviors: Empirical Evidence from Florida City Governments. *Public Administration Review, 79*(3), 399-410. doi: 10.1111/puar.13003.**(Aisha Azhar (SGS) Web of Science JCR Listed (IF: 4.659)**

   Abstract: Public employees are expected to be good stewards of public resources and engage in pro-environmental behaviors (PEBs). Using different categorizations of PEBs, this article examines whether public employees perform these PEBs in workplace and non-workplace settings. The article further investigates how PEBs are influenced by salient characteristics of public organizations—that is, public service motivation (PSM) and civic participation categorized as civic engagement and cognitive engagement. Data were collected through a survey of public employees in two city governments in Florida. A structural equation model was employed to test the proposed model. Findings indicate that PSM has a positive influence on workplace PEBs and similar PEBs in the non-workplace settings. Civic engagement has a positive influence on both workplace and non-workplace PEBs. Barriers significantly moderate the effects of PSM and cognitive engagement on workplace and non-workplace PEBs.

   Keywords: *not available.*

3. Muzaffar, A., Khurshid, A., Malik, M. N., & **Azhar, A.** (2019). Sustainable development across the supply chain: The missing link of socio-environmental effect. *Sustainable Development, 27*(5), 976-981. doi: 10.1002/sd.1988.**(Aisha Azhar (SGS) Web of Science JCR Listed (IF: 3.821)**

   Abstract: This research investigates the relationship of environmental sustainability with the key supply chain stakeholders that form the base for the social dimension of sustainability. Employing the perspective of stakeholder theory in the area of supply chains, we find that improving environmental sustainability results in the strongest relationship with the customers in which it operates. Similarly, relationships with suppliers, employees, and community are also significant. The community relationship is the weakest Smart PLS for structural equation modeling is used to determine the nature of relationship. The results suggest that practitioners should strategize relationship with stakeholders by focusing on both social and environmental aspects of sustainability. It also enhances the reputation and brand value of the firm. The paper also contributes in extending the stakeholder theory within the domain of sustainable supply chain management.

   Keywords: *environmental sustainability, social sustainability, stakeholder theory, supply chains.*

Book/Book Chapters

1. **Azhar, A.** (2019). Pakistan. In M. E. Guy, S. H. Mastracci & S.-B. Yang (Eds.), *The Palgrave Handbook of Global Perspectives on Emotional Labor in Public Service* (pp. 321-338). Cham: Springer International Publishing.**(Aisha Azhar (SGS)**

   Abstract: This chapter provides an examination of human resource management systems and practices in Pakistan. It explains how these practices are influenced by a confluence of social institutions, Western models, and Islamic principles. Pakistan, like other South Asian countries, has remained under the influence of British legacies in its administrative structures and employment practices. Using empirical evidence, this chapter summarizes the daily work experience of those who work for government. Findings reveal that two emotional labor variables, emotive capacity and deep acting, were positively related to job satisfaction and personal fulfillment. As if in superposition, deep acting is also positively related to burnout. The results are discussed through the lens of a colonial legacy and the incongruence between organizational and social display rules in Pakistan.

   Keywords: *not available.*

2. Yang, S.-B., Guy, M. E., Mastracci, S. H., **Azhar, A.,** Hsieh, C.-W., Lee, H. J., & Lu, X. (2019). Measuring Emotional Labor: Survey Construction, Measurement Invariance, and Structural Equation Model. In M. E.

Guy, S. H. Mastracci & S.-B. Yang (Eds.), *The Palgrave Handbook of Global Perspectives on Emotional Labor in Public Service* (pp. 175-196). Cham: Springer International Publishing.**(Aisha Azhar (SGS)**

Abstract: The capacity to engage in international comparative studies of emotional labor depends on having a robust survey instrument that works as well in one culture as in another. Comparative research projects are complicated undertakings because they must accommodate different languages as well as linguistic nuances. Challenges are compounded when empirical methods are employed. Translation and back-translation of the survey must be conducted to ensure that the meanings of items are as intended. Measurement equivalence must be assured in order for findings to be credible and for comparisons to be made across countries and cultures. This chapter describes development of the survey items, explains how the challenge of making comparisons across nations was overcome, and shows the structural equation model used in each nation's analysis. Items for each of three emotional labor constructs—emotive capacity, pretending, and deep acting—were developed by first analyzing pilot data from five nations on three continents. After variables were refined, public service workers from a larger sample of nations were surveyed: seven nations on four continents. Multi-group confirmatory factor analysis (MGCFA) then tested for cross-national invariance. Results confirm both configural and partial metric invariance of the items, enabling comparison of emotional labor demands and its consequences across nations.

Keywords: *not available.*

Conference Paper

1. **Azhar, A.** (2019). *Global Perspectives on Emotional Labor in the Public Service: "Pakistan"*. Paper presented at the American Society for Public Administration, Washington DC, USA.**(Aisha Azhar (SGS)**

Abstract: This chapter provides an examination of HRM systems and practices in Pakistan and how these practices are influenced by different social institutions, westerns models and Islamic principles. Pakistan, like other South Asian countries, has remained under the influence of British legacies in its administrative set-ups and employment practices. Through empirical evidence, this chapter summarizes the distinctive findings that emotive capacity and deep acting were positively related with job satisfaction and personal fulfillment. The results were unique and have been discussed under the lens of colonial legacy and incongruence between organizational and social display rules in Pakistan and western countries. Deep acting also showed positive relationship with Burnout, a result which was aligned with the previous findings.

Keywords: *not available.*

Institute of Communication and Cultural Studies (ICCS)

Institute of Communication and Cultural Studies (ICCS)

Research Articles

1. **Bhatti, Z. I., & Khan, A. A.** (2019). Aspects Marking in English and Thali: A Contrastive Study. *International Journal of English Linguistics, 9*(5), 170-181. doi: 10.5539/ijel.v9n5p170.**(Zafar Iqbal Bhatti, Arshad Ali Khan (ICCS)** **Master Journal List**

Abstract: The purpose of the paper is to explore the aspect system in Thali, a language spoken in Thal region, including district Layya, Bhakar and neighboring areas of Jhang, in Punjab province by a large number of people. This research paper presents comparisons and contrasts between Thali aspect system and English aspect system. There are only two aspects in Thali, namely, perfect and progressive. Perfect aspect can be categorized into past perfect and present perfect in terms of time dimensions. Similarly, progressive aspect is also categorized into past progressive and present progressive from time dimensions. All types of aspects in Thali are morphologically marked but aspect system in English is different by using morphological marking as well as several complex constructions like have + past participle, be + present participle, and have + been +

present participle for perfect, progressive and perfect progressive, respectively. Thali has only four structures for aspect whereas English has 17 different types of aspectual structures described in examples (24-40). The analyses and data examined in the paper are basically drawn from the native speaker intuitions and grammar (Beames, 1872-79). It is really a challenging job for Thali learners to conceptualise these different structures. As a final point, this paper finds out EFL issues and proposes some pedagogical strategies for teaching and learning English aspect system as a foreign language to Thali EFL learners.

Keywords: *aspect, present perfect, past perfect, present progressive, past progressive.*

2. **Khan, A. A.,** Ahmad, H., & Shah, S. R. A. (2019). A Self-efficacious TESOL Professional in the Arabian Gulf: Evidence from the Literature. *Global Regional Review (GRR), IV*(III), 283-292.**(Arshad Ali Khan (ICCS) HEC Y CAT**

Abstract: This article reflects on the notion of self-effectiveness as a substantial aspect of language teachers in ESL/EFL contexts. It introduces and defines the construct of teacher self-effectiveness, which can be derived from four different sources, a) enactive experience, b) vicarious experiences, c) social persuasion, and d) physiological states. The present study takes into consideration various skills, knowledge, and exposure that ESL/EFL teachers need in order to apply communicative language teaching (CLT) techniques and improve learners' linguistic competence. The review of literature brings into light a broad range of factors that might influence self-effectiveness beliefs of the teachers in a school context, and consequently their teaching outcomes. These factors include supportive organizational culture, collegial interactions, participation in continuous professional learning activities, high-level of English language proficiency, years of teaching experiences, and reflective pedagogical practices.It is also shown how self-efficacious teachers can impact EFL/ESL learners' motivation and their academic achievement.

Keywords: *CLT, EFL/ESL teachers, learning outcomes, self-effectiveness, teacher education, TESOL professionals.*

3. Hasan, W., & **Khan, A. A.** (2019). Phonological Analysis of English Loanwords in Dhani. *International Journal of English Linguistics, 9*(6), 198-213.**(Arshad Ali Khan (ICCS) Master Journal List**

Abstract: Present study aims to explore English loanwords into Dhani dialect of Punjabi language. It focuses on which English words have been borrowed and what kind of phonological adaptations they undergo. It is a qualitative and descriptive study. Data were collected through recordings from thirty participants engaged in general conversation in real life situations in Chakwal district of Rawalpindi Division, Punjab province, Pakistan. Participants were selected through simple random sampling technique. Results retrieved from analysis of the collected data show that English loanwords undergo different phonological strategies i-e substitution, addition, epenthesis and deletion. Substitution is the most prominent whereas deletion is the least prominent of all strategies. Analysis also highlights educational implication of the study.

Keywords: *Dhani, loanwords, English, phonological adaptation.*

4. **Khan, A. A., Khalid, A., & Abid, F.** (2019). Practices of Multicultural Education among the Faculty of Social Sciences and Humanities at University of Management and Technology Lahore. *Global Regional Review (GRR), IV*(IV), 194 – 207. **(Arshad Ali Khan (ICCS) HEC Y CAT**

Abstract: The aim of this research is to analyze practices in multicultural education among faculty of UMT, Lahore campus. To achieve the aim of study, the data was collected from 33 faculty members of the SSH department of UMT through purposive sampling. The closed-ended questionnaire with 5 Likert scale was used as an instrument to collect the data along with it a semi-structured interview was conducted to achieve the triangulation. Furthermore, the framework focuses on the different dimensions of multiethnic schooling created by Bank (2006, 2010). Data gathered through questionnaire was analyzed quantitatively while the

data collected through semi-structured interview was analyzed qualitatively. The study revealed that the teachers are more focusing on content integration and equity pedagogy as compared the facts creation and prejudice reduction. As far as the empowerment of ethos and communal construction of UMT concerned with most teacher that are in favor of it.

Keywords: *multicultural education, multicultural competency, diverse culture.*

5. Ali, S. R., Ahmad, H., & **Khan, A. A.** (2019). Testing in English Language Teaching and its Significance in EFL Contexts: A Theoretical Perspective. *Global Regional Review (GRR), IV*(II). **(Arshad Ali Khan (ICCS) HEC Y CAT**

Abstract: This conceptual paper reviews literature on the most common practices of language tests in ELT contexts around the world. The detailed discussion of various types of language tests is followed by its various aims and objectives which are linked to the qualities or characteristics of different language tests. The review of the literature reveals that language tests and its purposes vary from context to context and there is a wide range of practical constraints that test designers, test-takers, and test administrators encounter. Particularly, in the Saudi EFL context, EFL teachers lack a voice in the process of language assessment and there is a serious dearth of professional development training to raise EFL teachers' awareness of language tests and develop their assessment literacy. The review of the literature suggests that in various EFL/ESL contexts, more top-notch assessment methods need to be introduced and in the Saudi setting.

