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Spatial Adversities of the Commercialization of Main Roads: A Case Study of Main Road, *Samanabad*, Lahore

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Abstract

The negative impacts of land-use commercialization on built environment were studied in this research. Data was collected from the target population residing on Main Road *Samanabad*, Lahore. Data was collected through stratified sampling technique and analyzed in SPSS. The variables were correlated to draw conclusions. It was discovered that it is not only the tangible infrastructure that is responsible for the degradation of the built environment but intangible factors such as the existing policy on acquiring No Objection Certificate (NOC) also cause its deterioration. Furthermore, site-specific regulatory procedures need to be implemented. These loopholes were identified and organized in terms of their urgency of action and recommendations were prepared according to the research findings.

Keywords: *Samanabad*, land-use commercialization, spatial adversities of commercialization

Introduction

Main Road, *Samanabad*, Lahore is one of the emerging commercial corridors of Lahore. Its peculiar nature of commercial activity, the history of the town, its linkages with the rest of the city, memory of the its people along with their aspirations for future, all of them are intertwined with the process of commercialization. Any attempt to slow down or diminish this process entirely, for it brings with it a lot of planning liabilities and challenges, would only be half-effective. This restless drive to convert residential land-use to commercial one needs to be understood in order to identify all its adversities on built environment.

The research is conducted within the limited scope of selected variables and aims at drawing out the reasons which cause this phenomenon to take place. The study of the inter-relationships between these variables is made with the help of SPSS. The target population is divided into three sub-groups namely residential, car-related commercial and general commercial sub-group in order to comprehend all three angles to the problem. They are further split into those who want land-use commercialization to increase and those who are against it.

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The commercial space is defined in terms of its five essential components and comprises the showcase space, storage space, circulation space, open space and parking space. The damage made to the infrastructure is manifested by the twelve variables which are directly affected by commercialization. They are electric poles and cables, water and sewerage, air quality, noise, heat, access to natural light, trees and vegetation, condition of roads and pavements, pedestrian accessibility, vehicular accessibility, existing built environment on account of its structure and existing built environment on account of its aesthetics.

1.1. Historical Background of *Samanabad*

Saman Khuda was an 8th Century Persian noble whose descendants later ruled Persia during the Samanid Period (819-999). One of their descendent tribes was *Kambojas*, a tribe of Irano-Indian origin (their second root in *Shem*) and frequently mentioned in Sanskrit and Pali literature (Bosworth 2004). *Kambojas* lived in *Ichra* which was the oldest and largest settlement outside the Walled City. *Ichra* was Lahore in ancient times (Rehman, 2013) since the Lahori Gate of the Walled City of Lahore was named after it (Thornton, 1873). *Saman* refers to Saman Khuda whereas *Abad* means populated; hence the word *Samanabad*.

Some of the most exuberant cultures of region have flourished in Lahore (Thornton, 1873). The city is presently Pakistan's second largest city with over 7 million inhabitants. Its internal zones continue to face several planning related challenges whereas the center continues to drift slowly to the south-west of the city. With the increasing trend of absolute population as well as urbanization, there is an ever increasing demand to meet the supplies (Khan, 1994). Hence, commercialization finds its way through legal and illegal means alike.

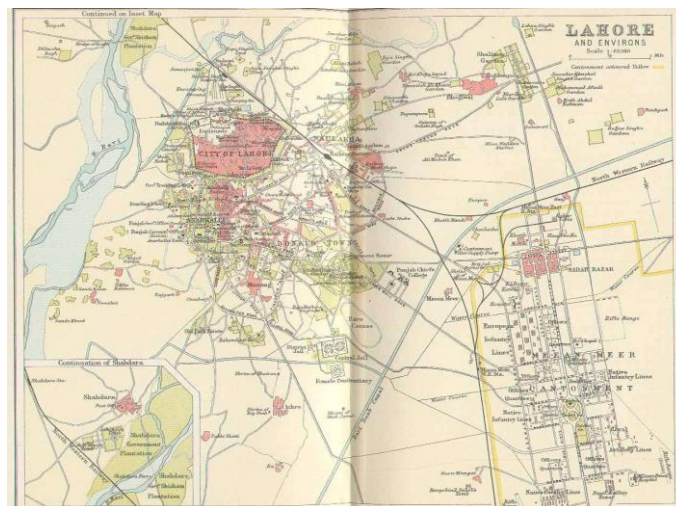


Figure 1. Lahore and Environs (Source: Mapping Lahore: Tracing Historical Geography of a (City through Maps))

Table 1
Internal Zones of Lahore (Source: JICA Study, LUTMP 2010)

	District	Tehsil	Town	No of
1			Ravi	21
2			Data Guni	18
3			Samanabad	20
4			Shalamar	17
5	Lahore	Lahore City	Gulbera	18
6	(188)	(164)	Aziz Bhatti	14
7			Waaah	12
8			Nishtar	19
9			Iqbal	25
10		Cantonment	Cantonment	24
11	Sheikhupura	Ferozewala	Ferozewala	16
12		Muridke	Muridke	6
13	(26)	Sharaaour	Sharaaour	4
14	Kasur	Kasur	Kasur	6
15	(14)	Pattoki	Pattoki	8
1-	The Study	All	All	228
15	Area			

Main Road, *Samanabad* manifests a multitude of diverse, commercial functions. It has one of the first planned markets (Main Market, *Samanabad*) of Lahore and has the largest used-car sale market. Sunday Bazar of used cars along the road is a commercial spectacle in its own right. However, commercial activity has sprawled deep into the residential area since the conception of this planned society. Many illegal developments have not only created problems for the residents but have affected the desired traffic patterns as well (Nadeem 1997). Spatial quality of *Samanabad* has been considerably affected with land-use commercialization. It is important to collect data from the site and analyze it to understand the impact of commercialization on built environment instead of relying on a utopian model for residential-commercial function. Empirical research in this regard should synchronize future development with existing spatial functions harmoniously.

1.1.1. Development of *Samanabad*. The first important phase in the development of *Samanabad* was the construction of residential quarters for the middle-class income group. Presently converted into N-block housing, the quarters were uniformly spread out in *Samanabad*. All of these quarters have now been converted into private residential and commercial property.



Figure 1. A View of the Site before development (Source: LIT)



Figure 2. Preparations for construction (Source: LIT)

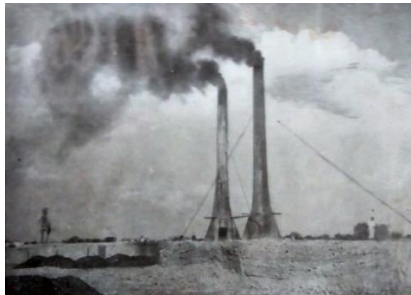


Figure 3. Preparations for construction (Source: LIT)

Housing infrastructure was laid out for the quarters. It is noticeable that the change in the requirement of services when quarters are converted to private housing is different from the change in the requirement of services when quarters/private housing is converted to commercial use. Residential areas nearby increased commercial activity suffer more in terms of services and constant need of up gradation.



