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SOCIOECONOMIC IMPACT OF THE FIRST MASS RAPID TRANSIT (MRT) IN DHAKA

Shahriar Iqbal Raj
Department of Architecture, North-South University
Email: shahriar.raj@northsouth.edu

A.S.M Julker Naem
Climate Change and Disaster Management Division, CEGIS
Email: jnaem@cegisbd.com

ABSTRACT

Dhaka, the capital of Bangladesh, has a metropolitan area density of 23,234 per square kilometer (Review, 2020), and it is considered one of the most densely populated megacities in the world. The city contributes 35% to the national economic growth of GDP. However, in this rapidly growing city, the transport management authority has an enormous lack of coordination to adopt; thus, the massive traffic congestion is one of the significant challenges. In 2015, Dhaka's average traffic speed was 6.8 Km/h (RSTP, 2015). According to the BRTA (Bangladesh Road Transport Authority), there are 1.74 million registered motorized vehicles in Dhaka, yet the city is acutely short of the road- space. Population growth trends of 3.8%-4.2%, creating numerous urban problems, have led to Dhaka as one of the ten least liveable cities globally (EUI, August 2016). Globally, Transit-Oriented Development (TOD) is widely used as an urban planning tool to maximize transit benefits. Mass Rapid Transport (MRT), as one of the modes of TOD, offers high-density development around stations to combat urban sprawl and socio-economic changes, reduced motorized vehicles, balanced urban growth, and pedestrian facility to enrich the quality of life. A study by Dhaka Urban Transport Project (DUTP) identified implanting Transport Oriented Development (TOD) to become a sustainable city is essential to achieve the Sustainable Development Goals (SDGs) by 2030, and as a UN member country, it is vital for Bangladesh. However, the socio-economic impact of the Mass Rapid Transport (MRT) System is yet to be realized in Dhaka, where most of the development policies are biased by political and donor agendas. This study will investigate the socio-economic impact of the first MRT-6 in Dhaka. The paper concentrate on a Mirpur with three transit stations as the case study.

Keywords: TOD, Urban form, Mass Rapid Transport (MRT)

Topic: B1_THEORY AND HISTORY OF THE CITY AND THE TERRITORY

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1. Introduction

Dhaka is a diverse metropolitan city with rich culture and heritage. As a capital city, it has more than 400 years of glorious past, where the human settlement of the region can be traced back to the 12th century. The Mughals selected this area for strategic military outposts as rivers surrounded it and declared Dhaka the first capital of this region (Ahsanul & Bruno, 2012). Since then, Dhaka went through many rulers and became the lucrative business hub of East Bengal.

Dhaka has been experiencing massive urbanization in recent years, with a population growth trend of 3.8%-4.2%. Further research suggests that if the current trend of population growth continues, along with the current pace of economic growth and industrialization, which is expected to occur over the next 10–15 years, Dhaka will emerge as the sixth-largest urban cluster on the planet (UN, 2016).

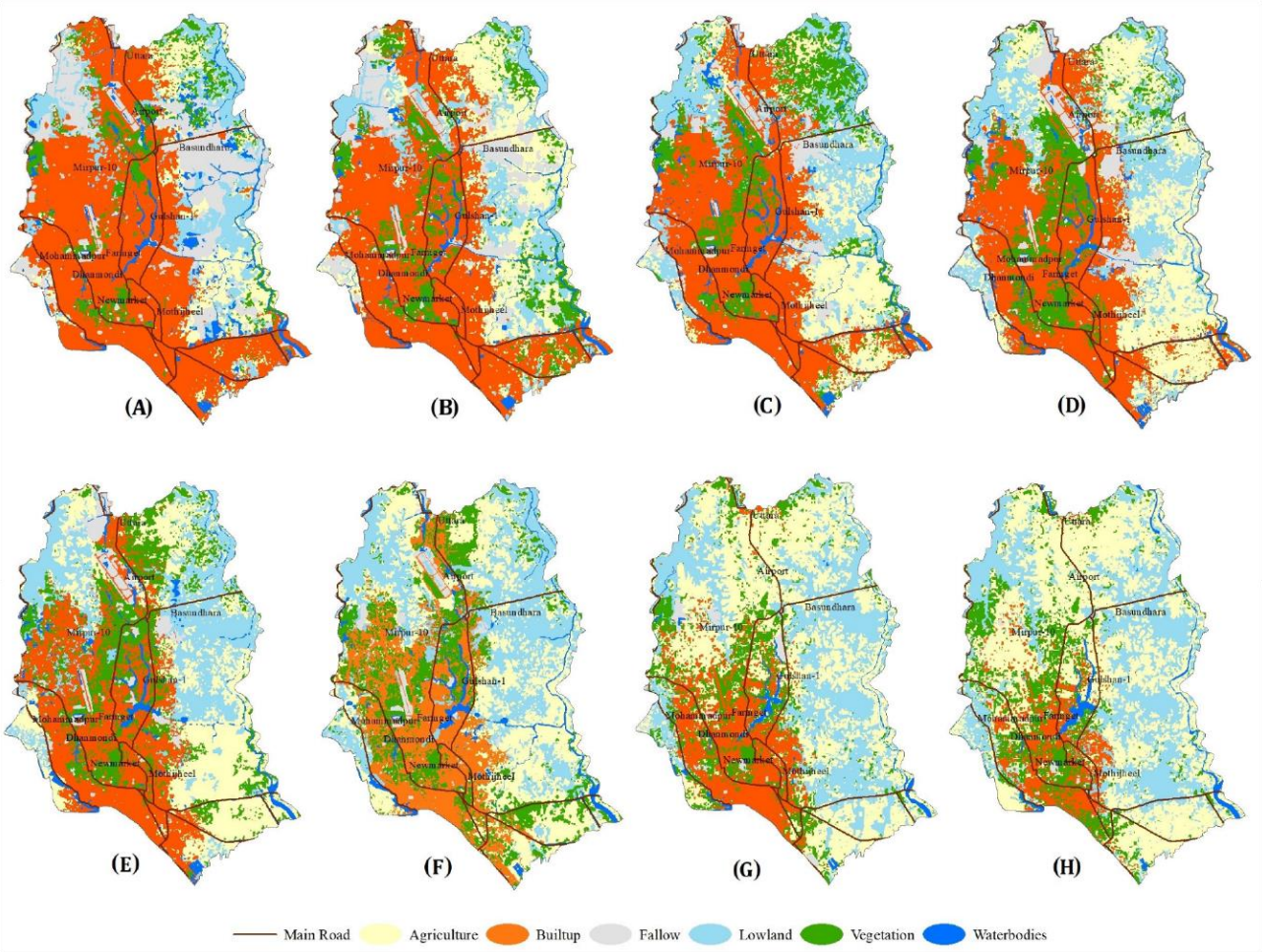

Fig 1: Land cover map of the Core city/Dhaka City Corporation area (DCC) between 1972 and 2015. (A) 2015; (B) 2010; (C) 2005; (D) 2000; (E) 1995; (F) 1990; (G) 1980; (H)- Source: (Mohammad Mehedy & Jane, 2017)

1.1. The Existing transport system of Dhaka

Currently, the Dhaka Metropolitan Authority (DMA) transportation system relies primarily on road transport. The transportation medium includes the car, Bus, minibus, auto-rickshaw, cycle-rickshaw, human hauler, etc. Different types of manual and automated transportation modes with various speed and safety concerns are becoming critical issues that cause unbearable traffic congestion and accidents. Traffic congestion is also

considered one of the significant sources of air-bone dust and smoke containing CO/ CO2, deteriorating Dhaka's breathable air quality (Arefin, Mallik, & Islam, 2017). Surprisingly, the JICA study shows that most trips are made by non-motorized médium, including walking and cycle-rikshaws. (JICA, 2018), and Revised Strategic Transportation Plan-2014 finds that 50% of trips are by walking (RSTP, 2015). Besides, walking the roads of Dhaka is famous for Cycle-Rikshaw, and it covers 25% of various transport demands (RSTP, 2015). However, the bicycle is not that popular in the city, and it is ancipital that lack of safe roads and separate bicycle lanes, the riders don't fill safe using it.

