



REVIVING AN OLD CPD BY INTRODUCING A MASS RAPID TRANSIT STATION. A CASE FROM DHAKA

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ABSTRACT

Bangladesh, once considered the Least Developed Country (LDC), became elevated to lower-middle income status in 2015. Dhaka is the capital of the country and central economic hub, ranked the sixth most populous city in the World, with a density of 23,234 people per square kilometer (Dhaka, Tribune, 2022). An influx of migrant people from different districts makes Dhaka a sprawling urban junction. Traffic congestion, air pollution, fire incidents, and other urban chaos are unbearable daily facts. Studies by Dhaka Urban Transport Project (DUTP) identified that adaptation of Transport Oriented Develop is essential to increase accessibility and to offer redevelopment opportunities around the station node. Mass Rapid Transit, one of the choices of TOD, was first conceived in 2005 in the Strategic Transport Plan for Dhaka, and the construction started in 2012. The initial route, MRT-6, will connect several residential and Central Business Districts areas like Motizeel. However, due to unmanaged traffic and unplanned mixed-used development, once vibrant CBD has lost its potential for commercial activities. This research will investigate the choice of Rail-based MRT for Dhaka and the additional improvement of spatial attributes (density, land use diversity, and pedestrian-friendly design) that will contribute to reviving the study station at Motizeel.

Keywords: TOD, Urban form, Mass Rapid Transport (MRT), Pedestrian
Thematic Clusters: *Accessibility and sustainable mobilities*

1. Introduction:

The development of the capital city-Dhaka can be traced back to its declaration as the provincial capital of Mughal Empire in 1600 AD. (Kraas, Aggarwal, Coy, & Mertins, 2013). According to World Population Review, Dhaka has ranked the sixth most populous city in the World with a density of 23,234 people per square kilometer, and the total population is 22,478,116. (Dhaka, Tribune, 2022). Economic Growth, Employment Opportunities, Health and Education Facilities, and the attraction of better citizen life are the factors causing an influx of migrant people from different districts and adjacent less developed areas. Thus the city becomes a sprawling urban junction. One of the studies suggests that places with sprawling, auto-centric landscapes are poor economic performers (Li & Lai, 2009). Sprawl destroys open space, consumes farmlands, drives up energy usage, undermines community fabric, heightens inequalities, depletes natural resources, generates pollution, increases automobile usage, sucks retail business out of formerly vibrant downtowns, abandons centers of cities, escalates global warming, and becomes ugly as well (Sies, 2008).

Under the Local Government (City Corporation) Amendment Act 2011 on November 29, 2011, to enhance the public facilities and services, Dhaka City Corporation was divided into Dhaka South City Corporation (DSCC) and Dhaka North City Corporation (DNCC); since then, a minimal improvement has been made to ease the traffic on streets. Accessibility is critical in urban development and influence and uses planning. According to the Revised Strategic Transport Plan 2015 (RSTP) and Dhaka Structure Plan Draft (2016-2035), the city authority has proposed five new transport corridors for 2035 for Dhaka city to mitigate the growing travel demand of urban concentrations (Japan International Cooperation Agency, 2016), (Rajdhani Unnayan Katripakkha, 2015).

In Bangladesh, the transport and communication sector has received the highest allocation in the development component of the proposed national budget for 2022-23, which has continued for the last ten years. A significant proportion of 27% of the budget is proposed for the sector (Akhter, 2022).

Based on the national policies, Dhaka's long wait for transport system modification is getting inertia. A new transport mode-(Mass Rapid Transit) is considered an extensive intervention in the transport sector and is expected to improve urban mobility and accessibility. The city planning authority has developed DAP (detail Area Plan) to curb unplanned development. The significant policy changes include variable ward density, increasing density along the new transport corridor, promoting mixed-used development, and widening neighboring streets at the local level. Thus steps to improve local-level accessibility in the built environment concentrate on the new transit stations (MRT/ BRT) and other existing central urban nodes (Rajdhani Unnayan Katripakkha, 2015).

This research will focus on the spatial and policy opportunities and challenges to (re)develop around MRT Station in the Central Business District area. Based on identified opportunities and challenges, this research will propose several land redevelopment tools for the CBD that will contribute to reviving the vibrancy of the study area.

This research has considered Motijheel as the Study which well-known commercial node of the city, and over the years, it has been developed as Central Business District (CBD) ((RAJUK), 1997).

2. Literature Review and Background Studies

2.1. Transport-oriented development (TOD) in Dhaka

More than three decades ago, Peter Calthorpe explained the term "Transit-Oriented Developments" (TOD) in the book "The New American Metropolis, Ecology, Community and New American Dream. The author described the importance of density, walkability, public space, and mixed-use development (Huê, Janet, Deepak, & Tridib, 2019). Since then, the concept of TODs has been hailed as a model for integrating land use with transportation in the interest of smart growth (Kenworthy & Laube, 1996). Smart growth calls for building communities that are more hospitable, productive, and fiscally and environmentally responsible than most of the communities that have been developed in the last century (Azra, 2016).

The definition of TOD varies in scope and specificity; however, most TOD definitions share several common elements (Azra, 2016):

- I. Density: Raising density around transit stations with 1/4 to 1/2 miles;
- II. Diversity: Mixed land use, extensive choices of housing and commuting;
- III. Design: Pedestrian or friendly-oriented design.

The new Detail Area Plan (DAP-2022) for Dhaka has identified the necessity of density control and mobility of urban mobility, thus setting new rules and strategies to control ward density based on urban facilities, Mass Rapid Transit corridor, and promote mixed-used development to reduce the urban mobility. Successful policy always acknowledges bringing the transit-land use synergy.

Efficient and sustainable strategies strive for a modally balanced system, augmenting traditional transportation with larger volumes, longer distances, and faster movements and promoting infrastructure and land use patterns that maximize opportunities for the Pedestrian, Cycle, and Cart traffic to meet short-distance movements, including access to higher speed, large-capacity motorized or rail transport system (Replogie, 1991).

The principles of sustainable transport also encourage the utilization of low-cost public transport capable of performing well in land use and densely populated cities, particularly developing cities. Thus the guiding principles of sustainable transport for Dhaka are:

- I. Improve accessibility along with mobility.
- II. Enhance safe and healthy movement.
- III. Participation of all and equity consideration
- IV. Integrated planning of land and resource use
- V. Economic affordability

Studies by Dhaka Urban Transport Project (DUTP) identified that adaptation of Transport Oriented Develop is essential, and the concept of Mass Rapid Transport as part of TOD was first conceived in 2005 in the Strategic Transport Plan for Dhaka. The construction of the first MRT route, MRT-6, started in 2012; in 2022, 50% of the route began test operation for six hours every weekday.

2.2. Mass Rapid Transit in Dhaka

The Dhaka Metropolitan Area (DMA) size is 2,161 km². Currently, the DMA transportation system relies primarily on road transport, and the medium of transportation is the car, Bus, minibus, auto-rickshaw, rickshaw, human hauler, etc. Due to traffic congestion, studies show Dhaka's average automobile speed on major arterial roads is only 7 km/ hour only ((JICA), 2018). Traffic congestion in Dhaka significantly contributes to air-borne dust and smoke that contains CO. Therefore, dissipating dependencies on fossil fuel-based transportation and adopting sustainable transportation systems become essential for livable Dhaka.

The Government of Bangladesh (GOB) formulated the "Strategic Transport Plan for Dhaka" (STP) in 2005 in cooperation with the World Bank (WB). Based on STP and further feasibility study, the World Bank proposed transport network will include (Mass Rapid Transit) MRT-1, 5, and 6 with Bus Rapid Transit (BRT)-1, 2 &3. Among these, MRT-6 and BRT-3 were emphasized in JICA and World Bank reports((JICA), 2018) (Bank, 2019).

