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Study of Urban Sprawl and its Social and Environmental Impacts on Urban Society in Latifabad Town, Hyderabad, Pakistan

Saima Allah Yar*

Centre of Excellence in Arts and Design, Mehran University of Engineering and Technology (MUET) Jamshoro, Pakistan

Abstract

Urban sprawl expansion is becoming a serious problem of many urban areas due to not much a picture of sprawl in priority, urban areas lack the infra structure and basic facilities like treated water supply, electricity, sanitation services. By the year 2016, Latifabad town accommodates 0.7 millions, which was essentially proposed for 60,000 people. Some of the problems of Latifabad town include excessive traffic congestion; pollution, increment infrastructure costs for community services; fragmentation of housing with low density areas and increase in energy consumption that causes social segregation and environmental degradation. For evaluating social and environmental impacts of sprawl, various factors were derived based on socio- environmental impacts. Quantitative results were generated using Yeh's index of satisfaction and software SPSS; which were based on questionnaires having filled by 480 occupants. The average satisfaction index from this analysis is found out to be -41.1431, which shows a highly dissatisfaction level of residents of Latifabad town. Some smart growth opportunities can be useful in reducing the urban sprawl as to advertise the problem and raise awareness; to enforce population control, compact developments to suit their needs and enhance the use of new technology to facilitate more people to be able to work from home. The research is beneficial to reduce the sprawl as the result of this study can give the directions to local development authorities, if considered the research proposal results, the urban sprawl can be controlled at certain level.

Keywords: Urbanization; Sprawl; Population; Economy

Introduction

Urbanization is well thought-out a constructive progression associated to modernization, industrialization and universal assimilation has economically profitable to a marginal of the urban populace [1-4]. It is the substantial sign of all the productive movement that convoy rapid development [5]. It is the change from customary rural economy to new developed one [6,7]. Current developments of land uptake for built-up areas clearly disagree with the spirit and the principles of sustainability in many places in the world. Its scattered areas leave undeveloped blocks results as a pointer of environmental hazards [8,9]. Sprawl states the structure of subsidize access way together through movement to the suburbs [10]. Many urban planners consulted on the most sustainable urban structure, gave decisions in favor of sustainability measures and against urban compaction and dispersion. However, it is clear that other areas of expertise have to be involved, for improvement of urban sprawl. However; the research work can be useful for the controlling of the urban sprawl and for the making future sustainable strategies of the urban environment. The easy and most uncomplicated reason for the cities expansion is that citizens demand more areas and so they shift from city centers with limited lot sizes to urban edges and outer reaches of cities. Noise, heavy traffic, air population and lack of green space are also among major qualities in relation with urban sprawl [10]; Which causes many impacts of urban sprawl, but the major impacts are social and environmental impacts. Land cover changes are chief dynamic forces for biogeochemical set, climate transform, and production of food from local to worldwide scales [11-16]. The dynamic of built-up growth is important in the study of present-day urban studies, includes the urban sprawl as an indefinite type of growth, or expansion [1,17]. People living standards always have an impact on their social lives. Social factors include the demographic and cultural aspects as, education standards, socio-economic status and neighborhood class, with the interaction with the neighbors that live as close, impacts directly or indirectly in living standards. They actually play their role in increasing of public costs, because the changes in infrastructures and services are paid by contributing to the existing inhabitants that live in it. Some of the researches carried out as focused on the connection between city form and travel activities, consequently not dealing with the multifaceted links between transport-energy competence, atmospheric emission, and human contact [18-20]. However agricultural loss to city sprawl found both in developing and developed countries [21-28]. There are also many environmental impacts to the urban sprawl that can cause the serious problems, the change of cultivated lands into built up lands can make hazardous the natural habitat that live in these lands, by displace them and it can really cause a ripple in the environment. The negative collision of urban sprawl includes impacts on eco environment leads to increase in air or water pollution and conservatory gases due to increase in the consumption of fossil fuels. Due to excess use of private vehicles, pollution is also being increased; people are getting overweight and are also have to deal with disorders such as high blood pressure and other diseases that come with obesity.