Due to the rapid urbanization, increasing population, and migration influx, the demand for infrastructure and services is growing in Dhaka, resulting in unbearable traffic congestion. (MM, Ali, & Afroz, 2015). Besides the population growth at the rate of 3.8%-4.4% every year .3-.4 million migrant people enter from different parts of the country, attracted by relatively higher wages and job opportunities (RIB, 2013). Combining all elements of traffic congestion, the calculated daily loss per person is 4$/ (360 BDT) per day for a commuter (Haider & Papri, May 2021). The traffic congestion arises in the morning and evening during office hours, and the expansion of traffic congestion spreads through Neighboring roads in the city following a gravity model (Sayed, Rahman, Zaber, & Ali, 2017). The cost incurred due to this congestion from working hour loss, productivity loss, environmental pollution, traffic accidents, fuel, and energy waste (Matin, 2012).

1.2. Dhaka Urban Transport Project

The Government of the people's republic of Bangladesh (GOB) took massive initiatives to improve the transportation system of the Dhaka Metropolitan Area (DMA), and the Dhaka Urban Transport Project (DUTP) project is assisted by International Development Association (IDA).

A study by DUTP explained well the present modal split of a person's movement in Dhaka metropolitan and showed walking as the predominant mode with a share of 62 percent of total person trips. The distribution was categorized by rickshaw (13.3%), Bus (10.3%), auto-rickshaw (5.8%), and car (4%). In consideration of person-trips by vehicle, rickshaw takes the highest share, accounting for 35 percent, followed by a bus (21%), auto-rickshaw (15.2%), car (10.5%) (JBIC, March 2000). However, JBIC-2000 and RSTO, 2015, show a significant decline in walking behavior and indicate poor transport planning that may di-promoting sustainability and user-friendly roads, footpaths, and safe environments for pedestrians (Hossain, 2002). It has been observed that the width of the footpath is gradually decreasing in the central streets to accommodate the growing number of motorized transport systems. Despite having traffic lights, the traffic control system in Dhaka is controlled manually and creates unsynchronized traffic management during peak hours.

Therefore, implanting Transport Oriented Development (TOD) to become a sustainable city is essential to achieve the Sustainable Development Goals (SDGs) by 2030, and as a UN member country, it is vital for Bangladesh. 'Uber' launched its operation in 2016 by offering a convenient and cost-effective rideshare concept with private cars. A local startup rideshare app Pathao started its journey in 2018 by providing Motorcycle ride share. It gets popular as an affordable mode of transportation among males and females to avoid traffic congestion and save time. Though DUTP never suggested rideshare as an aid to traffic congestion in Dhaka. As a result, the traffic management system has little or no control over the increasing number of motorbikes and cars; according to BRTA total of 8000 thousand registered motorbikes are becoming a nightmare on the street of Dhaka

The Strategic Transport Plan (STP) Dhaka 2004-2024 was prepared by Louis Berger Inc., an independent consultant, and BCL, a local consultant (Nawaz, 2019). Since then, it was expected that each donor and the foreign or local investor would provide assistance based on this STP to improve the urban transportation situation (JBIC, March 2000). The Japan International Cooperation Agency conducted an extensive study (JICA), the Dhaka Urban Transportation Network Development Study (DHUTS) Phase 1. It was made public in March 2009 with the DTCA as its counterpart agency. That study has emphasized the elevated metro rail

system, and it should be the priority project to ease Dhaka's transport chaos. However, the Mass Rapid Transport (MRT) System's socio-economic impact is yet to be realized in Dhaka.

Three elevated mass rapid transport (MRT) and three bus rapid transport system (BRT) were proposed by WB. The routes include MRT-1, 5, 6, and BRT-1, 2, and 3. Among the proposed routes, MRT- 6 is under construction, and Government is anticipating it will be ready in December 2022 for public service. The route will travel from Mirpur to Motizeel with 16 stations with a total length of 20 Km.

1.3 Area of concern

This paper will examine multiple theories to identify the impacts of MRT-6 node-based influence on áreas (wards) and socioeconomic. Mirpur under the Dhaka North Municipality is considered the primary study area. It represents a lower-middle and middle-income residential neighborhood (Sharmeen & Houston, 2019). The dynamic demographic and transportation characteristics, land value, and mixed-income level are significant considerations for Mirpur as the study área. (Afrin, Zerin, Sharmin, & Morshed, 2012), (Islam, Mitra, Shohag, & M.A, n.d.). Mirpur has crossed three MRT-6 stations. The MRT-6 route is still under development, and the projected date for public transportation is December 2022.

2. Literature Review

2.1 Concept of TOD

Thirty years ago, Petter Calthorpe, Peter Calthorpe explained the term "Transit-Oriented Developments" (TOD) in the book "The New American Metropolis, Ecology, Community and New American Dream. The author tried to explain the importance of density, walkability, public space, and mixed-use development (Huê, Janet, Deepak, & Tridib, 2019). Calthorpe and like-minded New Urbanists formulated a certain vision of community that will be affordable, environmentally sustainable, and have a superior quality of life, and argued that access to rail transit could play a pivotal role in the advent of such an urban way of life (Calthorpe, 1993; Duany & Elizabeth, 1994).

In Calthorpe's views, TOD referred to 'a mixed-used community within average 2,000- feet (or 10 minutes) walking distance of a transit stop and core commercial área. Such TOD áreas would 'mix residential, retail, office, open space, and public use in a walkable environment, making it convenient for residents and employees to travel by transit, bicycle, foot, or car (Huê, Janet, Deepak, & Tridib, 2019). Due to the initial high cost and dependencies on donors, most developing countries depend on road-based public transportation systems. Urban mobility in developing cities suffers from a poorly designed urban network (Cervero D. , 2013) and declining public transport services (Projani & Stead, 2017). Studies concluded that TOD in the long term should prove to be the winning development strategy in developing countries and could even provide greater benefits than in wealthier countries (Cervero D. , 2013). However, the transport network needs to be well designed and integrated with land use and population density and access to business and job opportunities.

'Mass Rapid Transit (MRT) is a term used to describe modes of urban public Transport (integrates both rail and road) that carry large volumes of passengers quickly (Rahman M. S., 2008). The role and form of MRT depend upon the city context, size, income level, asset base, institutions, existing transport systems, and other cultural and behavioral factors and attitudes.

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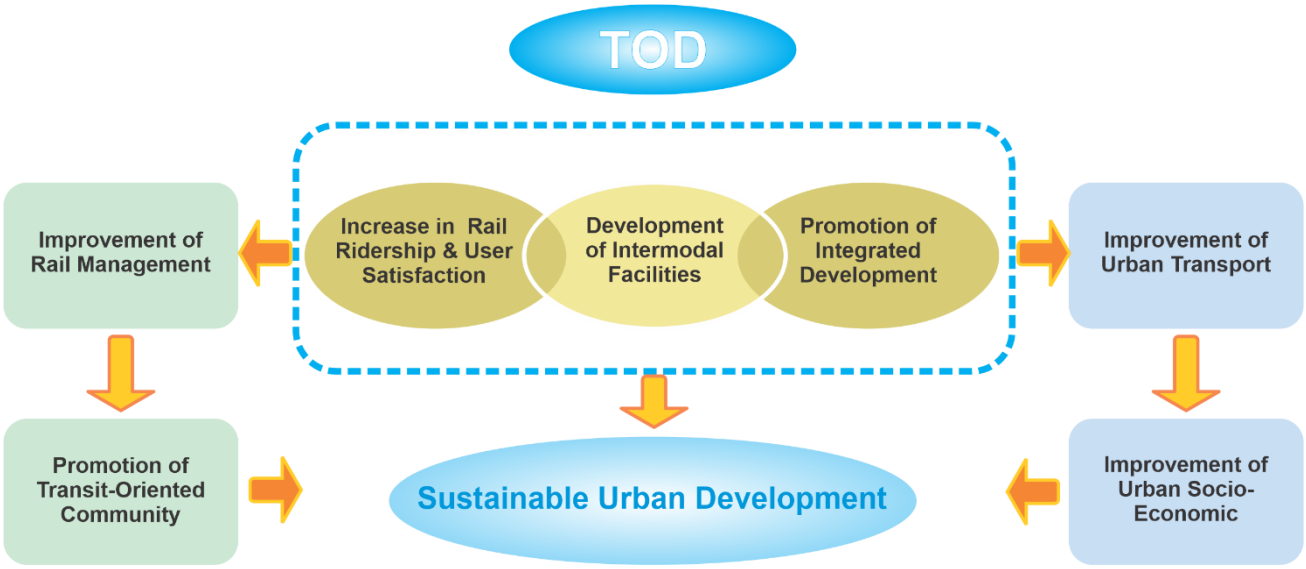

Fig 2 Conceptual TOD diagram-Dhaka (JICA, 2018).