MRT-6 will be elongated toward the North-South transport corridor of Dhaka. Because of the high density and scarcity of land, the MRT-6 route was constructed as an elevated Grade Separated route and ran along the central arterial transport corridor connecting DNCC and DSCC. The MRT-1 and MRT-5 will share tracks with MRT-6 and eventually will connect across the boundary rural or less developed areas on the East and West sides of Metropolitan Dhaka. The length of MRT-6 is 21.26 Kilometers, and it will stop at 17 stations establishing a transit-oriented development (TOD) corridor. The proposed fully functional MRT Line-06 will carry 61,000 passengers per hour in both directions.

2.2.1. Mass Rapid Transit (MRT) in Dhaka City issues and realities.

MRT policy and city sustainability are inextricably linked. In the era of globalization, city authorities recognize the need for their city to compete in the global marketplace; MRT is seen to be part of the 'package' to attract

inward investment (Rahman M. , 2008). For a rapidly growing city like Dhaka, adopting MRT has strategic importance from the point of development and political perspective; thus, adopting the metro rail system to support TOD for Dhaka has an apparent dilemma. Investment in the metro rail system is suitable for some Western and Asian cities like Hongkong and Singapore. Still, they are not necessarily the most appropriate options for cities in developing countries (Alam, 2010).

Inadequate and ineffective control over city development, most of the prime residential areas in Dhaka are now converted into commercial areas; among them, Gulshan and Bannai are notable. On the contrary, prime CBDs are losing their commercial vibrancy, and commercial activities are moving out. Non-residential use of residential areas is increasing and creating mobility challenges, and the existing urban fabric may not be ready to cope with the whole situation.

Traditionally, MRT systems have been categorized according to technology and degree of segregation from traffic. Table 01 summarizes the key features:

| Characteristics | Bus Rapid Transit (BRT) | Light Rail Transit (LRT) | Metro | Suburban Rail |
|-------------------------------------|--|---------------------------------------|--|---------------------------------------|
| Current Applications | Widespread in Latin America & some developing cities | Most European & North American cities | Most Developed cities & few large developing cities | Most European & North American cities |
| Segregation | At grade | At grade | Mostly elevated or underground | At grade |
| Space requirement | 2-4 lanes from existing road | 2-3 lanes from existing road | Little impact on existing road if elevated/underground | - |
| Impact on Traffic | Depends on policy & design | Depends on policy & design | Reduces congestion | Depends on frequency |
| Public Transit Integration | Problematic with paratransit | Often difficult | Excellent | Usually existing |
| Initial cost (US\$ million/km) | 0.5-15 | 13-50 | 15-30 at grade 30-75 elevated 60-180 underground | - |
| Implementation time | Short | Medium | Long | - |
| Interaction with land development | Good | Very good | Excellent | Variable |
| Fuel | Mainly Diesel/CNG/LPG | Electricity | Electricity | Electricity |
| Air pollution & noise | Considerable | Low | Low | Low |
| Capacity (pass./hr/direction) | 10-35,000 | 12-30,000 | 60,000+ | 30,000 |
| Speed (km/hr) | 17-20 | 20-50 | 30-80 | 40-45+ |
| Traffic Accident | Minor | Minor | No | Minor (at level crossing) |
| System image & passenger attraction | Good | Very Good | Excellent | Variable |

Table 1: Key Features Of MRT Systems (GTZ, 2005)

In the case of Dhaka, land ownership patterns, scarcity of land, population density, and growing travel demand cannot be efficiently handled by the road-based system (Rahman M. , 2008), and the development of an urban rail system becomes essential. Studies have shown that the existing infrastructure and social conditions do not have enough provisions to introduce bus-only lanes and prioritization. Considering difficulties and experiences in developing countries like Bangkok, Kuala Lumpur may suggest an elevated rail system may be a suitable mode to transport mass people, and BRT can be a feeder to the new system but cannot be an alternative.

MRT-6 in Dhaka will be fully functional by the end of 2023, and the TOD-integrated Detail Area Plan (DAP)-2022 is incentivized to promote TOD planning.

The literature review and field study concluded that the rationale for choosing the MRT for Dhaka as a new mode of transport system indicates political motivation and the donor's influence. Based on the Study of 13 developing countries, Halcrow Fox and Associates further concluded that none of the studied 13 developing cities significantly reduced traffic congestion by implementing the metro system (Walmsley & Perrett, 1992). Calcutta in India is one of the prime examples of financial loss by metro rail in a developing country (Singh, 2002). However, integrated planning and calculative plan may offer the fruit of TOD to the citizens of Dhaka.

2.2.2. Urban Mobility and Accessibility:

Mobility is the potential for movement and the ability to get from one place to another using one or more modes of transport to meet daily needs, and 'accessibility' refers to the ability to access or reach a desired service or activity (Eltis, 2019).

Mobility focuses on the satisfaction of users' needs. At the same time, the transport system, which includes vehicles, infrastructure, and traffic rules, is the instrument that is required for the concrete realization of mobility. Consequently, mobility directly results from social activities such as living, working, relaxing and production, trade, and consumption (for goods). (Eltis, 2019).

Mobility efficiency of any mode can be determined by per ton mile, per lane-mile per vehicle, or per person values (Hoque & Alam, 2002). A freeway corridor with High-Occupancy Vehicle (HOV) lane where bus or rail transit gets priority can transfer more people and goods than a corridor without this. However, in the case of Dhaka, mobility issues are critical as it includes congestion, safety, and environmental challenges. It is typical for developing cities to have good mobility but poor accessibility. In the case of Dhaka, the introduction of MRT will increase mobility, but poor accessibility may hinder the anticipated benefit.

The chart shows Dhaka's transport demand and supply of an effective transport system.

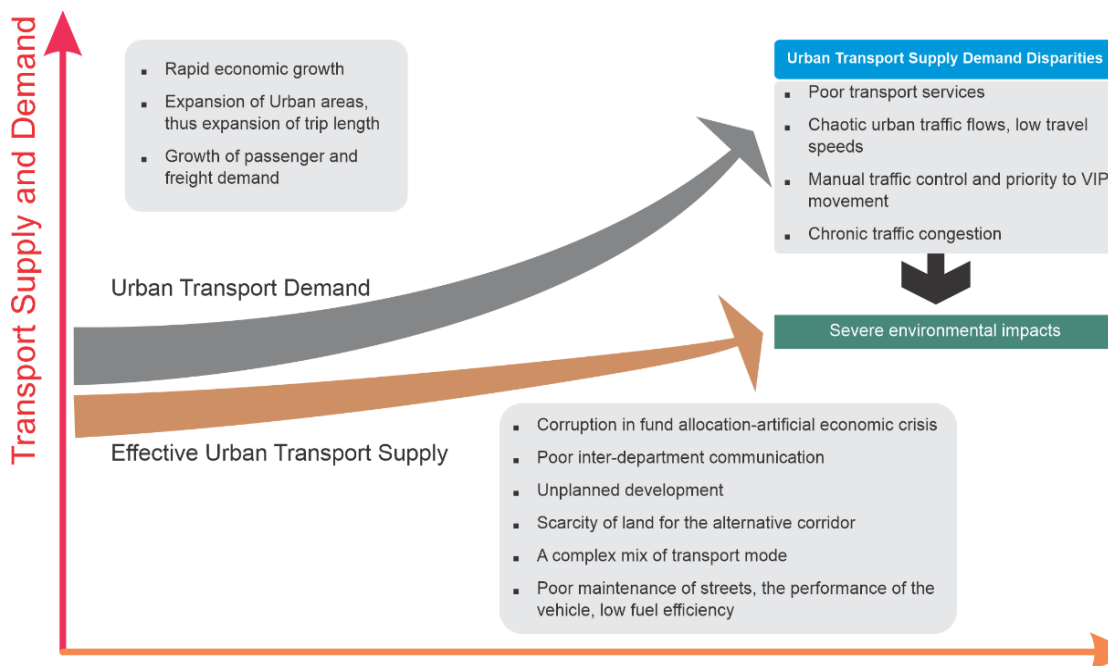


Figure 1: Increasing supply-demand disparities of Urban Transport in Dhaka- chart modified from (Hoque & Alam, 2002)

2.2.3. Transport mode in Dhaka:

In metropolitan cities of developing countries, unplanned public transport generally competes among them and with other modes rather than complementing each other (Barua & Alam, 2013). This unhealthy competition promotes duplication of services and uneven distribution of public transport facilities along busy corridors. In the case of Dhaka, this practice is widespread and creates chronic traffic congestion. With an insignificant number

of alternate arterial corridors, traffic congestion sometimes works like a chain reaction, and most corridors stagnate for long hours.