Keywords: *assessment, EFL context, ESL teachers, student proficiency, language tests.*

6. **Khalid, A., Khan, A. A.,** & Shah, S. R. A. (2019). Gender discourse of 'Equal opportunity' for male and female in Pakistani English textbooks: A critical discourse analysis study. *Journal of Communication and Cultural Trends, 1*(1), 77–98. **(Amina Khalid, Arshad Ali Khan (ICCS) UMT Journal**

Abstract: The aim of thepresent article is to investigate the representation of male and female within the gender discourse of 'equal opportunity' in Pakistani English textbooks. The present study has focused on if the gender discourse of 'equal opportunity' resisted or supported in Pakistani English textbooks at varied educational levels and in what ways such discourse manifests gender notions in Pakistani society. The paradigm of this research is descriptive and qualitative. The corpus of the study is collected from the Englishtextbooks of 5th, 6th and 8thclasses of the Punjab Textbook Board Lahore through purposive sampling. The theoretical framework of the research is based on Critical Discourse Analysis approach. Within the paradigm of CDA, Van Leeuwen's (2008) "Social Actor Network" model has been applied to analyze the gender representation in the text and the visuals. The results have shown that the discourse of 'equal opportunity' has been resisted in these textbooks as females have not been given the equal and fair representation. The findings are a vital source for the policy makers and the textbooks designers to improve the mistreated areas in future and keep in accordance with the policy of Education for All in real sense. This researchis limited to the school textbooks of three levels only so further research can be done on other textbooks in future.

Keywords: *biasness, critical discourse analysis, equal opportunity, gender, textbooks.*

7. **Khan, A. A.,** Bukhari, N. H., Khalid, A., & Abbass, S. N. (2019). The prediction of morphemes distribution at surface and abstract level: the case of Embedded Language nonfinite verbs in Pashto-English Bilingual data. *Kashmir Journal of Language Research*, *22*(2) 1-19. **(Arshad Ali Khan (ICCS) HEC Y CAT**

Abstract: The present research explores the election of Embedded Language (EL) nonfinite verbs at surface level with respect to its activation at abstract level. It also investigates the argument that non-finite verbs are elected at lexical-conceptual level. The framework used in the present research is the 4-M model (Myers-Scotton, 2002) of morpheme classification for the prediction of distribution of the EL non-finite verbs at

surface level in relation to abstract structure level. This research tries to answer the question: How the EL nonfinite verbs are elected at the abstract level in relation to surface level data? Approximately 8.49 hours bilingual data was collected from a sample of three groups is transcribed and only EL language verbs (nonfinite) are focused and discussed in the present research. According to the classification of 4-M model nonfinite verbs as content morphemes are salient only at lexical-conceptual level to its lemma specification of the speaker's intended semantic-pragmatic meanings. The nature of the EL nonfinite verbs also suggests its activation as fast and easy with low cost at the abstract level because its integration is made possible by the ML inflection morphemes for tense, aspect and outsider morpheme for subject-verb agreement. On the other hand the EL finite verbs are hard to find in the present data also suggest its complicated morphosyntactic nature. This is the first attempt in Pashto-English bilingual data that the 4-M model of morpheme classification is used to predict a relationship of the empirical data and its election at abstract level. The present study suggest that the model of morpheme classification could also be extended to the morpheme activation (LI and L2) in second language acquisition.

Keywords: *not available.*

8. Khalid, Amina & Khan, Arshad & Abid, Faiza. (2019). Exploring Intertextuality as Adaptation in Pakistani TV Advertisements. *Global Language Review.* IV. 59-66. 10.31703/glr.2019(IV-II).09. **(Amina Khalid, Arshad Ali Khan, Faiza Abid (ICCS) HEC Y CAT**

   Abstract: The aim of the present study is to investigate the different aspects of intertextuality as adaptation in Pakistani TV advertisements. The target of advertising companies is to persuade their consumers, so they use different approaches for this purpose and intertextuality is one of them. The following research question has been designed to get the answer of the problem: Which aspects of intertextuality do the Pakistani TV commercials adapt in order to achieve their intended effects? The research design of the study is qualitative and descriptive. The data of the study consists of eight Pakistani TV advertisements which have been collected from Pakistani TV channels through purposive sampling. The theoretical framework of the study is based on the approach of Intertextuality proposed by Kristeva (1966). The findings of the study showed that the advertisers have created their advertisements by adapting the intertextuality elements of citation, reference, allusion and translation to make them attractive and enticing to get their economic purpose.

   Keywords: *advertisement, intertextuality, adaptation, consumer, persuasion, citation, reference, allusion, translation.*

9. **Khalid, A., Khan, A. A., & Ashraf, S.** (2019). Demystifying Ideology: A Socio-Semiotic Analysis of Billboard Advertisements. *Global Language Review.* IV(I). 73-80. 10.31703/glr.2019(IV-I).10. **(Amina Khalid, Arshad Ali Khan, Sadia Ashraf (ICCS) HEC Y CAT**

   Abstract: The aim of the present study is to investigate the hidden ideologies in the billboard advertisements in the landscape of Lahore. The following questions have been designed: How do the billboard advertisements represent different ideologies in the landscape of Lahore? What types of ideology are implied in the billboard advertisements in the landscape of Lahore? The nature of the research is descriptive and qualitative. The sampling of the study is based on four billboards displayed in the main boulevard of Pakistan International Airline Society Lahore. The socio semiotic theoretical framework of Kress and Van Leeuwen (1996-2006) has been used. Those metafunctions such as representational, interactive and compositional have been investigated in this study. The study revealed that certain ideologies have been implied in the advertisements by the advertisers in order to achieve their aim which is to make their products popular, hence, the fulfilment of economic interests.

   Keywords: *ideology, billboard advertisement, social semiotic, critical discourse analysis.*

Conference Paper

1. **Ashfaq, N., Abid, F., Sarfraz, R., Khan, A., Riaz, S., & Niazi, A**. (2019). *Teaching Values and Morals through Cartoons in particular ''JAN''*. Paper presented at the 3rd International Conference on Linguistics and Literature (ICOLL 2019), Department of English, the Islamia University of Bahawalpur**. (Naheed Ashfaq, Faiza Abid, Rida Sarfraz, Anila Khan, Sadia Riaz & Aisha Niazi (ICCS)**
   Abstract: Not available.
   Keywords: *not available.*

2. **Ashfaq, N., & Abid, F.** (2019). *Elevation of Culture through Religious Events in Advertisements*. Paper presented at the 1st National Conference on TESOL, Linguistics and Literature (CTLL 2019), The Institute of Communication and Cultural Studies (ICCS) UMT, Lahore**. (Naheed Ashfaq, Faiza Abid (ICCS)**
   Abstract: Not available.
   Keywords: *not available.*

3. **Dar, S. A., Riaz, S., Moghees, A., Saeed, M.,** & Azhar, U. (2019). *Developing L2 and Cultural Competency through Humor in ELT Undergraduate Classrooms in Punjab-Pakistan*. Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Saima Abbas Dar, Sadia Riaz,Amnah Moghees, Muneeba Saeed (ICCS)**
   Abstract: Not available.
   Keywords: *not available.*

4. **Ahmed, R. J.** (2019). *Metaphorical Extensions of 'Build' by Invoking Polysemy Sense Relation*. Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Rao Jaleel Ahmed (ICCS)**
   Abstract: Not available.
   Keywords: *not available.*

5. **Hussain, J., Naveed, A., Khan, A. A.** (2019). *Mirativity Strategies in Urdu*. Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Jabbir Hussain, Ahmad Naveed, Arshad Ali Khan(ICCS)**
   Abstract: Not available.
   Keywords: *not available.*

6. **Ilyas, S.** (2019). *The Subaltern Voice in Arundhati Roy's The God of Small Things: A Postcolonial and Feminist Approach*. Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Sobia Ilyas (ICCS)**
   Abstract: Not available.
   Keywords: *not available.*

7. **Iqbal, H. M. Z.** (2019). *Brown Skins and White Hearts Replacing the Masters: A Postcolonial Study of Qaisra Shahraz's 'The Escape'*. Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (H.M. Zahid Iqbal (ICCS)**
   Abstract: Not available.
   Keywords: *not available.*

8. **Zia, A. B.** (2019). *Exploration of Transformed Ethnicity in Taufiq Rafat's Poetry (1947-1983)*. Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Atifa Binth e Zia (ICCS)**
   Abstract: Not available.
   Keywords: *not available.*

9. **Rasheed, S., Moghees, A., Dar, S. A.** (2019). *Intertexuality and Adaptation Strategy Employed in Deepa Mehta's Earth 1947*. Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Saadia Rasheed, Amnah Moghees, Saima Abbas Dar (ICCS)**
   Abstract: Not available.
   Keywords: *not available.*

10. **Javaid, S.** (2019). *Tracing Deforming Tendencies in the English Translation of "Mere Dardko Jo Zaban Mile" by Faiz*. Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Sheeza Javaid)** **(SKT Campus)**
    Abstract: Not available.
    Keywords: *not available.*

11. **Khan, H. S.** (2019). *Meaning Potential in Semiotic Remediation: A Multimodal Discourse Analysis.* Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Hira Saleem Khan (ICCS)**
    Abstract: Not available.
    Keywords: *not available.*

12. **Abbas, T., Ahmed, R. J.** (2019). *Hedging and Turn Taking by Pakistani Politicians: Media Discourse Analysis*. Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Rao Jaleel Ahmed (ICCS)**
    Abstract: Not available.
    Keywords: *not available.*

13. **Fatima, S. A., Kamran, R., Mansoor, F., Iqbal, S.** (2019). *Pakistani AV (Audio-Visual) Advertisements Shattering Gender Stereotypes: A Critical Discourse Analysis*. Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Syeda Asiya Fatima, Rehana Kamran, Fatima Mansoor, Sidra Iqbal)** **(SKT Campus)**
    Abstract: Not available.
    Keywords: *not available.*

14. **Naeem, T.** (2019). *Injurious Effects of Sovereign Speech Acts in The Bluest Eye*. Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Tamsila Naeem (ICCS)**
    Abstract: Not available.
    Keywords: *not available.*

15. **Moghees, A., Dar, S. A.,** (2019). *Intertextuality and its adaptation strategy in Deepa Mehta's earth 1947, Bapsi Sidhwa's ice candy man at the backdrop*. Paper presented at the 1st National Conference on TESOL, Linguistics

and Literature (CTLL 2019), The Institute of Communication and Cultural Studies (ICCS) UMT, Lahore**. (Amnah Moghees, Saima Abbas Dar (ICCS)**
Abstract: Not available.
Keywords: *not available.*

16. **Moghees, A., Dar, S. A., Saeed, M.** (2019). *Synchronicity of code switching and anxiety while speaking in ESL classroom at graduate level*. Paper presented at the 1st National Conference on TESOL, Linguistics and Literature (CTLL 2019), The Institute of Communication and Cultural Studies (ICCS) UMT, Lahore**. (Amnah Moghees, Saima Abbas Dar, Muniba Saeed (ICCS)**
Abstract: Not available.
Keywords: *not available.*

17. Sajid, M., **Hanif, N.** (2019). *A Comparison Between Constructivist and Traditional Approach for Teaching Grammar to ESL.* Paper presented at 5th International Conference of the Linguistic Association of Pakistan hosted by the Department of Applied Linguistics (ICLAP 2019), Government College University of Faisalabad, Faisalabad In collaboration with the Punjab Higher Education Commission of Pakistan**. (Nadia Hanif (ICCS)**
Abstract: Not available.
Keywords: *not available.*