Figure 2 summarizes the mechanisms through which TOD operates. As illustrated by the figure, the various conditions for TOD success are strongly interdependent. The three goals of sustainable urban development, efficient urban transportation, and equitable socio-economic development must be pursued simultaneously to maximize the short- and long-term benefits of MRT (JICA, 2018).

2.2 Socio-Economic Impact of public transportation and benefit of TOD

Developed countries like Canada, France, Germany, and United States adopted rapid rail transit to achieve the environmental goal and promote economic growth (Walmsley & Ken, 1992). Transportation planning also addresses making the cities congestion-free, faster, and more reliable movement for people, and most of the common goal is to reduce the dependencies on the motorized vehicle. On the other hand, developing counties implement this expensive project to tackle the growing demand for transportation which often cannot reduce the traffic congestion (Alam, 2010).

The economic impact of MRT as the most popular public transportation system can be direct or indirect. Weisbrod and Reno explained the economic impact of public transportation in the report Economic Impact of Public Transportation Investment-

Spending Impact: Capital Investment in public transportation requires the purchase of large-scale technology and creates short-term construction job opportunities and long-term operations job opportunities. (Weisbrod & Reno, 2009)

Travel Improvement Impacts: Longer-term travel benefits are fundamental justification for public transportation that can offer long-lasting area economic activity. The direct monetary benefit of travel falls into travel-time saving, travel-cost saving, reliability improvements, and safety improvements (Weisbrod & Reno, 2009).

Impact of Travel Cost Changes on the Economy: The Travel improvement Impact has various effects on the area's economy. It leads to shifts in purchasing patterns and business expansion decisions with overall impacts on economic growth (Weisbrod & Reno, 2009).

Access Improvement Impacts: Appropriate integration of new modes of the public transportation system has a greater impact on reducing traffic congestion. This may specifically include the mobility access market- by broadening the access of the diverse labor market and spatial agglomeration

economies- by creating clusters of similar complementary activities, enabling public access and terminal facilities (Graham, 2007).

In the case of developing countries, TOD improves the overall quality of life, and both businesses and employees are attracted to the region, which supports additional growth and development. Thus agglomeration benefits are typically capitalized into land values and rents at locations where access to public transportation services is concentrated (Weisbrod & Reno, 2009).

With a wide range of benefits from TOD, Banister and Thurstan Goodwinn argue that TOD's impact can be measured on the economy at three separate levels; (Banister & Thurstain-Goodwin, 2011)

- Output and productivity changes;
- At the meso level, impact related to agglomerative economics and labor market
- At the micro-level, the effect is determined by land and property market affect.

For sustainable TOD planning, it is essential to understand transit-induced gentrification. Previous research on the effects of capital investment on gentrification has primarily focused on urban (Wang & Lan, 2009) and housing renewal. Gentrification influences the social structure of an area, and it is related to increased land value and increased house rent.

2.3 Concept of Gentrfication

The fundamental concept of gentrification transforms a neighborhood creating an inflow of affluent residents and investment and outflow of the low-income population from the community (Yeom & Mikelbank, 2019).

Sociologist Ruth Glass explained the term "gentrification" in 1964, and several studies have investigated gentrification as a process of neighborhood change and have in various ways added nuance to the definition to fit their particular research interests and contexts. However, fundamental concepts of neighborhood transformation, inflow, and outflow have not changed. Glass also emphasizes that the changes in the surrounding built environment largely influence a neighborhood's social class and social character (Yeom & Mikelbank, 2019).

Changes in the built environment alter or modify existing living standards of a neighborhood where the different class of people tries to ensure their new living satisfaction. However, low-income residents and current residents in that area often result in displacement due to the new investors and increasing land value. Given current economic and policy realities, it seems these stakeholders cannot coexist in the same space (Yeom & Mikelbank, 2019).

3. The objective of the research:

The objective of this research is as follows:

a) To identify the node-based influence zone by GIS mapping to develop a comprehensive framework for future studies.
b) To understand socio-economic factors that will influence the influence areas while the MRT-6 will be operational.
c) To develop a framework to determine mixed-used potentiality by using the jobs-housing index.

4. Research Methodology

The study used the Economic Census Report 2013 of Bangladesh and surveyed data for different matrics. GIS data is also used to analyze land use, population, and POI. This research used both qualitative and quantitative methods to achieve the research goal. The followed process is explained in the following chart.

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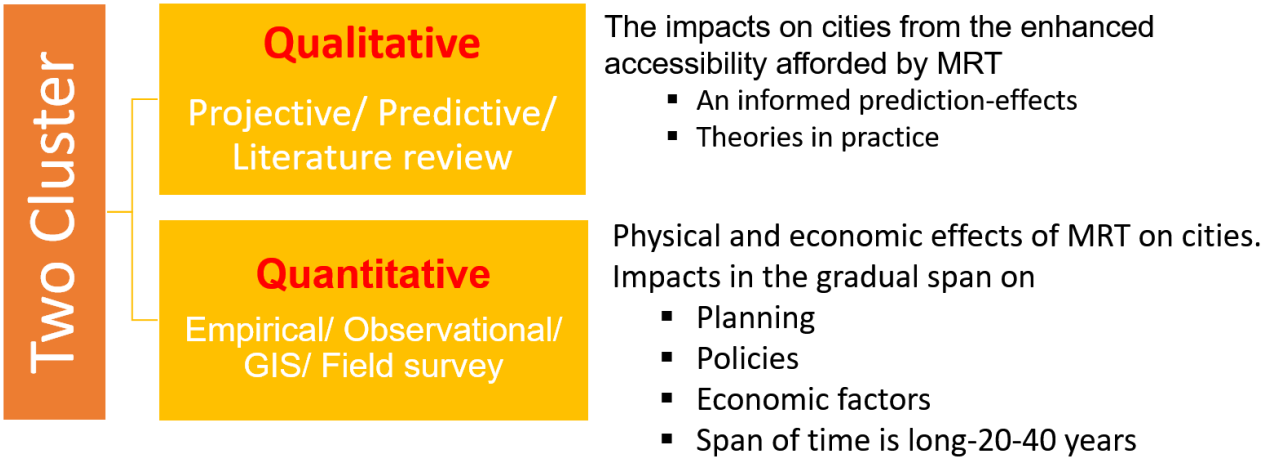

Figure 3: Research Methodology

4.1 Questionnaire survey

Good mobility planning requires actual data of what users demand to invest in more sustainable transport modes. This choice of transport modes is influenced by user characteristics, the social environment into which they are inserted, and transportation aspects (Schubert, Henning, & Simone, 2020). Thus, the selection of alternative modes to the motorized vehicle can be promoted by improving the transport mode's quality, frequency, and accessibility.

Initially, an interest group was created to discuss the subject matter of this survey. The survey was completed using google form and circulated on social media among anonymous groups. A total of 135 responded within the given time. The outcome of the study was shared among the interest group for validation, and data were used in this paper. The survey is considered the base of the more extensive survey.

5. Conceptual framework of the MRT station and its adjacent area:

The JACA report "Dhaka Mass Rapid Transit Development Project (TOD)" suggested creating public space near all MRT stations and developing stations as the station plaza. The report extended the value to the station plaza and emphasized it as the core space to facilitate three TODs strategic goals (JICA, 2018).

