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Flyover's Contribution in Aggravating the Traffic Problems of Megacities: A Synthesis of Mogbazar-Mouchak Flyover in Dhaka, Bangladesh

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Abstract

Dhaka, the capital of Bangladesh like most other megacities of the developing countries is regarded as the world's most broken and paralyzed city due to its dysfunctional transport system. Acute traffic congestion has put the city life into untold sufferings and wasting a large portion of working hour. Considering elevated expressway as a popular means of solving traffic congestion problem, a number of major flyovers have been constructed in Dhaka city and new initiatives are continually going on in this matter. In recent time, it is being observed that the flyovers itself are creating congestion instead of solving it. In this circumstance, this particular research compares the forecasted impact of Mogbazar-Mouchak flyover with the operational experiences after its construction to figure out the factual contribution of flyover in jettisoning lethal traffic congestion problem of Dhaka city. Required primary and secondary data have been collected from a series of field survey and relevant secondary sources. Unfortunately, the multi layered traffic congestion incidents of Mogbazar-Mouchak flyover in at grade and on its ramp from its inauguration, clearly indicates that the very flyover under consideration is tallying more to the ever existed traffic congestion of Dhaka city rather cracking it. Faulty design and shortsighted planning is the reason of increased traffic congestion and the non-functionality of the flyover which deserve close attention to be paid off. This study provides a scope for policymakers to rethink the proposition and role of flyovers in eliminating the transportation problem of megacity Dhaka.

Introduction

Dhaka the capital of Bangladesh is one the fastest growing mega cities in the world. The city is the habitat of 18.237 million people with population density of 23,234 per square kilometer. The city is experiencing an annual growth rate of 4.2% (Dhaka Population,

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2017). Moreover, everyday another 1700 people are entering within its 300 square kilometers area (Prothom Alo, 2016). This ever increasing population pressure has worsen the traffic condition horribly contributing Dhaka to be ranked the fourth worst livable cities in the world (Prothom Alo, 2017). Traffic extremes due very high population density of Dhaka city has made the existing infrastructures and transport system paralyzed and dysfunctional (The New York Times, 2016). Resultantly, considering traffic congestion as the greatest single reason The New York Times (23 September 2016) reported Dhaka as the world's most broken city.

Considering Dhaka's traffic problem and limited road network as a national issue, Dhaka Urban Transport Board carried out Strategic Transport Planning (STP) study in 1999. As per the recommendation of the study, construction of Moghbazar-Mouchak Flyover started in 2009 to minimize traffic jam (The Gurdian, 2013).

Several flyovers, such as Kuril flyover, Banani – Mirpur flyover, Banani overpass, Mohakhali flyover, Jatrabari Gulistan Flyover, Khilgaon flyover have been constructed before Moghbazar-Mouchak Flyover (RSTP, 2015). Unfortunately, the real field experience of these flyovers was not as pleasant as expected (Taleb and Majumder, 2012). Flyovers have both good and adverse impacts over surrounding land use and traffic condition (Islam, 2005). They hamper the traffic movement and deteriorate the environmental condition during construction phase and as the expert says they may aggravate the situation by attracting more traffic (Prothom Alo, 2015).

In this study, the likely impact of this flyover on traffic condition has been presented using data collected during construction face. Thereafter, predicted result has been checked out with operational experiences of the flyover. But, the field observation during the operation of Moghbazar-Mouchak flyover was much biter than expected.

Previous Study

Numerous Departments of Bangladesh Government, namely Roads and Highways, LGED and DTCA are working with a view to solving traffic problems. The Roads and Highway Department of Bangladesh first recommended construction of grade separated flyovers at four congested rail-crossing intersections. The flyovers at Mohakhali and Khilgaon intersections have been constructed to improve the traffic condition in 1987 (Taleb and Majumder, 2012). Later, Strategic transport Plan study for Dhaka city conducted by LGED, suggested the construction of flyover/intersection underpass at 20 points, bus stands and bus terminals as well as parking area to ease the traffic movement (DTCB, 2005). Accordingly, Kuril flyover, Banani–Mirpur flyover, Banani overpass, Mohakhali flyover, Jatrabari Gulistan Flyover, Khilgaon flyover, Mogbazar-Mouchak flyover have been constructed (JICA and DTCA, 2015). Several studies have been conducted on the impact of flyovers during and after construction phase.

