Winning Research Grants - NRPU HEC Projects
Operational Guidelines

by

South Asia Triple Helix Association (SATHA)

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President's Message – Abid H K Shirwani

South Asia Triple Helix Association (SATHA) advocates for S&T policy research and innovations having socioeconomic impact for local community/industry. SATHA has taken initiative to coordinate with all stakeholders working in the area of S&T to find common national objectives. In this aspect we have identified some guidelines to follow for winning HEC-NRPU Projects. I feel proud that SATHA has contributed these fruitful guidelines to help faculty and students win NRPU research grants by HEC, Pakistan. I do hope that researchers will take benefits and SATHA will continue such novel services.

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Preface

Grant wining is an art and one cannot be successful grant writer without considering its insights. The Higher Education of Pakistan launches different research programs to promote the research culture in Pakistan. National Research Programs for Universities (NRPU) is one of the HEC programs to promote the research. NRPU is the basic research which asks academic researchers to actively participate in different research projects. The academic researchers are the most powerful assets of a country for promoting the research culture in universities of Pakistan. According to the 2016-2017 estimate, the success rate of research proposal is very low i.e. 21% only.

This study is an attempt to investigate the reasons for the rejection of the NRPU projects. This study uses data from different universities of Pakistan to make some useful insights for winning the research grants. The data is collected using questionnaire and NRPU review forms.

This study investigates that most of the research projects of NRPU get rejected in early stage. Many projects got disqualified in the early stage of first scrutiny. The most common reason for projects disqualification is the ignorance of check list before sending the research proposals. The other major reasons that hinders in the way of projects acceptance are securing the lower scores in the areas of significances of projects and intellectual merits of the proposed activity. These two sections are very important because they carry high weights i.e. 85 mark out of 100. Institutional activity and budgeting of the projects is also important but they carry less weights i.e. 15 marks out of 100. This study provides the details about each section of review process and useful guidelines for achieving the maximum scores to win a research grant.

Acknowledgement

Table of Contents

List of Figures

List of Tables

Section 01

1. Introduction

1.1   Higher Education Commission of Pakistan (HEC)

HEC is an independent, autonomous and constitutionally established institution of primary funding, overseeing, regulating and accrediting the higher education efforts in Pakistan. The HEC also facilitated the development of higher educational system in the country with main purpose of upgrading universities and colleges in the country to be focal point of high learning of education, research, and development. Over the several years, HEC plays an important and leading role towards building a knowledge based economy in Pakistan by giving out hundreds of doctoral scholarships for education abroad every year (Wikipedia, 2017).

Grants can be an excellent source of funding for parent groups. In fact, millions of dollars in educational grants go un-awarded every year simply because no one applied for them.

Obtaining money through grant is not like earning it through fundraising. As a rule, fundraising dollars can be spent on whatever you wish—from school supplies to volunteer appreciation to inflatables for the carnival. On the other hand, organizations typically award grants for special projects. The range is broad, but your application must state specifically what you need the money for and how you will spend it. Then, you must follow the plan you laid out. In most cases, you also will be required to account for how the grant money was spent.

The good news is that you don't have to be a professional grant writer to find funds for your special project or program. For many grants, simply following a few basic rules will suffice.

When you begin thinking about whether a grant will make sense for your group, consider this question: Where is the gap? and what can your parent group can do to fix it? Grant makers fund a wide range of activities. Your challenge is to decide where your need lies, find the right organization to sponsor it, and then make the case for why you deserve the funds.

1.2   National Research Programs for Universities (NRPU)

The Higher Education Commission of Pakistan (HEC) is an independent, autonomous, and the constitutionally established institution of primary funding, overseeing, regulating, and accrediting the higher education efforts in Pakistan. HEC's most popular research funding programs include National Research Programs for Universities (NRPU) and Technology Development Fund (TDF). For meeting the current challenges of the researchers in universities of Pakistan and to promote research and development facilities, HEC provides a platform of NRPU (HEC, 2017). NRPU is the basic research that facilitates the researchers to create new ideas which can be beneficial for the society and country as a whole.

This study focuses on the insights of fund wining research proposals, and why they get rejected. In Pakistan HEC encourages researchers to write their research proposals and provides funding facilities to accomplish their projects. But unfortunately many proposals are rejected and the acceptance ratio is very low. Table 1 shows the total projects submitted, accepted and rejected from all provinces of Pakistan. We can see that, In Punjab only 218 projects were approved out of 985. This tells us that the success rate is very low i.e. 22% only. Whereas from all over Pakistan the success rate for 2016-2017 projects is 21%, which is very low. Similarly figure 1 shows the total projects approved during 2016-2017 subject areas wise, and we can see that Biotechnology/Microbiology/Biochemistry projects ratio is high i.e. 25% as comparing to other research areas. On the other hand the smallest ratio of projects is from Environmental Sciences/Geology i.e. 1% is very low. The current researchers need to pay attention on this area of research to make its' impact on the society because in Pakistan environmental research is very helpful.

Province	Projects Submitted	Projects Shortlisted	Projects Approved	Projects Rejected	Project Under Review
Federal	911	581	202	365	14
Punjab	985	581	218	342	21
Sindh	327	268	80	163	25
KPK	410	231	69	138	24
Baluchistan, Gilgit & AJK	89	46	06	39	1
Total	2722	1707	575	1047	85

Table 1: Summary of Projects Submitted under NRPU 2016-2017[1]
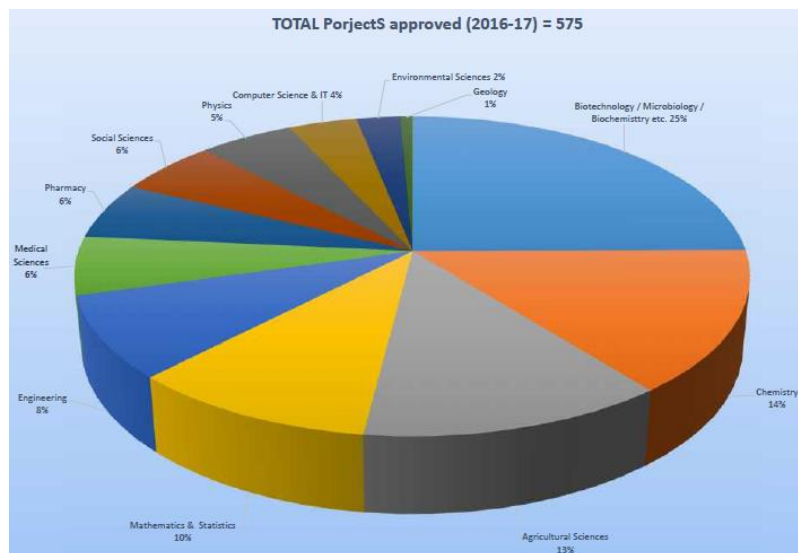