- Pedestrian-oriented design and provision for public space: the design of the station area should be pedestrian-friendly and accessible to all.
- Intermodal integration and provision of off-road facilities like bicycle stand, motorbike parking, and drop-off and pick-up facilities.
- Density and diversity integration should adopt policies to tackle their maximum level nearby the station area.

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Figure 4: Station Plaza Concept (JICA, 2018)

6. Study Area Profile

Mirpur is one of the 21 administrative units of Dhaka. The area is primarily inhabitant by poor and middle-class families; residential and sanitary conditions are typical of any congested urban settlement. The site consists of several wards and these are ward 11, ward 12, ward 13, ward 7, and ward 14 are partially included. According to the 1959 master plan, the area was developed to accommodate predominantly Muslim rehabilitated populations (Nancy, 2017). However, after the colonial era, this master plan became obsolete, and Mirpur started to experience a new form of urbanization.

Garments Industries govern the area's economic activity, and many informal economic activities are also observed along the street sides. The Grade Separated elevated Metro Lane is constructed on the main arterial street, and three MRT stations will cross Mirpur. These stations are Mirpur 10 station, Kazipara station, and Shewrapara station. Mirpur 10 is considered the busiest node among these three stations as it intersects four streets.

There are many commercial and industrial settlements along with residential buildings. A good number of houses are semi-pucca. All the roads are pucca with rainwater runoff systems and markings. However, most internal roads do not have designated footpaths; the streets are narrow, and some are broken in some places. All Mirpur wards have many urban facilities, universities, schools, hospitals, specialized hospitals, markets, open glossary markets, nearby stadiums, street markets, parks, offices, industries, and informal economic spaces (hawkers).

7. Job-Housing balance

The concept of Job-housing balance is derived from initiatives of the self-contained community by Howard, Purdom, and Munford (Giuliano, 1991). Giuliano (1991) defines Job-housing balance as "the distribution of employment relative to the distribution of Workers in a given geographic area."

Cities development authorities and transport authorities of developed countries have adopted a Job-housing balance to reduce travel demand and increase the quality of the place (Wu, Zhang, & Yang, 2015). Besides, jobs to housing units can also be used as a ratio to reveal the actual supply of the housing market (Wu, Zhang, & Yang, 2015). Job housing Balance is one of the precursors to the effective implementation of the TOD policy (Rahman & Ashik, 2020).

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7.1 Recommended Job Housing Ratio

Table 1: Recommended Jobs-housing balance ratios

Study	Measurement	Recommended Ratio
(Cervero R. , Jobs-housing balancing and regional mobility, 1989)	Jobs to household ratio Ceiling ratio	Ceiling ratio 1.5 (multiple workers) at a city level
(Frank, 1994)	Jobs to household ratio	0.8:1–1.2:1 for census tracts
(Peng, 1997)	Jobs to household ratio	1.2:1–2.8:1 for TAZs covered by a 5-mile radius of a central TAZ
(SCAG, 2001)	Jobs to household ratio	1:1–1:1.29 Commute shed within 14 miles radius of job centers
(Cervero R. , Jobs housing balance as a public policy, 1991)	Jobs to housing units ratio	1.4:1–1.6 for Medium-sized community

7.2 Recommended Job Housing Ratio

Job-housing balance has been calculated as a ratio of the number of jobs and households in this study area. The equation to calculate the ratio: *JHR =Ji/Hi*
Where Ji = number of jobs (employed population) of neighborhood i
Hi= number of Households in the neighborhood i

Table 2: Job-Housing Calculation Chart (Relevant Data Source: (BBS B. B., 2011)

	Job-Housing Calculation Chart								
	The base year is 2013			Present 2022			Projected 2030		
Thana	Household	TPE	Job-Housing	Household	TPE	Job-Housing	Household	TPE	Job-Housing
Mirpur	117450	116700	0.99	152253.57	146254.98	0.96	191760.04	178754.58	0.93
Pallabi	143332	151381	1.06	185805.10	189719.16	1.02	234017.46	231877.01	0.99
Badda	129673	86152	0.66	168098.57	107970.52	0.64	211716.48	131962.85	0.62
Cantonment	25956	30143	1.16	33647.46	37776.90	1.12	42378.23	46171.37	1.09
Demra	52982	47736	0.90	68681.98	59825.43	0.87	86503.45	73119.35	0.85
Dhanmondi	33169	42574	1.28	42997.86	53356.12	1.24	54154.86	65212.49	1.20
Gulshan	59149	58626	0.99	76676.43	73473.39	0.96	96572.28	89800.05	0.93
Hazaribagh	43740	34497	0.79	56701.33	43233.57	0.76	71414.09	52840.59	0.74
Kafrul	95575	68301	0.71	123896.42	85598.64	0.69	156044.84	104619.68	0.67
Kamrangir Char	21628	30286	1.40	28036.95	37956.11	1.35	35311.93	46390.41	1.31
Khilgaon	77904	55049	0.71	100989.03	68990.49	0.68	127193.48	84321.00	0.66
Lalbag	83809	103152	1.23	108643.84	129275.87	1.19	136834.55	158002.51	1.15
Motijheel	47119	99428	2.11	61081.62	124608.74	2.04	76930.96	152298.29	1.98
Ramna	41976	74760	1.78	54414.61	93693.42	1.72	68534.01	114513.22	1.67
Sabujbagh	88777	17266	0.19	115083.99	21638.72	0.19	144945.78	26447.10	0.18
Shyampur	43243	43646	1.01	56057.06	54699.61	0.98	70602.64	66854.52	0.95

Sutrapur	43474	22379	0.51	56356.51	28046.62	0.50	70979.79	34278.91	0.48
Tejgaon	29622	51359	1.73	38399.79	64365.98	1.68	48363.70	78668.86	1.63
Uttara	39123	15384	0.39	50716.19	19280.09	0.38	63875.93	23564.36	0.37
Mohammadpur	33169	73604	2.22	42997.86	92244.66	2.15	54154.86	112742.52	2.08
Kotwali	11614	102872	8.86	15055.54	128924.96	8.56	18962.12	157573.62	8.31

Table 2 shows that the Job-Ration of Mirpur and the adjacent area of Pallabi are balanced. Filed observati0on is also validated, meaning the people in these areas will travel less for the work. A gradual increase in job opportunities might attract new job seekers to travel. Thus, the demand for housing facilities will increase. The field observation also validates the outcome of this theory. It has been observed that many people use non-motorized vehicles or travel by foot to cover short distances.

