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In Depth-Analysis of Urban Resident-Satisfaction Level of Mirpur, Dhaka, Bangladesh: A Participatory Approach

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Abstract:

As rapid urban growth is happening worldwide, the situation affected Bangladesh too. If the current trend remains, Bangladesh will face more than 50% of urban people of the population by the year 2030. But to ensure properly planned growth and a sustainable living system, residential area (RA) plays a vital role. A properly designed living area consists of adequate housing, planned land use with every type of facilities in one place for the inhabitants. As the capital of Bangladesh, Dhaka faced more haphazard growth than other cities resulting in scattered development and unplanned placement of establishments. Mirpur is one of the major city centers of Dhaka facing the same problem in some sectors. This study aimed to find out the satisfaction level (SL) in each sector in Mirpur based on resident's observation of living. The SL was analyzed based on three environments, i.e. Physical (air, water, and sound quality, temperature and transportation condition), neighborhood (utility features, solid waste management, educational, commercial, medical & recreational facilities and local security) and social (privacy level, religious and community perception) environments. Total 97 samples were collected with a 95% confidence level and a 10% confidence interval. Both primary and secondary data were used. The result showed satisfactory condition in Mirpur DOHS, Cantonment area and moderate satisfying scenario in 10, 13, 14 sectors. The streets are narrow and inadequate conditioned in some areas. Also, the lack of proper electricity supply and occurrence of slum problems are common drawbacks in some sectors. This study reveals that lack of proper planning in an urban expansion leads us to the unacceptable housing system, misplacement of facilities, and improper mixing of residential class. This study will help urban planners and policymakers to redesign the residential areas based on the needs of the residents and to control urban growth more accurately.

Key Word: *Satisfaction, residential area, urban growth, urban expansion, residential class, Mirpur.*

I. Introduction

A traditional list of basic needs of a human being consists of housing, food, and clothing [1]. But as the modern world is facing rapid urbanization, it has become more challenging for urban planners and policymakers to ensure adequate housing for all the inhabitants. Currently, more than 50% of the population prefers to live in urban areas or metropolitan cities [2, 3]. Even the number of inhabitants of metropolitan areas is expected to grow to 6 billion by the year 2045 [4]. To ensure adequate housing with proper maintenance of urban growth, land-use planning (LUP) initiative must be taken [4-6]. There are two main parts of the LUP process. One is the development plan (DP); another one is development control (DC) [5, 7-10]. DP deals with the strategic approach to ensure specific goals that help the city planners to cope with rapid change due to rapid and haphazard urban growth [11, 12]. On the other hand, DC deals with a more practical approach, stopping the physical development planning in certain areas of a city and maintaining sustainable urban development [10, 12, 13]. One of the most effective DP plans is a planned residential area (RA) projects that help create a perfect housing problem solution [4, 5, 11].

Bangladesh is facing rapid urban growth after its liberation in 1971 [4]. Currently, more than 25% of people live in urban areas, and at this rate, the trend is expected to reach more than 50% of people by 2030 [4, 14]. Dhaka is the capital city of Bangladesh. Dhaka attracts people from all over the country, resulting in vast migration to this city because this city is one of the few sources of all the basic human needs, i.e., education, healthcare, and, most notably, food and money. This massive migration leads to haphazard urban growth in this city, creating more problems than a

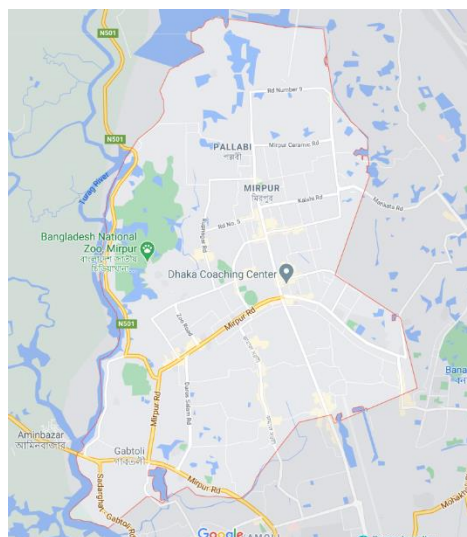
sustainable solution. During this period, the city authority implemented many residential projects in various areas like Dhanmondi, Uttara, Banani, Mirpur, etc. but, due to the major influx of people in this city, those areas became more commercial rather than residential. This scenario caused a major decrease in the satisfaction level of the residents of those areas who came to live here with the expectations of an excellent residential life. Residential satisfaction is an emotional response to the quality of persons' dwelling. It can either be positive or negative [15]. The quality of the residential environment depends on the surrounding infrastructures and their proper maintenance [16]. To ensure a better residential environment, the appropriate authority should provide a better quality of services first. Utility services like drinking water, sanitation, waste disposal, drainage, electricity supply, etc. are essential physical infrastructure in a planned residential environment. Also, the availability of residential and commercial services in one place results the residential environment to be self-sufficient. The city authority can raise the satisfaction level of the residents with creating more self-sufficient neighborhood and controlling the urban growth to a certain extent.