Figure 1: Summary of Projects Submitted under NRPU 2016-2017[2]

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[1] **Source:** http://hec.gov.pk/english/services/universities/nrpu/Pages/NRPU-Approved-Projects-Awards-2016-17.aspx
[2] **Source:** http://hec.gov.pk/english/services/universities/nrpu/Pages/NRPU-Approved-Projects-Awards-2016-17.aspx

This is a serious problem to consider, however this study tries to provide some useful guidelines and recommendations for research proposals to achieve high success rate. This study specially focuses on the National Research Programs for Universities (NRPU) review process and also discusses the key points that are causing the rejections of research proposals. This study also helps young researchers who want to do applied research but they do not have sufficient facilities and resources to complete their projects.

1.3   Lessons Learnt from Literature

Research grants may add value to the productivity of the output. It is observed that the scientists having funds or research grants are more likely to do innovation thus increasing productivity. on the other hand, academicians who have less access to funds/research grants are less likely to perform outstanding (Svider et al., 2013).

The economic growth of a country depends upon the technology and innovation made by the researchers. The researchers demand some financial support for the completion of their innovation projects (Chapin, 2004; Geuna & Martin, 2003). The academic research proposals have significantly promoted research ideas (Punch, 2000).

A grant is known as the best funding source which can help a researcher for doing his work. A researcher gets a grant free of cost but it is very difficult to obtain a grant. The grants can only be given to the deserving persons who have capabilities for doing something (Oztaysi, Onar, Goztepe, & Kahraman, 2017).

The output of the research grant is significantly affected by the source of grant. There can be two sources to win grants. One can be from industry, other can be from public sector. Industry mainly offers research grants on applied nature projects, whereas public sector grants somehow consists on conferences too. The scientific output will be highly affected by the source of research grant. Grants by industry mainly focus to the usable output and patentable inventions while other grants from small firms may focus more on to publish them rather than finding any significant impact of the research (Hottenrott & Lawson, 2014).

According to Oztaysi et al. (2017) there are many studies conducted in different countries on grant funding in international journals. The number of publications is 212 on the topic of grant funding. Similarly, Thomas & Nedeva (2012) give a framework to characterize researchers. This framework includes researcher's different conditions and attributes they have experienced. Bloch et. al., (2014) investigate the development of several methods for analyzing the research funding and they illustrate the key issues in developing the research proposals and for making the methodologies accordingly.

The publishing trend of research proposals increased day by day. Publishing of research proposals is necessary for research because without it we cannot know the novelty of our research area. For that reason its trend is increasing tremendously as shown by figure 2.
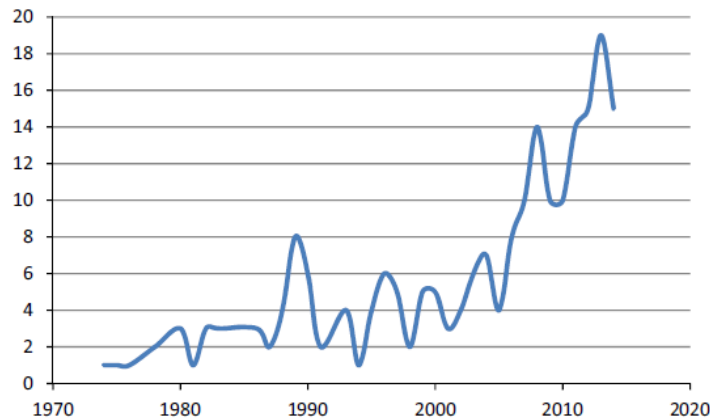
Figure 2: The Trend of Publishing Grant Papers[3]

Figure 2 provides a clear picture that how trend is changed and grant writing papers are published more and more. This is very helpful for the researchers because they know about the uniqueness of their projects and it also helps for finding the research gaps.

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[3] **Source:** Oztaysi, B., Onar, S. C., Goztepe, K., & Kahraman, C. (2017), Evaluation of research proposals for grant funding using interval valued intuitionistic fuzzy sets. Soft Computing, 21(5), 1203-1218.-

Section 02

2. NRPU Research Areas

NRPU provides a wide range of research domains for academic researchers. These research domains include: Arts and Humanities, Economic and Social Research, Engineering and Physical Sciences, Medical Sciences, Biotechnology & Biological Sciences, Natural & Environment Sciences, Science and Technology. The details of NRPU research areas with each category are as follows:

2.1   Arts and Humanities

- History (Ancient, Medieval and Modern);
- Classics;
- Archaeology;
- Modern Languages and Linguistics;
- English Language and Literature;
- The Visual Arts and Media;
- Librarianship, Information and Museum Studies;
- Philosophy, Law, Religious Studies;
- Music and Creative and Performing Arts

2.2   Economic & Social Research

- Sociology;
- Economics;
- Anthropology;
- Political Science;
- Area or Regionally Based Research and Geography;
- International Relations;
- Cultural and Media Studies;
- Law and Linguistics;
- Psychology.

2.3   Engineering & Physical Sciences

- Mathematics;
- Chemistry;
- Physics;
- Materials Science;
- Engineering;
- Computer Science, High Performance Computing;
- Energy Research;
- Research into the Built Environment;
- Information and Communications Technology;

- Research into Innovative Manufacturing

2.4   Medical Sciences

- Use of Animals in Research;
- Antibiotic Resistance;
- Brain Sciences;
- Genomics and Proteomics;
- Health of the Public;
- Intensive Care;
- Patient Safety Research;
- Stem Cell Research.

2.5   Biotechnology & Biological Sciences

- Genomics, stem cell biology, and bio-nanotechnology, that provide a basis for new technologies in healthcare, food safety, plant and livestock breeding, and bio-processing;
- Whole organism biology relevant to the understanding of diet and health, ageing, animal health and welfare, infectious diseases and immunity, and crop productivity;
- Biological populations and systems that underpin agricultural sustainability, biodiversity and novel bio-based and renewable processes for energy and manufacturing.