Prof Shamsul Hoque said small vehicles are a significant reason behind traffic congestion in Dhaka city; if the number of such vehicles can be reduced, buses and minibusses will get more road space, leading to more trips (Adhikary, 2022). Instead of discouraging small vehicles, Government policies have halved the vehicle registration fee for the motorcycle, thus encouraging more motorcycles on the street.

The current transport modes are as follows-

- Bus and Minibus
- Auto Rikshaw and RikshawMotor
- Car and Microbus
- Motor Bike and Bicycle
- Coverd Van (8 ton+) and mini van (3 ton)
- Different types of human haulers



Figure 2: Different mode of transport system on the street of Dhaka.

3. Objectives of the Research

The aim of this research is as follows:

- a) To determine the Challenges of the Mass Rapid Transport System in Dhaka, particularly in the case study filed.
- b) To suggest design solutions and policies to improve accessibility to the Rail station at CBD.
- c) To identify the factors that can contribute to reviving the Old CBD.

This research has concentrated on the 'spatial relation' of the local urban grid concerning local movement and land uses to assess metro accessibility and its impact on CDB. For case analysis, the Study has considered one station area (Motijheel) along the MRT line-06 route.

The area is well known as a commercial node of the city and offers vibrant commercial activities.

3.1. The Rationale of the Research

Climate change and mitigation of global warming are becoming a significant concerns of transport planning, built environment, town planning, and the transport industry. Developed countries are trying to curve the impact of climate change and pushing developing countries to take early measures.

Worldwide, metro rail is getting popular as a sustainable transport mode. However, it cannot perform independently; it must be integrated adequately with existing mobility patterns and urban fabric. It is anticipated that the accessibility of the metro station around its influencing area will significantly affect Dhaka's overall mobility pattern, thus, MRT's success.

This Study has concentrated on a station located in the oldest CBD (Motizeel). The study findings will help to determine the accessibility challenges of the station's surroundings and to integrate those factors into the planning and design process. This research has the potential to understand the prospects and constraints of station-adjacent spatial dynamics and the necessary aspects to ensure the efficient functioning of the metro system.

4. Research methodology:

This Study implies both qualitative and quantitative approaches—a field survey was conducted to analyze the station-influence area.

Following is the flow diagram of the research methodology.

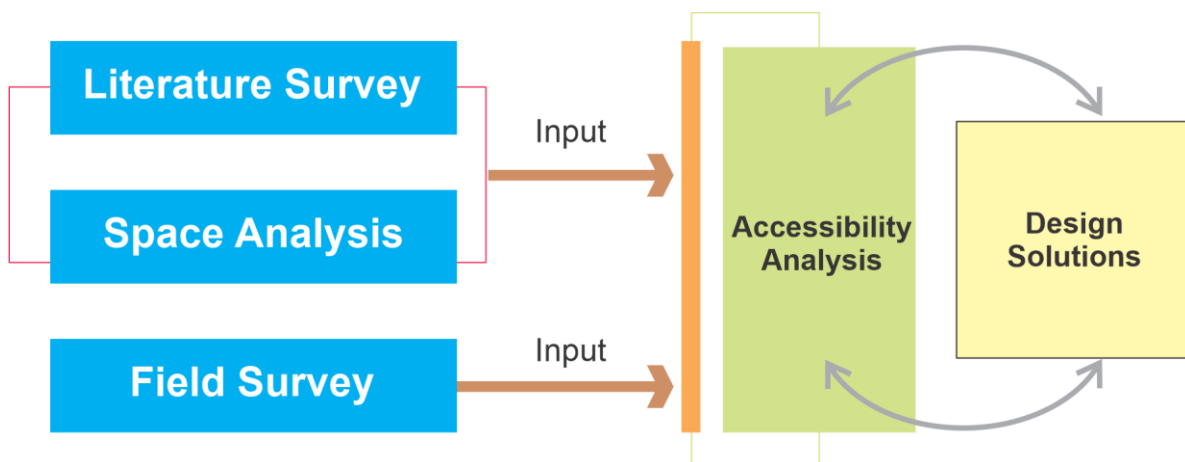


Figure 3: Research Methodology Diagram

5. The study area

5.1. Background

Motijheel, the capital's economic hub, is one of Bangladesh's oldest Central Business Districts (CBD). First developed by the late government officials of the Mughals, it became a symbol of the modern Bengal metropolis and a vibrant CBD in the 50s. However, due to different urban causes and degrading infrasture, many business institutes are establishing or relocating their headquarters in the North part of the city, especially in Gulshan, Karwan Bazar, and a new proposed CBD at Kamrangirchar. Motijheel is now almost a shell of its former self. After work hours, the place is virtually desolate.

Lack of inclusive mixed-use facilities, encroached pedestrian spaces, high land prices (EQMS, 2021), unhygienic conditions, and lack of social security is the root causes of the deterioration of Motizeel. Privately

owned buildings aren't up to building code, with less or no development setback rules, leaving less and less space for pedestrians. (JICA, 2018).

Motijheel is surrounded by Arambagh (a business hub for printing industries), Bangabhaban (State President's house), Fakirapool (businesses, retail shops), Dilkusha Commercial Area, Bangladesh Bank residential colony, Motijheel residential colony, T & T residential colony, GPO, Chamelibagh, Bangladesh Bank Avenue, Baitul Mokarram (National mosque) and Gulistan (business sprawl).

By 2010-15, the density growth shows 241 to 281 persons per acre (RAJUK). Motizeel and its surroundings are considered to be mixed-used areas and harbor many types of commercial activities. The new structure plan (2016-35) for Dhaka City has proposed a policy for compact Urban Center-based development and strategies to improve accessibility to achieve sustainability (Rajdhani Unnayan Katripakkha, 2015).



Figure 4: Motijheel-1980, Source: Bangladesh Old Photo Archive, <https://www.facebook.com/bd.old.photo.archive>

5.2. Analysis

5.2.1. Street Network

The street network around the Motijheel MRT station area shows a combination and co-existence of the grid pattern and spontaneous, organic development. Connecting roads away from the new MRT station is more organic in the pattern. From the physical survey, the road pattern can be classified as

- Primary Arterial Road- Motijheel Road – Connecting main offices and large commercial buildings.
- Secondary roads- Distributary roads and access to the primary roads
- Local road tertiary - Access to individual plots or buildings.