Khan (2013) stated that flyovers may not bring the desired outcome due to the lack fund, ignorance about the planning perspective of such proposals or absence of comprehensive planning approach. In case of Gulistan-Jatrabari flyover, severe traffic congestion at Jatrabari, Gulistan and in nearby areas were created during construction due to piled-up construction materials. In its operation phase new areas like BUET, Bakshibazar have been affected having no traffic congestion prior to the flyover construction. Although the

toll rate is not sufficient to limit the user, it slows collection process hampering commuter's smooth movement.

Islam and Saha (2005) reported that the land value beside New Airport road has been increased in an unplanned fashion due to Mohakhali flyover construction. As government acquired large amount of land, the area became commercially attractive. High class residential areas have been developed and contributed to traffic congestion in the surrounding areas. Furthermore, the road lane instead of commercial space has been used for private automobile parking and interrupting normal traffic flow.

According to Taleb and Majumder (2007), businessman adjacent to Khilgoan flyover claimed that a number of shops have been partially or fully damaged due to flyover construction. Due to small shop frontier, the job opportunity has been decreased in the adjacent shops. Consequently, monthly income of the businessman has also decreased.

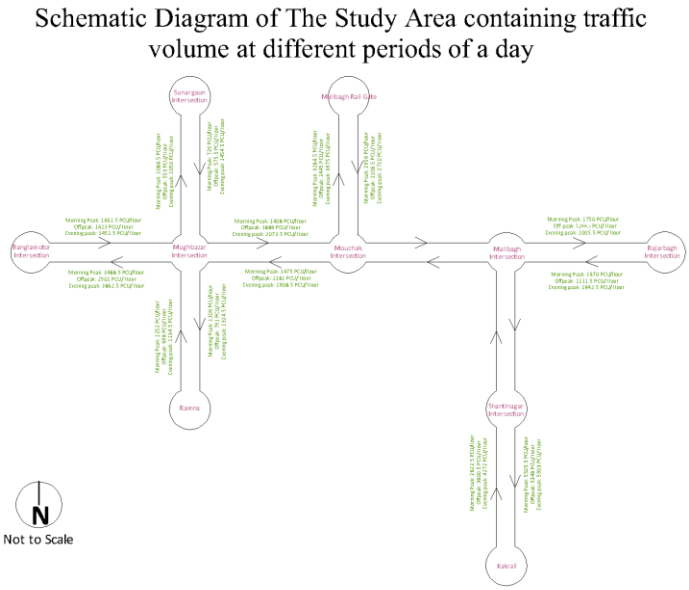
Comparing the context of Bangladesh and abroad, some similarities and dissimilarities in respect of their impacts can be observed. On the basis of the pedestrian safety and congestion reduction, Gulistan-Jatrabari flyover and navy pier flyover of Chicago City have revealed some sort of contradictory results. Practically, Gulistan-Jatrabari flyover has failed to reduce congestion rather it creates congestion in new areas. On the other hand, navy pier flyover has become one of the biggest improvements in Chicago city with the reduction of downtown evening rushes and providing pedestrians and bicyclists their own separate roadway (Khan, 2013; Blakley, 2014).

Likewise, Khan (2013) and Taleb and Majumder (2007) on impact assessment report of Proposed Inbound Warwick flyover indicated that the project area would be negatively affected by nature of the construction works, traffic and pedestrian accommodation resulting into the relocation of traders in the vicinity of project area. Road safety might be affected during construction, especially when traffic is detoured. It was also reported that, road closure will affect the movement of the pedestrian (Sivest, 2007).