2.6   Natural & Environment Sciences

- Geo and Earth Sciences, Hydrology, Soil Science, Atmospheric Research and Oceanography;
- Biological and Microbiological Research on Animal and Plant Biodiversity, Population Dynamics and Ecology;
- Climate Change Research;
- Environmental Chemistry and Physics;
- Satellite Based Earth Observation;
- Polar Research;
- Management of Land and Natural Resources.

Section 03

3. Guidelines as per HEC

This section presents the supportive guidelines and helping material to understand the procedure of the research proposals of NRPU.

3.1 Eligible Universities

HEC allows all the full time faculty members of the public universities of Pakistan and some selected private universities of Pakistan to submit their research proposals. The following are the list of eligible private universities of Pakistan:

- GIK Institute of Engineering & Technology, **Topi**
- Aga Khan University, **Karachi**
- Lahore University of Management Sciences, **Lahore**
- National University of Computer and Emerging Sciences (FAST), **Islamabad**
- Indus Institute of Higher Education, **Karachi**
- Institute of Business and Technology, **Karachi**
- Foundation University, **Islamabad**
- Riphah International University, **Islamabad**
- University of Management Technology, **Lahore**
- Zia ud Din University, **Karachi**
- The University of **Faisalabad**
- Institute of Business Management, **Karachi**
- Dadabhoy Institute of Higher Education, **Karachi**
- The University of **Lahore**
- Beaconhouse National University, **Lahore**
- Iqra University
- Shaheed Zulfikar Ali Bhutto Institute of Science & Technology (SZABIST), **Karachi**
- Forman Christian College, **Lahore**
- Sarhad University of Science & Information Technology, **Peshawar**
- Baqai Medical University, **Karachi**
- Isra University, **Hyderabad**
- Hamdard University, **Karachi**
- Jinnah University for Women, **Karachi**
- Sir Syed University of Engineering and Technology, **Karachi**
- University of Wah, **Wah Cantt**
- National College of Business Administration & Economics, **Lahore**
- Textile Institute of Pakistan, **Karachi**
- Karachi Institute of Economics & Technology, **Karachi**
- HITEC University, **Taxila**

3.2   Eligibility Criteria

The research proposals under NRPU must be submitted according to the following criteria as per HEC.

- The Principal Investigator (PI) has to be a **full-time regular** faculty member **(BPS or TTS)** or on **contact not less than project life** of any public sector university/DAIs or private sector university/DAIs eligible for public funding.
- PI should have an advance academic degree & relevant experience **(PhD or M.Phil./MS)** and working as academician/researcher but not as administrator.
- PI can execute or submit only two **(2) research projects simultaneously** under any of HEC funded research grant programs either under NRPU or UITSP or TDF or TRGP or Pak-US etc. (either ongoing, submitted, under review, etc.).
- If a university teacher is working as **PI or Co-PI in more than one project**, he/she may get only **one month's Initial Basic Pay under any one of his/her project as honorarium**.

3.3   Duration of the Projects

HEC allows submitting research grant proposals for the period of **1 to 3 years**. However there is no restriction on the lower limit of the project.

3.4   Financial Assistance

The funding opportunity for the researchers is based on the Principal Investigator's cumulative impact factor. The funding limits according to the cumulative impact factor are as follows:

For Physics, Chemistry and Biology

Impact Factor	Eligible Amount
100 or above	20 million
50-99	17 million
20-49	15 million
10-19	12 million
0-9	10 million

For Remaining Disciplines

Impact Factor	Eligible Amount
50 or above	20 million
25-49	17 million
10-24	15 million
5-9	12 million
0-4	10 million

3.5   NRPU Policy Relating to Financial Assistance

HEC gives some policy guidelines that must be considered while submitting the research proposal under NRPU program of HEC.

3.5.1   Foreign Payment

No foreign payment is allowed to any **foreign firm / foreigner as Co-PI / consultant** for the purchasing of any type of item or equipment etc.

3.5.2   International Travel

International travel is not allowed under NRPU. However, PI may go abroad if he/she is funded/supported by a collaborating partner.

3.5.3   Travelling and Daily Allowance

TA/DA is **not allowed to any of the PI, Co-PI and student** etc. However, travel expenditure as per actual may be claimed under head **local travel** but **maximum up to 0.2 million** per year per project.

3.5.4   Food and Entertainment Allowance

Any type of food/entertainment expenditure **may not be demanded** in the budget of NRPU.

3.5.5   Studentships

The only studentship is allowed (**M. Phil./MS/M.Sc.(Hons.)/PhD students).** However **no research associate/research assistant/field assistant/field surveyor/ or any supporting staff** etc. can be engaged other than studentship in the project.

3.5.6   Daily Paid Labor

Daily paid labor (DPL) can be demanded for a specific time period and may be hired at university rates if justified under the proposal.

3.5.7   Secretariat Staff

Secretariat Staff (if required & justified by PI) is allowed @ **Rs18, 000** per year.

3.5.8   Coordinator / Consultant

No coordinator/consultant is allowed to be hired as it is responsibility of PI/Co-PI.

3.5.9   Funding Amount Limit

The total amount of the project would **never be exceeded 20 million in any case** if PI, s impact factor allowed.

3.5.10   Expenditure Rule

PI must make all expenditure in accordance with the **Government rules/regulations** such as PPRA rules. The next installment is released after deducting previous unspent amount reflected by PI in his/her audited expenditure statement submitted to HEC.

3.5.11   Audit

All accounts of these funds shall be maintained as per Government rules and are subject to audit.

3.6   NRPU Review Process

For overseeing the insights of NRPU projects, one must have to deeply look at the review process of NRPU projects. Because we believe that if we can understand thoroughly this NRPU review process then we can make maximum scores in each section and then chances of winning a project increases. Figure 3 shows the complete review process of NRPU proposals.

Review Process of NRPU

Round 1
- Initial Screening
- Consists of check list of 10 items
- Checked by focal person (Tick or Cross)
- Cross on any items will lead to disqualify project immediately.