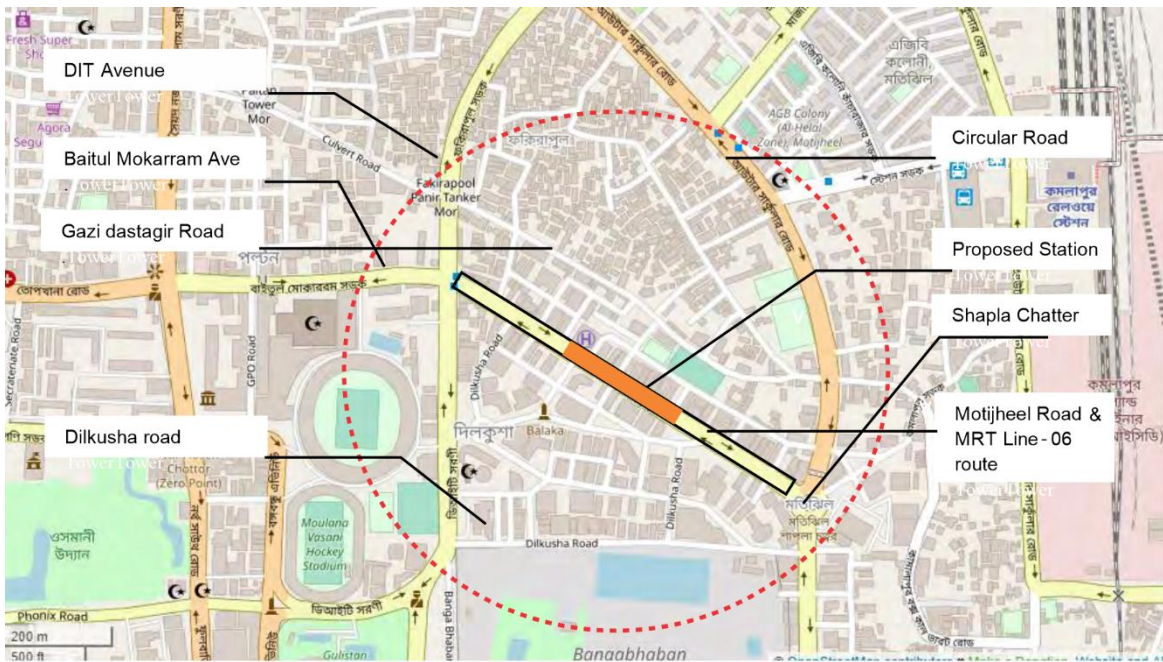


Figure 5: Map showing Street Network, Source-Open Steet Map.

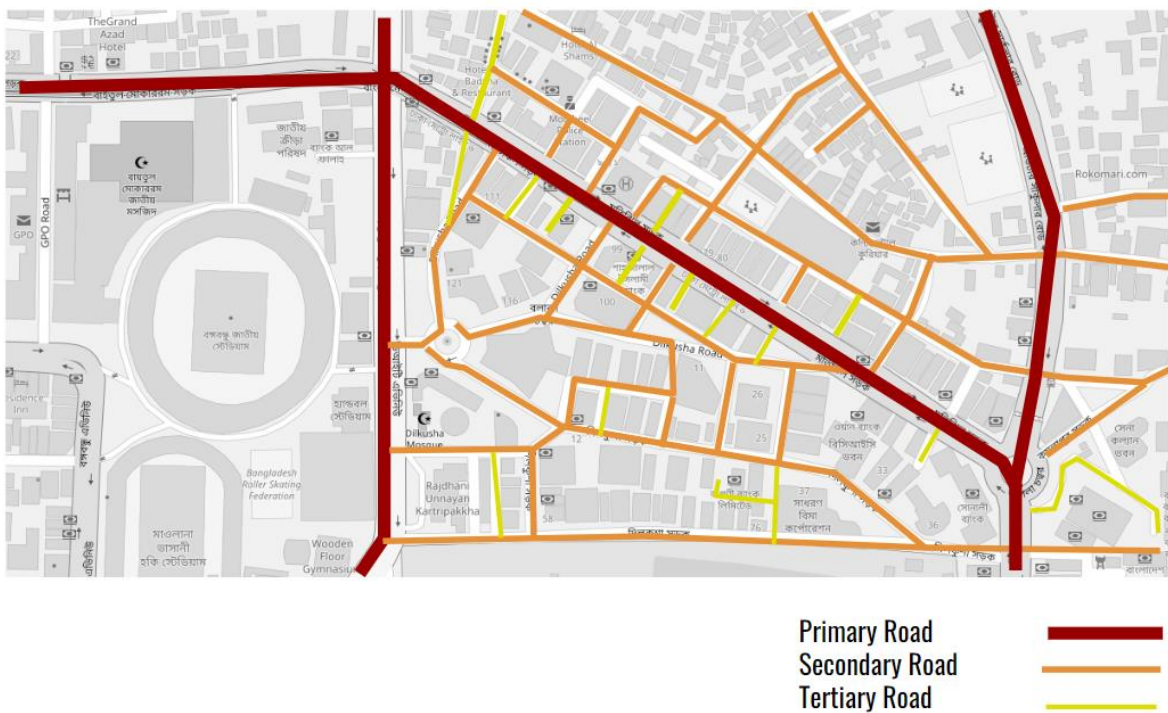


Figure 6: Map Showing Primary, Secondary, and tertiary Road networks nearby the station area

5.2.2. Land Use Map

In Figure 7, the densely built area and street network are evident. The State President's house is the only large open area that is restricted to public access.

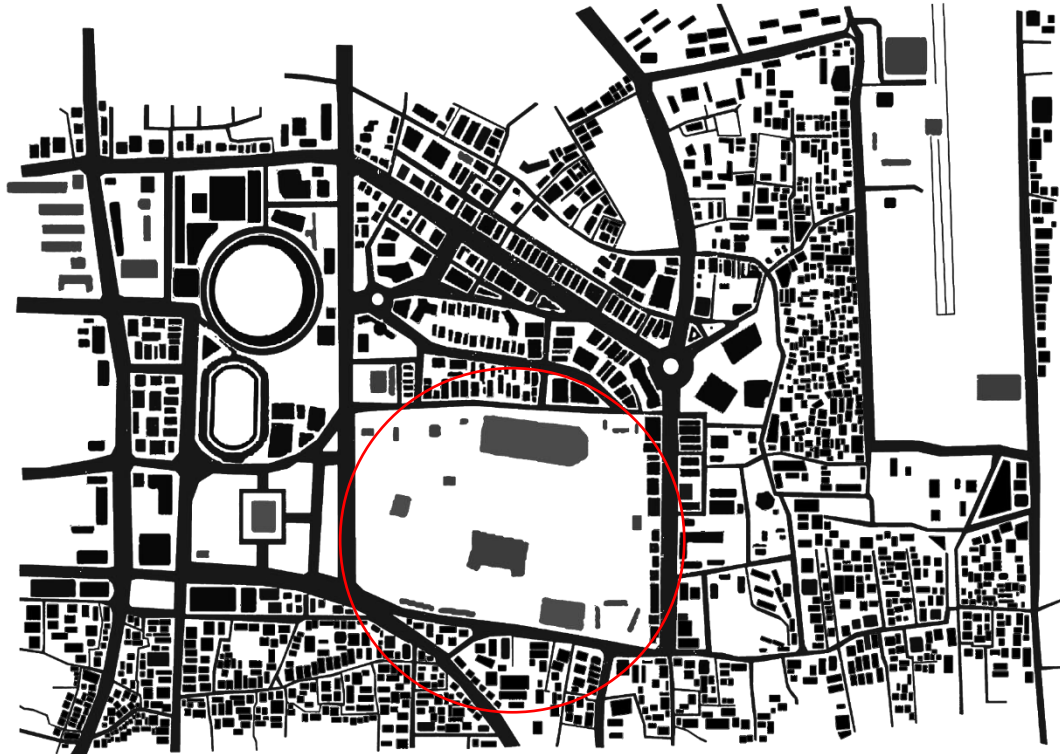


Figure 7: Builtup Area



Figure 9: Green patches in the Motijheel Area



Figure 8123

Figure 8: Land Use Map

In Figure 8, most of the land nearby MRT station is used commercially; however, there are no public buildings (theater, shopping mall, arena, park, etc.). Figure 9 shows the imbalance between the open (green) and built environment.