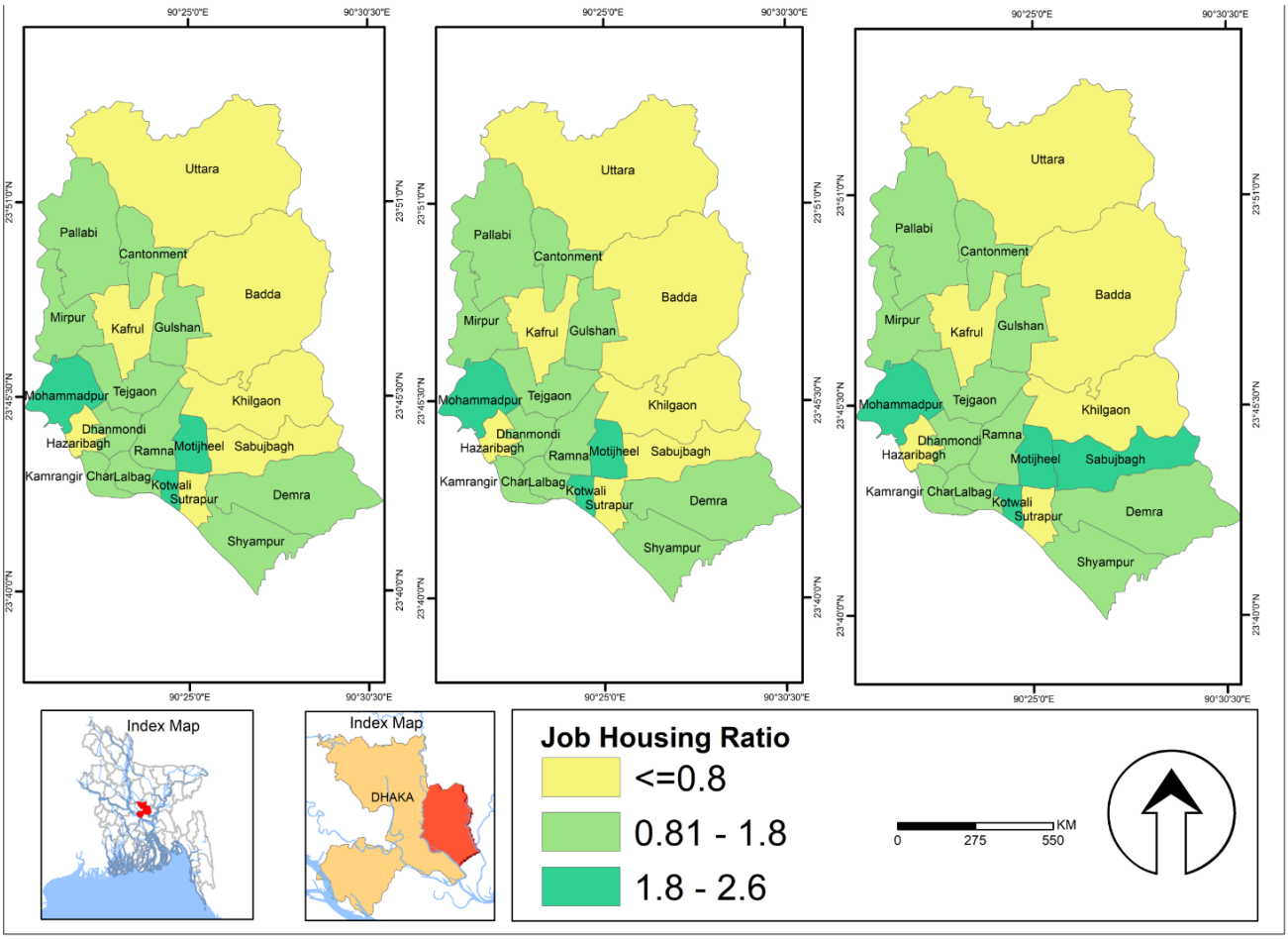

Figure 5: Clustering Neighborhood Based on Job Housing Ration (GIS Analysis)

7.3 Catchment Area study

Each catchment area experiences a unique transformation, even for stations that follow similar construction (Tong, Wang, Chan, & Zhou, 2018). Good walking distance, widely known as the pedestrian catchment area (PCA), is often regarded as the critical determinant of CA. TOD planning commonly addresses a distance from 400 m to 800 m (10 min walking time) as a de facto standard (Calthorpe, 1993; Cervero D. , 2013). The study considered 900, 800, and 700-meter radios based on weather, surroundings, and people's walking behavior in Dhaka.

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In this study, all sixteen stations of MRT6 are plotted on the GIS ma MRT-stations are considered as the center of pedestrian catchment radios. Using Google Maps, nearby points of interest are identified to understand the MRT station for activity importance.

In figure 5, catchment radios of 700, 800, and 900 Meters are superimposed on the Dhaka metropolitan map. MRT-6 lane is constructed as a grade-separated elevated rail-based mass rapid transport system. All stations are located on major arterial roads and show pedestrian proximity from nearby establishments. One major finding from this GIS study is that MRT 6 is considering 600-meter radios and overlap took place between 900 and 800-meter radius as pedestrian influence zone.

In direct ridership models, land use characteristics within the catchment area are indispensable, and many suggest the concept of a half-mile walking distance as the catchment area's radius. (Liu, Iseki, & Knaap, 2018; Cervero R. , 2006). Both population and employment densities within 0.5 miles of the station positively correlate with daily transit ridership (Pan, Li, Shen, & Shi, 2017).

Figures 6,7, 8, and 9 show the pedestrian catchment area of Mirpur and its influence of it on density and land use. The GIS analysis shows that this already densely populated area has a balanced Housing-Job ratio.

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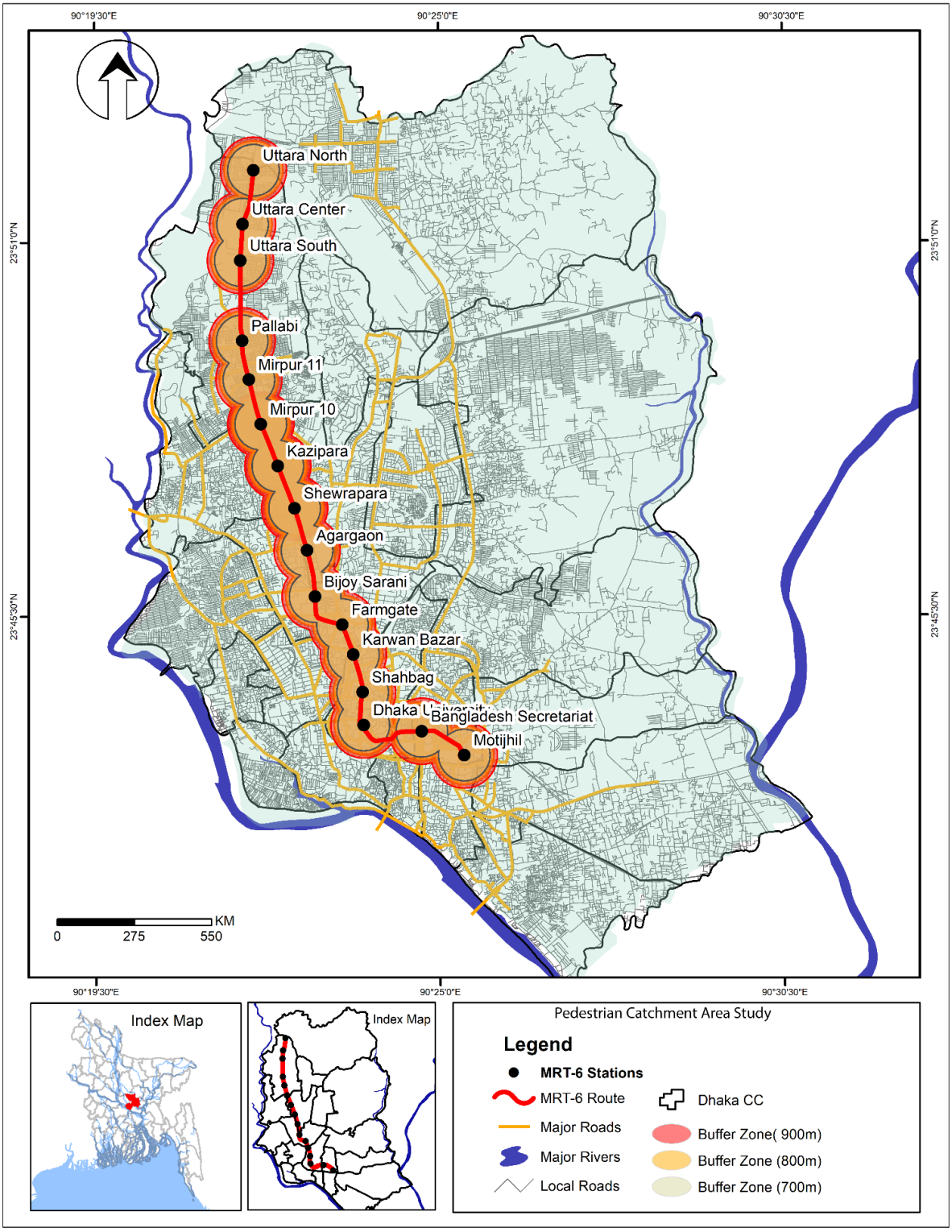

Fig 6: Study of Pedestrian Catchment Area. (own interpretation)