Round 2
- This round starts only if first round clears.
- Checked by Expert Reviewers
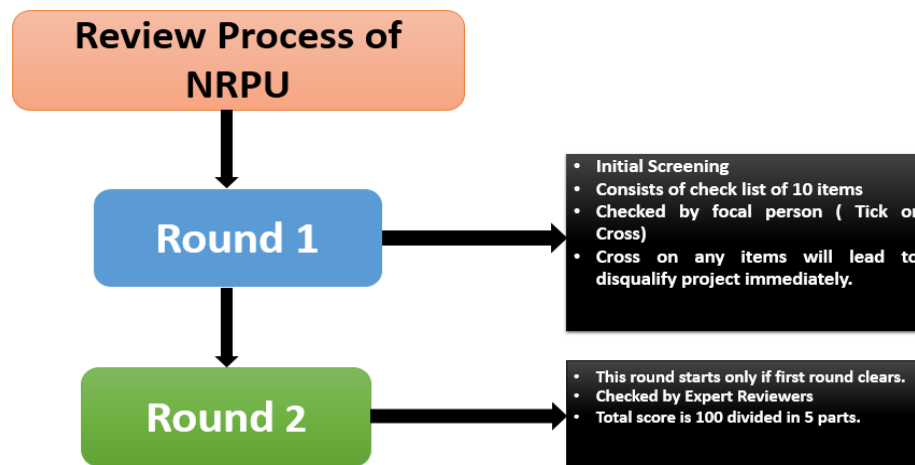- Total score is 100 divided in 5 parts.

Figure 3: Review Process of NRPU Projects

The review process consists of two rounds. In the first round, all submitted NRPU projects

are checked by a focal person. This focal person checks all the projects with respect to a checklist mentioned below. He makes tick and cross on a checklist of 10 points. The cross on any point of the checklist will lead to disqualification of the project. So this round is very important and special care is required to be made before submitting the projects. The next round is qualified by the researchers only if he clears in first found. Second round consists of five parts that will be reviewed by the experts. The detail is given below:

3.6.1 ROUND 1 – Initial Screening

This is the first stage of NRPU review process and is considered very important because about 73% of NRPU projects get disqualify in this round. This round is supervised by a focal person and it is based on tick and cross on the checklist items. The cross on any checklist item will lead to immediately disqualification of the project. The checklist consists of 10 points and they all have equal importance (Automania, 2017). To qualify the round 1, we have to strictly follow the checklist points and ensure its availability in our proposals.

3.6.2 Check List of Round 1

The checklist of round 1 consists of the following ten points:

- The proposal under consideration of a research project is not meant for the establishment of laboratory or for development only. (Proposal under review must not be a development or establishment project.)
- Is the qualification and expertise of the Principal investigator/Co-PI relevant to the project? Are CV of PI and Co-PI attached?
- Is one page summary of each project of PI, already completed, ongoing, and/or submitted to any funding agency including HEC, attached? If not applicable please tick mark.
- Are invoices/quotations for permanent equipment costing over Rs.0.1 million attached? If not applicable please tick mark.
- Is year-wise justified quantity and cost of expendable supplies (chemicals/reagents, kits, glassware/plastic ware etc.) given? If not applicable please tick mark.
- Is total cost of the research project in-line with the financial provisions of the NRPU program (with reference to PI's Impact Factor)?
- Are project activities and milestones clarified with respect to timeline on Gantt chart (either inserted inside the proposal in 4A section Schedule Phasing/Methodology and/or given separately)?
- Does the institution possess necessary infrastructure/ sufficiently equipped for smooth execution and to complete the proposed project? If not applicable please tick mark.
- Is a clearance certificate from Institutional Bioethics Committee (IBC) of the university/concerned institute (if required) attached? If not applicable please tick mark.
- Does the proposed project have enough merit to process it through the extensive evaluation system? Is it justified considering rationality, creativity, originality and/or going to solve the critical national problem (for the applied project only where the industry has participated/contributed)?

11

3.6.3 Reviewers Comments on Projects Disqualification[4]

- The proposed project is an important area of Mechanical Engineering and highlights the research needs in the said area. However, the project focuses secondarily on the research gaps and primarily on capacity building and lab establishment. Your project must not be meant for establishing or developing the laboratory.
- Project objectives are not provided.
- Limited references are given and the literature from the same authors has been quoted many times in the proposal.
- Impact Factor of PI is not clear from the attached CV of PI.
- No Co-PI proposed in project, but according to the project requirements the need of Co-PI is necessary.
- In proposal, two M.Phil. and PhD Students were discussed while budget of single M.Phil. student is demanded.
- Percent time devotion to project has not been mentioned for PI, M.Phil. and Ph.D. students in the budget.
- Typing mistakes in budget needs correction.
- The proposed research idea is good and highlights the research needs, however, the project appears to address the issue of Capacity Building and Infrastructure in the host institution rather than filling the research gaps.
- Project should specify research objectives clearly and not generally.
- More references of the published literature required.
- Impact Factor should be confirmable from the attached CV.
- M.Phil. and Ph.D. scholars have been demanded for last year only, therefore these researchers may not contribute fully
- Budget subtotals are missing and grand total estimate needs attention
- At least two quotations should be provided because of high prices of the proposed permanent equipment
- ORIC and VC Signatures are missing
- The title of the project shows that the project is related to the development of next-generation electrodes (both anodes/cathodes) for SOFCs. However, the objectives and methodology part confirms that the main theme of this project is the development of coke/sulfur resistant SOFC anodes only and not the cathode. Certainly, the development of cost-effective coke/sulfur resistant SOFC anodes is one of the big challenges for the materials scientist/researchers to date and its successful development may facilitate the commercialization of SOFC technology.
- Both PI and Co-PI do not have the qualification to pursue this project. According to CVs attached, PI has published two papers. Similarly, Co- PI has two journal publications in the area of Electro chemilumine scence. Since 2010, PI has almost no publication in any journal on his related field. The absence of any publication in the proposed area shows lack of expertise.