5.2.3. Existing Streetscape

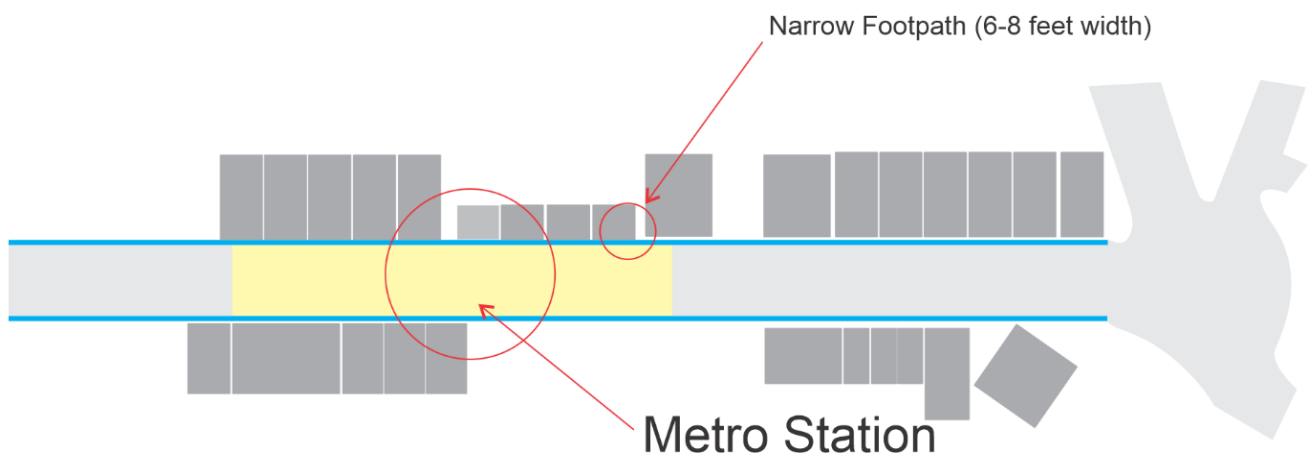


Figure 10: Existing narrow footpath and context of MRT station

The condition of the street in Motijheel is deplorable. Illegal encasement of hawkers is reducing road width for vehicles and pedestrians. Footpaths are narrow and unsafe because of poor maintenance. The surface of the footpath is uneven and poses a danger to disabled people. Moreover, most of the footpaths are partially occupied with goods from nearby shops. Shops and hawkers activity continues from 6:00 am-6:00 pm. During the field survey, few activities were observed after office hours, thus converting the area to blur and inactive.

5.2.4. Pedestrian accessibility

50 Pedestrians were interviewed, and most were found to be non-resident travelers to CBD and do not live within a 1 Km radius. 20% live within walking distance (400-1000 meters), 36% live within 5 Km, and 12% live within a 10 Km radius of the MRT station. They expressed unhappiness regarding walkability and lack of social security on footpaths.

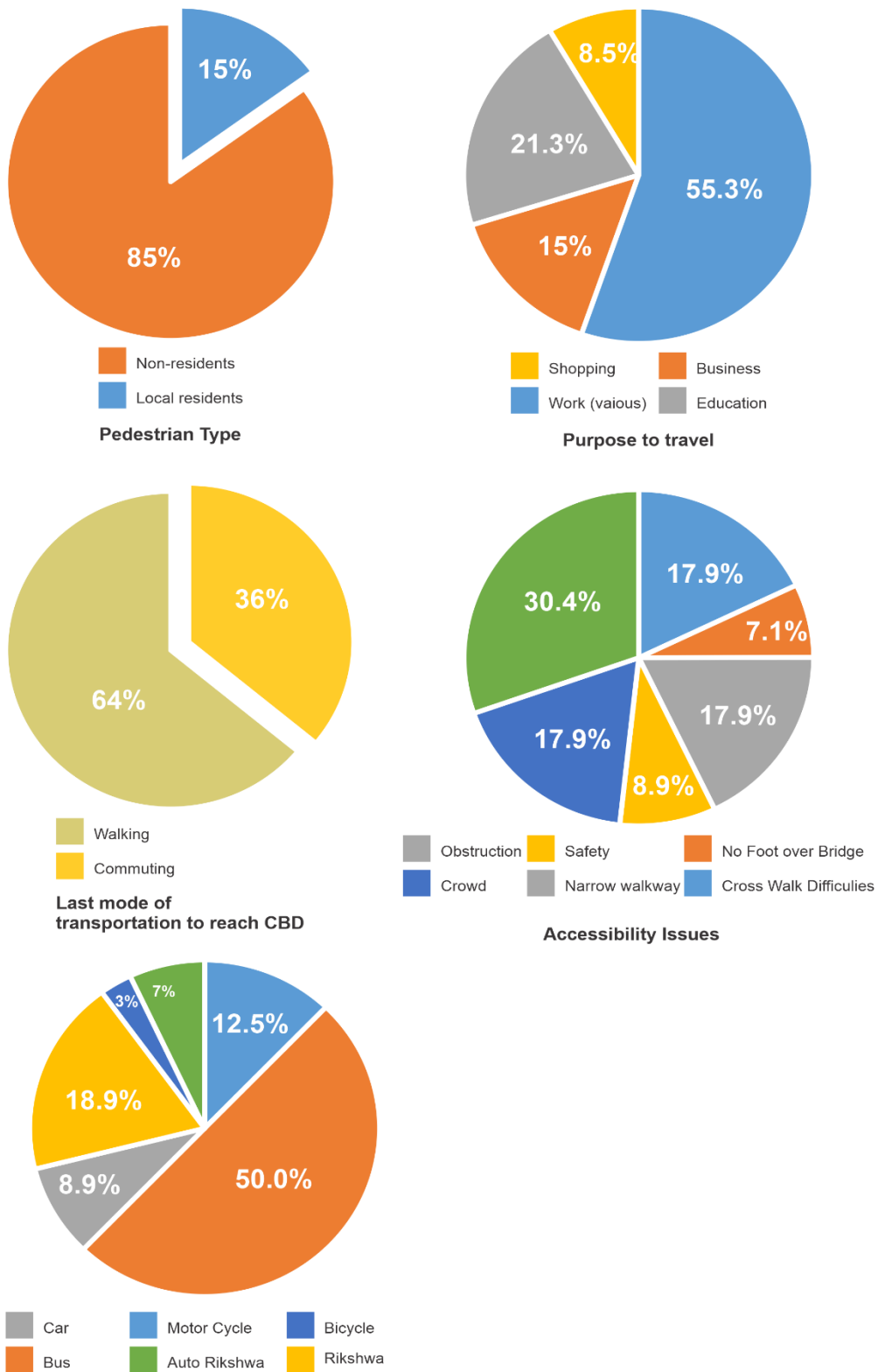


Figure 11 shows different Study results on the Pedestrian.

Considering the reason to travel to CBD, 55.3% of people travel for various work purposes, 15% are directly linked with business, 8.5% travel for street shopping, and 21.3% travel for education purposes.

Mode selection- 50% of the traveler selected a bus, 18.9% rikshaw, 7% auto rikshaw, 18.9% car, and only 3% bicycle.

The travelers raised several accessibility issues-

Foothpath obstruction-17.9%

Over Crowd-17.9%

Narrow walkway-17.9%

Absence of foot over bridge 7.1%

5.2.5. Street vendors activities



Figure 12: Study street for street vendor

Street vendors are lined up on almost every street in Motijheel CBD. The estimated number of street vendors in the study area is approximately 4000. Among them, 100 hawkers were surveyed for this research. The most significant portion of hawkers (25.5%) make their living by selling ready-made garments; 17.5% sell fruit and vegetable; 12.4% sells pre-cooked lunch and snacks. The rest earn their living from selling tea, shoes, accessories, cobbling, and recycled glassware. Since there is no major retail outlet in Motijheel CBD, hawkers are the dominant retail force in the area.

Hawkers' presence causes a nuisance to pedestrian movement; sometimes, unnoticed legal eviction causes roadblocks. The law enforcement authority extorts the 4000 hawkers around 10,000,000.00 Ten Million BDT (100,000.00 USD per month) (Rahman A. , 2017).

5.2.6. Traffic movement by the time

Motizeel has a moderate average daily traffic compared to the rest of the city. Generally, traffic congestion occurs from 9:00 to 11:00 am, when commuters arrive at work, mainly from Uttara and Farmgate. Congestion occurs at major nodes where bus stops are situated. Traffic drops drastically from 4:00 pm when the office starts to break, and workers leave for their residences.