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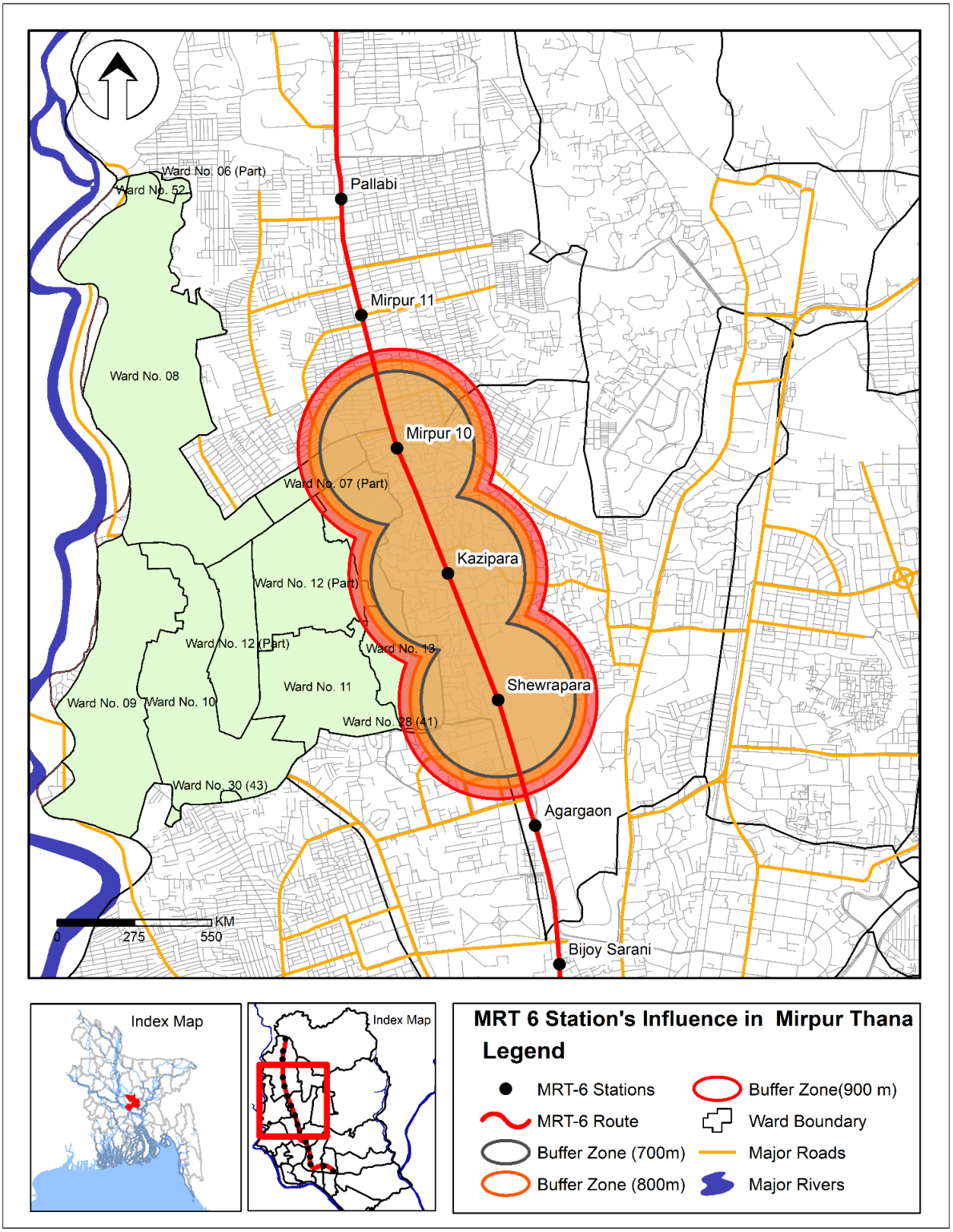

Fig 7: Isolating MRT stations at Mirpur Thana (field study)

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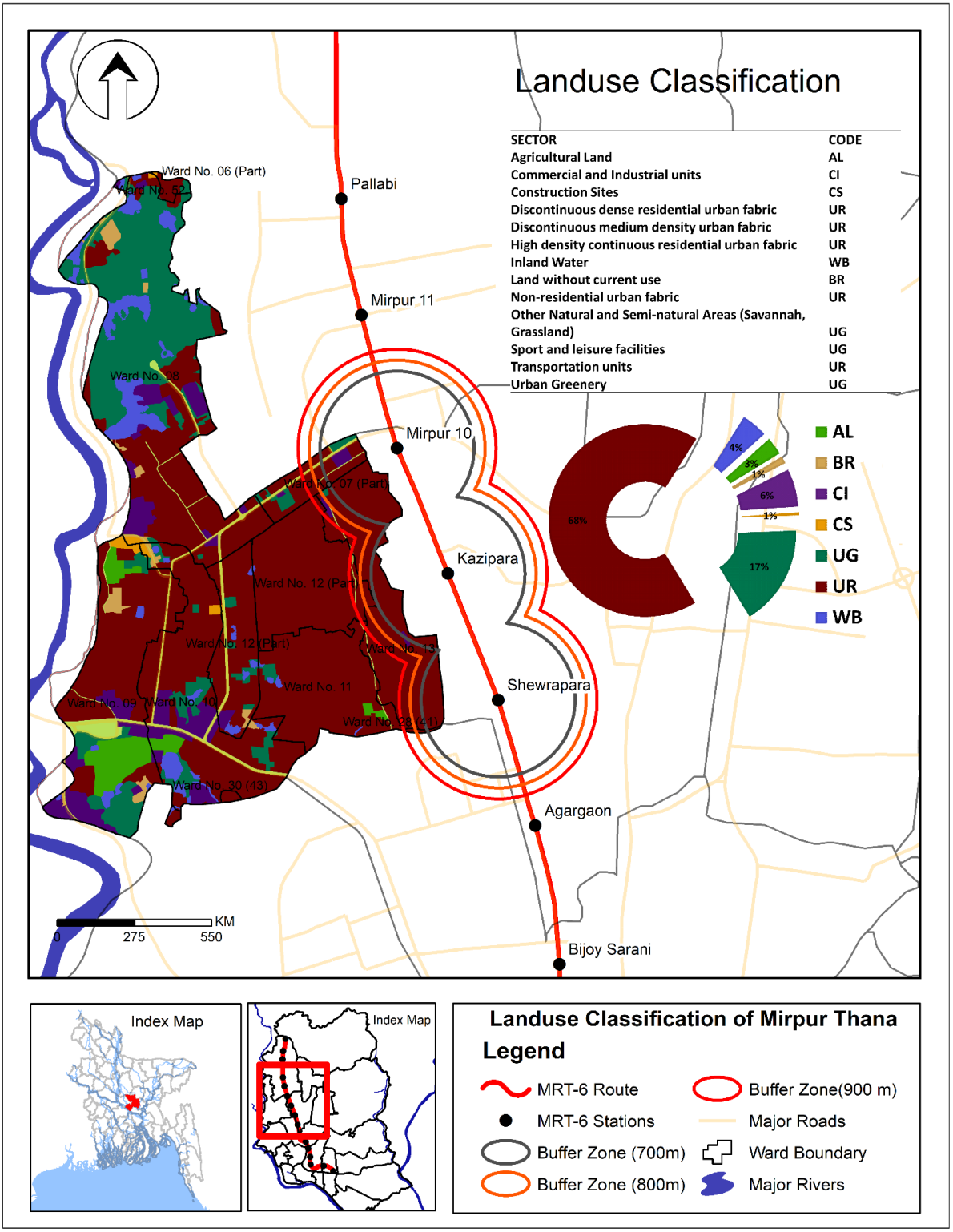

Fig 8: Land use and Catchment Area Study (Field and GIS study)