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[4] The disqualification points by the reviewers are collected from the different NRPU project review forms

- No Certificate from IBC is required
- PI has not discussed any real problems which are related to a) development of mixed matrix membranes and b) commercial viability.
- PI has not mentioned any such problems and is unable to explain how they would tackle this problem
- PI and Co-PI are from the same field of interest. They don't have publications in leading journals. Only a few publications are in good journals. Research record is not impressive. PI has total 14 and Co-PI has only 8 papers in W-category. Also journals quality is not good.
- The project is lacking clear objectives to achieve.
- The PI seems inexperience in the proposed area, and he may be able to execute the project in accordance with the funding body.
- One of the quotations for equipment is missing. Any equipment costing more than **0.1 million** requires quotations.
- The publications possessed by the PI do not match with the proposed area.
- Ethical approval is not required for this project at this stage.
- Projects activities are outlined but the time frame is not detailed.
- CVs of PI and Co-PI is missing.
- There is no need of Co-PI for the proposed research.
- Two MS students are required for the proposed project.
- PI CV is not clear, publications are provided with the not clarity it is hard to judge.
- The proposal is one year.
- The proposal is incomplete. Miscellaneous information and questions not filed.
- Prices of equipment not realistic.
- PI did not mention what is research in this project?
- PI has 6 publications in his career: two as first author and 4 as co-author and these are in very ordinary journals.
- The proposed project is a big project for PI in his career, he should start his independent research career with a modest start by writing a mini research grant and using the institutional facilities, publish a good quality article(s) and then apply for a big research grant. The PI may apply for a mini research grant of **Rs. 12million.**
- The background of PI is not enough for the proposed project.
- The practical feasibility of the proposed is doubted.
- If the desired results are not achieved and the proposal is not feasible financially, or to the tentative benefits would not be achieved then why to demand a huge amount for proposal approval.

3.6.4 ROUND 2 – Review by Experts[5]

In this round technical experts review the proposals. Total score for the proposal is 100. This round is subdivided into 4 sections and each section is allotted some score (Automania, 2017). A reviewer checks the proposal and gives marks in each section accordingly.

3.6.5 SECTION A (TOTAL SCORE 60)

Section A. What is the intellectual merits of proposed activity? 60 Marks

A.1. Principal Investigator	20 Marks
A.2. Significance	20 Marks
A.3. Approach	20 Marks

3.6.5.1 A-1 Principal Investigator (20 Marks)

PI is the key person responsible for implementing the research project and for ensuring its completion within the stipulated duration by achieving all the stated objectives and goals of the research proposal. The success of the research project depends on the intellectual and managerial skills of the PI. Therefore, it is very important to review the CV of PI & Co-PI. HEC encourages having one Co-PI. The score division of PI is as follows:

- Qualification, experience & expertise. **5 Marks**
- Research work & Publications. **5 Marks**
- Do the research team (including PI, Co-PI, experts, and collaborators) possess sufficient expertise to successfully execute the proposed research project? **5 Marks**
- Is prior research undertaken by PI good quality, especially related to the proposed area? **5 Marks**

3.6.5.2 A-2 Significance (20 Marks)

- Is the proposal rationally sound and the research gaps are clearly identified? **4 Marks**

- To what extent the proposed activity is based on creative and original concepts? **4 Marks**
- How well does the proposed activity advance the current state of knowledge within its own field or across other relevant fields? **4 Marks**
- Is there any duplication or repetitiveness to the existing data (in public domain)? **4 Marks**
- Is the scientific hypothesis valid and warrants research? And does the proposal address / solve a problem of national importance? **4 Marks**

3.6.5.3 A-3 Approach (20 Marks)

- How well conceived & realistic are the project goals in terms of their significance? Doability in the proposed timeframe? Advancement of knowledge? **4 Marks**
- Are the conceptual framework, design, methods, and analyses well-conceived and developed? **4 Marks**
- Is the project multi-disciplinary and interdisciplinary expertise available to pursue the objectives? And has previously published work been comprehensively reviewed? Is PI and/or research team's previous related work cited in this proposal? **4 Marks**
- Is detailed methodology of each research step clearly stated? **4 Marks**
- Does the proposal include a clear plan of work and scheduling? Are key performance indicators clearly defined? **4 Marks**

3.6.6 SECTION B (TOTAL SCORE 25)

Section B. What are the broader impacts of the proposed activity? 25 Marks

B.1. Socio- Economic	10 Marks
B.2. Research	5 Marks
B.3. Education and Training	5 Marks
B.4. Collaboration	5 Marks

3.6.6.1 B.1. Socio-Economic (10 Marks)

- To what extent does the proposed work impact the national economy in terms of decreasing dependence on imports, improving productivity or enhancing exports? **2 Marks**

- How well the proposed solution/developed product/process is related to the needs of the beneficiary industry? **2 Marks**
- Will proposed study pass any benefit over to society/ help the social sector? **2 Marks**
- Does the proposed research contribute to achieving SDG's (sustainable development goal) of Pakistan? **2 Marks**
- Is the end-user been identified? Would the end-user be willing /consented to take up the research finding to further explore commercial aspects? **2 Marks**

3.6.6.2 B.2. Research (5 Marks)

- To what extent will this proposal enhance the infrastructure for research, such as facilities, instrumentation, networks, and partnerships at the host institute? **2.5 Marks**
- Will results of the proposed research be disseminated broadly through research reports and publications to enhance scientific and technological knowledge? **2.5 Marks**

3.6.6.3 B.3. Education and Training (5 Marks)

- To what extent will the proposal enhance the infrastructure for education, such as facilities, instrumentation, networks, and partnerships? **1 Marks**
- How will the activity help in the advancement of understanding through promoting teaching, training, and learning? **1 Marks**
- Will it facilitate the development of new courses? **1 Marks**
- To what extent the proposed funding will contribute to the students (at individual & collective level) who will get direct training and indirect help. **1 Marks**
- Will proposed research have any impact on teaching/training of manpower, institutional capacity building and on local industry; on the economic development of national, regional and community development? **1 Marks**

3.6.6.4 B.4. Collaboration (5 Marks)

PI has to justify the need for collaboration. PI should clearly identify the part/s of research that would be carried out in the participating laboratory. PI has to include a letter from collaborating partner/agency expressing a willingness to collaborate. PI may mention cost sharing by collaborating institution/s if PI doing a collaboration that may be in terms of monetary or services form. No payments should be made to collaborating partner from the funds released under NRPU for analysis/any other purpose etc. within the country or abroad. The score division is as follows:

- How well does the proposed work enhance academia-industry/end-user partnerships? **0.5 Marks**
- If the research involves collaboration with another institution, how relevant is that to the proposed research goals and plans? **0.5 Marks**
- Does PI identify /justify the need for collaboration? **0.5 Marks**
- Does PI clearly identify the part/s of research that would be carried out in the participating laboratory? **0.5 Marks**

- Is the collaborating partner willing to cooperate actively and promised to use the output (product/process)? **0.5 Marks**
- Has PI included a letter from collaborating partner/agency expressing a willingness to collaborate? **0.5 Marks**
- Has PI attached any certificate/ document from end-user, in support of the proposed research? **0.5 Marks**
- Has PI mentioned cost sharing by collaborating institution(s)/end users? (May be in monetary term or in the form of services). **0.5 Marks**
- Is problem conceived/developed in collaboration with local industry? **1 Marks.** The details are given as follows:
  - ✓ Will it lead to the development of a product/process?
  - ✓ Will improve an existing product/process?
  - ✓ Will provide a substitute for an imported product/process?
  - ✓ Will help reduce imports/ increase export?
  - ✓ Will remove a technical difficulty or solve a technical problem?
  - ✓ Will the end-user/ beneficiary industry (major/minor) benefit from the proposed research?

3.6.7 SECTION C (TOTAL SCORE 10)

Section C. Institutional Facilities and Infrastructure. 10 Marks

Host institution should be sufficiently equipped for smooth execution of the project under discussion. Host university/institution should possess the necessary infrastructure to undertake and complete the proposed project. PI should have sufficient support/facilitation from the host university/institution for smooth execution of the project under discussion. Therefore, it is very important for a reviewer to see a list of equipment already available for PI in the host university/institute for a research project to assess demand for permanent equipment not available in the host institution necessary for smooth execution of the research project under discussion. The score division is given as follows:

- Do the researchers (individual or team) have adequate facilities and resources to perform the proposed work in term of: Equipment available for research at the host university/institution (is laboratory well equipped)? and Laboratory facilities and supplies required for smooth execution of research activities? **2 Marks**
- Is demand for permanent equipment under budget head reasonable and justified in term of its utilization in the project under discussion? **2 Marks**
- How much significant is the demanded equipment/s (having worth more than 0.5 million) in terms of contribution in successful completion of the project under discussion? **2 Marks**
- To what extent will the institution increase its capability to perform a follow-up or similar research on national or regional problems? **2 Marks**
- Is year wise quantity and cost of expandable supplies demanded justified?

Otherwise focal point/reviewer must cut it down to a reasonable amount. **2 Marks**

3.6.8 SECTION D (TOTAL SCORE 5)

Section D. Budget Estimates
5 Marks

- Is the proposed budget adequate (neither over- nor underestimated) to accomplish the stated aims? **1 Marks**
- Is the choice of equipment appropriate? Are the costs / time frames reasonable? **1 Marks**
- Does the PI justify the demand for Equipment? And Expendable supplies? **2 Marks**
- Reasonability of request in various categories vis-à-vis justification provided – Is it convincing? **1 Marks**

3.6.8.1 Recommendations for Fund Winning Budgeting

The budgeting estimate of a research proposal is very important section and should be considered with full consideration. The fund winning budget estimate contains all the requirements of HEC and also includes reasonable prices of equipments and other expenses (Automania, 2017). HEC provides some useful guidelines for the preparation of fund winning budget estimate that are presented below:

- If permanent equipment/s is/are already available in the host university/institute or their contribution in the execution of the project is not significant, please cut them down.
- If year wise quantity and cost of expandable supplies demanded is not justified either these are not required or overestimated? Please cut them down to a reasonable size.
- HEC encourages having one Co-PI.
- Food/Entertainment expenditure cannot be demanded in the budget.
- No foreign payment could be made either to any firm for the purchase of any item or to any foreigner Co-PI.
- International travel is not allowed. However, PI may go abroad if he/she is funded/supported by a collaborating partner.
- However, travel expenditure as per actual can be claimed under head local travel but maximum up to **0.2 million** per project.
- The only studentship is allowed **(M. Phil./MS/MSc(Hons)/PhD students)**
- No research associate/research assistant/field assistant/field surveyor/or any supporting staff etc. can be engaged other than studentship in the project. However daily paid Labor (DPL) can be demanded for a specific time period and may be hired at university rates if justified under the proposal.
- Secretariat Staff (if required & justified by PI) is allowed @ **Rs=18,000** per year.
- No coordinator/consultant is allowed to be hired as it is the responsibility of

PI/Co-PI.

3.6.8.2 Cost Estimates – Main Points Considered By HEC

The cost estimation of the project proposals for NRPU should be made according to the following points given by HEC (Automania, 2017).

1. **Honoraria**
   - Honoraria for PI (One-month initial basic pay scale per year)
   - Honoraria for Co-PI (One-month initial basic pay of scale once in entire project life)
2. **Studentships**
   - Rs.25000 per month for Ph.D. students
   - Rs.20000 per month for M.S. / M.Phil. students
3. **Equipment**
   - Permanent equipment (Invoice/quotation for items costing Rs.0.1 million or above must be attached by PI.
4. **Expendable Supplies**
   - Year wise quantity and cost with full justification must be given by PI.
5. **Travel Expenses**
   - International travel is not allowed
   - Local travel is allowed with maximum Rs.0.2 million if justified.
   - In case of social sciences special permission may be granted by HEC (Authority) to those proposals where extensive survey, samples collection and travelling are involved.
6. **Journal Publication Fee/Online Material (Literature, Documents etc.)**
   - Maximum Rs.50000/- or as per actual is allowed.
7. **Stationary**
   - Maximum Rs.10, 000/ year or as per actual.
8. **Miscellaneous**
   - Audit / Accountant fee - Maximum Rs.10, 000/ Year
9. **Indirect Cost – University Overheads**
   - 15% of the total direct cost to meet office support and utilities etc. of ORIC (If ORIC office is not fully functional) or
   - 02% of the total direct cost to meet research office support and utilities, etc. (If ORIC office is not established)

Section 04

4. Methodology Section

The study was initiated to develop guidelines for faculty and universities to win maximum projects of NRPU HEC. The study also aims to help faculty and universities to save their time and resources by reducing rejection rate. More than 100 universities were approached through a questionnaire about experience of NRPU projects. The achieved response rate is 18%. The NRPU response forms showing HEC decision were also collected from faculty. Around 300 faculty members were approached with success rate of 27%.