The above literature depicts that in the context of Bangladesh, flyovers may create traffic congestion to some extent in the surrounding areas during its construction and also affect new areas after the construction. Toll collection process affects commuter's movement through the flyover. It may changes the land value of its adjacent area in an unplanned fashion. Commercial uses of land rises dramatically along the flyover, which eventually may create pocket parking place in its frontage and thus contribute to the traffic congestion of the surrounding areas.

Study Area at a Glance

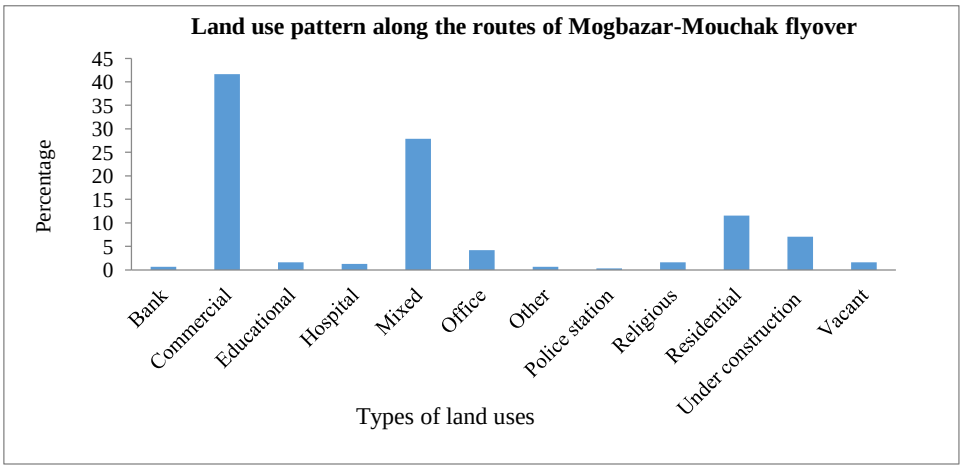
In order to investigate the impact of flyover on traffic condition, Mogbazar-Mouchak flyover and its surrounding areas located at the center of Dhaka city have been selected. As shown in Figure 1, the flyover is 8.25 kilometer long encompassing eight intersections namely: Satrasta, FDC, Moghbazar, Mouchak, Shantinagar, Malibagh, Chowdhuryparha, Ramna and two railway crossings (LGED, 2005).



Source: Field survey, 2014

Figure 1: Schematic diagram of Study Area

Land uses along these routes are mainly commercial (Figure 2). Around 42% of the adjacent area is used for commercial purposes which are the major traffic generators. The rest of the land beside the flyover is being used for different purposes. An intense commercial use of land indicates that it will generate greater amount of heavy vehicles for loading and unloading of goods. It will slow down the speed of vehicles. Again, most of the time, the road-lane in front of the commercial building is used as a parking lot which creates intolerable traffic congestion.



Source: Field survey, 2014

Figure 2: Land use along the routes of Mogbazar-Mouchak flyover

These commercial establishments and their linked activities have reduced the effective road width which adds to congestion problem (Table 1).

Table 1: Variation between LGED and field survey data

Link Name	Total carriageway width (meter) (Field survey)	Effective carriageway width (meter) (Field survey)	Avialable width (From the proposal report of LGED) (meter)
Mouchak to Moghbazar intersection	26.09	13.65	26
Malibag to Shantinagar	30.6	24.2	35
Malibagh to Rajarbagh	20.57	19.81	27
Mouchak to Malibag Rail Gate	20.5	17.18	28
Moghbazar to Kakrail	19.32	18.2	26
Moghbazar to Banglamotors	22.25	14.86	N/A
Moghbazar to Tejgaon	20.4	15.23	25 to 34

Source: Field survey, 2014

With a view to reducing this acute congestion, Local Government Engineering Department (LGED) has started its construction work on December 2012 and opened to traffic in 27 October 2017 (The Independent, 27 Oct, 2017).