18. **Hanif, N.,** Sajid, M. (2019). *Emotional Intelligence: Effect on English Speaking Task.* Paper presented at 5th International Conference of the Linguistic Association of Pakistan hosted by the Department of Applied Linguistics (ICLAP 2019), Government College University of Faisalabad, Faisalabad In collaboration with the Punjab Higher Education Commission of Pakistan**. (Nadia Hanif (ICCS)**
Abstract: Not available.
Keywords: *not available.*

19. Alam, M., Fayya, S., **Farooq, A**. (2019). *Mobile-Assisted Language Learning (MALL): An Effective Approach for Teaching Presentation Skills at Undergraduate Level.* Paper presented at 5th International Conference of the Linguistic Association of Pakistan hosted by the Department of Applied Linguistics (ICLAP 2019), Government College University of Faisalabad, Faisalabad In collaboration with the Punjab Higher Education Commission of Pakistan**. (Areej Farooq (ICCS)**
Abstract: Not available.
Keywords: *not available.*

20. **Farooq, M.,** Mahmood, A., (2019). *Acoustic Behavior of English Triphthongs in Pakistani English Variety.* Paper presented at 5th International Conference of the Linguistic Association of Pakistan hosted by the Department of Applied Linguistics (ICLAP 2019), Government College University of Faisalabad, Faisalabad In collaboration with the Punjab Higher Education Commission of Pakistan**. (Mahwish Farooq (ICCS)**
Abstract: In this research, the acoustic behavior of English triphthongs has been analyzed in Pakistani English (PakE). A triphthong is a gliding movement of three consecutive vowels. According to Roach (2009), majority of English speakers (with BBC pronunciation) perceived few words as monosyllabic vocabulary by having triphthongs. English has five triphthongs which are comprised with the combination of closing diphthongs followed by a short vowel schwa (ə). Contrarily, this condition may not compulsory for PakE due to language variation phenomenon because two diverse languages have different approaches. If there are some similarities than consider them just coincidence nothing else. Presently, it has been proposed that the native language, Urdu affects the acoustic behavior of English triphthongs therefore, two different experimental

approaches have been adopted. In the first step, the auditory approach has used syllable count technique. In the second step, the identified segments have been acoustically analyzed in PRAAT. After data analysis, the results have reported that Urdu has influenced and transformed the acoustic features of PakE. Therefore, there is no trace of English triphthongs in PakE because are replaced by a monophthong, diphthong or with an addition of a consonant (/v/ or /j/) which will ultimately increase the syllable count.

Keywords: *English triphthongs, Pakistani English, acoustic analysis.*

21. **Farooq, M.,** (2019). *A Study to Investigate Teacher-Learner Issues in Large ESL Classes in Pakistan.* Paper presented at the 1st National Conference on TESOL, Linguistics and Literature (CTLL 2019), The Institute of Communication and Cultural Studies (ICCS) UMT, Lahore**. (Mahwish Farooq (ICCS)**

Abstract: In a developing country like Pakistan, the large classes with limited resources are a 'fact of life'. Therefore, this study will prove a motivation for the improvement of teaching-learning in large classes. Traditionally, the class size research has assumption that small classes are better than large classes because an increase in number of students has a negative correlation with learning. So, there are two camps in this debate, (i) teachers who consider 'large classes' highly problematic while (ii) administrator and policy makers consider 'small classes' the most expensive intervention. Therefore, this research is designed to investigate this controversial point of view. Consequently, instead of trying to prove the 'smaller is better' hypothesis, the researcher has become the participant in order to understand what actually happens in large classes. Along with this, in order to nullify the subjective opinion the researcher has gathered the impartial opinion of other students and teachers by taking observations and interviews. Therefore, she has observed 10 secondary EFL classes in Lahore, Pakistan. Furthermore, 10 teachers and 10 groups of students (3-5 students in each group) from the same classes were selected for post-interviews. This discussion will help in policy making and its implications.

Keywords: *ESL, large classes.*

22. Rasheed, U., **Farooq, M.,** (2019). *Gender and Discourse in Disney Princess Movies: An Analytical Study.* Paper presented at the ICDELL 2019, International Conference of Department of English Language and Literature, University of Management and Technology, Lahore**. (Mahwish Farooq (ICCS)**

Abstract: Media is leaving its footprints on every society, culture and race. It is the most important weapon in shaping the views of people. Young male and female learn their gender roles from media. They speak, dress, and behave as media portrays. Movies are one of the most important tools of media. Disney Princess is a filmmaking franchise of Walt Disney production which characterizes female heroic figures in their movies. As female characters in these movies enjoy more heroic characteristics than male, it is curious to compare the discourse of both. This study investigates the speech characteristics of the male and female characters in Disney Princess movies to identify whether the characters use gendered language in their speech. The research is constructed on Lakoff's (1975) theoretical model of women speech. The script of nine selected movies in written data is taken into consideration. Data is analyzed quantitatively by measuring the frequencies of the selected speech items through AntConc. The qualitative interpretations are generated then, with an intention to critically evaluate the findings produced by quantitative analysis. Data analysis demonstrates that the most used linguistic feature in the films is the hedge. Female characters uttered hedges more than male. Empty adjectives and hedges are likewise articulated more by female characters in the films. Similarly, male characters also used the features of female discourse in their exchanges. Furthermore, male characters use female speech characteristics sometimes more than female. However, female characters still use the elements of female speech. For example, they use empty adjectives, tag questions, hedges, and intensifier.

Keywords: *discourse, gender, Disney princess, linguistic items, speech characteristics.*

Learning Resource Center (LRC)

Research Articles

1. **Tabassum, F.,** Batool, S. H., Ameen, K., & Hassan, M. (2019). Status of school libraries and developmental issues in Pakistan A case study of public high schools. *Global Knowledge Memory and Communication, 68*(4-5), 377-391. doi: 10.1108/gkmc-08-2018-0070.**(Faiza Tabassum (LRC)** **Master Journal List**

   Abstract: Purpose The purpose of this paper is to highlight the status (information services, infrastructure, budget, collection and staffing) of public girls' high school libraries of the Lahore city. Lahore is the second largest and hub of educational institutions in Pakistan. Resource-based learning is the basic right of all citizens. School libraries support teaching and learning with best available information resources. In Pakistan, fewer studies have reported the status of school libraries, and keeping in view the significance of early education, the present study highlights the situation through a qualitative lens. Design/methodology/approach For an in-depth analysis of the situation, qualitative research approach was used. The data were collected through interviews and observation technique. Additionally, focus groups were conducted with the students of grade IX and X to find their school libraries' perceptions. Findings The findings revealed that the overall status of school libraries was unsatisfactory. Libraries were facing many problems such as lack of staff, budget, place and poor infrastructure issues. It was also found that economic geographical location of schools was not the factor affecting the status of libraries, rather, the schools' head was mainly responsible for the better condition of the libraries. Research limitations/implications - The study has implications for educationists, librarians, library schools and library professional organizations to make effective policies. However, the findings cannot be generalized and can be applicable in a similar context. Originality/value The study is based on MPhil thesis and is significant to be added in global school librarianship literature.

   Keywords: *Pakistan, development, school libraries, Lahore, school library services, secondary school.*

Conference Paper

1. Mariym, Zia, M. W., & **Ismail, M.** (2019). *Analytical Study of Social Bookmarking Websites*. Paper presented at the International Conference on “Transformation of Knowledge Repository into Knowledge Economy”, Minhaj University Lahore**. (Muhammad Ismail (LRC)**

   Abstract: Information is an important factor in everyday of life. Everyone needs it, but all kind of information is not important for all of us. The information seekers not reading complete source ofinformation at a time. When people read any material and they had limited time, they let mark it for future readings. In Past they use leather, fabric or thin cards to keep the readers to return to it with ease. After the invention of computerbookmarks change its form. A bookmark is a saved shortcut that directs browser to a specific webpage which contains title, URL and favicon of the corresponding webpage but it only limited to one PC or laptop. When the internet technology was advent and web 2.0 generation is launched, the process of marking a book has been changed. Now we use different applications or websites to save the links of the documents which we want to read later. This is called Social Bookmarking. Social bookmarking helps us to save the links of requires document for future readings. We can also share the list of saved links, we can make categories or sub categories of the links according to their divisions or our requirements. The Analytical study of Social Bookmarking Websites will explore the services of different social bookmarking websites and explore the way of use and difference among these sites in book marking.

   Keywords: *bookmarking, social bookmarking, folksonomy.*

2. **Ismail, M.,** Tariq, M. (2019). *Use of Web 2.0 Technologies by Early Career Library Professionals: A Comparative analysis of Personal and Professional uses of Web 2.0*. Paper presented at the International Conference on "Transformation of Knowledge Repository into Knowledge Economy", Minhaj University Lahore**. (Muhammad Ismail (LRC)**

Abstract: The evolution of web technologies has changed the learning trends. This change highlights the need of serious development in teaching and learning methods. Web 2.0 plays an important role in improving teaching and learning methods in all fields of life including library sciences. Thus, the current study intends to explore the effective use of Web 2.0 by the Early Career Professionals (ECPs) in the area of Library Information Science (LIS).

Keywords: *communication trends, early career library professionals, Information and Communication Technologies (ICTs), Web 2.0 for professional learning, web technologies.*

Institute of Knowledge and Leadership

Institute of Knowledge and Leadership

Research Articles

1. Akram, N., Akram, M. W., Wang, H. S., & **Mehmood, A.** (2019). Does Land Tenure Systems Affect Sustainable Agricultural Development? *Sustainability, 11*(14). doi: 10.3390/su11143925.**(Ayesha Mehmood (IKL) Web of Science JCR Listed (IF: 2.592)**

Abstract: The current study aims to investigate the agricultural investment differences among three kinds of land lease agreements and their effect on farmers' decisions regarding sustainable growth in terms of soil conservation and wheat productivity, using cross-sectional data from rural households in Punjab, Pakistan. The multivariate Tobit model was used for the empirical analysis because it considers the possible substitution of investment choices and the tenancy status' endogeneity. Compared to agricultural lands on lease contracts, landowners involved in agribusiness are more likely to invest in measures to improve soil and increase productivity. Moreover, the present study has also identified that the yield per hectare is much higher for landowners than sharecroppers, and thus, the Marshall's assumption of low efficiency of tenants under sharecroppers is supported.

Keywords: *land tenure, soil conservation, Investment decision, farm productivity, land use sustainability, agricultural development.*

2. Akram, M. W., Akram, N., Hongshu, W., Andleeb, S., Kashif, U., & **Mehmood, A.** (2019). Impact of Land Use Rights on the Investment and Efficiency of Organic Farming. *Sustainability, 11*(24), 7148. **(Ayesha Mehmood (IKL) Web of Science JCR Listed (IF: 1.676)**

Abstract: This study investigated the impact of three land tenure arrangements on organic farming (OF) in terms of increment of efficiency, yield, and investment in soil-improving activities by using farm-level data gathered from three districts located at Punjab, Pakistan. A multivariate to bit model that captured the probable substitute and investment choices, as well as the endogenous nature of land tenure arrangements, has been employed in this analysis. The empirical outcomes displayed that rights of land use affected the decisions made by farmers to invest in land and to improve efficiency. In detail, owner-farmers with secure rental arrangements invested more in improving their land and productivity compared to those with unsecured lease agreements. The yield per hectare was the highest for owner cultivation farm, while sharecropper output seemed the lowest, which are in agreement with the hypothesis of Marshallian inefficiency.