Urban sprawl in Latifabad is being occurred due to different causes. Various studies have carried on finding out the factors of urban sprawl, such as, excessive traffic congestion generates a highly fragmented agricultural and natural landscape spaces reducing and removing of urban open; pollution that causes environmental degradation by encourages travel. As sprawl differentiates to other types of city expansion, such as crimes, high taxes, deficiency of infrastructures; a number of educational hubs are exists in central areas which strengthens sprawl. Land value is the other factor that has also pointed out in research study.

Latifabad unit no: 01 has become the densely-populated area, due to which the requirements of commercial areas led the conversion of residential areas into commercial strips in front of the houses. Latifabad unit no: 02 was constructed on planning, but now 10 percent of

***Corresponding author:** Saima Allah Yar, Assistant Professor, Centre of Excellence in Arts and Design, Mehran University of Engineering and Technology (MUET), Jamshoro, Pakistan, Tel: +92-222110003; E-mail: arsaima.gazal@gmail.com

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infra-structure remains due to highly negligence in maintaining and restricting accompanying land. Encroachment and slums are also found. Latifabad unit no: 03 also faced the problem of densely population and spread towards the formation of slums.

Latifabad unit: 04, unit: 05 and unit: 10 exists near the river Indus channel, due to which much people avoid to accommodate themselves in these areas; although Slums are formed due to which some of its residential units have also been converted into commercial areas. Latifabad unit: 06 is a very planned and developed area, but due to densely population, encroachment and slums are also found. Latifabadunit: 07 and unit: 08 are faced by heavy encroachment and slums due to its distinction by size and disperse commercial activities. Much of the plots of Latifabad unit: 09 and Latifabad unit: 11 had been Sub divided to accommodate the maximum no: of families that makes the reasons of destroying infrastructures of both units. Latifabad unit: 12 is also highly unplanned residential area, Almost lacks the fully basic infra-structure, and some of the areas are hilly in this unit, which also discouraged the developed ratio.

Latifabad is named following the name of celebrated poet of Shah Abdul Latif Bhitai king of melody, the Indus river flows along the western boundary of the huge district. Latifabad township scheme came into existence during the year 1952 under Government: Gazette Notification. 1850 acres were acquired for Shah Latifabad Sattelite Town from Mir Muhammad Ali Retired Chief engineer Kotri Barrage; a descendent of the ruling family of talpurs. The township was originally planned in 1953-54 to accommodate 1500 plots/units triggered to accommodate a population of 60,000 people. The same area along with its latest extensions accommodates population of approximately 0.772 million people and its boundaries expanded and strained in form of slums approximately covering an area of 2975 acres. Latifabad is divided into twelve units, comprising 17 union councils. Hospital and number of schools exists in each unit all along with mixed land uses residences and very active commercial areas as shown in Figure 1.

There had been seen the sudden growth of Latifabad Township just after the developing phase by the years 1991 in an involuntary and haphazard manner typically within the town and surroundings due to have the attractions to social and environmental perspectives such as formation of proposed bungalow units, open spaces, schools, commercial markets and offices etc. Currently 0.7 million people are living in Latifabad town, which was actually designed for 60,000 people as presented in Table 1 which give the details of plots in Unit wise.

Material and Methods

In challenge to measure urban sprawl, population, availability of schools, hospitals and services, working and recreational areas, and migration rate were focused as done by Zia and Hyun [29], through which various factors are derived through above studies to analyze the growth of urban sprawl in Latifabad such as, living criteria, mode of transport vs. time factor, encroachment and parking space, fulfillment of shops and commercial areas, education level, social problems, enough space for parking, traffic noise, encroachment, parks available, conversion of parks, street furniture, health problems, usages of utilities properly, political influences and land mafia. There are certain limitations that apply to this research. The first limitation is regarding investigations relating to variable concerned with investigation on socio-environment. This research has employed a qualitative approach. Qualitative measures were done using software SPSS, which were based on questionnaires having filled by 480 occupants. The qualitative data were gathered to formulate the results based on living criteria, transportations with time factors, encroachments, availability of various services in their existing

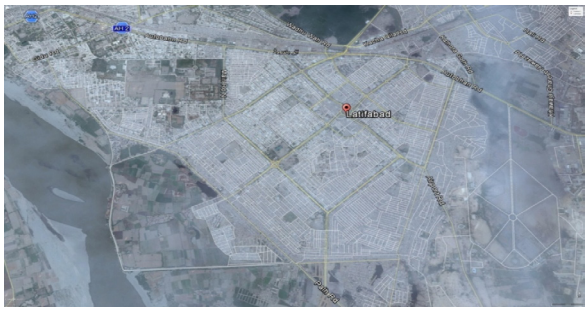

Figure 1: Latifabad image.