Figure 4. Samanabad Quarters Under-Construction (Source: LIT)



Figure 5. Quarters View from Above (Source: LIT)

Several private housing units on Main Road, *Samanabad* are still standing. It is not only their architectural value but often their event-based historic value which increases the architectural value of these houses. For example, several film celebrities, actors and producers used to live in *Samanabad* in the early 50's. Hence, it is an area which needs thorough documentation and empirical study from a historical perspective in its own right.



Figure 6. (Left) A Private House at First Roundabout during Post-partition Development



Figure 7. (Right) The same house in 2015 (Source: LIT)

1.2. An Overview of Commercialization Policies in Lahore

According to the plan, the south-west direction of sprawl was suggested for the dispersal of the population in the least damaging fashion to compensate for the existing load on infrastructure. Structural Plan 1980 also highlighted areas of interest which showed good potential for a healthy commercial activity. Subdivision of residential plots was made possible in 1982 policy. In 1988, it was acknowledged that commercial activity not only affected the urban concerns at close proximity to the site but it also affected the environment and ecology of the area at large; hence a more holistic approach was advocated in 1988 commercial policy. It was not until 1993 that precise location and site was given due consideration in devising a policy. In 2001 policy that commercial activity on the declared ribbons throughout the city would be more structured and would follow the given regulations. Illegal commercial activity in legitimate cases (determined by the committee) would be made legal after the payment of an annual fee at a fixed rate (elaborated in detail).

1.2.1. Challenges of Commercialization in Samanabad. *Samanabad* is one of the identified zones in 2010 report of Lahore Urban Transportation Master Plan which are under the immense pressure of commercialization. In terms of planning, it is not commercialization itself as much as the issues which are firmly tied with it which cause tremendous problems, such as traffic and

parking issues among a host of others. Being densely populated, as stated in the report, *Samanabad* projects a series of advantages and prospects with respect to commercialization. LDA, along with its sister departments like TEPA, recognizes this scenario. Traffic plan for *Samanabad* was assigned an ‘Urgent’ value in the 2010 report.

Table 2

Proposed Action Plan for Traffic Management Project

Project	Project Description	Implementati
TM12	A.1 Junction Design and Traffic Signal	Short Term
TM18	B.4 Linking Communities - Smart Roads	Short Term
TM23	C.3 Pedestrian and Bicycle Path Network	Short Term
TM24	D.1 Comprehensive Parking System	Short Term
TM31	H.1 Local Standards and Guide Lines	Short Term
TM16	B.2 Traffic Circulation System Design and	Medium-
TM17	B.3 Public and Freight Transport Terminals	Medium-
TM19	B.5 Feasibility Study for Traffic Demand	Medium-
R44 &	Shadbagh Area (Roads - R44) and Samanabad	Urgent
R45	Area (Roads R45) -	
R57	Construction and Remodeling of Secondary	On-Going
	roads - south of LRR in the south-western	Development

(Source: LUTMP 2010)

In a very recent study conducted by Dr. Hameed, R. and Nadeem, O. (2014), it has been observed with special reference to *Samanabad* that haphazard commercialization is directly linked with traffic-related, parking-related and environment-related problems. The researchers have pointed out unplanned commercialization as one of the cardinal forces of the degradation of the quality of life, especially in residential areas.

Hence, it is very important to identify the factors involved in the transformation of an historic town of an historic city, since they continuously influence and get influenced by larger forces at play. Without having a clear understanding of these changes, it would be impossible to evaluate and hence improve the quality of life in Lahore (Naz & Anjum 2007).

2. Research Methodology

The following three types of variables were deployed in this research.

Independent variables or predictors or inputs of research were the five spatial aspects of commercial land-use discussed above. They represented not only the scale of deficit but also the scale of opportunity once cross-tabulated with the dependent variables. The independent variables were showcase space, storage space, circulation space, parking space and open space.

Dependent variables were used to identify the links between several aspects of built environment. The level of the adverse impact of commercialization on



built environment was also drawn through co-relation matrix. Twelve dependent variables in this research were as follows,

- Water and Sewerage System
- Electric Poles and Cables
- Roads and Pavements
- Accessibility: Pedestrian Movement
- Accessibility: Vehicular Movement
- Environment: Air Pollution
- Environment: Noise Pollution
- Environment: Heat
- Environment: Natural Light
- Environment: Green and Vegetation
- Existing Building Structures
- Existing Building Aesthetics

Since this research focused only on the spatial aspects of built environment, some of the critical aspects of commercialization were restricted and considered off bounds. They constitute a list of *Extraneous variables* given below. They were real estate prices, climatic anomalies, crime, land politics and seasons.

2.1. Sampling Technique

Stratified Random Sampling Technique was used in this research. Target population was divided into three strata (Commercial: Car Showrooms, Commercial: Other and Residential Subgroup). The resultant sample size n was calculated for the target population using sample-size formula (for small populations when target population N is known).

$$n = [z^2 * (1-p)] / e^2 / 1 + [z^2 * p (1-p)] / e^2 * N]$$

Where,

z = z-score

e = margin of error

p = standard of deviation

n = 281 (calculated)

With stratified proportionate samples of

n_1 = 28 (Commercial: Car Showrooms)

n_2 = 112 (Commercial: Other)

n3= 141 (Residential)

Kth interval turned to be 2.2, therefore alternate samples were focused in the survey.

2.2. Data Collection and Documentation

A detailed land-use map was needed for this research. Therefore, primary data was collected through field surveys and documentation of built environment. Following is a list of detailed maps of the Main Road, *Samanabad* which were documented in this research.