Keywords: *land use policy, land tenure system, organic farming, investment, productivity, sustainability.*

Author Index

A

B

D

E

F

G

H

I

J

K

L

M

T

U

W

Y

Z

Keywords Index

D

E

F

G

H

N

O

P

Q

R

S

T

U

V

W

X

Z

Summary of UMT Research Outlook 2019

Table I

School/Department wise listing of Publications

School\Departments	Articles	Proceeding Papers	Conference Papers	Books/Book Chapter	Total
School of Sciences (SSC)					
Department of Chemistry	28	1	34		63
Department of Physics	16				15
Department of Life Science	41				41
Department of Mathematics	106		5		111
Total	**191**	**1**	**39**		**231**
School of Engineering (SEN)					
Department of Civil Engineering	6	1	1		8
Department of Industrial Engineering	1	1			2
Department of Electrical Engineering	17	9	2		28
Department of Mechanical Engineering	8	3			11
Total	**32**	**14**	**3**		**49**
Institute of Communication and Cultural Studies (ICCS)					
ICCS	9		22		31
Total	**9**		**22**		**31**
School of System & Technology (SST)					
Department of Computer Science	42	32	4	2	80
Department of Software Engineering	7	9			16
Departments of Informatics & System	3	9			12
Total	**52**	**50**	**4**	**2**	**108**
Institute of Clinical Psychology (ICPY)					
ICPY	16				16
Total	**16**				**16**
Institute of Islamic Banking (IIB)					
IIB	3				3
Total	**3**				**3**
School of Business and Economics (SBE)					
Department of Economics	21		8		29
Department of Finance	7		2	1	10
Department of Management	23		4		27
Department of Operations & Supply Chain	4		4		8
Department of Quantitative Methods	10	1	1		12
Department of Marketing	6				6
Department of Information Systems	3	2	1		6
Total	**74**	**3**	**20**	**1**	**98**
School of Social Sciences & Humanities (SSSH)					
Department of English Language & Literature	29		27		56

Department of Islamic Thought & Civilization	7				7
Department of Political Science & International Relations	8		7	1	16
Department of Special Needs Education	5		4		9
Department of Sociology	4				4
Department of Psychology	5				5
Department of Gender Studies			6		6
Department of Education	21		45	1	67
Total	**79**		**89**	**2**	**170**
School of Health Science (SHS)					
SHS	9				9
Total	**9**				**9**
School of Food and Agricultural Sciences(SFAS)					
SFAS	15			3	18
Total	**15**			**3**	**18**
School of Professional Advancement (SPA)					
SPA	1		3		4
Total	**1**		**3**		**4**
School of Governance & Society (SGS)					
SGS	3		1	2	6
Total	**3**		**1**	**2**	**6**
School of Textile & Design (STD)					
STD	6		7		13
Total	**6**		**7**		**13**
Learning Resource Center (LRC)					
LRC	1		2		3
Total	**1**		**2**		**3**
Institute of Knowledge and Leadership (IKL)					
IKL	2				2
Total	**2**				**2**
Institute of Aviation Studies (IAS)					
Department of Aviation Studies	1		3		4
Total	**1**		**3**		**4**
Institute of Islamic Perspectives and Guidance (IIPG)					
Institute of Islamic Perspectives and Guidance	1				1
Total	**1**				**1**
School of Architecture and Planning (SAP)					
Department of Architecture	8				8
Department of City & Regional Planning	4		2		6
Total	**12**		**2**		**14**
Grand Total	**507**	**68**	**195**	**10**	**780**

Table II

School/Department wise listing of Journals Articles

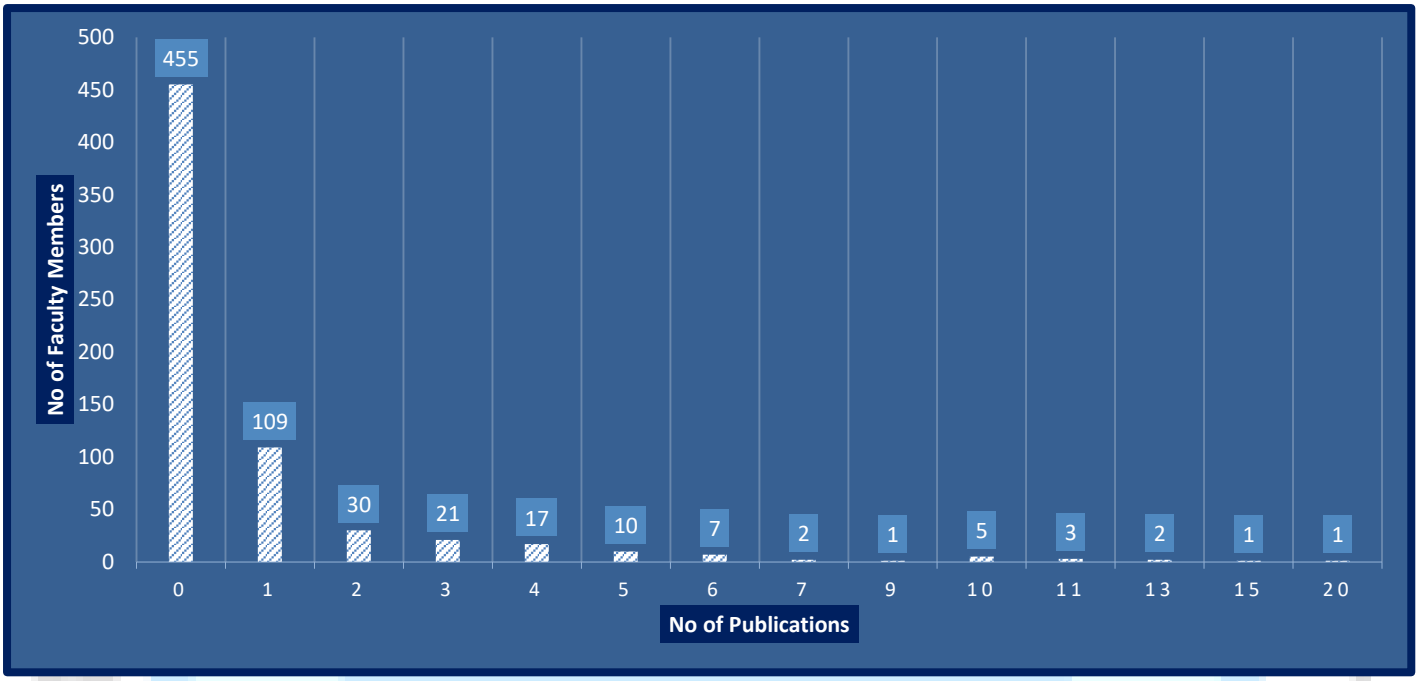
School\Departments	JCR	SJR	HEC X-Cat.	HEC Y-Cat.	HEC Z-Cat.	NR	UMT	Master Journal List	Total
School of Sciences (SSC)									
Department of Chemistry	20	4				1	1	2	28
Department of Physics	12	2			1		1		16
Department of Life Sciences	32	6			1		2		41
Department of Mathematics	61	35	3			1	1	5	106
Total	**125**	**47**	**3**		**2**	**2**	**5**	**7**	**191**
School of Engineering (SEN)									
Department of Civil Engineering	1			1		2	2		6
Department of Electrical Engineering	13	3				1			17
Department of Industrial Engineering				1					1
Department of Mechanical Engineering	5	3							8
Total	**19**	**6**		**2**		**3**	**2**		**32**
School of System & Technology (SST)									
Department of Computer Science	29	11						2	42
Department of Software Engineering	3	2				1		1	7
Department of Informatics System	3								3
Total	**35**	**13**				**1**		**3**	**52**
School of Business and Economics (SBE)									
Department of Economics	6	6		6		1		2	21
Department of Finance	1	5	1						7
Department of Management	10	11		1				1	23
Department of Operations & Supply Chain	1	1		1	1				4
Department of Quantitative Methods	6	2		1				1	10
Department of Marketing	1	3	1		1				6
Department of Information Systems	2			1					3
Total	**27**	**28**	**2**	**10**	**2**	**1**		**4**	**74**
Institute of Islamic Banking (IIB)									
IIB		2						1	3
Total		**2**						**1**	**3**
School of Architecture and Planning (SAP)									
Department of Architecture	1	1		1			4	1	8

School\Departments	JCR	SJR	HEC X-Cat.	HEC Y-Cat.	HEC Z-Cat.	NR	UMT	Master Journal List	Total
Department of City and Regional Planning	2	1		1					4
Total	**3**	**2**		**2**			**4**	**1**	**12**
School of Social Sciences & Humanities (SSSH)									
Department of English Language & Literature		2	1	13	2	2		9	29
Department of Islamic Thought & Civilization		4		2		1			7
Department of Political Science & International Relations	2	2	2		2				8
Department of Sociology		3				1			4
Department of Psychology	4	1							5
Department of Special Needs Education				5					5
Department of Education	2		3	9	1	5	1		21
Total	**8**	**12**	**6**	**29**	**5**	**9**	**1**	**9**	**79**
School of Health Sciences (SHS)									
SHS	6					1		2	9
Total	**6**					**1**		**2**	**9**
School of Food and Agricultutral Sciences (SFAS)									
SFAS	13	1						1	15
Total	**13**	**1**						**1**	**15**
Institute of Clinical Psychology (ICPY)									
ICPY		8		6			2		16
Total		**8**		**6**			**2**		**16**
School of Professional Advancement (SPA)									
SPA							1		1
Total							**1**		**1**
School of Textile & Design (STD)									
STD	5	1							6
Total	**5**	**1**							**6**
Institute of Communication and Cultural Studies (ICCS)									
ICCS				6			1	2	9
Total				**6**			**1**	**2**	**9**
School of Governance & Society (SGS)									
SGS	3								3
Total	**3**								**3**
Institute of Aviation Studies (IAS)									
IAS						1			1
Total						**1**			**1**

School\Departments	JCR	SJR	HEC X-Cat.	HEC Y-Cat.	HEC Z-Cat.	NR	UMT	Master Journal List	Total
Institute of Islamic Perspectives and Guidance (IIPG)									
Institute of Islamic Perspectives and Guidance		1							1
Total		**1**							**1**
Institute of Knowledge & Leadership (IKL)									
IKL	2								2
Total	**2**								**2**
Learning Resource Center (LRC)									
LRC								1	1
Total								**1**	**1**
Grand Total	**246**	**121**	**11**	**55**	**9**	**18**	**16**	**31**	**507**

Graph

Summary of UMT Faculty "Journal Publications" 2019



No of Journal Publications	Total No of UMT Faculty Members
0	455
1	109
2	30
3	21
4	17
5	10
6	7
7	2
9	1
10	5
11	3
13	2
15	1
20	1

LRC
Learning Resources Center

library.umt.edu.pk

Received Article after Publishing Research Outlook 2019

Institute of Clinical Psychology (ICPY)

Institute of Clinical Psychology (ICPY)

Research Articles

16. **Khaliq, A., Bashir, U., & Mahmood, Z.** (2019). Machiavellian personality tendencies and interpersonal difficulties in University students. Clinical &Counselling Psychology Review, 1(1), 20–34. **(Aqsa Khaliq, Umaiza Bashir, Zahid Mahmood (ICPY) UMT Journal**

Abstract: Interpersonal relationships are a very important part of the university life of a person. To explore the relationship between interpersonal difficulties and personality traits, a sample of 300 students in the age range of 18-28 years (M=22.04) was taken from different government and private universities. To measure the Machiavellian Personality Tendencies among students an indigenous tool was developed rooted inthe Pakistani culture. Interpersonal Difficulties Scale (Saleem, Ihsan, & Mahmood, 2014) was used. It was revealed that students with high Machiavellian Personality Tendencies have more interpersonal difficulties and Machiavellian Personality Tendencies, gender, family system and birth order are significant predictors of interpersonal difficulties in university students. These results are discussed in the Pakistani cultural context and their implications are stated for future research and therapeutic work.