Unit no	Nos: of "A" Type plots	Nos: of B" Type plots	Nos: of C" Type plots	Nos: of "D" Type plots	Nos: of plots Commercial
1	71	1	-	-	59
11	86	184	8	95	59
111	135	43	5	-	-
1V	51	61	-	43	35
V	24	4	52	355	118
V1	77	172	504	-	121
V11	52	51	71	186	55
V111	43	63	112	702	104
1X	52	39	195	147	-
X	16	1	52	25	98
X1	26	20	-	550	104
X11	13	14	-	186	-

Table 1: Residential and commercial units in Latifabad. (HDA, 2016).

residential units of the people lives in Latifabad, and found satisfactory and unsatisfactory indexes by using the software SPSS and Yeh's index of satisfaction.

Research approach

The qualitative approach was made to determine the capacity of Latifabad people with regards to impact in social interaction and environmental factors in order to achieve the drivers and factors for sprawl and establishing the linkages for Latifabad town. Some factors were derived to measure the level of satisfaction, as; living criteria, mode of transport by time factor, encroachment and parking space, fulfillment of shops and commercial areas, education level, social problems, enough space for parking, traffic noise, encroachment, parks available, conversion of parks, street furniture, health problems, usages of utilities properly, political influences and land mafia.

Research design

Based on above factors, the questionnaire was generated and the sample size of respondents was determined by Robert and Daryle [30]; which should be minimum 384 respondents for the current Population of Latifabadi-e 0.77 million. The questionnaire was circulated among the 480 families of Latifabad.

Living criteria

The questions were asked about the no; of family members live per unit, area of home and housing availability. The no: of factors were asked to migrate from other areas, as Latifabad had been the attraction for city dwellers since it was planned as shown in Table 2.

The survey reveals there is a less ratio of migration, 31.25% of 40-80 sq yards are not the permanent residents, 33.19327 of the 120-150 sq yards are migrants and 27.461% of more than 200 sq yards are migrants.

Over all 30.688% has a migration level that shows that 69.311% of the Latifabad town is the permanent residents.

Results and Discussion

Mode of transport vs. time factor

The questions were asked about the usages and types of transport with time factor with respect to private and public transport to reach their destinations as shown in Figure 2 and Table 3.

The data reveals that 52.121% of public vehicle and 67.515% of the private own vehicles users spend 15-20 minutes to reach their destinations. 46.666% of public vehicle and 32.418% of the private own vehicles users spend 30-40 minutes to reach their destinations. 1.212% of public vehicle users spend more than 40 minutes to reach their destinations as shown in Figure 2, moreover, 65.553% of people who keep the private own vehicles, 72.929% of private own vehicle face traffic problem as shown in Figure 3.

Encroachment and parking space

The questions were asked about the encroachment in front of their houses or found in their areas as shown in Table 4.

The data shows that the 81.458% respondents face the encroachment in their areas, whereas, 63.33% of the respondents do not have the enough parking space as shown in Figure 4.

The area of your House is			Did you migrate from other areas to settle in Latifabad		Total
			Yes	No	
40-80 sqyds	How many family members do you live at home	2-4	1	4	5
		5-7	8	14	22
		8 or more	6	15	21
	Total		15	33	48
120-150 sqyds	How many family members do you live at home	2-4	17	22	39
		5-7	34	72	106
		8 or more	28	65	93
	Total		79	159	238
200 sqyds or more	How many family members do you live at home	2-4	4	21	25
		5-7	26	55	81
		8 or more	23	64	87
	Total		53	140	193
Total	How many family members do you live at home	2-4	22	47	69
		5-7	68	141	209
		8 or more	57	144	201
	Total		147	332	479

Table 2: Living criteria of Latifabad residents.