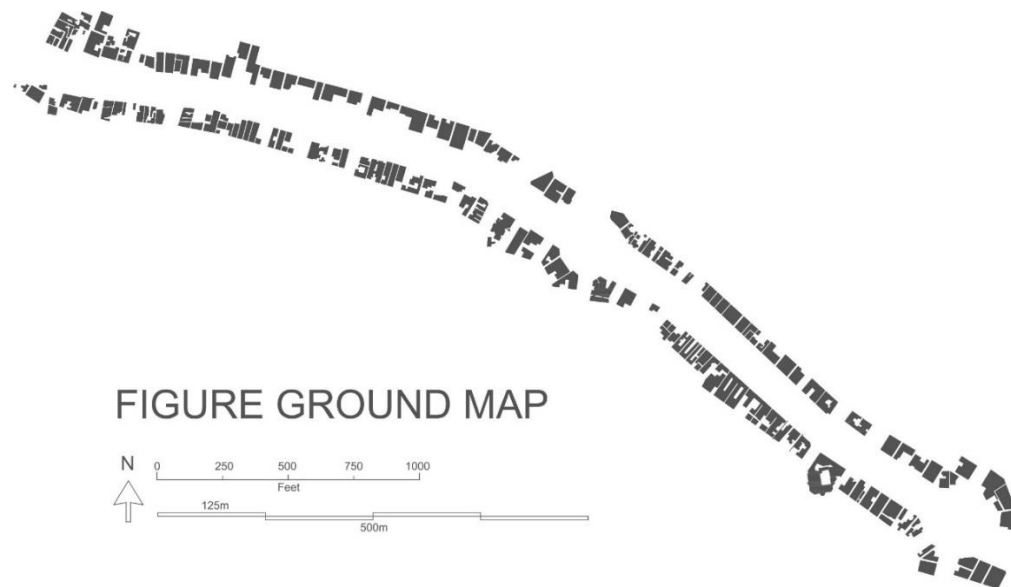


Figure 2. Figure Ground Map of Main Road, Samanabad

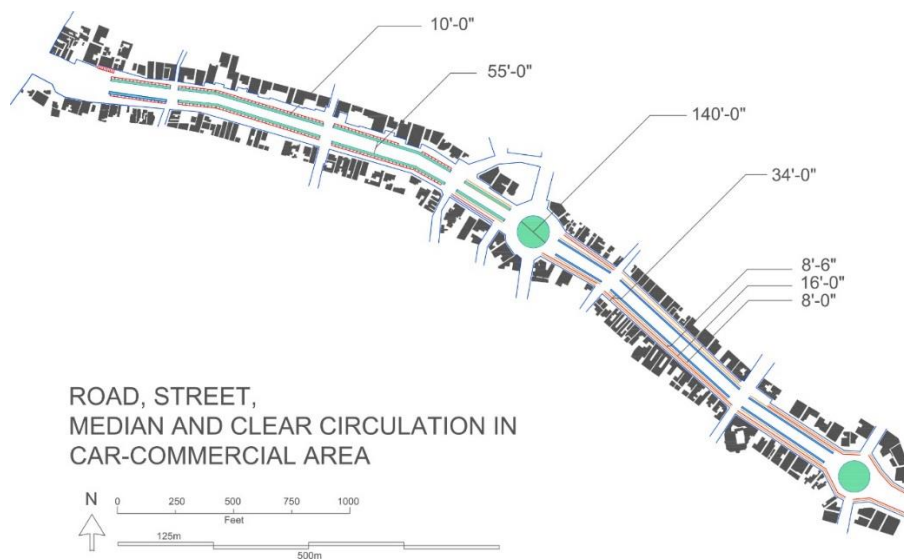


Figure 3. Figure Showing Main Road, Adjacent Streets, Medians and Circulation Area



Figure 4. Land-Use at Basement Level of Main Road, Samanabad

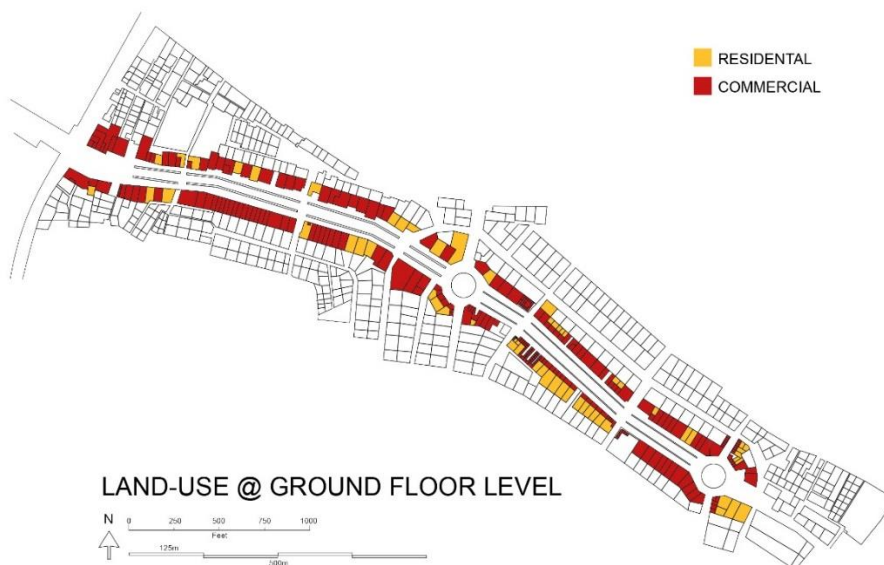


Figure 5. Land-Use at Ground Level of Main Road, Samanabad



Figure 6. Land-Use at First Floor Level of Main Road, Samanabad



Figure 7. Land-Use at Second Floor Level of Main Road, Samanabad

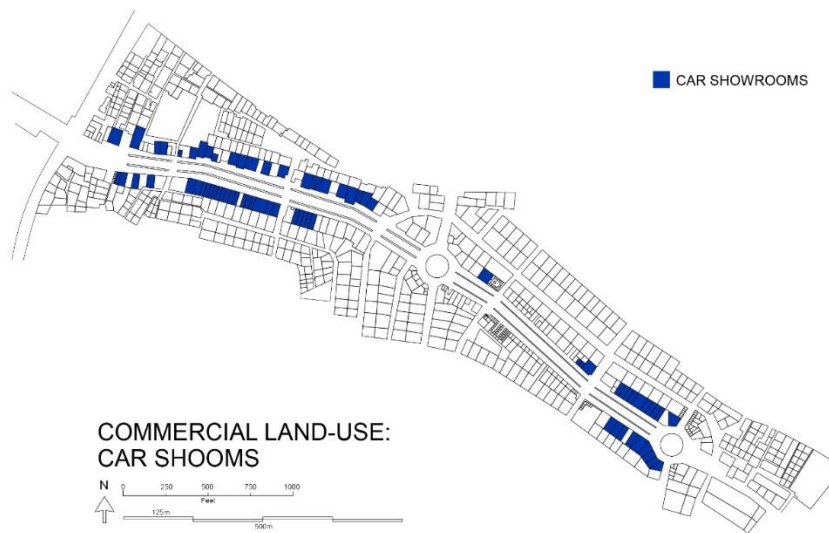


Figure 8. Commercial Land-Use at Main Road, Samanabad Related to Car-Showrooms Only

2.2.3. Problems in Acquiring No Objection Certificate (NOC). One of the important findings of this research was that respondents eagerly take on the difficulty of acquiring NOC. Contrary to a naturally presumed outcome of criticizing a ‘higher fee’ and/or ‘lengthy administrative procedure’ as a cause of not acquiring NOC, only a handful of respondents blamed it on those two accounts. The largest chunk of the sample said ‘No Problem’ instead of identifying one. However, an important remark was made by one of the respondents when he said that ‘the way to getting neighbor’s approval is simple. You sign their NOC, they sign yours.’ This kind of approach in researcher’s understanding can have far-fetched and dire consequences on the site in general and the context as a whole. The ‘You sign my NOC, I sign yours’ approach could be one of the cardinal factors behind unwanted but authorized proliferation of commercial activity in the city.