Keywords: *interpersonal difficulties, Machiavellian personality, university students.*

School of Social Science & Humanities (SSSH)

Department of Political Science and International Relations (DPSIR)

Conference Papers

4. **Qureshi, A.** (2019). *'PVE: The Role of Muslim Women Activists in Informing Ethno-Religious Minority Policies in the UK (2001-2016)*. Paper presented in the International Conference on Contemporary Education and CVE Practices in Pakistan at University of Management and Technology, Lahore (March 27-28, 2019)**. (Abeeda Qureshi (DPSIR/SSSH)**

Abstract: This article examines the role of Muslim women in the implementation of ethno-religious minority policies in the UK from 2001-2014. Using Muslim women as a case study, I aim to understand how this relationship works in practiceand whether the role played by Muslim women is symbolic or substantive.Also, I attempt to explore whether the engagement between the government and Muslim women has increased since 2010, with the change in the government from New Labour to the Coalition.Last but not least, the representative claims of the women involved in the policy process is examined to determine the legitimacy of the whole process. Specifying the 'decentred' theory of policy making, I employ a 'hybrid' approach to policy implementation and take further insight from 'Saward's (2006; 2009) 'representation' theory to answer the aforementioned questions.The theoretical framework helps meto justify thethree level analysis, e.g. national, local and individual case studies. Using evidence from the documentary analysis and in-depth elite interviews, I highlight the positive role of non-elected Muslim women in the implementation of policies towards the Muslim community. The particular importance of the thesis lies in the way I apply the 'decentred' government' approach and the 'hybrid' model of policy implementation to appreciate how Muslim women and local actors can 'twist' national policy to suit local needs. The empirical findings on how women approached engagement through Prevent, and how local actors negotiated a 'grey space' to pursue more locally appropriate approaches, are both significant interventions in the wider debate on Prevent and its implications for Muslim women's and state-

Muslim engagement.

Keywords: *multiculturalism, integration, preventing violent extremism, radicalization, muslim women activists, policy debates. terrorism.*

5. **Qureshi, A.** (2019). *Gender and Political Science Research in Pakistan*. Paper presented at the Lahore Political Science Symposium, Forman Christian College, Lahore (April 30, 2019)**. (Abeeda Qureshi (DPSIR/SSSH)**

   Abstract: The field of political science and International Relations is considered a masculine field. Concepts such as power, sovereignty and security have always attracted the attention of the researchers of political science. However, due to the active involvement of feminist political writers, publications on the subject have proliferated rapidly (Tickner, 1992) leading to a dialogue and conversation between feminist writers and the theorists of political science and International Relations. In Pakistan, 'Gender' as a category of analysis has received less attention of political science researchers. It is observed that Gender perspectives (that includes men and women both), are left to be explored by the researchers in psychology, sociology, literature and gender studies. A quick examination of 10 universities of Pakistan highlights that during 2010 to 2018, 18 research articles and one book chapter have been published using 'women' as a category of analysis. The focus remained, however, limited to issues of representation' and 'participation'. Resultantly, there is hardly any research available that examine and compare how gender variations impact the decision making process and working of political institutions. Gender awareness, it is argued, would help Political Scientists to better understand the complex political environment, in particular, gender difference in political behavior and in electoral politics – voting trends.

   Keywords: *feminist writers, gender perspectives, power politics, representation, participation.*

6. **Qureshi, A.** (2019). *The Political Ideology of Syed Qutb and Mawdudi: An Analysis of their Impact on Contemporary Violent and Non-violent Islamist Organizations*. Paper presented at the Thirteenth Humanities and Social Sciences Conference Critical Research Outlook 2019 | 200 Interventions: Mapping Emerging Scholarship on South Asia, Lahore University of Management Sciences (LUMS) (April 10-11, 2019). **(Abeeda Qureshi (DPSIR/SSSH)**

   Abstract: The political ideology of Mawdudi and Qutb, who are the two most prominent Muslim scholars, revolutionized people's ideas about the state, politics, the economy, society and jihad. Both had a deep influence on Islamist organizations, particularly in Asia, the Middle East and many Western countries. Writers have observed that Mawdudi, who supported a peaceful course to achieve his idea of an Islamic state, became an inspiration for Qutb, who is much more radical in his approach. Qutb in the later part of his life propagated armed resistance and became the intellectual father for many extremist organizations such as Al-Qaida and Taliban. Through documentary analysis of their key texts this paper argues that the political philosophy of both is still relevant as a source of inspiration to many Islamists organization (both violent and non violent).. These organizations are categorized by using a predetermined scale, of ideologically impressed only organizations and those which are both ideologically committed and tactically employed ones. These organizations are then labeled as violent/radicalized, non-violent/reformist and hybrid (vacillating between a violent and non-violent trajectory) The corollary of the main argument looks for the causes behind the success of such organization and here by applying the 'Social Movement Theory,' we argue that the processes and pressures of social forces, such as feelings of deprivation, social injustice, weak political systems, and structural strains of prevalent order are some of the leading causes behind their success. These causes together form the favorable local context for the growth of such organizations.

   Keywords: *violent islamist organizations, reformist, social movement, social injustice, ideology.*

7. **Qureshi, A.** (2019). *Reserved Seats for Women: Reinforcement of Patriarchy and Powerlessness*. Paper presented at the 1st National Conference on Debates in Contemporary Gender Issues, Department of Gender Studies, University of Management and Technology, Lahore. **(Abeeda Qureshi (DPSIR/SSSH)**

Abstract: Women across the world experience gender disparity and discrimination, although depending on local prevailing religious, cultural and social norms, its intensity varies. The theorists who believe in the 'Politics of Presence' link women's social and economic position to their absence from the decision-making. The supporters of 'the politics of presence' and group rights argue that women themselves are in the best position to represent women's interests (Weldon, 2002, Wanguerad, 2009), hence, support quota or reserve seats for women to have a higher representation of women in parliament. The, article, however, argues that the affirmative action has proven counter-productive in creating a favorable environment for women political workers coming from apolitical and non-elitist background. The article concludes by arguing that a real representation of women can be ensured by supporting women on general, winnable seats by challenging the elitist, dynastic and gender discriminatory culture of political parties in Pakistan, rather than selecting them on reserved seats, and by ensuring a transparent and merit-based selection procedure in the political parties.

Keywords: *women's representation, gender disparity, politics of presence, affirmative action, reserved seats, political parties.*

(i) Number wise (Descending-order) publications by author

Employee Name	School	Total Publications
Sammia Shahid	SSC	43
Yaar Muhammad	SSS&H	35
Noman Arshed	SBE	23
Yaser Daanial Khan	SST	22
Muhammad Javaid	SSC	21
Adnan Abid	SST	16
Nauman Khalid	SFAS	16
Muhammad Sohail Afzal	SSC	15
Seema Arif	SSS&H	12
Arshad Ali Khan	ILA	12
Zahid Mahmood	ICPY	12
Sajid Masood	SSS&H	11
Muhammad Umer Azeem	SBE	11
Braira Wahid	SSC	11
Muhammad Shaban	ILA	10
Muhammad Saeed	SSC	10
Muhammad Imran Asjad	SSC	10
Tabasam Rashid	SSC	10
Sadia Saleem	ICPY	10
Muzammil Hussain	SST	9
Muhammad Shoaib Farooq	SST	8
Ahmad Hassan Butt	SST	7
Abdul Rafay	SBE	7
Shaukat Iqbal	SST	7
Tayyaba Anees	SST	7
Abdul Hameed	SSS&H	7
Zafar Iqbal Bhatti	ILA	7
Ambreen Salah Ud Din	SSS&H	6
Muhammad Furqan Tanvir	ILA	6
Mubbasher Munir	SBE	6
Adeel Ashraf	SST	6
Rukhsana Kalim	SBE	6
Ali Ajwad	SEN	6
Fatima Sajjad	SSS&H	6
Faiza Abid	ILA	6
Aisha Azhar	SGS	6
Nadia Anwar	ILA	6
Rao Sana Ullah Khan	SFAS	6
Muhammad Shahid Hassan	SBE	6
Yasir Rashid	SBE	6
Naeem Saleem	SSC	6
Hafeez Ur Rehman	SBE	6
Sohail Zafar	SSC	6
Agha Kashif Arshad Khan	SSC	6
Mohammad Nazim	SSC	6
Ayesha Jabeen	ICPY	6
Kamran Hameed	SBE	5
Madiha Shah	SSS&H	5
Saima Abbas Dar	ILA	5

Mian Usman Sattar	SBE	**5**
Fariha Tariq	SAP	**5**
Wahab Nazir	SFAS	**5**
Muhammad Moeen	SBE	**5**
Mumtaz Hasan Malik	STD	**5**
Mohsin Javed	SSC	**5**
Muhammad Ali	SSC	**5**
Qayyum Zafar	SSC	**5**
Amnah Moghees	ILA	**4**
Faiza Anwar	STD	**4**
Faisal Anis	SSS&H	**4**
Naheed Ashfaq Qureshi	ILA	**4**
Amjad Hussain Zahid	SST	**4**
Aun Haider	SEN	**4**
Farah Jamil	SAP	**4**
Imran Siddique	SSC	**4**
Zohaib Zahid	SSC	**4**
Muhammad Bilal Riaz	SSC	**4**
Urooj Fatima	SSC	**4**
Jameel Ahmad	SEN	**4**
Zarmeena Khan	ILA	**4**
Anila Akbar	ILA	**4**
Kamran Rashid	SBE	**3**
Sheraz Naseer	SST	**3**
Faria Ferooz	SST	**3**
Muhammad Fahad Sheikh	SEN	**3**
Ahmad Aizaz	IAS	**3**
Sadia Ishfaq	ILA	**3**
Mahwish Farooq	ILA	**3**
Mian Muhammad Haris Aslam	SBE	**3**
Bilal Wajid	SBE	**3**
Malik Tahir Hassan	SST	**3**
Muhammad Nabeel	SST	**3**
Rida Sarfraz	ILA	**3**
Sami Ullah Bajwa	SBE	**3**
Maqbool H Sial	SBE	**3**
Syed Ahmad Ali	SBE	**3**
Syed Muhammad Muslim Raza	SBE	**3**
Muhammad Imran Jamil	SSC	**3**
Ali Abdullah	SSC	**3**
Muhammad Zaid	SSC	**3**
Nabiha Naeem	SSC	**3**
Rana Muhammad Mateen	SSC	**3**
Usman Ilyas	SEN	**3**
Abdullah	SEN	**3**
Amina Khalid	ILA	**3**
Umar Bacha	SHS	**3**
Emmen Farooq	SST	**2**
Muhammad Ahsan	SST	**2**
Muhammad Farhat Kaleem	SEN	**2**
Muhammad Shoaib Saleem	SEN	**2**