The NRPU response forms and filled up questionnaires were analyzed to write this guideline book. The HEC web site is also studied in details to simplify the operational guidelines.

Furthermore, the book is sent to five experts reviews who are regular reviewers of NRPU projects. Three reviewers responded with very quality feedback and that is incorporated in the final draft of the book.

Section 05

5. Results-Reasons for Acceptance and Rejections of NRPU

The academic researchers are the most powerful assets of a country for promoting the research culture in universities of Pakistan. According to the 2016-2017 estimate the success rate of research proposal is very low i.e. 21% only. The following are the main reasons for mostly rejected projects. We found these reasons from NRPU review forms from different universities

Based on the responses collected from the different universities of Pakistan, we identify some remarkable points which can definitely help academic researchers for increasing their chances to win NRPU proposals. Our findings consist of two parts. Firstly we identified 15 most common possible reasons for the rejections of NRPU proposals. These reasons are the most common that exists in many proposals. We overlook to pay attention to these reasons but unfortunately these can create great cause for the rejections of our proposals. These reasons are as follows:

5.1 15 Reasons of NRPU Rejection

i.   Understanding

The major reason for the rejection of NRPU projects is the understanding of research projects' phenomena. The research under NRPU program is of applied nature in which researcher ensures the actual applicability of the research project. To avoid the rejections under NRPU we should understand the concepts of basic and applied research.

ii.   Experience and Qualification of PI

The experience and qualification of the PI (Principal Investigator) is the central point for winning NRPU projects. A number of projects get rejected having a single solid reason that PI has not relevant experience and qualification for running this project. HEC requires that PI must have at least MS/MPhil or PhD. PI must have sufficient number of publications in the relevant field for minimizing the chances of the rejections of NRPU proposals. Moreover impact factor of PI is also important for winning the projects because funding limits is dependent on the basis of cumulative impact factor of PI.

iii.   Novelty of the Research

The uniqueness of the research is very essential for winning projects. Most of the projects get rejected because they are not based on novelty but instead they are just replication of previous studies. In order to win projects your research must contain some innovation and novelty.

iv.   Budgeting Errors

Budgeting errors are the most common errors in NRPU proposals. Basically the budgeting part of proposals seems difficult for the faculty members because they are from different fields and they don't have proper knowledge of budgeting methods. The most common mistakes occur where PI demands the equipment costing more than Rs.100, 000 and don't

attach its quotations. In this case HEC requires that PI must attach quotation of the equipment costing more than Rs.100, 000. Most of the projects get rejected because they don't have justification for the funds they demanded. Normally funds are demanded but they are either overestimated or underestimated and PI fails to justify the reasons for demanding funds.

v. Ignorance of NRPU Research Domains

HEC provides research areas in which you can write your proposals under NRPU program. The research areas must be strictly followed for avoiding rejections of the projects. If a project is out of the research domain provided by HEC then it gets rejected straight forwardly.

vi. Excessive Interdependence of the Project

The interdependence of the project on excessive tasks and events can move your project towards rejection, because if the previous task is not performed then what will happen to next task of your project.

vii. Institutional Approval

Submission of the projects under NRPU program without approval from the host institute will lead towards its rejection. HEC requires that projects must be submitted with prior approval form the host institute and signed by DG and Rector of the university. Many projects get rejected because they are not approved by the host institution.

viii. Ignorance of Guidelines

HEC provides detailed guidelines for the submission of projects under NRPU program. These guides can be easily downloaded from HEC web site. Most of the Scientists do not read the guidelines thoroughly and get their projects rejected. The review process of NRPU projects consists of 2 rounds, in which round one is more important because in this round a focal person checks the project's checklist and if he finds any point missing or unanswered, he immediately rejects the project and at this stage the project gets disqualified.

ix. Projects Objectives and Scope

Research projects' objectives are the key consideration of the project. Objectives provide reviewer an understanding about the purpose of doing research. This reason is most common in rejections because many researchers do not specify the objectives and scope of their research projects.

x. Practical Implication of the Project

The scientists must ensure the practical applicability of their research projects before writing it. This reason is most common in academia. The reviewer of NRPU ensures and verifies that whether the project is actually applicable or the practical implication is possible or not.

xi. Errors Relating to the Project Equipment

The equipment prices must be realistic. Most of the NRPU rejection reasons include project equipment related mistakes. The equipment get over priced and sometimes

equipment cost is unrealistic. One main point is that the equipment costing greater than Rs. 100,000 requires quotations to be attached with project file. This requirement is mandatory and most of the projects get rejected having this reason.

xii.   **Grammatical and Syntax Errors**

These types of errors are most common in the research proposals and they may cause serious problems for the researchers. The grammatical mistakes and syntax errors must be corrected before sending the projects to avoid rejections and bad impression.

xiii.   **Errors in Projects Summary**

The project summary is the key idea of the researchers which provides a complete sense of understanding of the whole projects to the reviewer. Mostly this part is not considered well before submitting the projects. The summary should be brief, eye catching and should include whole project details in short paragraph. This adds value to the importance of the project.

xiv.   **Missing Hypothesis**

Hypothesis must be provided in research proposals. This is the essential part of the project which is to be tested or which researchers expects from their projects. Missing hypothesis will lead your projects towards rejections.

xv.   **Complicated Aims of the Projects**

The aims of your project must be clear and simple and must not be complicated. The project having many complicated aims that cannot be achieved during the life the project must be considered critically. Many projects get rejected because they have not mentioned clear aims of the project.