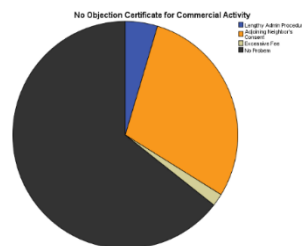


Figure 9. Problems in Acquiring No Objection Certificate

3. Research Findings

The following bar charts give us an insight into the respondents' feedback on the 'bad effects' which commercialization has on existing infrastructure.

3.1. Electric Poles and Cables

Both residents and businessmen on Main Road, *Samanabad* identified the impact of commercialization on the electrical systems, cables and poles. Their placement and condition not only ruined the architectural aesthetics of built environment but pose great danger to people residing/working nearby. Future commercialization is expected to make the situation worse.

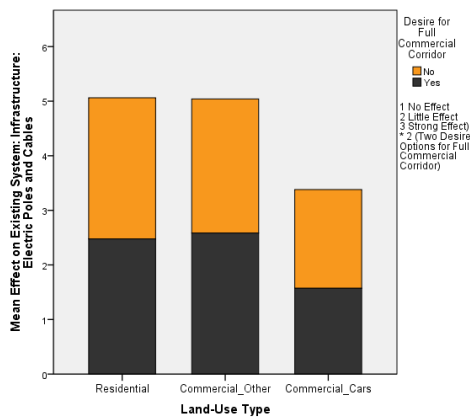


Figure 10. (Left) Effect of Commercialization on Electric Poles and Cables Figure 11. (Right) Effect of Commercialization on Electric Poles

3.2. Water and Sewerage

Increased commercialization has also put extra load on water and sewerage systems. However, its peculiar nature in the form of car showrooms has specific implications besides constant up gradation of infrastructure to meet the needs. Water from public outlet is used for car wash in the picture below.

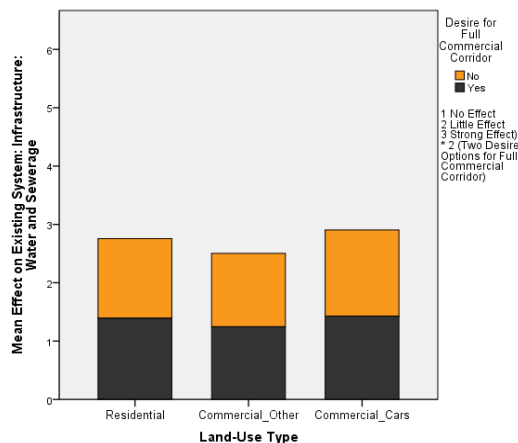


Figure 12. (Left): Effect of Commercialization of Commer-on Water and Sewerage System

Figure 13. (Right): Effect cialization on Water and

3.3. Roads and Pavements

Non-car dealer respondents strongly proclaimed that one of the areas affected badly by commercialization is the condition of roads and pavements. It is because cars are frequently washed on the roads and water (often carrying detergents in it) seeps into the ground slowly and surely damages the roads.

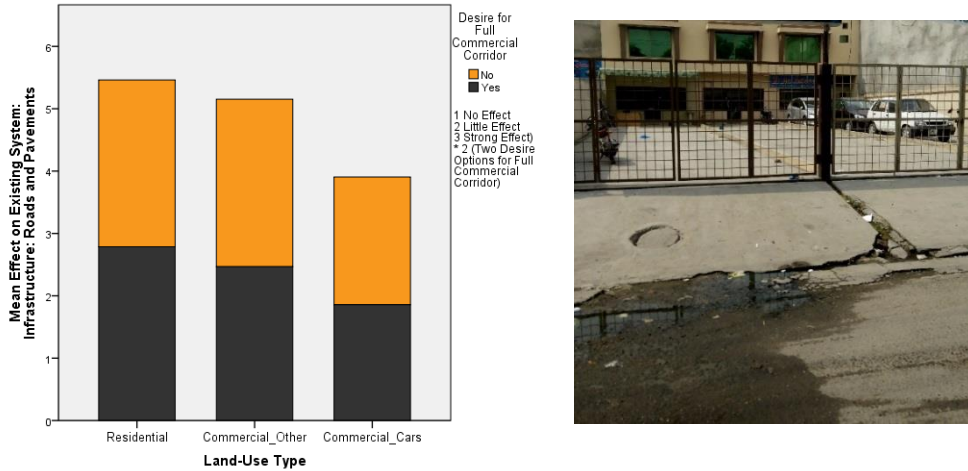


Figure 14 (Left): Effect of Commercialization on Roads and Pavements

Figure 15 (Right): Effect of Commercialization on Roads and Pavements

3.4. Pedestrian Accessibility

Car market has created a considerable hindrance in the mobility of pedestrians. Unfortunately, this hindrance is not only limited to roads. Dealers often nail in cars through the circulation space of Main Market where shops have been shut down. This pattern is contagious and has bad consequences on pedestrian mobility. Similarly, cars parked along medians inside the service lane also block out pedestrian entrances into and across the medians, hence enforcing alternate routes.

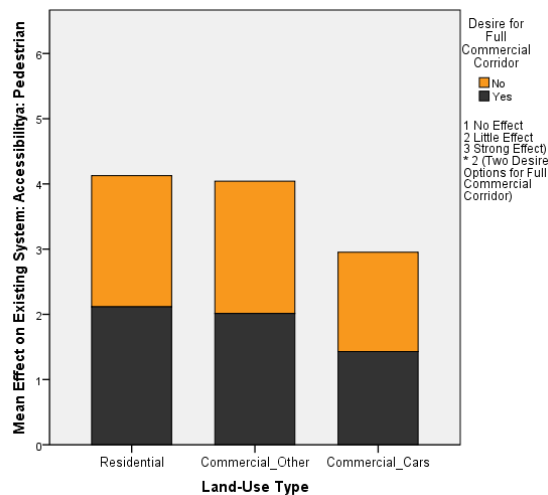


Figure 16. Effect of Commercialization on Pedestrian Accessibility



Figure 17 (Right) and Figure 18 (Left). Pedestrian Accessibility Blocked by Cars

3.5. Vehicular Accessibility

Residents also face big trouble while driving their vehicles through areas of highly commercialized car dealerships. One of the biggest reasons stated by them for their trouble which was also observed by the researcher was the orientation of these cars. When parked perpendicular to the road they consume twice as much space leaving little room for other vehicles.