Zahid Ullah	SEN	2
Anika Sitara	STD	2
Amna Khalid	STD	2
Beenish Batul	IAS	2
Arslan Asim	IAS	2
Rao Jaleel Ahmed	ILA	2
Sadia Riaz Sehole	ILA	2
Muhammad Waqas Sajjad	ILA	2
Sobia Ilyas	ILA	2
Nadia Hanif	ILA	2
Imran Saleem	SPA	2
Naveed Yazdani	SBE	2
Naveda Kitchlew	SBE	2
Sajid Mahmood	SST	2
Kinza Mehr Awan	SST	2
Shafaq Khan	SST	2
Hafiz Muhammad Umer Aslam	SSC	2
Muhammad Usman Rashid	SEN	2
Tayyaba Sohail	SSS&H	2
Usman ali	SSS&H	2
Tamsila Nourin Naeem	ILA	2
Malik Umer Ayub	SBE	2
Amjad Ali	SBE	2
Mazhar Javed Awan	SST	2
Saima Gulzar	SAP	2
Beenish Mujahid	SAP	2
Muhammad Aziz Ur Rehman	SSC	2
Ayesha Mohy Uddin	SSC	2
Zaheer Hussain Shah	SSC	2
Syed Ali Mardan Azmi	SSC	2
Ifra Noureen	SSC	2
Rubab Manzoor	SSC	2
Basit Ali	SSC	2
Muhammad Arif	SSC	2
Muhammad Khurram	SSC	2
Muhammad Adnan	SEN	2
Irfan Ullah	SEN	2
Zeshan Ahmad	SEN	2
Tipu Sultan	SEN	2
Asif Hussain	SEN	2
Muhammad Rizwan Younis	SEN	2
Abdul Waqar Akhtar	SEN	2
Shakir Ahmad	SEN	2
Muhammad Usman	SEN	2
Muhammad Shoaib Pervez	SSS&H	2
Muhammad Tahir Mustafa	SSS&H	2
Farah Naz	SSS&H	2
Humaira Ahmad	SSS&H	2
Muhammad Rafiq	ICPY	2
Umaiza Bashir	ICPY	2
Ijaz Yusuf	SBE	1
Asher Ramish	SBE	1

Mueen-ud-Din-Azad	SBE	1
Abdul Ghaffar	SBE	1
Arslan Asif	SST	1
Nabeel Sabir Khan	SST	1
Fasiha Ashraf	SST	1
Tahreem Yasir	SST	1
Ateeqa Naseer	SST	1
Tayaba Anjum	SST	1
Fahad Ali	SST	1
Shaista Habib	SST	1
Usman Inayat	SST	1
Syed Mohsin Ali	SST	1
Owais Hakeem	SST	1
Afnan Iftikhar	SST	1
Tanzeela Shakeel	SST	1
Mehr Un Nisa	SST	1
Hira Fayyaz	SST	1
Sundas Sagheer	SST	1
Hira Asim	SST	1
Ayesha Asmat	SST	1
Sidra Ashraf	SSC	1
Shamsa Kanwal	SSC	1
Saira Shaheen	SSC	1
Adnan Malik	SSC	1
Ijaz Ahmad Chaudhry	SEN	1
Farhan Daud Qazi	SEN	1
Farhan Ammar Ahmad	SEN	1
Hira Sattar	SEN	1
Adnan Khalid	SEN	1
Awais Saeed	SEN	1
Mudassar Abbas	STD	1
Adil Masood Qazi	STD	1
Rabbia Hassan	STD	1
Fatima Najeeb Khan	IAS	1
Zukhraf Jamil	IAS	1
Muhammad Owais	SSS&H	1
Abeeda Qureshi	SSS&H	1
Sajid Iqbal Sheikh	SSS&H	1
Muhammad Omer Shabbir	SSS&H	1
Naveed Rehan	ILA	1
Muniba Saeed	ILA	1
Areej Farooq	ILA	1
Atifa Binth E Zia	ILA	1
Zohair Farooq Malik	SCA	1
Abdul Rashid Kausar	SBE	1
Tashfeen Mahmood Azhar	SBE	1
M. Mahmood Shah Khan	SBE	1
Imran Sadiq	SBE	1
Tahseen Mohsan Khan	SBE	1
Ramla Sadiq	SBE	1
Amer Saeed	SBE	1
Khuram Shahzad	SBE	1
Rana Zamin Abbas	SBE	1

Usman Riaz Mir	SBE	1
Zeeshan Shaukat	SBE	1
Abdul Ghafar	SBE	1
Saqib Farid	SBE	1
Syed Farooq Ali	SST	1
Ayesha Khan	SST	1
Uzma Farooq	SST	1
Kinza Sattar	SST	1
Ayaz Hussain	SST	1
Khawaja Ubaid Ur Rehman	SST	1
Muhammad Yusuf Awan	SAP	1
Muhammad Ilyas Malik	SAP	1
Faiqa Khilat	SAP	1
Rummana Khan Sherwani	SAP	1
Sarmad Salah Ud Din	SAP	1
Usman Muhammad Buksh	SAP	1
Minahil Nawaz	SAP	1
Seemin Aslam	SAP	1
Muhammad Azhar Iqbal	SSC	1
Naseer Ahmad Asif	SSC	1
Sohail Nadeem	SSC	1
Yasir Rehman	SSC	1
Raja Noshad Jamil	SSC	1
Shahzad Ahmed	SSC	1
Sajed Ali	SSC	1
Syed Khawar Nadeem Kirmani	SSC	1
Sidra Khalid	SSC	1
Shah Muhammad Haroon	SSC	1
Ehsan Adeeb	SSC	1
Toheed Akhter	SSC	1
Imran Tipu	SSC	1
Anam Amir	SSC	1
Mudassar Fareed Awan	SSC	1
Musharafa Saleem	SSC	1
Ayesha Ameen	SSC	1
Fazal Dayan	SSC	1
Zaineb Sohail	SSC	1
Rabia Nasar	SSC	1
Muhammad Asim Butt	SEN	1
Muhammad Ahmad Adnan	SEN	1
Hafiz Muhammad Osaid	SEN	1
Muhammad Shoaib	SEN	1
Waseem Iqbal	SEN	1
Shakeel Ahmad	SEN	1
Jawwad Nasar Chattha	SEN	1
Muhammad Yasir Khalid	SEN	1
Muhammad Khalil Anwar	SEN	1
Irum Jafri	SEN	1
Abdullah Khalid	SEN	1
Nouman Khadim	SEN	1
Kanwar Ali Haider Khan	STD	1
Ahmad Fraz	STD	1

Mumtaz Akhter	SSS&H	**1**
Tahira Basharat	SSS&H	**1**
Muhammad Kalim Ullah Khan	SSS&H	**1**
Amna Arif	SSS&H	**1**
Amna Yousaf	SSS&H	**1**
Basharat Hussain	SSS&H	**1**
Muhammad Usman Askari	SSS&H	**1**
Afreen Komal	ICPY	**1**
Inam Ul Haq	SSS&H	**1**
Ayesha Afzal	SSS&H	**1**
Shermeen Bano	SSS&H	**1**
Sara Subhan	ICPY	**1**
Rabia Khadim	ICPY	**1**
Sadia Ashraf	ILA	**1**
Talat Hussain	SBE	**1**
Mohammad Ayaz	SBE	**1**
Hassan Shakeel Shah	SBE	**1**
Hafiz Adil Jahangir	IIPG	**1**
Farah Yasser	SCA	**1**
Muhammad Gulzar	SCA	**1**
Hafsa Tahir	SHS	**1**
Syeda Saira Iqbal	SHS	**1**
Waqas Asghar	SFAS	**1**
Afia Mushtaq	SPA	**1**

(ii) Author wise (Alphabetical) publications

Employee Name	School	Total Publications
Abdul Ghafar	SBE	1
Abdul Ghaffar	SBE	1
Abdul Hameed	SSS&H	7
Abdul Rafay	SBE	7
Abdul Rashid Kausar	SBE	1
Abdul Waqar Akhtar	SEN	2
Abdullah	SEN	3
Abdullah Khalid	SEN	1
Abeeda Qureshi	SSS&H	1
Adeel Ashraf	SST	6
Adil Masood Qazi	STD	1
Adnan Abid	SST	16
Adnan Khalid	SEN	1
Adnan Malik	SSC	1
Afia Mushtaq	SPA	1
Afnan Iftikhar	SST	1
Afreen Komal	ICPY	1
Agha Kashif Arshad Khan	SSC	6
Ahmad Aizaz	IAS	3
Ahmad Fraz	STD	1
Ahmad Hassan Butt	SST	7
Aisha Azhar	SGS	6
Ali Abdullah	SSC	3
Ali Ajwad	SEN	6
Ambreen Salah Ud Din	SSS&H	6
Amer Saeed	SBE	1
Amina Khalid	ILA	3
Amjad Ali	SBE	2
Amjad Hussain Zahid	SST	4
Amna Arif	SSS&H	1
Amna Khalid	STD	2
Amna Yousaf	SSS&H	1
Amnah Moghees	ILA	4
Anam Amir	SSC	1
Anika Sitara	STD	2
Anila Akbar	ILA	4
Areej Farooq	ILA	1
Arshad Ali Khan	ILA	12
Arslan Asif	SST	1
Arslan Asim	IAS	2
Asher Ramish	SBE	1
Asif Hussain	SEN	2
Ateeqa Naseer	SST	1
Atifa Binth E Zia	ILA	1
Aun Haider	SEN	4
Awais Saeed	SEN	1
Ayaz Hussain	SST	1
Ayesha Afzal	SSS&H	1
Ayesha Ameen	SSC	1

Ayesha Asmat	SST	**1**
Ayesha Jabeen	ICPY	**6**
Ayesha Khan	SST	**1**
Ayesha Mohy Uddin	SSC	**2**
Basharat Hussain	SSS&H	**1**
Basit Ali	SSC	**2**
Beenish Batul	IAS	**2**
Beenish Mujahid	SAP	**2**
Bilal Wajid	SBE	**3**
Braira Wahid	SSC	**11**
Ehsan Adeeb	SSC	**1**
Emmen Farooq	SST	**2**
Fahad Ali	SST	**1**
Faiqa Khilat	SAP	**1**
Faisal Anis	SSS&H	**4**
Faiza Abid	ILA	**6**
Faiza Anwar	STD	**4**
Farah Jamil	SAP	**4**
Farah Naz	SSS&H	**2**
Farah Yasser	SCA	**1**
Farhan Ammar Ahmad	SEN	**1**
Farhan Daud Qazi	SEN	**1**
Faria Ferooz	SST	**3**
Fariha Tariq	SAP	**5**
Fasiha Ashraf	SST	**1**
Fatima Najeeb Khan	IAS	**1**
Fatima Sajjad	SSS&H	**6**
Fazal Dayan	SSC	**1**
Hafeez Ur Rehman	SBE	**6**
Hafiz Adil Jahangir	IIPG	**1**
Hafiz Muhammad Osaid	SEN	**1**
Hafiz Muhammad Umer Aslam	SSC	**2**
Hafsa Tahir	SHS	**1**
Hassan Shakeel Shah	SBE	**1**
Hira Asim	SST	**1**
Hira Fayyaz	SST	**1**
Hira Sattar	SEN	**1**
Humaira Ahmad	SSS&H	**2**
Ifra Noureen	SSC	**2**
Ijaz Ahmad Chaudhry	SEN	**1**
Ijaz Yusuf	SBE	**1**
Imran Sadiq	SBE	**1**
Imran Saleem	SPA	**2**
Imran Siddique	SSC	**4**
Imran Tipu	SSC	**1**
Inam Ul Haq	SSS&H	**1**
Irfan Ullah	SEN	**2**
Irum Jafri	SEN	**1**
Jameel Ahmad	SEN	**4**
Jawwad Nasar Chattha	SEN	**1**
Kamran Hameed	SBE	**5**
Kamran Rashid	SBE	**3**