Many scholars have discussed the satisfaction level of people based on various aspects of urban growth. Ali et al. (2004) discussed the satisfaction level based on urban conveniences and the surrounding environment of the Bandarban Area [17]. Spatial mapping of 41 wards of Chittagong Metropolitan City was also evaluated based on urban environmental quality [18]. Both these studies were assessed with public opinion the same as Kafy et al. (2019), who assessed the urban satisfaction level of various residential areas of Rajshahi City Corporation [4]. However, no study dealt with Mirpur's urban satisfaction level, with residents' proper opinion. No author has discussed the residents' visions and analyzed the satisfaction level out of that. This study aims to identify the resident satisfaction level based on physical, neighborhood, and social environments within various places in Mirpur Area. This study also provides some useful observations and a planned overview of the situation of the urban environment. Urban planners and policymakers will find this study helpful as this study offers proper recommendation to convert Mirpur into a sustainable resident-friendly, self-sufficient area.

II. Material and Methods

Study Area Profile

Dhaka city is considered as the center point of the country as well as one of the four metropolitan cities in the country. Dhaka City Corporation (DCC) is divided into two parts, north and south city corporation. Mirpur is situated into Dhaka North City Corporation (DNCC), and according to Wikipedia, 2020, it consists of eight wards, one union parishod, and 11 mouzas. It is located at 23.8042°N 90.3667°E, and has an area of 58.66 km². Currently, this thana has an estimated population of 1,074,232 people [19, 20]. For this study, this study area has been divided into small areas to survey more accurately. These areas are Ansar Camp, Kazi Para, Mirpur 1, 2, 6, 7, 10, 11, 12, 13, 14, Mirpur Cantonment, Mirpur DOHS, Shewrapara, Technical. However, there are no certain boundaries for these areas. **Figure 1** shows the boundary of Mirpur Thana.



Source: Google Maps, 2020

Figure no 1: Mirpur Thana boundary, Dhaka, Bangladesh

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Data Collection Process

For this study, primary data was collected from the inhabitants of the study area. A stratified random sampling method was followed for getting the best observation of the whole study area. For the primary source of information, 97 respondents were surveyed with the help of a structured questionnaire. The detailed information about the survey process is shown at **Table 1**.

Table no 1: Detailed overview of the survey scenario for this study

Total Population	Confidence Level	Confidence Interval	Response amount	Area Surveyed	Total Respondent
1074232	95	10	6	Ansar Camp	97
			6	Kazipara	
			7	Mirpur 01	
			7	Mirpur 02	
			6	Mirpur 06	
			6	Mirpur 07	
			7	Mirpur 10	
			6	Mirpur 11	
			7	Mirpur 12	
			7	Mirpur 13	
			6	Mirpur 14	
			7	Mirpur Cantonment	
			7	Mirpur DOHS	
			6	Shewrapara	
			6	Technical	

Source: Authors' analysis, 2020

The larger the sample size will be, the more it will reflect the respondents' actual situation [4]. The survey amount was calculated with the sample size calculator (<https://www.surveysystem.com/sscalc.htm>), determining how many people need to be surveyed to get the best result from the survey process. The collected data was analyzed later with Microsoft Excel and SPSS, and then it was shown with graphs and tabular representation to make those more understandable. All the variables are taken from the assessment of satisfaction scenario assessed by Kafy et al., (2019) [4].

Satisfaction Index Calculation

The satisfaction or dissatisfaction level can be determined based on environmental variables with this formula developed by Hall, Yen, Tan (1975):

$$I_s = \frac{F_s - F_d}{N} \quad (1)$$

I_s = Satisfaction Index

F_s = Number of satisfied respondents

F_d = Number of dissatisfied respondents

N = Total number of respondents

This satisfaction index can have a value of +1 to -1, where +1 stands for the highest level of satisfaction, and -1 stands for the highest level of dissatisfaction. Many researchers have used this formula to identify the satisfaction of various groups and urban environment quality mapping [4, 17, 18, 21-24].