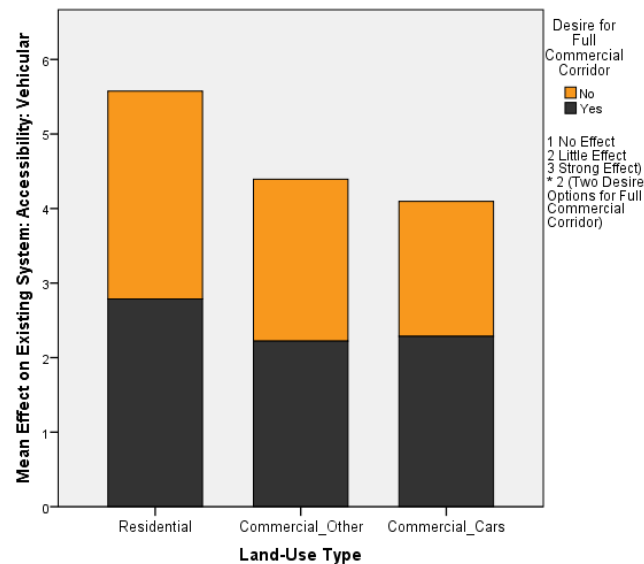


Figure 19. Effect of Commercialization on Vehicular Accessibility
 Figure 20. Vehicular Accessibility Reduced by Cars

3.6.Environment: Air

The highest proportion of respondents to point out bad air quality were the residents of the area. The bar chart also gives an insight on the activity pattern. Local residents happen to be the group which spends most of the time in the area, particularly at night. Furthermore, the highest level of CO emissions has been recorded at *Samanabad* Mor in the following studies done by the Faculty of Environment and Public Health, Institute of Public Health, Lahore.

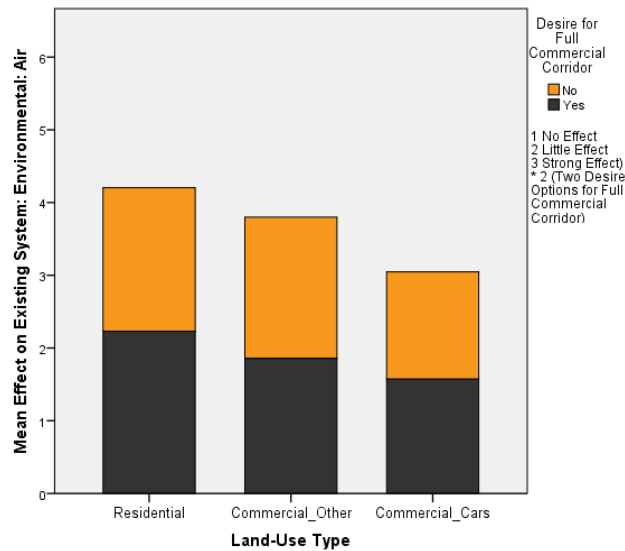


Figure 21. Effect of Commercialization on Air Quality

3.7.Environment: Natural Light

Access to natural sunlight is everybody's equal right just like the right to breathe the same air (Cartwright 1980). Multistoried buildings rise at the expense of depriving immediate neighborhood from receiving direct natural light. No such problem has been recorded in *Samanabad* but this trend might change soon. Suzuki motors has already erected a franchise which dominates the skyline and other commercial plazas are under construction.

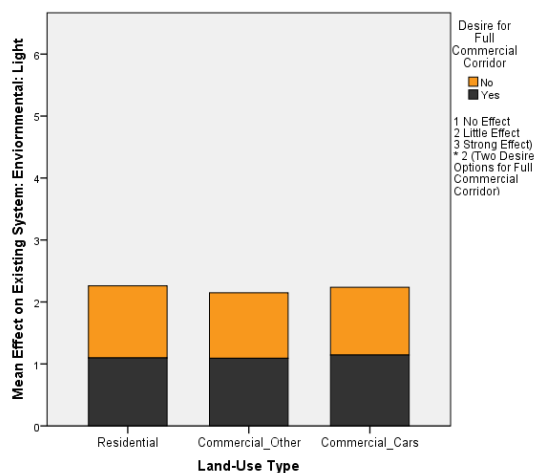


Figure 22. (Left) Effect of Commercialization on Access to Natural Light



Figure 23. (Right) Effect of Commercialization on Access to Natural Light

3.8. Environment: Heat

Higher levels of air temperature often recorded in heavily commercialized areas is also not a major problem in *Samanabad*. Trees and medians largely help in dissipating the heat generated by cars. Furthermore, since the cars are mostly parked and dispersed all over in a horizontal fashion, it reduces the thermal impact of commercialization.

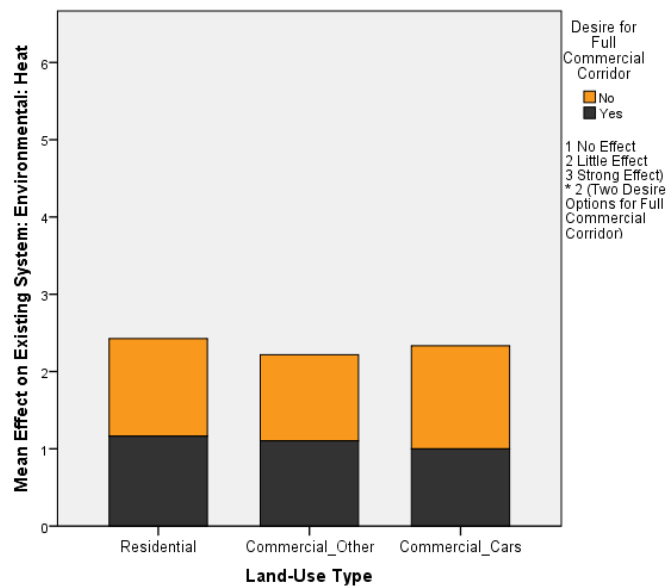


Figure 24. Effect of Commercialization on Heat

3.9. Environment: Noise

Unlike natural light and heat, noise is a major environmental concern. Residents have been bothered by the increase in noise levels most. It is not only the clattering sound of automobiles but oblivious honking which adds to the noise pollution.

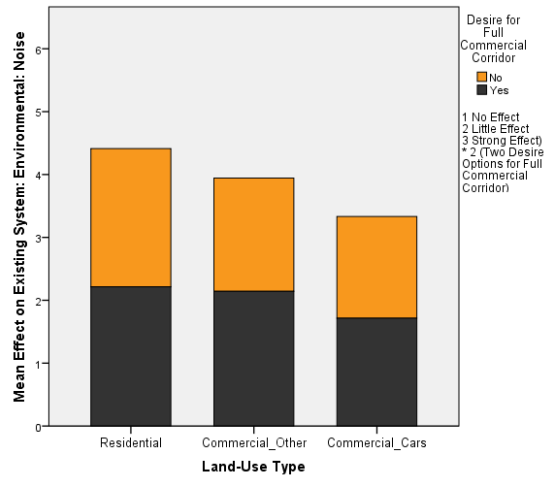


Figure 25. Effect of Commercialization on Noise

3.10. Environment: Green and Vegetation

The most damaging effect of commercialization has been recorded on plants, trees and greenery long affiliated with *Samanabad*. This is one affect that even a large proportion of car dealers pointed out consistently. A number of causes and effects of degradation of built environment, such as increased noise pollution and reduced quality of air, are directly linked to the loss of greenery.