This research is directed towards the comparison to the likely and actual impact of Mogbazar-Mouchak flyover. The likely impact of this flyover has been predicted from the impact of Khilgaon flyover which was in operation. So, the study area comprised of Mogbazar-Mouchak flyover and Khilgaon flyover long with their surrounding areas. Prior to Mogbazar-Mouchak flyover, LGED constructed 1.9 Kilometers long Khilgaon flyover which started operation in March 2005. Moreover surrounding land use composition and traffic condition of Moghbazar–Mouchak flyover is more fitted to that of Khilgaon flyover than all other flyovers in operation in Dhaka city. Due to these analogous characteristics, the Khilgaon flyover has been selected as the basis of likely impact assessment of Mogbazar-Mouchak flyover.

Methodology and Data

Both primary and secondary data have been used to fulfill the research objectives. The likely impact of Moghbazar–Mouchak flyover on traffic condition has been assessed predominantly from field data. The required primary data has been collected from a series of field survey; Land use and geometric features survey, volume survey, origin and destination survey, road user survey and speed study during the flyover's construction phase in 2014. Primary data collection has been conducted in two stages. Firstly, the required data for the study has been collected along the routes of Mogbazar-Mouchak flyover. Then to assess the likely impact of flyover construction required database is collected from the roads along the routes of Khilgaon flyover. Khilgaon flyover has been chosen for the analysis of the future surrounding land use composition and impact on traffic condition of Moghbazar–Mouchak flyover is more fitted to that of

Khilgaon flyover than all other flyovers currently in operation in Dhaka city. Current data, after the starting operation of the flyover on 27 October 2017 has been documented from the secondary sources.

Likely impact has been predicted from existing traffic condition, its future growth and surrounding landuses. The geometric features of roads, land use along the road side, traffic volume and modal share are used as explanatory variables to explore the existing traffic conditions along the route of this flyover. Traffic volume data along Mogbazar-Mouchak flyover route has been collected for both links and intersections. Volume of motorized and non-motorized vehicle have been collected in both peak and off-peak hours and level of service of that consecutive link and has been calculated following the Highway Capacity Manual. Probable traffic volume and level of service for each link has been estimated from this database. A fixed growth rate of eight percent per annum has been assumed and traffic volume is projected for the design year as DITS final report, Volume 1 indicated a future traffic growth rate of 8% per annum (Bangladesh Local Government and Engineering Department, 2005). Traffic volume has been projected using the following formula:

$$Projected\ Traffic\ Volume = Base\ Year's\ Traffic\ Volume\ (1 + Growth\ Rate)^{Number\ of\ Years}$$

The number of prospective flyover user has been estimated from the primary data collected from origin and destination survey. The basic assumption is that if the legs of the flyover provide access to the destination of the user at a minimum distance, then they will use the flyover or vice-versa.

In order to assist the prediction process, data on socio-economic activities, speed of different vehicles and delay at links of the Khilgaon flyover are used.

In the estimation stage, likely traffic volume in each link and their level of service has been estimated. Finally, this projected traffic condition has been compared and cross cheeked with the real experience during the operation phase of this flyover.

Data Analysis and Interpretation

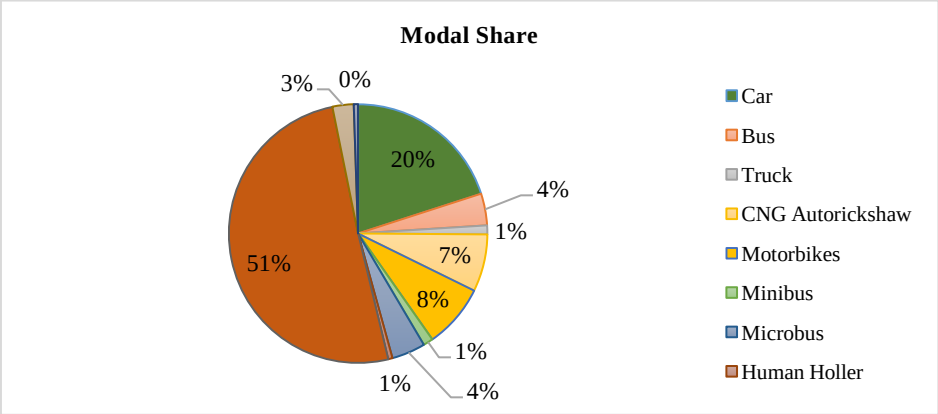
Data analysis and interpretations are mainly comprised of three segments; analyzing traffic conditions before operating the flyover, traffic volume and speed analysis of Khilgaon flyover and most importantly, the forecasting of likely impact and its validity checking.