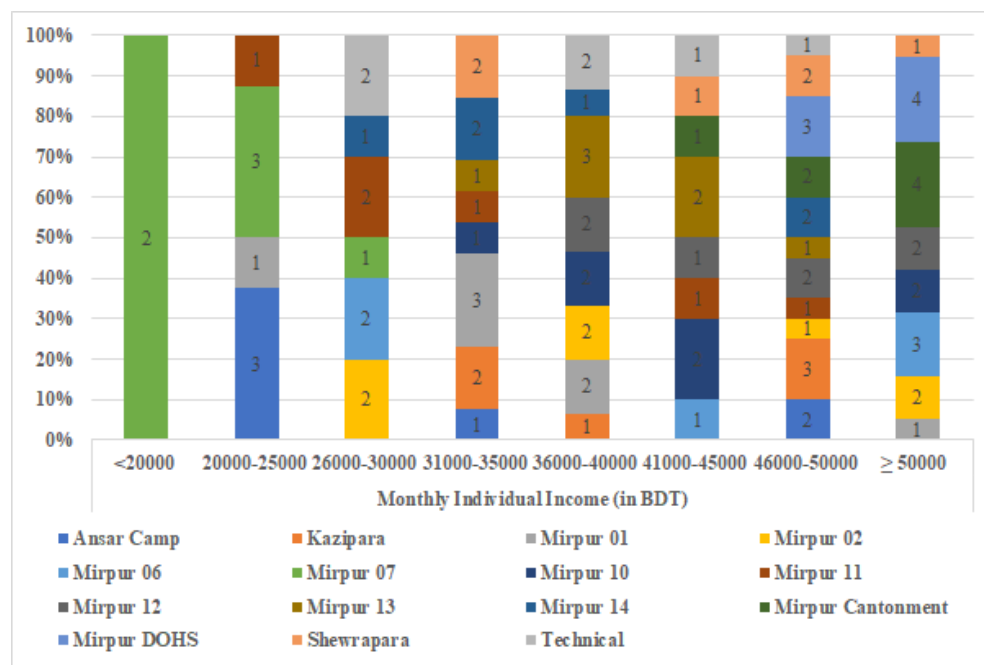
III. Result and Discussion

Socioeconomic and demographic scenario of the respondents

General characteristics such as gender, age, educational level, income, marital status, employment are considered the demographic characters of the respondents, representing the present condition and the environment of the study area [4]. The male respondent (57%) percentage was higher than the percentage of female respondents (43%) where 53% were married and 47% were unmarried or divorced. Though there were several age groups in the questionnaire, almost 79% of the respondents fell into 20-60 years. 62% of the respondents were involved in earning activities, and 38% were either unemployed, homemakers, retired, or students. The purchasing power is reflected by the status of the income level of the respondents. This is a key factor in determining the reaching power of the provided facilities in an urban area. Higher class and middle-class people live in this area, along with the low class (worker, guard, etc.). 11% of the people have an income range of <25K BDT, and the maximum amount of people (21%) has an income range of 46K-50K BDT. A nearly similar situation is seen in the family income scenario as most of the respondents (31%) were in the high-income range group, having a family income of more than 50K BDT. There were two primary income sources seen in the surveyed data, i.e., business and administrative jobs. Very few amounts of the respondents were involved in construction works and daily labor.

Survey area wise income scenario

Majority of the respondents were of high income or middle-income group. **Figure 2 and 3** represents the individual and family income scenario of each surveyed area respectively.



Source: Authors' analysis, 2020

Figure no 2: Monthly Individual Income scenario of the respondents in the different surveyed area