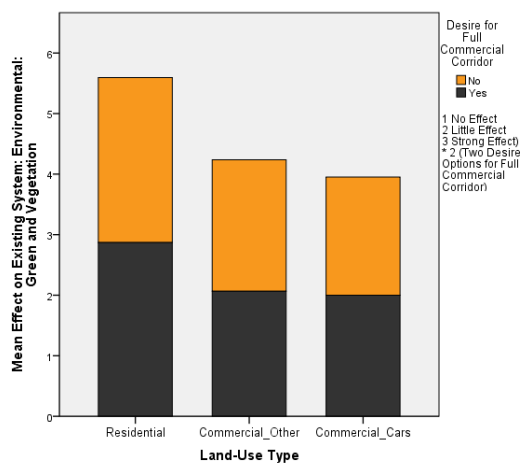


Figure 26. (Left): Effect of Commercialization on Plants and Trees

Figure 27. (Right): Effect of Commercialization on Plants and Trees

3.11. Environment: Building Structure

The structure of the residential area has been immensely affected by the commercialization of car dealership. The walls of the property at the back of commercial face are blithely brought down; sometimes up to three plots in order to provide covered parking for cars. The severity of this structural intervention and its sheer contrast with the neighbor's plot can be seen in the following photograph.



Figure 28. Effect of Commercialization on Building Structures

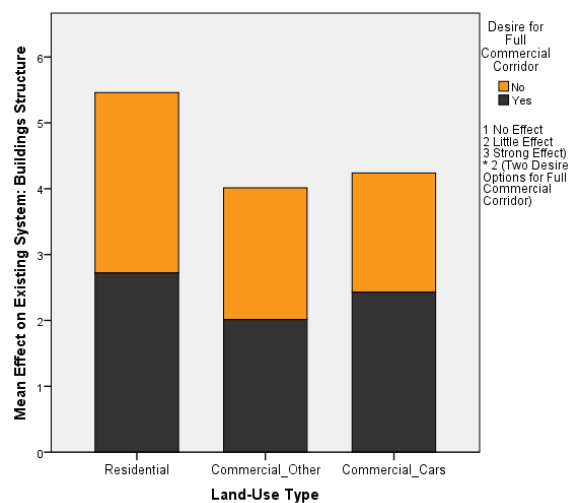


Figure 29. Effect of Commercialization on Building Structures

3.12. Environment: Building Aesthetics

One of the most intriguing results is related to the architectural aspect of building aesthetics. To the utmost delight of researcher, the respondents had a fairly good sense of appreciation of good architectural aesthetics. The shops in Main Market had been divided out of a larger plot, there still exists a residential area at the back of the market. Both shopkeepers and residential respondents

consequently associated with the built environment and in most cases had witnessed change. A major sub-section of the subjects in the sample set identified the damage made to building aesthetics as a strong effect of commercialization.

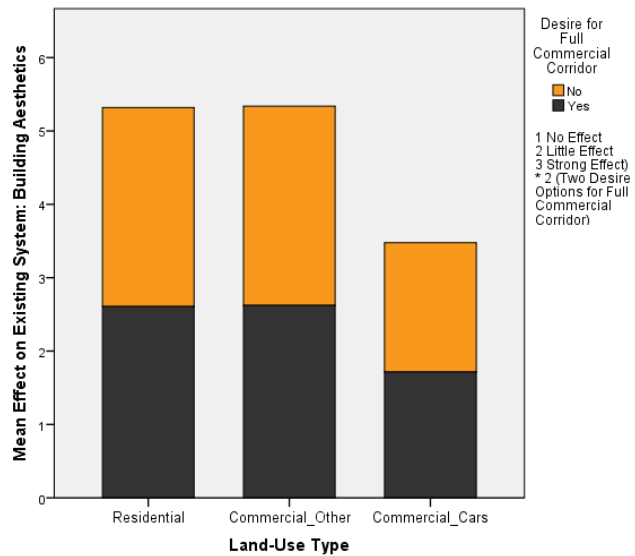


Figure 30. Effect of Commercialization on Building Aesthetics



Figure 31. (Left): and Figure 32. (Right): Private Houses on Main Road, Samanabad

Conclusions and recommendations made in the next section are drawn from the following co-relation matrix.



Category	Statistical Measure	Showcase Space	Storage Space	Circulation Space	Open Public Space	Parking Space	Infrastructure: Water and Sewerage	Infrastructure: Electric Poles and Cables	Environment: Green and Vegetation	Environment: Natural Light	Environment: Heat	Environment: Air Pollution	Environment: Noise Pollution	Infrastructure: Roads and Pavements	Accessibility: Pedestrian Movement	Accessibility: Vehicular Movement	Existing Building Structures	Existing Building Aesthetics
Showcase Space	Pearson Correlation	1																
	Sig. (2-tailed)																	
Storage Space	Pearson Correlation	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Circulation Space	Pearson Correlation	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Open Public Space	Pearson Correlation	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Parking Space	Pearson Correlation	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Infrastructure: Water and Sewerage	Pearson Correlation	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Infrastructure: Electric Poles and Cables	Pearson Correlation	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Environment: Green and Vegetation	Pearson Correlation	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Environment: Natural Light	Pearson Correlation	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Environment: Heat	Pearson Correlation	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Environment: Air Pollution	Pearson Correlation	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Environment: Noise Pollution	Pearson Correlation	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Infrastructure: Roads and Pavements	Pearson Correlation	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Accessibility: Pedestrian Movement	Pearson Correlation	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Accessibility: Vehicular Movement	Pearson Correlation	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Existing Building Structures	Pearson Correlation	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Existing Building Aesthetics	Pearson Correlation	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

** Correlation is significant at the 0.05 level (2-tailed).
*** Correlation is significant at the 0.01 level (2-tailed).

4. Conclusion and Recommendations

Following spatial adversities need urgent regulatory action (double steric).