Traffic Condition of Study Area before Operating Flyover

Traffic condition of pre-operation phase has been represented through the analysis of traffic volume, modal share of peak and off-peak hours, geometric features of road. For the analysis of traffic volume data, the direction of traffic movement is also considered as it is at different time periods of the day (each thirty minutes of morning and evening peak and off-peak period) at different directions. To analyze existing traffic scenario, specifically modal share and origin-destinations data have been used.

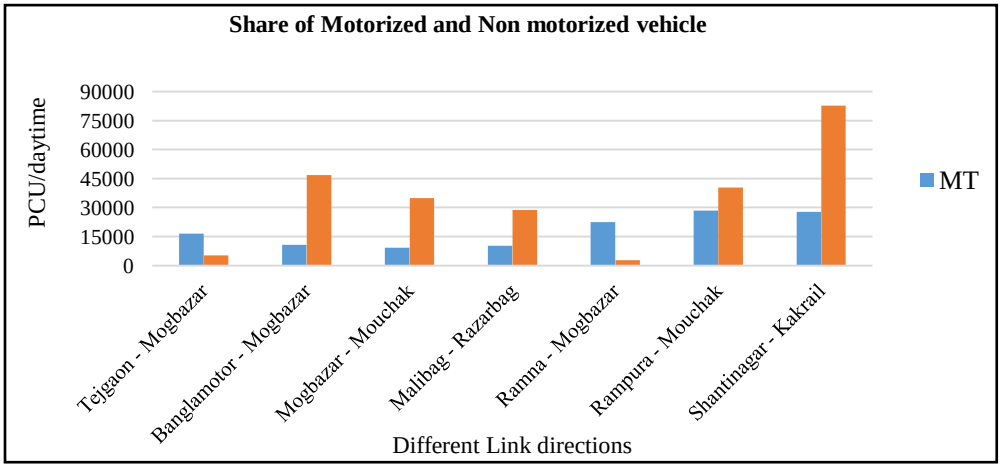
Modal Share

Traffic condition of pre-operation phase has been represented through the analysis of traffic volume, modal share of peak and off-peak hours and geometric features of road. Rickshaw holds the highest share (Figure 3), and link wise modal share shows that NMT is dominant mode in most of the links (Figure 4).