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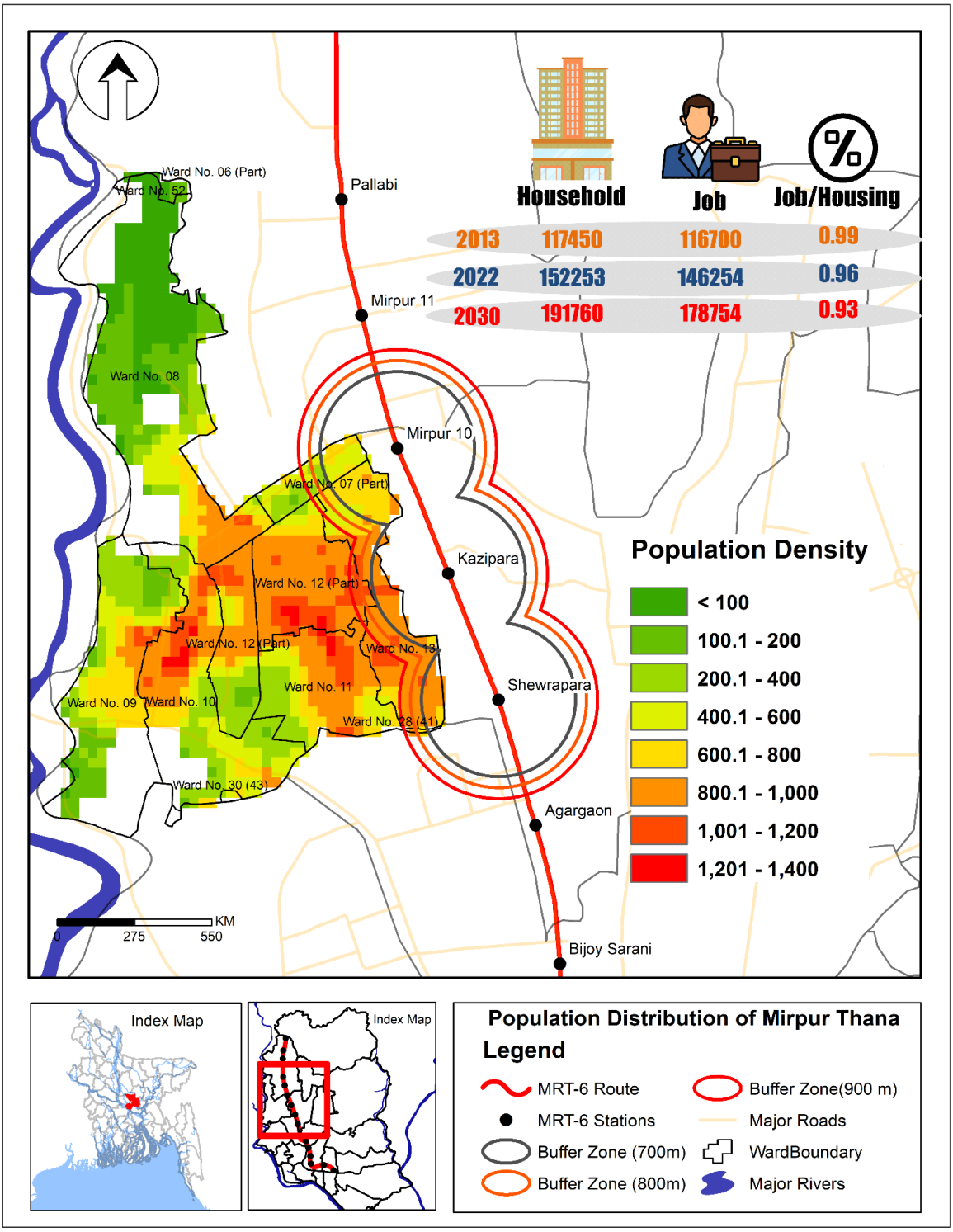

Fig 9: Population and Catchment Area Study, Mirpur Thana

7.4 Study of Point of interest.

Figure 9 is created by using Google Maps. The map shows the Points of Interest and their relative concentration nearby the MRT station área. The study área of Mipur is crossed by stations 6,7,8 and 9. According to Google's space category location data, Station 6 Pedestrian catchment área shows the maximum number of POI. The rest two stations, 7 & 8, have moderate POI value to attract public activity, housing interest, job opportunities, and also informal business activities.

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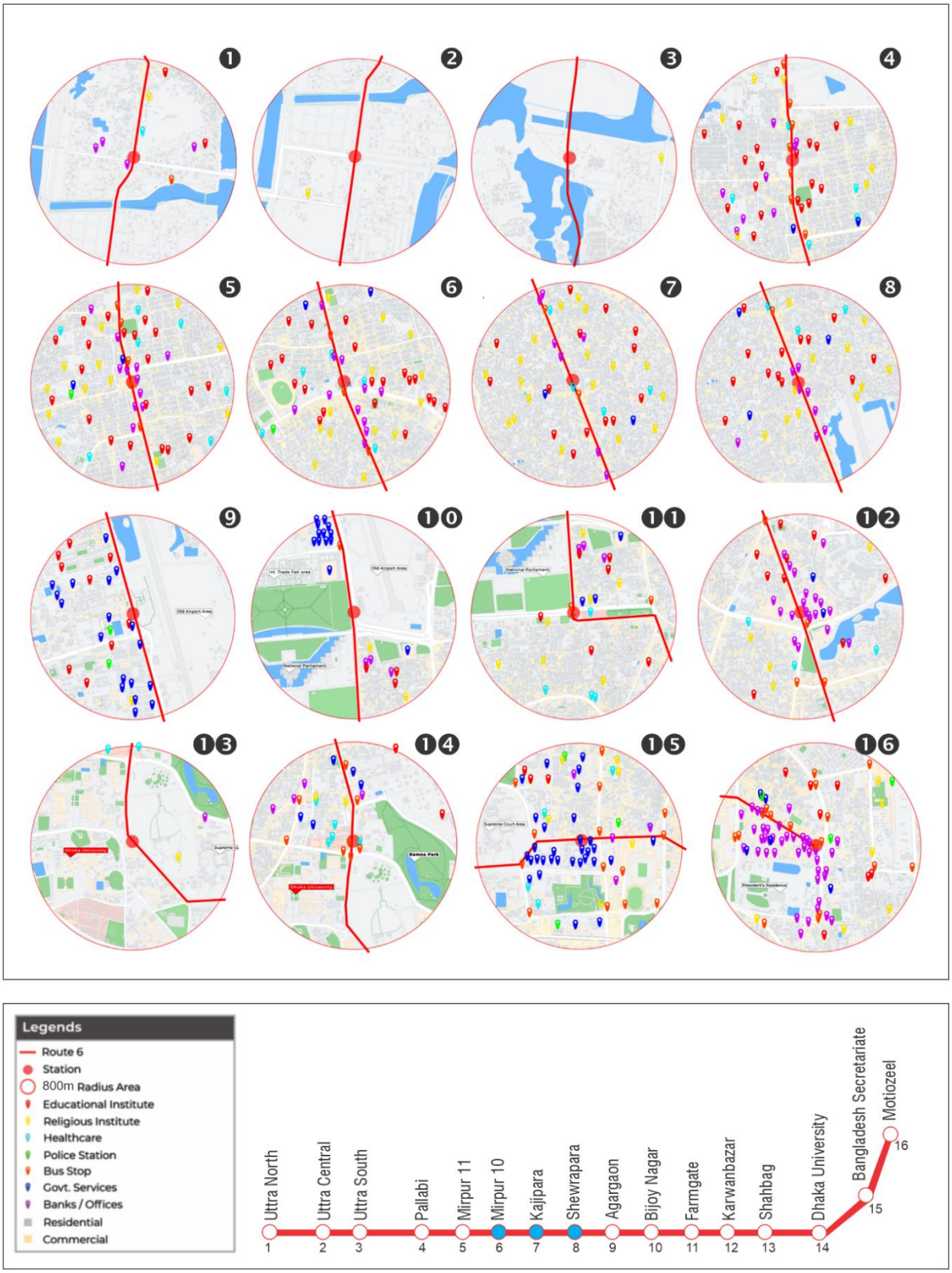

Fig 10: Study of POI (Study Map)

7.5 Primary Data analysis

A short survey was conducted, and the number of participants was 136 from different parts of Dhaka. The study was conducted to determine the importance of different modes of transportation and the average travel time per day.