Kanwar Ali Haider Khan	STD	1
Khawaja Ubaid Ur Rehman	SST	1
Khuram Shahzad	SBE	1
Kinza Mehr Awan	SST	2
Kinza Sattar	SST	1
M. Mahmood Shah Khan	SBE	1
Madiha Shah	SSS&H	5
Mahwish Farooq	ILA	3
Malik Tahir Hassan	SST	3
Malik Umer Ayub	SBE	2
Maqbool H Sial	SBE	3
Mazhar Javed Awan	SST	2
Mehr Un Nisa	SST	1
Mian Muhammad Haris Aslam	SBE	3
Mian Usman Sattar	SBE	5
Minahil Nawaz	SAP	1
Mohammad Ayaz	SBE	1
Mohammad Nazim	SSC	6
Mohsin Javed	SSC	5
Mubbasher Munir	SBE	6
Mudassar Abbas	STD	1
Mudassar Fareed Awan	SSC	1
Mueen-ud-Din-Azad	SBE	1
Muhammad Adnan	SEN	2
Muhammad Ahmad Adnan	SEN	1
Muhammad Ahsan	SST	2
Muhammad Ali	SSC	5
Muhammad Arif	SSC	2
Muhammad Asim Butt	SEN	1
Muhammad Azhar Iqbal	SSC	1
Muhammad Aziz Ur Rehman	SSC	2
Muhammad Bilal Riaz	SSC	4
Muhammad Fahad Sheikh	SEN	3
Muhammad Farhat Kaleem	SEN	2
Muhammad Furqan Tanvir	ILA	6
Muhammad Gulzar	SCA	1
Muhammad Ilyas Malik	SAP	1
Muhammad Imran Asjad	SSC	10
Muhammad Imran Jamil	SSC	3
Muhammad Javaid	SSC	21
Muhammad Kalim Ullah Khan	SSS&H	1
Muhammad Khalil Anwar	SEN	1
Muhammad Khurram	SSC	2
Muhammad Moeen	SBE	5
Muhammad Nabeel	SST	3
Muhammad Omer Shabbir	SSS&H	1
Muhammad Owais	SSS&H	1
Muhammad Rafiq	ICPY	2
Muhammad Rizwan Younis	SEN	2
Muhammad Saeed	SSC	10

Muhammad Shaban	ILA	**10**
Muhammad Shahid Hassan	SBE	**6**
Muhammad Shoaib	SEN	**1**
Muhammad Shoaib Farooq	SST	**8**
Muhammad Shoaib Pervez	SSS&H	**2**
Muhammad Shoaib Saleem	SEN	**2**
Muhammad Sohail Afzal	SSC	**15**
Muhammad Tahir Mustafa	SSS&H	**2**
Muhammad Umer Azeem	SBE	**11**
Muhammad Usman	SEN	**2**
Muhammad Usman Askari	SSS&H	**1**
Muhammad Usman Rashid	SEN	**2**
Muhammad Waqas Sajjad	ILA	**2**
Muhammad Yasir Khalid	SEN	**1**
Muhammad Yusuf Awan	SAP	**1**
Muhammad Zaid	SSC	**3**
Mumtaz Akhter	SSS&H	**1**
Mumtaz Hasan Malik	STD	**5**
Muniba Saeed	ILA	**1**
Musharafa Saleem	SSC	**1**
Muzammil Hussain	SST	**9**
Nabeel Sabir Khan	SST	**1**
Nabiha Naeem	SSC	**3**
Nadia Anwar	ILA	**6**
Nadia Hanif	ILA	**2**
Naeem Saleem	SSC	**6**
Naheed Ashfaq Qureshi	ILA	**4**
Naseer Ahmad Asif	SSC	**1**
Nauman Khalid	SFAS	**16**
Naveda Kitchlew	SBE	**2**
Naveed Rehan	ILA	**1**
Naveed Yazdani	SBE	**2**
Noman Arshed	SBE	**23**
Nouman Khadim	SEN	**1**
Owais Hakeem	SST	**1**
Qayyum Zafar	SSC	**5**
Rabbia Hassan	STD	**1**
Rabia Khadim	ICPY	**1**
Rabia Nasar	SSC	**1**
Raja Noshad Jamil	SSC	**1**
Ramla Sadiq	SBE	**1**
Rana Muhammad Mateen	SSC	**3**
Rana Zamin Abbas	SBE	**1**
Rao Jaleel Ahmed	ILA	**2**
Rao Sana Ullah Khan	SFAS	**6**
Rida Sarfraz	ILA	**3**
Rubab Manzoor	SSC	**2**
Rukhsana Kalim	SBE	**6**
Rummana Khan Sherwani	SAP	**1**
Sadia Ashraf	ILA	**1**
Sadia Ishfaq	ILA	**3**
Sadia Riaz Sehole	ILA	**2**
Sadia Saleem	ICPY	**10**

Saima Abbas Dar	ILA	**5**
Saima Gulzar	SAP	**2**
Saira Shaheen	SSC	**1**
Sajed Ali	SSC	**1**
Sajid Iqbal Sheikh	SSS&H	**1**
Sajid Mahmood	SST	**2**
Sajid Masood	SSS&H	**11**
Sami Ullah Bajwa	SBE	**3**
Sammia Shahid	SSC	**43**
Saqib Farid	SBE	**1**
Sara Subhan	ICPY	**1**
Sarmad Salah Ud Din	SAP	**1**
Seema Arif	SSS&H	**12**
Seemin Aslam	SAP	**1**
Shafaq Khan	SST	**2**
Shah Muhammad Haroon	SSC	**1**
Shahzad Ahmed	SSC	**1**
Shaista Habib	SST	**1**
Shakeel Ahmad	SEN	**1**
Shakir Ahmad	SEN	**2**
Shamsa Kanwal	SSC	**1**
Shaukat Iqbal	SST	**7**
Sheraz Naseer	SST	**3**
Shermeen Bano	SSS&H	**1**
Sidra Ashraf	SSC	**1**
Sidra Khalid	SSC	**1**
Sobia Ilyas	ILA	**2**
Sohail Nadeem	SSC	**1**
Sohail Zafar	SSC	**6**
Sundas Sagheer	SST	**1**
Syed Ahmad Ali	SBE	**3**
Syed Ali Mardan Azmi	SSC	**2**
Syed Farooq Ali	SST	**1**
Syed Khawar Nadeem Kirmani	SSC	**1**
Syed Mohsin Ali	SST	**1**
Syed Muhammad Muslim Raza	SBE	**3**
Syeda Saira Iqbal	SHS	**1**
Tabasam Rashid	SSC	**10**
Tahira Basharat	SSS&H	**1**
Tahreem Yasir	SST	**1**
Tahseen Mohsan Khan	SBE	**1**
Talat Hussain	SBE	**1**
Tamsila Nourin Naeem	ILA	**2**
Tanzeela Shakeel	SST	**1**
Tashfeen Mahmood Azhar	SBE	**1**
Tayaba Anjum	SST	**1**
Tayyaba Anees	SST	**7**
Tayyaba Sohail	SSS&H	**2**
Tipu Sultan	SEN	**2**
Toheed Akhter	SSC	**1**
Umaiza Bashir	ICPY	**2**
Umar Bacha	SHS	**3**

Urooj Fatima	SSC	**4**
Usman ali	SSS&H	**2**
Usman Ilyas	SEN	**3**
Usman Inayat	SST	**1**
Usman Muhammad Buksh	SAP	**1**
Usman Riaz Mir	SBE	**1**
Uzma Farooq	SST	**1**
Wahab Nazir	SFAS	**5**
Waqas Asghar	SFAS	**1**
Waseem Iqbal	SEN	**1**
Yaar Muhammad	SSS&H	**35**
Yaser Daanial Khan	SST	**22**
Yasir Rashid	SBE	**6**
Yasir Rehman	SSC	**1**
Zafar Iqbal Bhatti	ILA	**7**
Zaheer Hussain Shah	SSC	**2**
Zahid Mahmood	ICPY	**12**
Zahid Ullah	SEN	**2**
Zaineb Sohail	SSC	**1**
Zarmeena Khan	ILA	**4**
Zeeshan Shaukat	SBE	**1**
Zeshan Ahmad	SEN	**2**
Zohaib Zahid	SSC	**4**
Zohair Farooq Malik	SCA	**1**
Zukhraf Jamil	IAS	**1**

(iii) Number wise Recognized Journal (JCR, SJR, MJL, HEC X, Y Category & UMT Journals) publications by authors

Name	School	Total Articles
Muhammad Javaid	SSC	**20**
Yaser Daanial Khan	SST	**15**
Muhammad Sohail Afzal	SSC	**14**
Nauman Khalid	SFAS	**13**
Zahid Mahmood	ICPY	**12**
Muhammad Umer Azeem	SBE	**11**
Noman Arshed	SBE	**11**
Braira Wahid	SSC	**11**
Muhammad Saeed	SSC	**10**
Muhammad Imran Asjad	SSC	**10**
Tabasam Rashid	SSC	**10**
Sadia Saleem	ICPY	**10**
Arshad Ali Khan	ILA	**10**
Muhammad Shaban	ILA	**9**
Sammia Shahid	SSC	**8**
Zafar Iqbal Bhatti	ILA	**7**
Hafeez Ur Rehman	SBE	**6**
Adnan Abid	SST	**6**
Sohail Zafar	SSC	**6**
Agha Kashif Arshad Khan	SSC	**6**
Mohammad Nazim	SSC	**6**
Ayesha Jabeen	ICPY	**6**
Muhammad Shahid Hassan	SBE	**5**
Yasir Rashid	SBE	**5**
Tayyaba Anees	SST	**5**
Naeem Saleem	SSC	**5**
Mohsin Javed	SSC	**5**
Muhammad Ali	SSC	**5**
Qayyum Zafar	SSC	**5**
Abdul Hameed	SSS&H	**5**
Yaar Muhammad	SSS&H	**5**
Abdul Rafay	SBE	**4**
Muhammad Moeen	SBE	**4**
Shaukat Iqbal	SST	**4**
Muhammad Shoaib Farooq	SST	**4**
Farah Jamil	SAP	**4**
Imran Siddique	SSC	**4**
Zohaib Zahid	SSC	**4**
Muhammad Bilal Riaz	SSC	**4**
Urooj Fatima	SSC	**4**