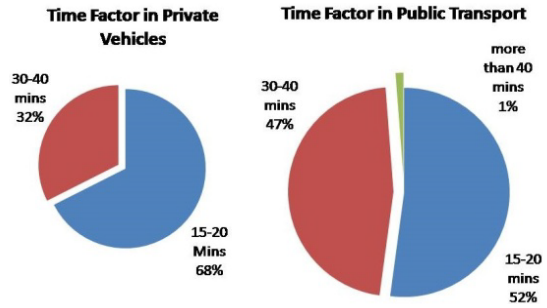

Figure 2: Mode of transport vs. time factor.

Do you find the traffic problem in your area?			How much time do the road tracks take to reach workplace from your home?			Total
			15-20 mins	30-40 mins	more than 40 mins	
Yes	What kind of transport do you use for your daily out back?	Public transport	63	69	2	134
		Private vehicles	151	78	0	229
	Total		214	147	2	363
No	What kind of transport do you use for your daily out back?	Public transport	23	8	-	31
		Private vehicles	61	24	-	85
	Total		84	32	-	116
Total	What kind of transport do you use for your daily out back?	Public transport	86	77	2	165
		Private vehicles	212	102	0	314
	Total		298	179	2	479

Table 3: Mode of transport vs time factor.

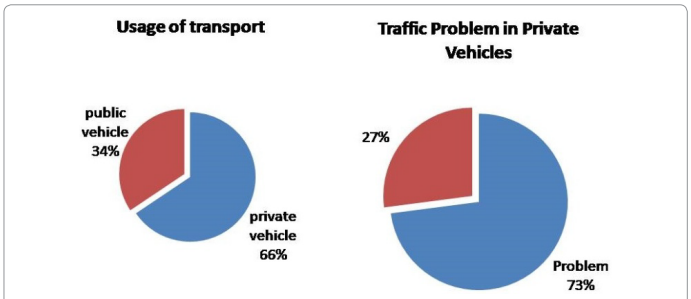

Figure 3: Mode of transport facing problem.

Do you find the encroachments of houses in your area?	Do you find enough space for parking in your area?		Total
	Yes	No	
Yes	141	250	391
No	35	54	89
Total	176	304	480

Table 4: Encroachment and parking space area.

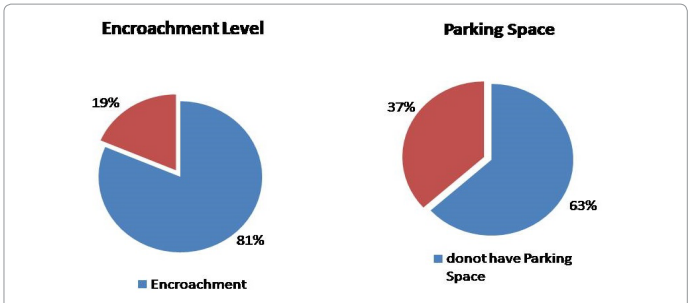

Figure 4: Encroachment and parking space.

Satisfaction index of physical and functional activities

Average satisfaction index was carried out to find out the level of satisfaction by two points as" satisfied" and "dissatisfied" by the formula of YIS (Yeh's index of satisfaction) as done by Neelum and Abbas [31]. The following formula is used to compute satisfaction index as Equation

S. no.	Activity	Satisfied	Unsatisfied	Satisfaction index
1)	Housing availability	231	249	-3.75
2)	Traffic problem	116	364	-51.66
3)	Other routes availability	299	181	24.583
4)	Shops near to area	400	80	66.666
5)	Shops and commercial fulfillment	327	153	36.25
6)	Education level	255	225	6.25
7)	Social problems	138	342	-42.5
8)	Enough space for parking	176	304	-26.66
9)	Traffic noise	150	330	-37.5
10)	Encroachment	89	391	-62.9166
11)	Parks available	232	248	-3.333
12)	Conversion of parks	269	211	12.083
13)	Street furniture	36	444	-85
14)	Health problems	208	272	-13.333
15)	Usages of utilities properly	220	260	8.333
16)	Political influences	229	251	-4.583
17)	Land mafia	191	289	-20.4166