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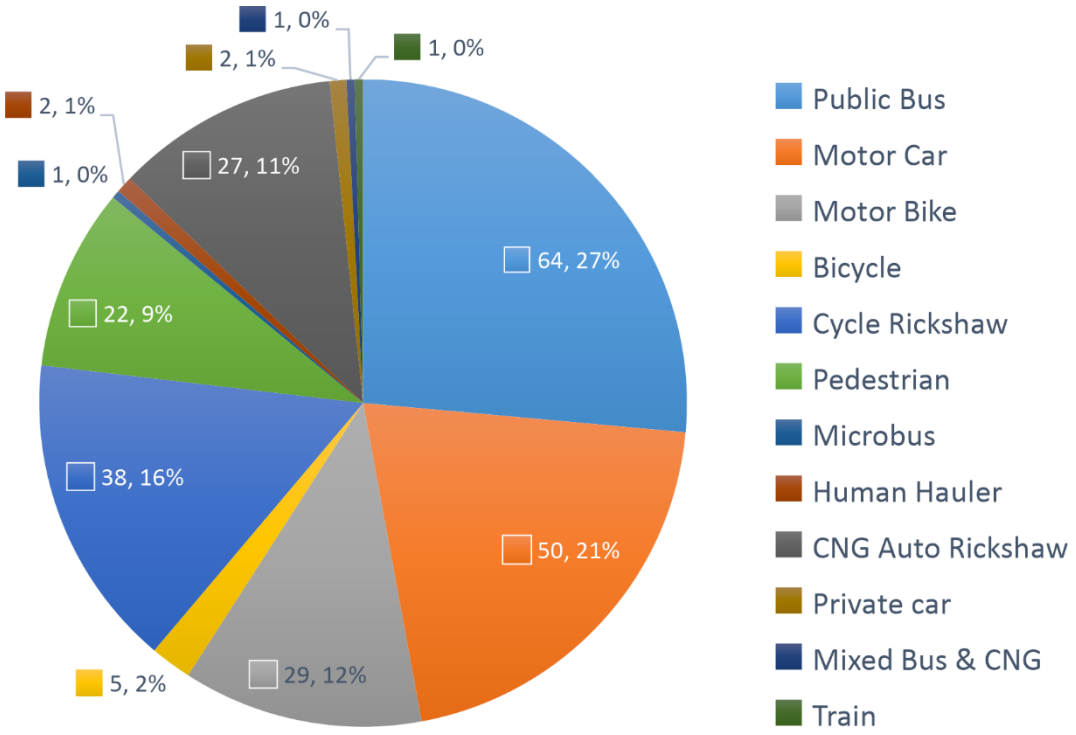

Fig 11: Percentage of using different modes of transportation travel to and travel back from the workplace.

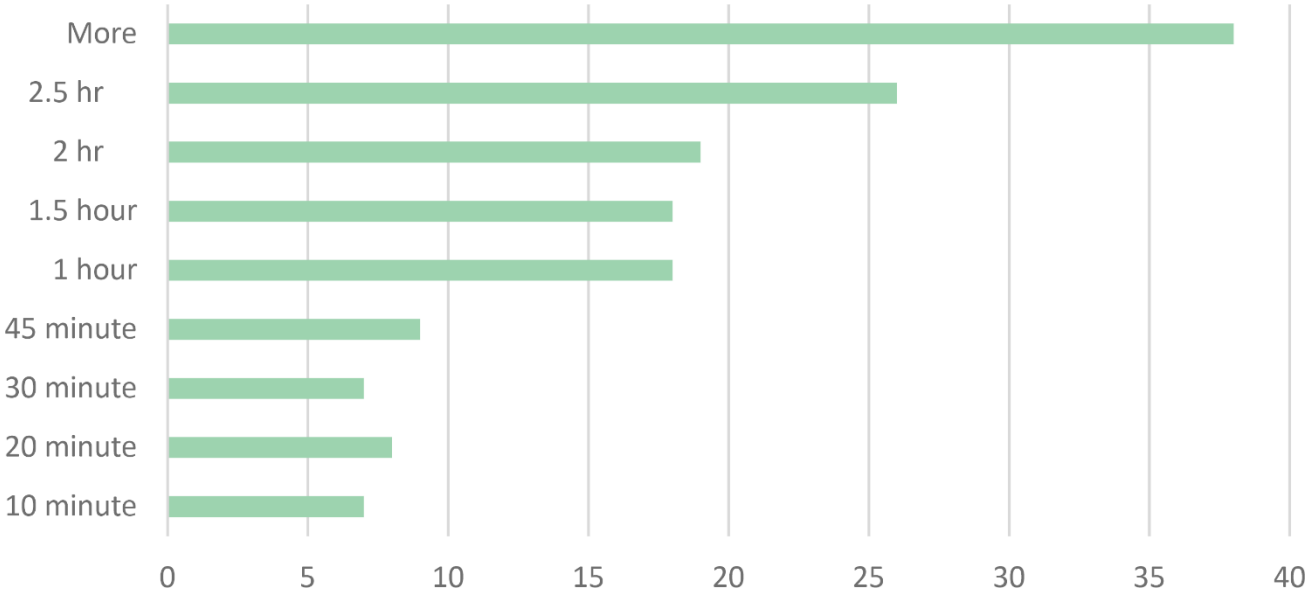

Figure 12: Average travel time/ day

Table 10 shows that most people use the bus in Dhaka as their public Transport. However, in tables 11 it shows that the average travel time for a traveler is more than 2.5 hours per hour.

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8. Conclusion:

Dhaka is a densely populated área, and the city has a complex urban fabric and land ownership pattern. The city suffers from colossal traffic congestion, economic losses, air pollution, and an unhealthy environment. Literature review shows that the city can be benefitted from transport-oriented development ((TOD). Excessive land Price, complex ownership, and population density are the significant challenges to implementing a new transportation system in Dhaka. Though the underground mass rapid system claims less land and fewer environmental impacts, it is not economically viable and geologically challenging. Due to the scarcity of land, the MRT-6 lane in Dhaka is designed as a Grade separated transportation system, and the route runs along with one of the main arterial roads. This study has gone through the different qualitative and quantitative processes to understand the socio–the impact of MRT-6, and this study concentrated on Mirpur and its adjacent área as the baseline study.

The calculation of the Job Housing Ratio shows that Mirpur is a balanced área. In Mirpur, different types of jobs are available, and housing rents are moderate. Thus, more people may shift to Mirpur to enjoy public facilities and job opportunities.

However, the operation of MRT-6 as a convenient public transport mode will increase the land price, which might lead to hick in house rent. Thus, exiting landowners might be interested in selling their land for better financial benefits and shift to comparatively less developed área to subside the increased cost of living.

According to the state law, the building regulatory government agency (RAJUK) has already acquired or bought land paying three times (according to the state law) the market price to build apartments for officers. The goverment officers will be given easy loans for purchasing those apartments. The reality is that most of these government officers are entitled to office transport and get monthly benefits to maintain their automóbiles.

New housing or facilities will créate opportunities for various jobs, and these changes will attract more people to travel to Mirpur. However, Mirpur might not be their choice of living considering their income. The área might experience gentrification due to the abnormal hick of land price and house rent. Field interview indicates that land price and house rent have increased 20% and 15% in the last ten years, respectively.

The new elevated transport system might impact this Street shopping culture and force them to migrate to a different place. However, good planning of stations and scope of economic activities can establish an economic synergy, thus will retain the socio-economic culture of Street shopping. The primary data shows that almost 20% of city travelers are pedestrians, which might be an asset for the success of MRT stations. On the contrary, MRT might harm the 64% use of the public bus. However, the cost of travel by MRT will play a significant role in subsiding the unseen cost of traffic congestion.

The MRT-6 route is still under construction, and it is going to be the first mass rapid transportation system in Dhaka. Thus factors of socio-economic impacts are predictive, and further study on the used research methodologies and extensive sample survey will help better understand the socio-economic implications of MRT-6 on Dhaka.

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