Between “Bad Effect on Trees and Greenery” and “Bad Effect on Structure of Existing Buildings” (0.390**)

Samanabad's population pointed out a strong relationship between the damage to trees and vegetation and changes made in building structures. This relationship, seemingly obscure at first, implied a strong mental map and memory of the place by local population. It was stated through consistent accounts to the researcher that houses along Main Road, *Samanabad* used to be back as far as 16 feet from the road. This land (in some cases inside of property wall and in others outside of it) was all green with a good number of trees in it. With the increasing trend of commercialization, built environment was drifted gradually closer and closer to the road. Furthermore, the new commercial storefronts tend to cut out the trees and other visual barriers to their façade which generates money through advertisements and hoardings.

Site specific byelaws need to be defined and strictly implemented for *Samanabad* Main Road (since the offsets are not consistent throughout) on an urgent basis in order to block out further encroachment of the structures on the road. Trees may be planted not only inside the medians but also along the property lines as physical barrier and in order to revive the character of the place.

Between “Bad Effect on Trees and Greenery” and “Bad Effect on Vehicular Accessibility” (.259**)

Another important relationship of environmental degradation was pointed out to be with vehicular accessibility. The latter is inherently linked with the structural change in built environment. The closer the walls come to each other, the narrower the path between them becomes; hence there is greater pressure in favor of removing trees and other ‘obstructions’ in the path. Newer, heavier, faster modes of transportation along with an increased number of trips demand clear view and obstruction-less mobility.

Mixed mode of traffic should be strongly discouraged, for it slows down the overall flow and puts more pressure for widening the roads.

Between “Bad Effect on Electric Poles and Cables” and “Bad Effect on Existing Building Aesthetics” (.233**)

One of the highest stated problems was the damage caused to the aesthetic value of the built environment by a chaos of electric wires jumbled up in front of the plots and haphazardly planted electric poles (sometimes encroaching the road so deep as to pose danger to the passing vehicles).

Underground wiring in *Samanabad* is not a good solution because the town is already sunken in water as compared to the neighboring towns; water in most areas remains on the surface for days after heavy rain fall. However, electric

cables should deploy the standard number of separators between wires and poles should be rooted off the roads. Furthermore, wires should be at a safe distance from built structures. It will not only mitigate danger but also provide an aesthetic relief to the built environment.

Between “Bad Effect on Vehicular Accessibility” and “Bad Effect on Existing Structure of Buildings” (.387**)

Commercial buildings which do not provide adequate parking space put pressure on vehicular mobility.

It is a mutually corresponding relationship, the more space is provided to vehicles the more damage is done to the peripheral structure. In order to assign a balanced intervention plan, building byelaws should be cross-examined with traffic byelaws before the implementation of the either.

Between “Opportunity for Providing Circulation Space” and “Bad Effect on Parking” (.285**)

There is a strong tradeoff between opportunities for providing circulation space to new commercial activity and the existing circumstances of parking. Cars nailed into the circulation space of Main Market, *Samanabad* have been documented in Chapter 4. Car showrooms are mostly responsible for this situation.

Before implementing circulation space byelaws on present and future commercial activity, regulations need to be laid out for existing car showrooms. Otherwise circulation space may be overtaken by cars on sale.

Between “Bad Effect on Trees and Greenery” and “Bad Effect on Pedestrian Accessibility” (.189**)

People are inherently intelligent and they relate with and appreciate nature even if they do not specialize in the study of nature. Good pedestrian accessibility is also a good pedestrian walk. Trees play an important role in it for they not only provide shade but also better air quality and refreshment to eyes. The eradication of trees and their substitution with walls and encroachments has affected good pedestrian accessibility as well.

Pedestrian accessibility needs not only to be re-allocated but also redesigned with good landscape measures considered beforehand. The existing greenery could be utilized on that account.

Between “Opportunity for Providing Storage Space” and “Bad Effect on Roads and Pavements” (.188**)

Car sale commercial activity has already been making its way towards Main Market, *Samanabad* from both ends. One of the problems associated with car storage in public domain is that the cars are constantly washed. The water tainted with all kinds of detergents runs down the roads and pavements and



accumulates where there is no drain. Consequently, it seeps into the ground and results in the destruction of roads and pavements.

Car parking policy for showrooms should not only be restricted to space regulations but should also be tied to proper water drainage and associated systems.

Between “Bad Effect on Vehicular Accessibility” and “Bad Effect on “Building Aesthetics” (.167**)

When vehicular accessibility is restricted through encroachments or affected through the degradation of roads or due to other reasons, they directly affect building aesthetics.

Temporary, informal commercials on main road with vehicular traffic should be strongly discouraged. The existing context of built environment or buildings that are half-a-century old or even more need to be taken into consideration while planning ahead for vehicular accessibility.

Between “Bad Effect on Roads and Pavements” and “Bad Effect on Vehicular Accessibility” (.167**)

This relatively evident relationship calls for high priority planning and regulation. Roads which are being frequently used by vehicles get badly affected by them.

Providing road accessibility is not going to solve the problem for long. A constant check and maintenance is required on the Main Road, *Samanabad*.

Between “Bad Effect on Roads and Pavements” and “Bad Effect on “Building Aesthetics” (.160**)

Roads and pavements in particular are connected to built environment; they are an extension of building in that sense. When roads and pavements are damaged, they directly affect the building aesthetics nearby.

Both planning and conservation are continuous processes and they should be integrated as such. Not only the buildings and structures of value need maintenance and preservation but the whole context including roads and pavements outside the property line.

Between “Bad Effect on Electric Poles and Cables” and “Bad Effect on “Roads and Pavements” (.159**)

One of the most significant causes of destruction of roads and pavements was insertion of electric poles in them without proper, adequate protocol. The poles not only damage the roads and pavements and limit the flow of circulation but also pose a constant threat to people.

LESCO should also be brought on board while planning regulations for building and traffic related problems.

Between “Bad Effect on Air Quality” and “Bad Effect on Sound/Noise” (.156**)

One of the most insightful relationship is found between air quality and noise. With more cars and more CO₂ emissions, the air temperature begins to rise. Hot air molecules, already oscillating at a higher rate amplify the sound, hence increase the noise.

One of the ideals in given circumstances is plantation of more trees for they help in climate control and damper down noise level through providing a kind of barrier. Moreover, their importance has been established already in aforementioned relationships.

Between “Opportunity for Providing Storage Space” and “Bad Effect on Vehicular Accessibility” (.150*)

Cars parked along medians and property lines by showrooms in *Samanabad* represent both their storage and showcase space. Cars which need fixing are more than often parked indistinguishably among the cars on display. It is because of the difficulty of rearranging all units when a single unit moves in or out. In any case, they become an obstacle in vehicular flow. Hence, any opportunity about excessive storage space is directly tied to the damage it is going to cause on vehicular accessibility.

The number of cars being parked, their location and the orientation in which they are parked needs to be monitored in favor of an unobstructed traffic flow.