Table 5: Satisfaction index of physical and functional activities.

$$YIS = \frac{\text{Satisfied - dissatisfied}}{\text{Total respondents}} \times 100 \quad (1)$$

It is easily shown in the Table 5 that there is a much level of dissatisfaction for Housing availability, traffic problem, social problems, enough space for parking, traffic noise, encroachment, parks availability, conversion of parks, street furniture, health problems, usages of utilities, political influences and land mafia involving in land conversions from different attributes to built ups or within built ups classifications as residential to commercial etc.

The education level of standard got the 50%-50% of both satisfaction and dissatisfaction level, where as other Routes availability, shops near to area, and shops and commercial fulfillment got much satisfaction level.

The average satisfaction index from this analysis found out to be -41.1431, which shows a highly dissatisfaction level of Latifabad residents, so, there is a lot of need to improvement and implementing strict policies to get over these issues. Table 5 presented the satisfaction index of physical and functional activities.

The main cause of sprawl is the rapid urban growth, which is in practice by doing the major violation of byelaws. The situation is going to be dangerous as the transformation is taking place. The increased urbanization may have various negative impacts on physical and functional activities, basic infra structure, energy, use and economic development.

Conclusion

In many cases, definitions are based on implicit value statements that make the concept questionable for understand in scientific research. The sprawl is dealt with qualitative and quantitative measures of urban sprawl. Various attempts of measuring urban sprawl are formulated in the literature.

The qualitative data was gathered and formulated results based on living criteria, transportations with time factors, encroachments, availability of various services in their existing residential units of the people lives in Latifabad, and found satisfactory and unsatisfactory indexes.

It is estimated that 30.688% has a migration level that shows that 69.311% of the Latifabad town is the permanent residents. There is a ratio of 65.553% of people who keep the private own vehicles, and 72.929% of private own vehicle face traffic problem. The 81.458% respondents face the encroachment in the areas, whereas, 63.33% of the respondents do not have the enough parking space.

The average satisfaction index from this analysis found out to be -41.1431, which shows a highly dissatisfaction level of Latifabad residents, so, there is a lot of need for improvement and implementing strict policies to get over these issues.

Recommendations

Urban sprawl is noticeably a huge problem in Latifabad nowadays and it needs to be fixed before it grows to such a point of severity that it cannot be fixed, stopping urban sprawl would mean stopping the development of barren lands around city areas completely, which cannot occur with the increase in population of Latifabad.

Although, the problem of urban sprawl illustrate no signs resolving itself in future, if the insight of the suburbs can be changed, there can be the some of the above mentioned ways to solve the issues. After all, the people are the main ones who can make a change when it comes to restrictive suburban expansion to solve even greater issues, such as pollution, health problems, and the crumbling infrastructure.

Urban sprawl can only be slowed down by achieving the Sustainable strategy in order to recommend appropriate policy and management options.

An ideal sustainable strategy can be envisioned as that in terms of development along with diversity, which should be compact and offer array of mixed zones or land uses supported by provisions of sustainable mass transit system, should be energy efficient by means of innovative technology relaying on solar energy and promote ecological protection through greening.

The other strategies are designed as follows:

1. To make people aware of the problem, anything to advertise the problem and raise awareness, would make people notice the amount of harm they are causing by developing such large areas of animal/natural habitat.

2. Another way is to enforce population control. The main cause of urban sprawl is Latifabad's (Currently most populated Taluka in Hyderabad District) increasingly large population. As there are so many people living here, as the population rises, and people move,

3. New developments must be created to suit their needs. Latifabad has to aim for a happy medium. Not too many people, not too few.

4. A third way to slow down urban sprawl is to enhance the use of new technology to facilitate more people to be able to work from home. Currently, people are dependent on accessing workplaces and public services offered only by a large city. There can be an incentive to live near the city because of the perks that the city offers its inhabitants.

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