Figure 13: Time-based traffic study

5.3. Strengths, Weaknesses, Opportunities, Threats

5.3.1. Strengths:

- Overall less vehicular traffic
- Hawkers/street vendors play an alternative role to retail establishments retaining the vibrancy in this area.
- Motijheel CBD has a unique historical, cultural, financial, administrative, and political significance. It hosts the headquarters of this country's central banks, the presidential palace, RAJUK, the National Mosque, and two major sports complexes.

5.3.2. Weaknesses:

- Inadequate pedestrian facilities are not ready for future mass pedestrian movement due to the MRT

station.

- Footpath and road encroachment
- No accessibility for the physically or visually-impaired person
- Poor land laws
- Lack of mixed-use, recreational, and high-end retail establishments.
- Uncontrolled Hawker activities
- Trash littering on roads

5.3.3. Opportunities:

- MRT station will attract significant commercial investment, as observed in Mirpur station. It has an opportunity to transform into a central retail hub.
- With the decreased traffic, motorways can be narrowed to make space for pedestrian facilities.

5.3.4. Threats:

- The hike in Land-price
- Illegal extortion by individuals holding political influence and law enforcement agencies
- Social security issues; pickpocketing is common in congested areas, even during the daytime.
- Lack of bus stops. Passengers get off and on at the intersections, which poses a severe safety risk.
- The lack of crosswalks poses a severe safety risk for pedestrians.

6. Enhancing the existing accessibility and introduction of pocket parks:

6.1. Land use proposal: Enhancing pedestrian accessibility

Accessibility supports enhanced Mobility; Motijheel can be transformed into an efficient passenger transit spot and a vibrant urban center. Principles of consolidated urban redevelopment can open up public spaces on the ground level and extend a few floors above by introducing skywalks. This will split the ground-level pedestrian counts, thus easing the load on existing pedestrians. Bangkok case can be an ideal start.

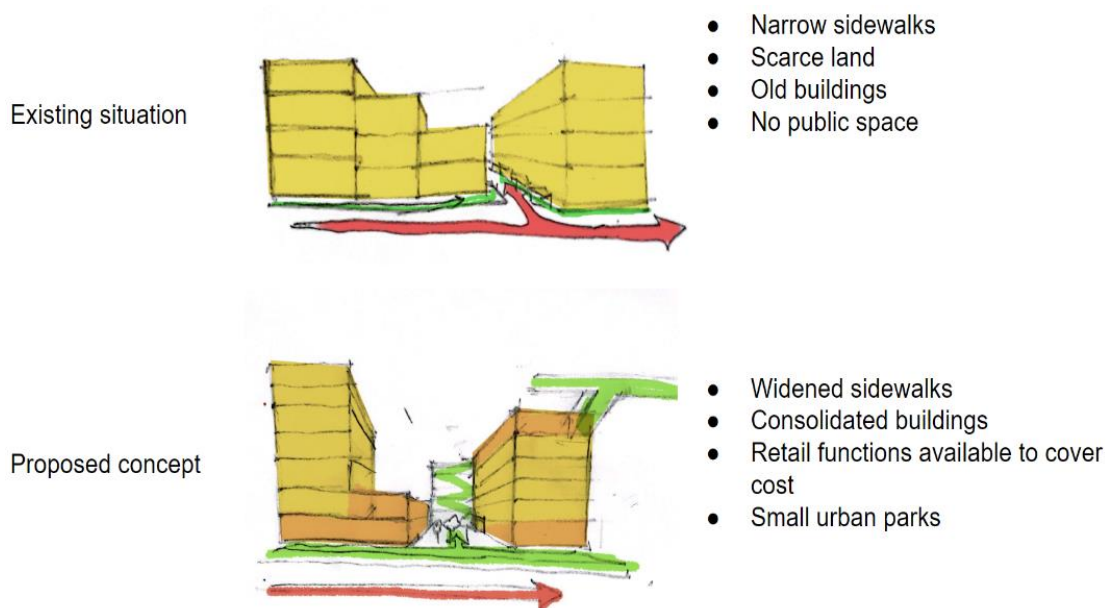
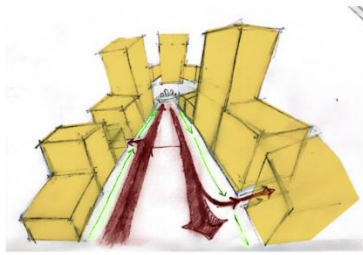


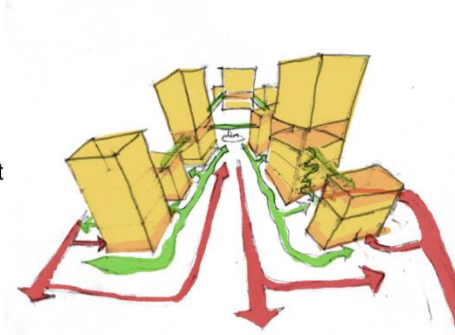
Figure 14: Consolidated Development on a neighborhood scale

Existing situation



- Narrow sidewalks
- No public spaces
- No crosswalk
- Vehicular roads on every free space

Proposed concept



- Widened sidewalks
- Space freed for pedestrian use
- Crosswalks
- Alternate vehicular routes for buildings with underground parking

Figure 15: Consolidated Development on urban scale



Figure 16: MRT Station Connected Skywalk in Bangkok

Some tertiary roads are identified as partially blocked by vendor activities and rarely are used by vehicles. These roads can be repurposed into small-scale urban plazas or "pocket parks," where pedestrians and vendors can experience unhindered mobility and safety. These designated pocket parks can be the starting point for MRT station accessibility, where many pedestrians can get on and off comfortably.