Between “Opportunity for Providing Storage Space” and “Bad Effect on Existing Structure of Buildings” (.150*)

It has been observed and documented for a number of cases in *Samanabad* where car showrooms have pierced through up to two and in some cases three buildings perpendicular to the road in order to provide storage space to cars. It is one of the strongest impact car-related commercialization has had on the built environment of *Samanabad*.

The permit to subdivide a given plot for a different land-use type may be revised in order to slow down this trend of continuous internal destruction of built environment on Main Road, *Samanabad*. A couple of properties have been divided into strips of up to four different car dealers, each of which run down separately all the way back to these properties lengthwise. This trend has radically changed the built environment of *Samanabad* from within. There needs to be a check and ideally a cap on such voracious spatial transformation.

The following spatial adversities should be addressed in the later stage. They demand a lesser rate of urgency for action (single steric).

Between “Bad Effect through Noise” and “Bad Effect on Existing Buildings Structure” (.149*)

Sound vibrations and noise strongly affect building structures.



Sounds can be reduced or blocked out entirely through several design techniques, e.g., increasing the distance between the source and the structure and placing barriers like trees in between.

Between “Bad Effect on Roads and Pavements” and “Bad Effect on Structure of Existing Buildings” (.144*)

Commercialization, particularly in case of car sales, contributes to the deterioration of roads and pavements. Similarly, buildings undergoing deterioration damage the road as well. Moreover, the regulations about the construction process are not followed. Construction material is dumped on the side of road without much consideration.

New construction process needs to be inspected and car-related commercial activity should be administered.

Between “Bad Effect on Quality of Air” and “Bad Effect on Existing Building Aesthetics” (.136**)

Now that the *Samanabad Nala* has been covered to make room for dual carriage way, its smell has been reduced. But the toxics in air negatively impact architectural aesthetics since architecture is a full-body experience.

Air quality needs to be monitored and kept under control in order to revive and maintain an overall ambiance of the place.

Between “Opportunity for Providing Storage Space” and “Bad Effect on Electric Poles and Cables” (.136*)

Building loads increase with an increase in commercialization resulting in heavier electrical infrastructure put in place; therefore, an opportunity for providing more storage space is tied to further degradation of built environment through electrical systems, if not considered beforehand.

There should be a limit to the commercialization process in order to ensure adequate electrical supply to everyone, free of visual noise.

Between “Opportunity for Providing Storage Space” and “Bad Effect on Existing Building Aesthetics” (.130*)

More than often, one comes across in the Main Market, *Samanabad* a set of tables jammed into each other. It is a common practice to wrap up the goods at night and create movable storage spaces inside the circulation space. It affects the visual overview of the market. Advertisement boards of all colors and sizes have hid and majorly ruined the aesthetic quality of several houses.

Storage space should be very well defined and under no circumstances should it be allowed to break into circulation space.

Between “Bad Effect of Noise” and “Bad Effect on Roads and Pavements” (.130*)

Sound vibrations travel through ground as well. Constant vibrations tend to cause damage to floors and pavements and even roads.

Roads should be properly laid out end to end within assigned dimensions with no rough and brittle edges; noise levels should be reduced through design and policy as stated before.

Between “Bad Effect on Quality of Air” and “Bad Effect on Existing Buildings Structure” (.129*)

Some level of CO₂ in air is inevitable for it is produced during breathing but huge amount of other toxics released primarily through traffic pollution have damaging effects on the built environment.

New trees should be planted and existing open spaces should be populated with grass, plants and trees and maintained consistently.

Between “Opportunity for Providing Storage Space” and “Bad Effect on “Quality of Air” (.128*)

Even the most attractive storage space may not pull in customers if it smells bad or is affected by air pollution. In case of car showrooms, customers tend to spend a longer period of time at each dealer’s shop inspecting the cars but they do not put up with air pollution if it is not bearable and quickly skip ahead.

More trees need to be planted near *Mor-Samanabad* in particular where this trend is getting worse.

Between “Bad Effect on Electric Poles and Cables” and “Bad Effect on “Natural Light” (.121*)

This relatively weaker relationship indicates dire consequences for there are a good number of apartments occupying upper floors. Transformers, jumbled up cables and the advertisement boards affixed to the poles partially block sunlight from entering the apartments at upper floors. Roadside windows literally open up into transformers and electric wires in more than one cases.

Under no circumstances, an electric pole should be erected closer than a specified distance which is safe and keeps them away from the shops and apartment windows.

4.1. General Conclusions and Recommendations

A number of general conclusions are stated below.

4.1.1.NOC, A License to Object. One of the most important general conclusions of the research concerns the No Objection Certificate (NOC). The highest percentage of people (please see Pie Chart 3) claimed there was no problem in acquiring the NOC. On further investigation they stated (in different fashion but along the same line) that acquiring a neighbor’s consent is not that big a problem. All you need to do is sign an NOC for them. This trend has terrible consequences. If allowed to go unchecked, every residential property



owner, especially in an area which is already losing residential proportion would want his/her property to become commercial so that it could be sold at a higher price. This is where planners need to intervene and stop this trend in order to maintain balance which individuals disturb in fulfilling their self-interest. The weightage of acquiring NOC from an adjacent neighbor as an administrative procedure for commercialization should be reduced.

4.1.2. Distinction between Showcase and Storage Space. In case of used car sale markets, almost all cars happen to be simultaneously stored and showcased at the same time. Building byelaws therefore need to cater to this difference between ordinary and car sale commercial activity.

4.1.3. Clearly Defined Circulation Space. It has been deduced that a clearly defined circulation space, ideally enhanced by good architectural aesthetics, not only facilitates consumers but also brings more potential visitors for each seller in the market. It is good in everyone's interest, particularly in case of ribbon commercialization.

4.1.4. Parking Space is a Moderator. Buildings with inadequate parking space should not be approved in the first place. A flexible and a shared parking space may be adjusted for existing scenarios where there is inadequate space for car parking. It may be done through third party administrator like Lahore Parking Company. In case of car showrooms, each parking space occupying public property like streets and roads needs to be listed and documented and therefore charged a fee. It would discourage broad dispersal of cars all over the area and keep a check on commercial activity. The fee generated as such may be invested back in protection of cars against theft or other damages.

4.1.5. Specified Commercialization. The biggest threat to the area is a vicious trend of a specific kind of commercialization, that is, car dealership market. It is approaching fast from both ends of Main Market where cars have already started nailing into the customers' circulation space. A good number of old shops have already been evacuated and if the trend continues, it wouldn't be too long before the Main Road, *Samanabad* loses its original character entirely.

It is concluded here that two areas are strongly linked with the degradation caused by commercialization which need to be immediately addressed. The first one is accessibility in terms of traffic, parking and road condition related issues. Both pedestrian and vehicular accessibility have been largely compromised. The second problem, directly linked with several other aspects, is the loss of trees and damage done to the environment. This aspect is also frequently related with variables deployed in the study.

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