Jameel Ahmad	SEN	4
Mumtaz Hasan Malik	STD	4
Sajid Masood	SSS&H	4
Nadia Anwar	ILA	4
Zarmeena Khan	ILA	4
Anila Akbar	ILA	4
Rao Sana Ullah Khan	SFAS	4
Rukhsana Kalim	SBE	3
Maqbool H Sial	SBE	3
Syed Ahmad Ali	SBE	3
Syed Muhammad Muslim Raza	SBE	3
Ahmad Hassan Butt	SST	3
Fariha Tariq	SAP	3
Muhammad Imran Jamil	SSC	3
Ali Abdullah	SSC	3
Muhammad Zaid	SSC	3
Nabiha Naeem	SSC	3
Rana Muhammad Mateen	SSC	3
Ali Ajwad	SEN	3
Usman Ilyas	SEN	3
Abdullah	SEN	3
Seema Arif	SSS&H	3
Fatima Sajjad	SSS&H	3
Faiza Abid	ILA	3
Amina Khalid	ILA	3
Aisha Azhar	SGS	3
Umar Bacha	SHS	3
Wahab Nazir	SFAS	3
Malik Umer Ayub	SBE	2
Sami Ullah Bajwa	SBE	2
Amjad Ali	SBE	2
Amjad Hussain Zahid	SST	2
Mazhar Javed Awan	SST	2
Saima Gulzar	SAP	2
Beenish Mujahid	SAP	2
Muhammad Aziz Ur Rehman	SSC	2
Ayesha Mohy Uddin	SSC	2
Zaheer Hussain Shah	SSC	2
Syed Ali Mardan Azmi	SSC	2
Ifra Noureen	SSC	2
Rubab Manzoor	SSC	2
Basit Ali	SSC	2
Muhammad Arif	SSC	2
Muhammad Khurram	SSC	2

Aun Haider	SEN	**2**
Muhammad Adnan	SEN	**2**
Irfan Ullah	SEN	**2**
Zeshan Ahmad	SEN	**2**
Tipu Sultan	SEN	**2**
Asif Hussain	SEN	**2**
Muhammad Rizwan Younis	SEN	**2**
Abdul Waqar Akhtar	SEN	**2**
Shakir Ahmad	SEN	**2**
Muhammad Usman	SEN	**2**
Muhammad Shoaib Pervez	SSS&H	**2**
Muhammad Tahir Mustafa	SSS&H	**2**
Farah Naz	SSS&H	**2**
Humaira Ahmad	SSS&H	**2**
Muhammad Rafiq	ICPY	**2**
Umaiza Bashir	ICPY	**2**
Naveed Yazdani	SBE	**1**
Naveda Kitchlew	SBE	**1**
Abdul Rashid Kausar	SBE	**1**
Tashfeen Mahmood Azhar	SBE	**1**
M. Mahmood Shah Khan	SBE	**1**
Imran Sadiq	SBE	**1**
Mian Muhammad Haris Aslam	SBE	**1**
Mian Usman Sattar	SBE	**1**
Tahseen Mohsan Khan	SBE	**1**
Ramla Sadiq	SBE	**1**
Amer Saeed	SBE	**1**
Khuram Shahzad	SBE	**1**
Bilal Wajid	SBE	**1**
Rana Zamin Abbas	SBE	**1**
Usman Riaz Mir	SBE	**1**
Zeeshan Shaukat	SBE	**1**
Abdul Ghafar	SBE	**1**
Mubbasher Munir	SBE	**1**
Saqib Farid	SBE	**1**
Syed Farooq Ali	SST	**1**
Malik Tahir Hassan	SST	**1**
Ayesha Khan	SST	**1**
Uzma Farooq	SST	**1**
Sajid Mahmood	SST	**1**
Muhammad Nabeel	SST	**1**
Muzammil Hussain	SST	**1**
Kinza Mehr Awan	SST	**1**
Shafaq Khan	SST	**1**
Kinza Sattar	SST	**1**

Ayaz Hussain	SST	1
Adeel Ashraf	SST	1
Khawaja Ubaid Ur Rehman	SST	1
Muhammad Yusuf Awan	SAP	1
Muhammad Ilyas Malik	SAP	1
Faiqa Khilat	SAP	1
Rummana Khan Sherwani	SAP	1
Sarmad Salah Ud Din	SAP	1
Usman Muhammad Buksh	SAP	1
Minahil Nawaz	SAP	1
Seemin Aslam	SAP	1
Muhammad Azhar Iqbal	SSC	1
Naseer Ahmad Asif	SSC	1
Sohail Nadeem	SSC	1
Yasir Rehman	SSC	1
Raja Noshad Jamil	SSC	1
Shahzad Ahmed	SSC	1
Sajed Ali	SSC	1
Syed Khawar Nadeem Kirmani	SSC	1
Sidra Khalid	SSC	1
Shah Muhammad Haroon	SSC	1
Ehsan Adeeb	SSC	1
Toheed Akhter	SSC	1
Imran Tipu	SSC	1
Anam Amir	SSC	1
Mudassar Fareed Awan	SSC	1
Musharafa Saleem	SSC	1
Hafiz Muhammad Umer Aslam	SSC	1
Ayesha Ameen	SSC	1
Fazal Dayan	SSC	1
Zaineb Sohail	SSC	1
Rabia Nasar	SSC	1
Muhammad Usman Rashid	SEN	1
Muhammad Asim Butt	SEN	1
Muhammad Ahmad Adnan	SEN	1
Hafiz Muhammad Osaid	SEN	1
Muhammad Shoaib	SEN	1
Waseem Iqbal	SEN	1
Shakeel Ahmad	SEN	1
Jawwad Nasar Chattha	SEN	1
Muhammad Yasir Khalid	SEN	1
Muhammad Khalil Anwar	SEN	1
Irum Jafri	SEN	1
Abdullah Khalid	SEN	1

Nouman Khadim	SEN	**1**
Kanwar Ali Haider Khan	STD	**1**
Ahmad Fraz	STD	**1**
Faiza Anwar	STD	**1**
Mumtaz Akhter	SSS&H	**1**
Tahira Basharat	SSS&H	**1**
Faisal Anis	SSS&H	**1**
Muhammad Kalim Ullah Khan	SSS&H	**1**
Tayyaba Sohail	SSS&H	**1**
Amna Arif	SSS&H	**1**
Amna Yousaf	SSS&H	**1**
Basharat Hussain	SSS&H	**1**
Muhammad Usman Askari	SSS&H	**1**
Afreen Komal	ICPY	**1**
Usman ali	SSS&H	**1**
Inam Ul Haq	SSS&H	**1**
Ayesha Afzal	SSS&H	**1**
Shermeen Bano	SSS&H	**1**
Sara Subhan	ICPY	**1**
Rabia Khadim	ICPY	**1**
Tamsila Nourin Naeem	ILA	**1**
Naheed Ashfaq Qureshi	ILA	**1**
Rida Sarfraz	ILA	**1**
Sadia Ashraf	ILA	**1**
Talat Hussain	SBE	**1**
Mohammad Ayaz	SBE	**1**
Hassan Shakeel Shah	SBE	**1**
Hafiz Adil Jahangir	IIPG	**1**
Farah Yasser	SCA	**1**
Muhammad Gulzar	SCA	**1**
Hafsa Tahir	SHS	**1**
Syeda Saira Iqbal	SHS	**1**
Waqas Asghar	SFAS	**1**
Afia Mushtaq	SPA	**1**

(iv) Number wise JCR publications by authors

Employee Name	School	JCR
Muhammad Sohail Afzal	SSC	14
Yaser Daanial Khan	SST	14
Nauman Khalid	SFAS	12
Muhammad Javaid	SSC	11
Braira Wahid	SSC	10
Tabasam Rashid	SSC	8
Sammia Shahid	SSC	7
Muhammad Imran Asjad	SSC	7
Muhammad Umer Azeem	SBE	7
Muhammad Saeed	SSC	6
Muhammad Ali	SSC	5
Qayyum Zafar	SSC	5
Muhammad Moeen	SBE	4
Shaukat Iqbal	SST	4
Urooj Fatima	SSC	4
Naeem Saleem	SSC	4
Adnan Abid	SST	4
Agha Kashif Arshad Khan	SSC	4
Noman Arshed	SBE	4
Ahmad Hassan Butt	SST	3
Ali Abdullah	SSC	3
Muhammad Zaid	SSC	3
Aisha Azhar	SGS	3
Umar Bacha	SHS	3
Wahab Nazir	SFAS	3
Muhammad Shoaib Farooq	SST	3
Muhammad Bilal Riaz	SSC	3
Jameel Ahmad	SEN	3
Mumtaz Hasan Malik	STD	3
Rao Sana Ullah Khan	SFAS	3
Mohammad Nazim	SSC	3
Syed Ali Mardan Azmi	SSC	2
Ifra Noureen	SSC	2
Rubab Manzoor	SSC	2
Basit Ali	SSC	2
Muhammad Arif	SSC	2
Muhammad Khurram	SSC	2
Zeshan Ahmad	SEN	2
Tipu Sultan	SEN	2
Asif Hussain	SEN	2
Syed Muhammad Muslim Raza	SBE	2
Fariha Tariq	SAP	2
Muhammad Imran Jamil	SSC	2
Nabiha Naeem	SSC	2
Imran Siddique	SSC	2
Muhammad Shahid Hassan	SBE	2
Tayyaba Anees	SST	2
Sohail Zafar	SSC	2
Shaista Habib	SST	1

Mian Usman Sattar	SBE	1
Amer Saeed	SBE	1
Khuram Shahzad	SBE	1
Bilal Wajid	SBE	1
Usman Riaz Mir	SBE	1
Saqib Farid	SBE	1
Syed Farooq Ali	SST	1
Malik Tahir Hassan	SST	1
Sajid Mahmood	SST	1
Muzammil Hussain	SST	1
Kinza Mehr Awan	SST	1
Shafaq Khan	SST	1
Kinza Sattar	SST	1
Adeel Ashraf	SST	1
Khawaja Ubaid Ur Rehman	SST	1
Rummana Khan Sherwani	SAP	1
Naseer Ahmad Asif	SSC	1
Yasir Rehman	SSC	1
Shahzad Ahmed	SSC	1
Syed Khawar Nadeem Kirmani	SSC	1
Shah Muhammad Haroon	SSC	1
Imran Tipu	SSC	1
Anam Amir	SSC	1
Musharafa Saleem	SSC	1
Hafiz Muhammad Umer Aslam	SSC	1
Zaineb Sohail	SSC	1
Rabia Nasar	SSC	1
Shakeel Ahmad	SEN	1
Jawwad Nasar Chattha	SEN	1
Muhammad Yasir Khalid	SEN	1
Muhammad Khalil Anwar	SEN	1
Irum Jafri	SEN	1
Kanwar Ali Haider Khan	STD	1
Faiza Anwar	STD	1
Afreen Komal	ICPY	1
Usman ali	SSS&H	1
Hafsa Tahir	SHS	1
Syeda Saira Iqbal	SHS	1
Waqas Asghar	SFAS	1
Sami Ullah Bajwa	SBE	1
Amjad Hussain Zahid	SST	1
Mazhar Javed Awan	SST	1
Saima Gulzar	SAP	1
Muhammad Aziz Ur Rehman	SSC	1
Ayesha Mohy Uddin	SSC	1
Zaheer Hussain Shah	SSC	1
Aun Haider	SEN	1
Muhammad Adnan	SEN	1
Irfan Ullah	SEN	1
Muhammad Shoaib Pervez	SSS&H	1
Maqbool H Sial	SBE	1

Syed Ahmad Ali	SBE	1
Rana Muhammad Mateen	SSC	1
Fatima Sajjad	SSS&H	1
Abdul Rafay	SBE	1
Zohaib Zahid	SSC	1
Yasir Rashid	SBE	1
Mohsin Javed	SSC	1