5.2 10 Points for NRPU Acceptance

Grant wining is an art and one cannot be the successful grant writer without considering its insights. The Higher Education of Pakistan launches different research programs to promote the research culture in Pakistan. National Research Programs for Universities (NRPU) is one of the HEC programs to promote the research. NRPU is the basic research which asks the academic researchers to actively participate in different research projects. Here are few points that have been analyzed on identifying the potential opportunities to win NRPU Projects.

i.   **Feasibility of the Project**

The feasibility of the NRPU projects in terms of funds and its implication is crucial point. The feasibility of the projects must be realistic and within the availability of the fund provided. Your project must be feasible within the time frame mentioned.

ii.   **Societal Impact**

The projects under NRPU must consist of applied research. The main point considered in NRPU is the impact on society. Your research should not include paper work only but actually it should be for the benefits of the society.

iii.   Project Completion Duration

The time frame for NRPU projects is maximum 3 years. This limit is strictly followed and for winning the projects. Your projects must meet the 3 years' time span, rather than only for one year or two years. Time span is very crucial and you must design your project within 3 years' time period.

iv.   Reasonable Equipment Costs with Quotations

Your equipment costing is very important. You must provide the realistic process and also mention the need for the equipment. If the equipment is already available in the host university then please cut it down. One main point is that the equipment costing greater than Rs. 100,000 requires quotations to be attached with project file. This requirement is mandatory and most of the projects get rejected having this reason.

v.   Realistic Aims of the Project

Aims and purposes of the project are very important. These must be clear and simple and must be practically applicable within the time frame mentioned. The vague and ambiguous aims and purposes of the project lead to rejection. You should provide a brief aim of the project that is eye catching and absorbs the reader's attention.

vi.   Correct Citations and Relevant References

Reference and citations section is important and must not be ignored. This section provides readers that researchers have thoroughly studied the background of the problem and then have found gap to carry on this research. Moreover the reference must be latest and properly cited. Incorrect citations must be avoided for winning the research proposal. The referencing style must be proper and according to the reader requirements i.e. APA style is more demanding style by the reviewers. Cite your all references in the same format.

vii.   Eye Catching Introduction

The background of your study is the central part of your proposal. It catches the reader's attention for reading it till end. If the introduction is not interesting and do not provide background of your problem then it puts bad impression on the reviewer and the chances of rejection of your proposal are increased.

viii.   Justification for the Need of Project

Principal investigator must provide the need and justification of the project. It must be provided that why this research is needed actually and why HEC funds it. You must mention the significance of your proposal in concise and good manner that reviewer finds your proposal interesting. You must provide the justification of each and everything you mention in your proposal i.e. equipment, supplies, traveling expenses, experiments and etc. The NRPU reviewers demand justification of each and every item you mention in your project.

ix.   Define the Delimitations or Boundaries of the Project

A project proposal without limitations is vague and unclear. To increase the chances of winning the NRPU proposal, you must mention the limitations or boundaries of your

research project in order to properly investigate the project by the reviewers. Boundaries refer to the limits in which you are going to conduct this project. A project with complete limitations increases the chances of winning the projects.

x.   Avoid Ambiguous / Doubtful Experimental Plans

In order to win your research project, you must provide the clear and practically implacable research plans if any. Doubtful experimental plans means that you include an experiment plan in your proposal whose execution is doubtful practically and one cannot confidently execute the experiment. If your project includes such types of experiments then it is difficult for the reviewer for accepting your project for funding.

5.3 Conclusion

Academic researchers are the most valuable assets of our country. For this reason HEC has taken an initiative to promote the research culture in Pakistan because we live in a global and fully technology equipped era and without research it is impossible for a country to survive. Pakistani researchers have GOD gifted intelligence and innovative capabilities but unfortunately they have not sufficient support for making their ideas applicable and commercializable. For this reason HEC provides facilities to our researchers through national research program in order to promote research culture and progress of our country.

Therefore this study is an attempt to investigate the reasons for rejection of NRPU projects. Because the rejection rate of the NRPU proposals is very high and young researchers are discouraged again and again after facing too many rejections. This study uses data from different universities of Pakistan to make some useful insights for winning the research grants. The data is collected using questionnaire and NRPU review forms.

This study investigates that most of the research projects of NRPU got rejected in the early stage. Most common reason for projects disqualification is the ignorance of check list before sending the research proposals. The other major reasons that hinders in the way of projects acceptance are securing lower scores in the areas of projects significance and intellectual merits of proposed activity. These two sections are very important because they carry high weights i.e. 85 marks out of 100. Institutional activity and budgeting of the projects is also important but they carry less weights i.e. 15 marks out of 100. This study provides details about each section of review process and useful guidelines for achieving the maximum scores to win a research grant.

And finally this study suggests 15 possible reasons that may lead your NRPU project towards rejection. These reasons are most common and if young academic researchers focus on these rejection points then they can have a chance for winning NRPU projects. Furthermore, this study also identifies 10 winning points for the NRPU projects. These points are key to success and must be considered in order to win NRPU research grants.

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7. Author's Profile

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Rahmat Ullah is a research scholar in management with specialized focus on innovation and technology development. He moved into management profession by setting up own enterprise, managing marketing and doing sales for national firms. After management and business administration education, he joined research organization IRP to promote R&D culture in Pakistan. He has published his research papers in academic journals and also presented them in national and international conferences. He has diversified experience of providing training, managing survey projects, developing online portals, initiating academic publishing and executing funded projects of development nature.

Rahmat has the credit of introducing a number of research software in Pakistan, developing above 30 training modules of research methods and training research scholars in Pakistan and abroad. He is also the focal person for university-industry linkages where he successfully launched a collaborative R&D promotion program with state-run R&D organizations, chambers of commerce and industries, business associations and industrial groups all over Pakistan. He has managed a large number of development technologies and initiated many industries-driven projects in the universities of Pakistan.

Rahmat also got training in health and hospital management, developed medical unit, and served the development sector in social development and poverty alleviation. He has blended experience of failures and success in initiating startups, scaling up to national level ventures, and making them financially viable. Rahmat is a regular trainer in research methods, and consultant for innovation and technology development for academia, industry, and R&D organizations. Currently, he serves the Institute of Research Promotion as a Chief Coordinator, manages UMT-ORIC, and General Secretary, South Asia Triple Helix Association.

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Dr. Zaffar Mehmood is a PhD from The University of Queensland. He is academically gifted personality with a University Gold medal on his record. He has his qualifications both in scientific fields and in business education. He has served as a university lecturer for three years and has extensive teaching and research experience both in Pakistan and in Australia. Besides research work he has performed various technical and academic roles overseas. His area of expertise is Food Nanotechnology. Dr. Zaffar has produced research outcomes with great commercial potential and he has hands on experience in intellectual property management through his innovative research work that enabled him to submit patent applications in Australia and USA. He is looking ahead for more patent applications in future. He has been trained by Australian Institutes on commercialization of innovative research work. He was finalist of trailblazer competition of innovative ideas in Australia organized by The University of Queensland Australia within Australian top ranking universities.

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