Source: Field survey, 2014

Figure 3: Modal share in the Study Area



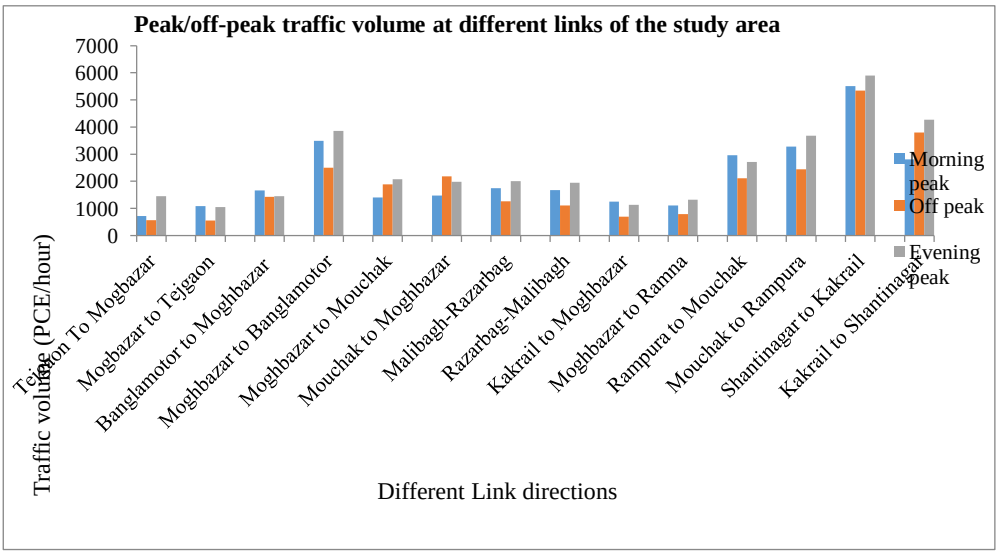
Source: Field survey, 2014

Figure 4: Link wise MT and NMT shares

Figure 3 depicts that rickshaw is dominant vehicle, where car is the second dominant one. This results from the fact that during off-peak hour and evening peak period people are reluctant to travel on bus or other public transport due to heavy traffic congestion.

Peak/off-peak Traffic Volume

The comparative analysis of traffic volume in different links within the study area shows that, Shantinagar to Kakrail link experiences the highest traffic volume both in peaks and off-peak hours (Figure 5).



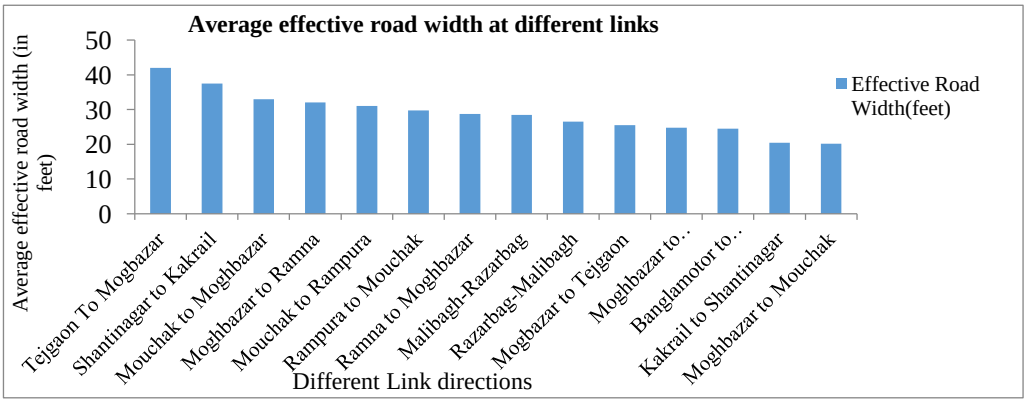
Source: Field survey, 2014

Figure 5: Link wise peak/off-peak traffic volume

Field survey data illustrated that, in most of the links traffic volume in evening peak hour is higher than the morning peak. But the scenario of Kakrail to Shantinagar, Mogbazar to Mouchak is opposite to the other links. In these links the off peak hour traffic volume is higher than the morning peak. The underlying reason behind this can be the high concentration of commercial land use along these routes.

Level of Service at Different Links

As a measure to represent congestion scenario Level of Services (LOS) has been calculated following the Highway capacity manual, (Highway capacity manual, 2000) which was previously used to determine LOS of Agrabad to CEPZ Road at Chittagong in Bangladesh (Chisty *et al*.,2014). As effective road width is directly related to the LOS in this method, average effective road width along the routes of Mouchak-Mogbazar flyover has been collected from field survey which shows that it varies from 20 to 42 feet among different links (Figure 6). Table 2 shows that most of links of study area have considerably low average speed with unsatisfactory level of services.