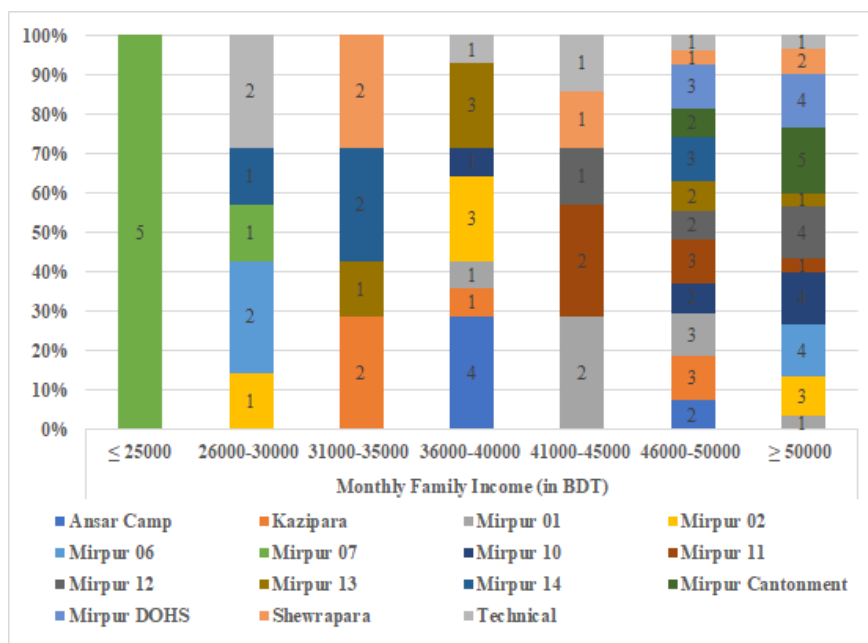
Mirpur 7 has the majority of low-income groups as the income range there is <30K BDT. Mirpur 2,6,11, Ansar Camp, and Mirpur DOHS had some middle-income group with 1-4 respondents between an income range of 26K – 40K BDT. Mirpur 11,12,13,14, Cantonment, DOHS, Shewrapara, and Technical area had respondents from the higher middle to high income groups having an income of 41K to more than 50K BDT. All the areas had 1 – 5 respondents in the high-income groups.

For the monthly family income scenario, Mirpur 7 had the low-income group having a majority of income ranged ≤25K BDT. Mirpur 2, 13, and Ansar Camp had the middle-income group having a monthly income of 26K – 40K BDT. Each area had 1 – 3 responses in this income group. As for higher-middle class and higher-class income groups,

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Mirpur 2,6,10,12, Mirpur Cantonment, Mirpur DOHS, Shewrapara had a higher percentage of respondents, having 2 – 5 respondents in these categories. The higher-middle class had the income range of 41K – 50K BDT and the higher class had the income range of >50K BDT.



Source: Authors' analysis, 2020

Figure No 3: Monthly Family income scenario of the respondents in the different survey area

Satisfaction scenario according to the physical environment

A total of 17 variables were selected to analyze the satisfaction index based on the physical environment shown in **Table 2**. Outside noise had the worst-case scenario, having the highest negative value (-0.27) in the satisfaction index. Too much transportation noise and the noise of construction is the primary reason behind the dissatisfaction of the residents for this variable. Similarly, the lack of proper drainage ways creates a water logging problem (-0.24) all around the study area after heavy rain. Lack of adequate transport service system (0.22) and too much traffic (0.14) holds a middle place in the satisfaction index. Summer Temperature has a sixth place in the ranking (0.36). Too much impervious surface results increase in temperature [25, 26]. Waterbody presence, street condition, earthquake, airflow, and greeneries have positive values and a higher place at the satisfaction index with higher ranks. Noise inside has the highest value in the satisfaction index (0.97) and the highest-ranking (17). Proper placement of ponds in recreational facilities creates a good scenario among the residents. Though the street condition is flawed in some areas of the study area, many residents believe that the ongoing construction process will improve the street condition. The availability of transportation bears quite a satisfactory scenario among the residents. The government provided the transport system and other features like Uber and Pathao provides enough transport for the residents of this area. Thus, these variables have higher values in the satisfaction ranking.

Table no 2: Satisfaction index according to physical environment variables

Physical Environment Variables	Satisfaction Index	Ranking
Noise inside (Human noise, radio, TV)	0.97	17
Water body presence	0.92	16
Street condition (with, construction)	0.91	15
Availability of Transportation	0.87	14
Earthquake	0.87	13
Airflow	0.81	12
Greeneries	0.76	11
Winter Temperature	0.75	10
Water quality	0.71	9
Air Quality (smell)	0.68	8
Availability of open spaces	0.43	7

Summer Temperature	0.36	6
Transport service system	0.22	5
Traffic jam	0.14	4
Air Quality (Dust/SPM)	-0.15	3
Water logging	-0.24	2
Noise outside (traffic/loud speaker etc)	-0.27	1