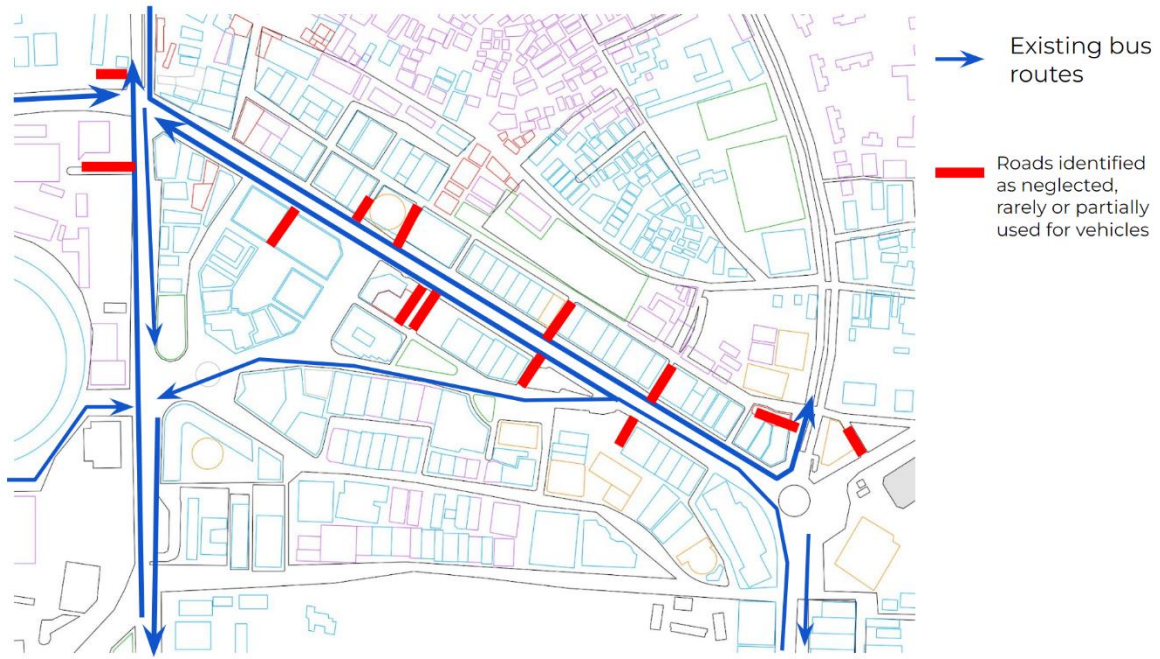


Figure 17: Identified Tertiary roads for redevelopment



Figure 18: Urban Pocket

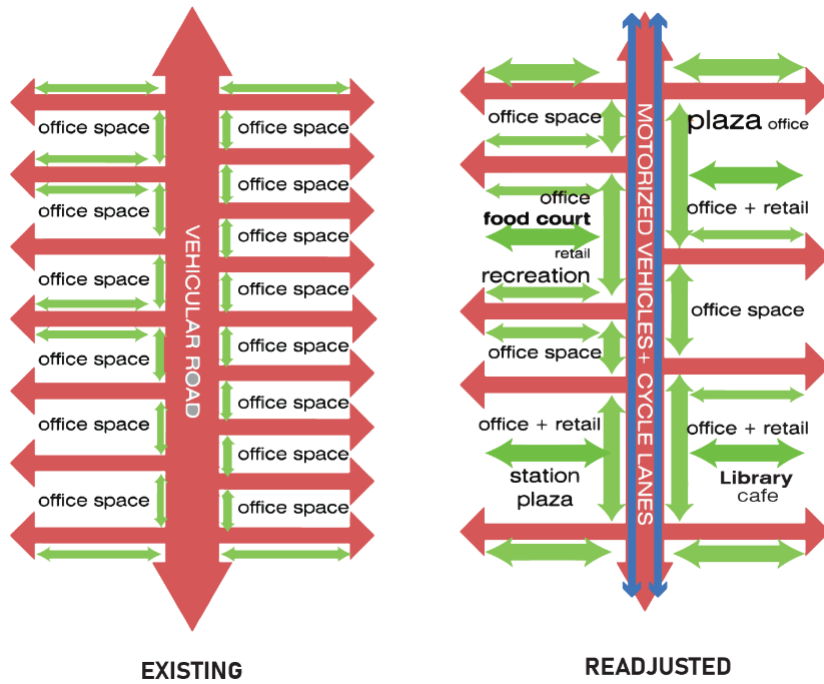


Figure 19: Readjusted street network

6.2. Site development for Plaza

Troposed plazas will be located near the four corners of the station to ensure optimum MRT passenger movement. Jute Administration, National Textbook Board, and Pubali Filling Station are currently under government ownership; acquiring the necessary land is comparatively more straightforward and can be considered a service to the public. The proposed Plaza at the Swadhinata Bhaban site can be developed through a private-public partnership. The ground floor of the building can be freed as a passage to adjacent plaza space, thus increasing public interaction with surrounding areas.

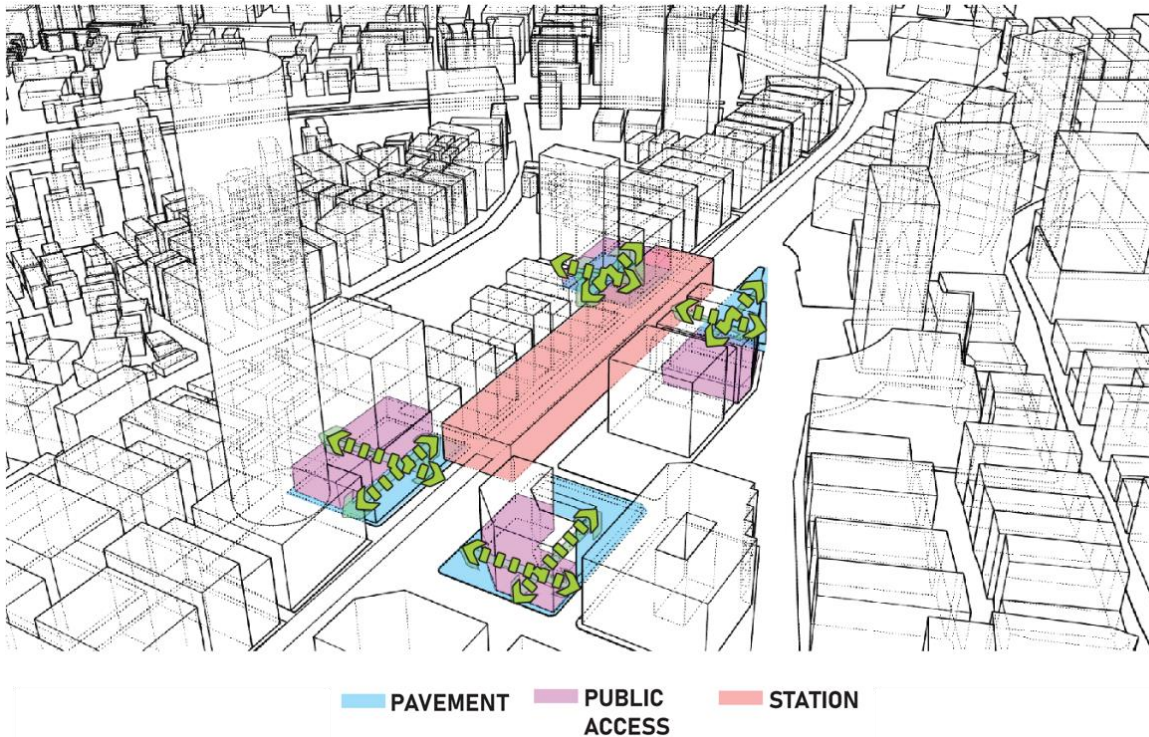


Figure 18: Plaza area design

6.3. Redesigning streetscape

BRTA Study shows in Dhaka, 74% of road spaces are occupied by private vehicles. A field survey found that 25% of car users at Motijheel are willing to give up their cars when the MRT system is fully operational. The numbers are consistent with JICA's 2025 passenger projection of 483,200 daily passengers (JICA, 2018). This equals 35% of the current car users in Dhaka City, which is 6% of the total city population. This should free up 30% of road space in the area.

In a two-way arterial road of 100' width like Motijheel Road, 30' of width can be recovered for Pedestrian movement without significant intervention.

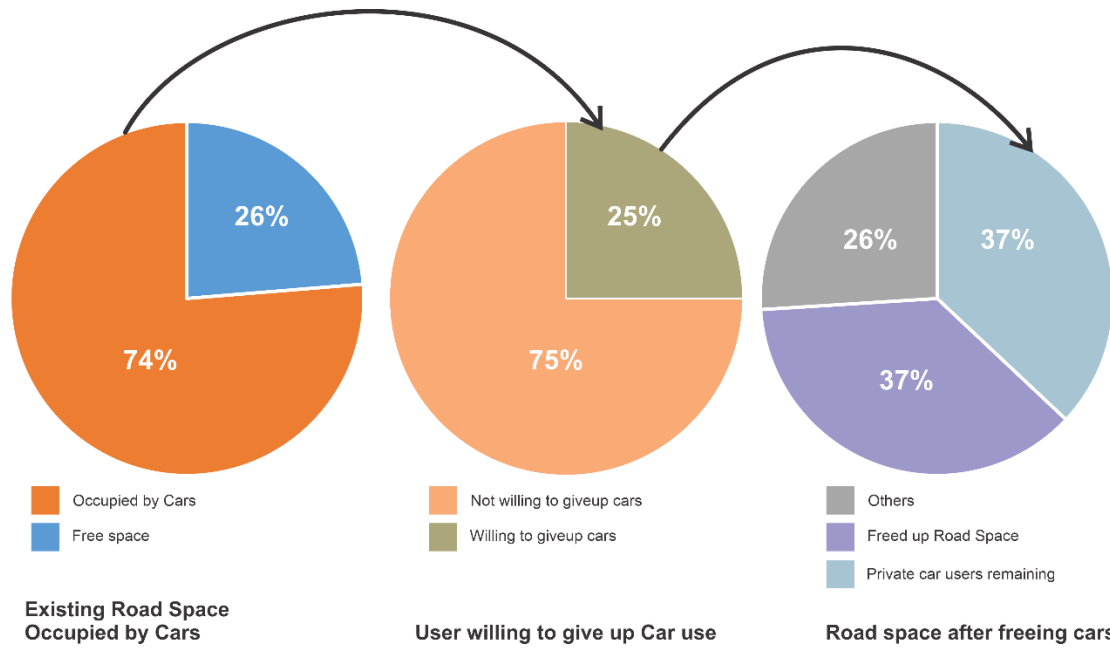


Figure 19: Freeing Road Space

Pedestrian safety and unobstructed movement was the priority for designing the sidewalk. The sidewalk has four parts:

1. Buffer: seating, planting, lighting fixtures, water fountains, maintenance hatches, trash receptacles.
2. Cycle Lane
3. Sidewalk
4. Frontage space

The existing urban fabric at Motijheel CBD is unsuited to accommodate peak pedestrian traffic and provide the necessary visual and spatial comfort for a safe, pleasant walking experience. By taking advantage of any new development triggered by the new transit hub, new policies can be implemented to create the desired walkability.

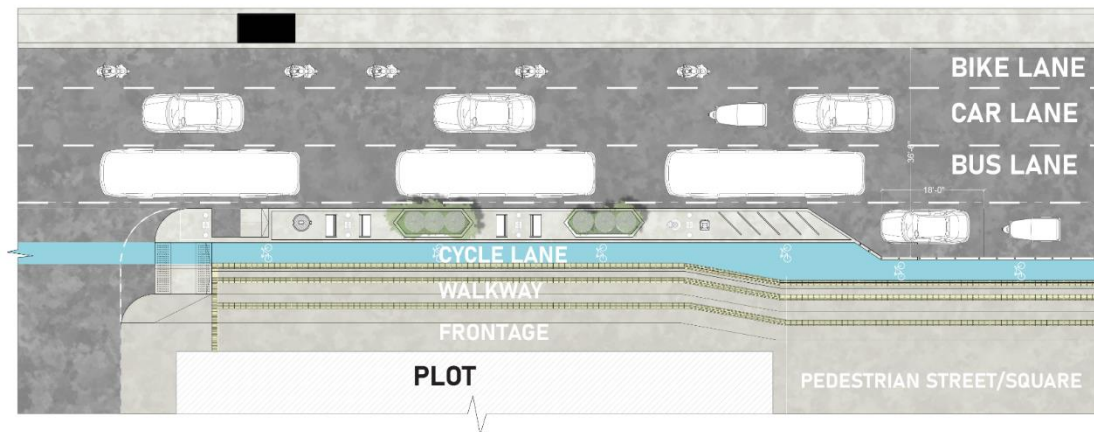
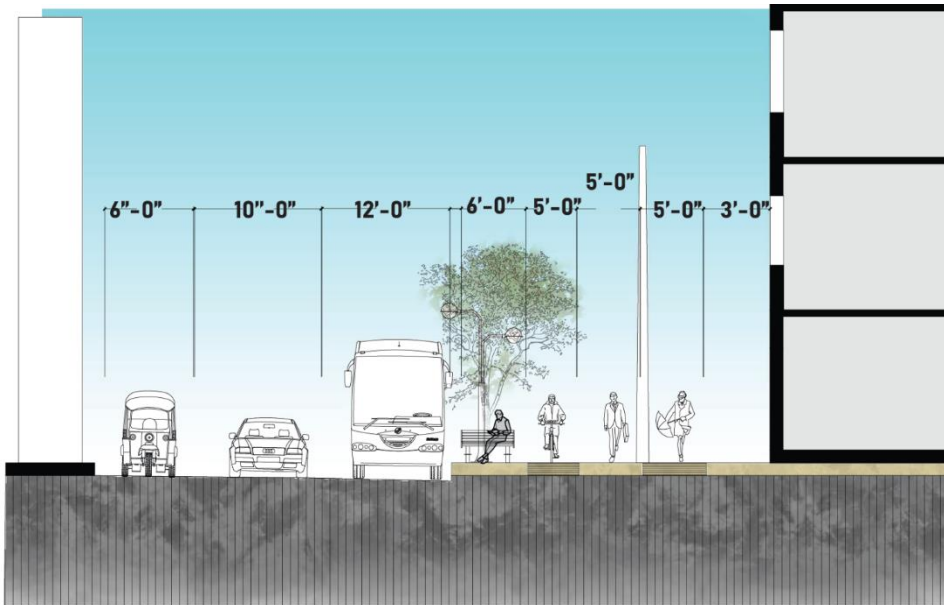


Figure 19: Proposed Street Scape

7. Conclusion:

Land prices and poor mobility are pushing CBD's commercial activities to shift to new and less expensive areas. Motizeel becomes barren and has less activity after work hours. The costly commercial land is being used for half of the day. The site is losing its vibrancy because of inadequate public spaces and activities. However, introducing an MRT station as a mobility improvement policy is rendering the scope to regain its past. Constructed MRT Station will also generate many passengers in the station precinct. To efficiently transfer these passengers to local destinations and manage a mass movement, it will be necessary to ensure proper accessibility around the station. This Study shows that the MRT station alone cannot revive the vibrancy of Motizeel; instead, when introduced with development strategies and policies, they will complement each other and contribute to creating a balanced urban commercial place.



Figure 20: Aerial View of Station Complex



Figure 21 Station Plaza

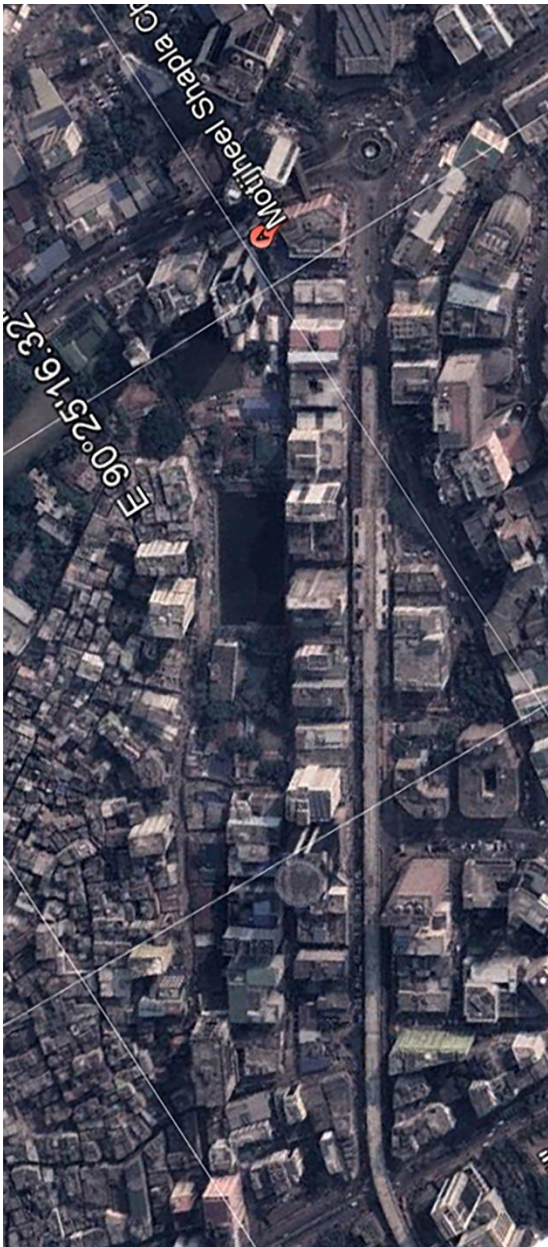


Figure 22 On the left, Adopted from Google Earth- present Motizeel. On the right, propose a streetscape with a footpath and green pocket.

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