Source: Field survey, 2014

Figure 6: Average effective road width of links

Table 2: Level of service at different links before operating flyover

Direction	LOS (peak hour)	Overall Speed (Km/hr)	LOS (off-peak hour)	Overall Speed (Km/hr)
Tejgaon To Mogbazar	C	28	C	28
Mogbazar to Tejgaon	C	28	C	28
Moghbazar to Banglamotor	C	28	C	28
Banglamotor to Moghbazar	F	<14	F	<14
Mogbazar to Mouchak	D	17	D	17
Mouchak to Mogbazar	D	17	D	17
Malibagh to Rajarbag	D	17	C	28
Rajarbag to Malibagh	D	17	C	28
Ramna to Moghbazar	C	28	C	28
Moghbazar to Ramna	C	28	C	28
Rampura to Mouchak	F	<14	D	17
Mouchak to Rampura	F	<14	F	<14
Shantinagar to Kakrail	F	<14	F	<14
Kakrail to Shantinagar	D	17	D	17

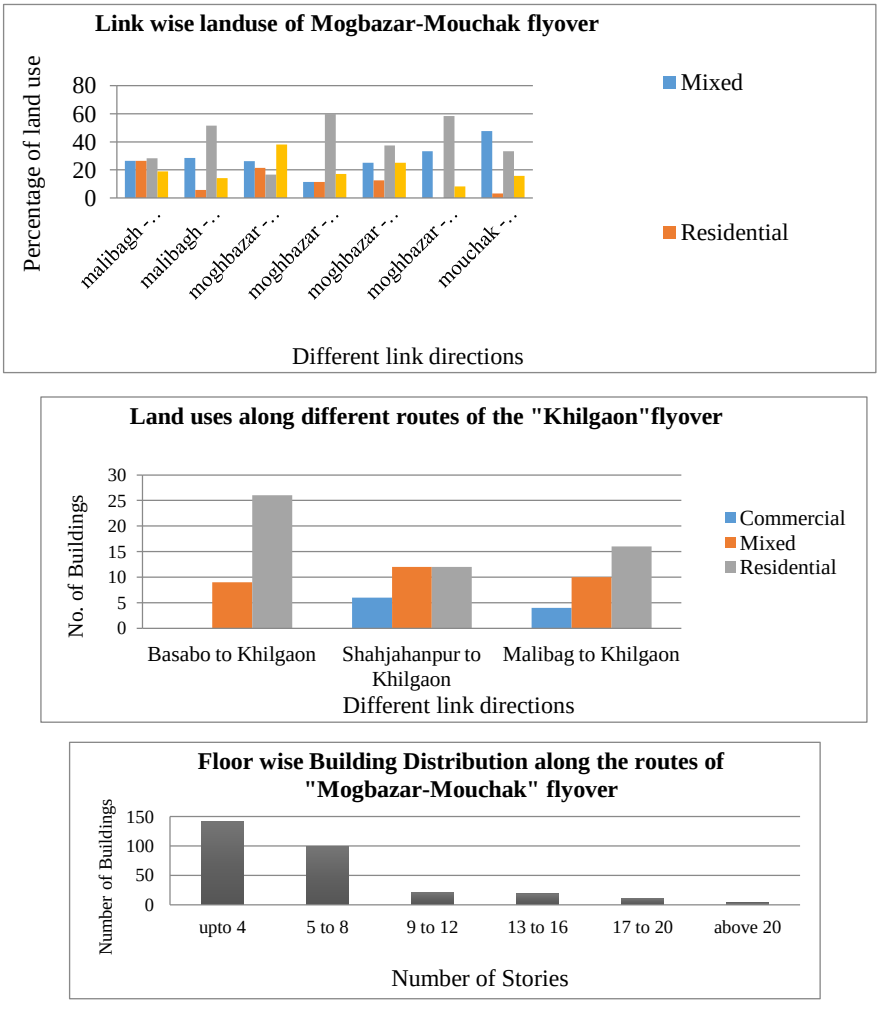
Source: Authors' calculation, 2014

The traffic volume at different link directions have been collected in two morning and evening peaks, two off-peak periods of 15 minutes each was selected at working day of the study area. The level of service has been calculated considering the volume of both motorized and non-motorized vehicles.