Source: Authors' analysis, 2020

Satisfaction scenario according to neighborhood environment

A total of 22 variables were considered to measure the satisfaction index based on the neighborhood environment (**Table 3**). Drainage System (-0.19) and Sewerage System (-0.17) have higher negative values in the satisfaction index and the 1st and 2nd ranking respectively. Mirpur 10, 11, and some respondents of Ansar Camp, Technical shows negative impact for these variables. Utility services like water supply, gas supply, electric supply has moderate values in the satisfaction index and placed in middle areas in the ranking. Too much interruption of electricity and lack of uninterrupted gas supply results this type of moderate satisfaction scenario. Administrative services like postal facilities (0.52) have moderate ranking in the satisfaction index but local security, law & order has low value (0.14) in the satisfaction index. According to the respondents, higher level of crimes like theft, eve-teasing, local young gangs create problems in the neighborhood. As for positive scenario, religious places (1.00) and educational facilities (1.00) have the highest satisfaction value in the satisfaction index. Respondents are also satisfied with the availability of shopping center (0.97), graveyard (0.97), medical facilities (0.95), and banking facilities (0.91). These variables have the highest ranking. High quality of education institutions, availability of hospitals, private and public banks results the satisfactory scenario among the respondents. Both government and private schools, colleges are there in the study area. Residents are quite satisfied with the primary education of their children near their residence. As Dhaka is known as the city of mosques, Mirpur is no exception. There are mosques in just 2 – 3 minute walking distance from all the residence. Also, mandir, church and other religious places are available in the study area.

Table no 3: Satisfaction Index according to neighborhood environment variables

Neighborhood Environment Variables	Satisfaction Index	Ranking
Religious place	1.00	22
Educational facilities	1.00	21
Availability of shopping center	0.97	20
Availability of graveyard	0.97	19
Availability of medical facilities	0.95	18
Availability of banking facilities	0.91	17
Cyber Café	0.85	16
Recreational facilities	0.84	15
Business facilities	0.84	14
Telephone services	0.82	13
Water supply	0.77	12
Parking facilities	0.65	11
Postal Facilities	0.52	10
Electric Supply	0.48	9
Sanitation condition	0.48	8
Gas Supply	0.44	7
Housing condition (according to rent)	0.28	6
Employment facilities	0.22	5
Local security, law & order	0.14	4
Solid waste Management (Garbage)	-0.05	3
Sewerage System	-0.17	2
Drainage System	-0.19	1

Source: Authors' analysis, 2020

Satisfaction scenario according to the social environment

The connectivity among the people in all the areas and the presence of a community feeling is excellent in all the sections in the study area. According to the respondents, the people are quite satisfied about their neighbors and their community. Mastan problem and nude poster problem has low amount of satisfaction among the respondents having a value of 0.42 and 0.68 respectively. Hijacking, eve-teasing, theft, etc. results the dissatisfaction among the respondents. Other than these, other variables have the highest positive value in the satisfaction index (**Table 4**). The rapid increase of teenage gangs in recent times resulted this type of dissatisfaction over the study area. They are constantly involved in eve-teasing, theft, hijacking, and other unsocial occurrences. This was one of the primary

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concerns about the safety of the neighborhood among the respondents. There was no religious conflict in the study area as inhabitants from all the religions live in harmony.

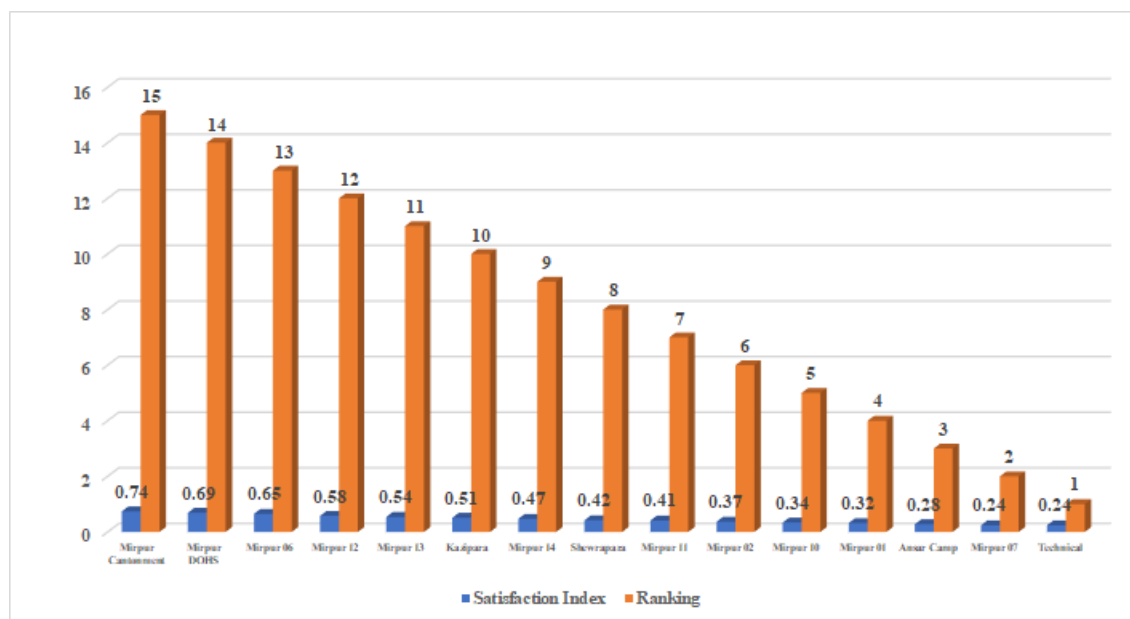
Table no 4: Satisfaction Index according to the social environment variables

Neighborhood Social Variables	Satisfaction Index	Ranking
Feeling around community	1.00	8
Activities around the neighborhood	1.00	7
Connectivity among inhabitants	1.00	6
Religious conflict	1.00	5
Privacy	1.00	4
Prostitute problem	0.91	3
Nude poster problem	0.68	2
Mastan problem	0.42	1

Source: Authors' analysis, 2020

Overall Satisfaction Scenario

As per the responses, people are more satisfied with the social environment rather than the physical and neighborhood environment. Around all the parts of the study area, people are more satisfied with social environment features like community feeling, neighborhood activities, etc. But they are not satisfied with physical features like water logging, street conditions, etc. Too much traffic in the Technical, Shwerapara area and poor street condition in Mirpur 12,13,14 is one of the main disappointing variables among the respondents. In neighborhood features, drainage and sewage system in all the areas of Mirpur is poor, which results in high amount of waterlogging. Haphazard mixing of the living class in Mirpur 13,14 also creates disturbance among the neighborhood but creates some working opportunities for the day laborers. Mirpur Cantonment and DOHS area have the highest satisfied responses and have the highest rank in the satisfaction index ranking for all the surveyed area of Mirpur (**Figure 4**). Technical, Mirpur 07 has the lowest rank in the overall satisfaction scenario. Too much traffic, noise problem, lack of law, order and security is considered as the base problem for the low ranking and value of satisfaction. Though the government is taking some initiatives to resolve this problem, but according to the respondents, these areas have become more commercial than residential in the first place. So, building a new residential area with proper planning processes and policies will be more efficient and environmentally friendly than transforming the commercial centers to residential areas.



Source: Authors' analysis, 2020

Figure no 4: Ranking of different surveyed area according to satisfaction index

IV. Conclusion

Rapid and haphazard development in urban areas creates a lack of adequate services and utility services around the area. This unplanned growth can result in misplacement of proper services and can result in dissatisfaction among the residents. A fully functional residential area has the potential to provide all the features one needs within walking distance. As seen in the survey, maximum people are quite satisfied with their surrounding environment except for some basic features like waterlogging, a massive amount of traffic, and lack of law, order, and security. If the proper authority can take steps to redeem these conditions, Mirpur can be recognized as a fully functional residential area. A major amount of the respondents identified their location as a commercial or administrative area rather than a residential area. Proper placement of services and planned boundaries can help the resident to find a satisfactory neighborhood to live in. A crime-free community is one of the essential features of a residential area. If the local security is secured, the inhabitants will find it more peaceful to walk around their neighborhood. Area recognition is a critical factor for feature placement. Residential features will only be compelling if they are placed in the right residential areas. As some of the Mirpur areas already touched by the haphazard urban growth, they are converted to commercial or more administrative types rather than residential. If the government takes initiatives to make the other residential areas more environment friendly, the residents may move to those areas leaving the commercial areas for further development. Furthermore, a proper government plan with some NGOs' initiatives can help turning Mirpur to a more environment-friendly area and reduce the problems related to urban environmental areas.

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