Likeliness of Mogbazar-Mouchak and Khilgaon Flyover Area

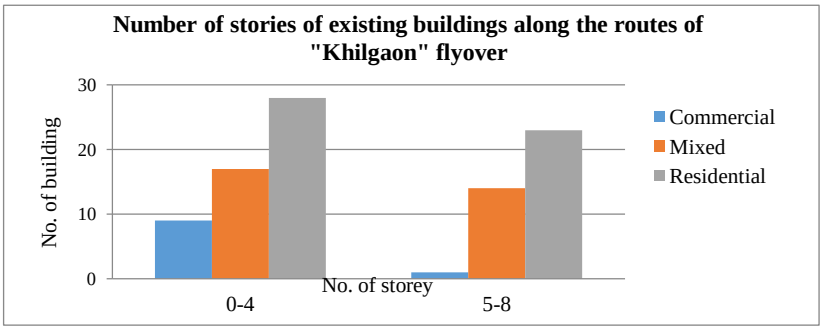
In order to facilitate the likely impact estimation of Mogbazar-Mouchak flyover, data have been collected from three different links along the routes of the Khilgaon Flyover. If surrounding landuse along these two flyovers exhibit reasonable similarity, then Mogbazar-Mouchak flyover might affect surrounding lanaduses and traffic conditions in a similar way.

Figure 7 (3 graphs) indicates that land use distribution pattern of Shajanpur to Khilgaon link is approximately similar to Mogbazar to Banglamotor and Mouchak to Malibagh links of the study area. Again, mixed use of land is the predominant land use activity in Shahjahanpur to Khilgaon link which matches the land uses along Mogbazar to Banglamotor and Mouchak to Malibagh links.



Source: Field survey, 2014

Figure 7: Comparative landuse distribution along the route of Khilgaon and Mogbazar-Mouchak flyover area



Source: Field survey, 2014

Figure 8: Floorwise buidling distribution among Khilgaon and Mogbazar-Mouchak flyover area

Furthermore, most of the buildings along the routes of Mogbazar-Mouchak flyover fall within the range of zero to four and five to eight stories (Figure 8). High rise buildings (buildings above eight stories) are mainly of mixed use. The same situation is revealed in the case of buildings along the routes of Khilgaon flyover. Almost all of the buildings along these routes fall under the categories of zero to four and five to eight stories.

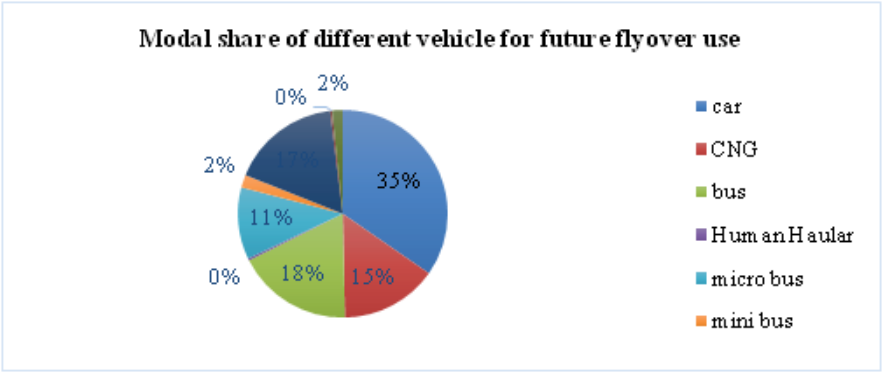
For these reasons, the likely impact of the Mogbazar-Mouchak flyover on the surrounding land uses and traffic conditions can be projected approximately analyzing the existing socio-economic and traffic conditions along the routes of Khilgaon flyover.

Likely Impact Estimation of Mogbazar-Mouchak Flyover on Traffic Condition

Assuming that only motorized vehicles would use flyover, the expected traffic volume of each mode has been estimated.

Expected Traffic Volume Using Flyover

The analysis describes car as the dominant mode holding 35% of total modal share (Figure 9). The highest volume of cars are expected in Kakrail to Mogbazar link, where public transport would have a negligible share.



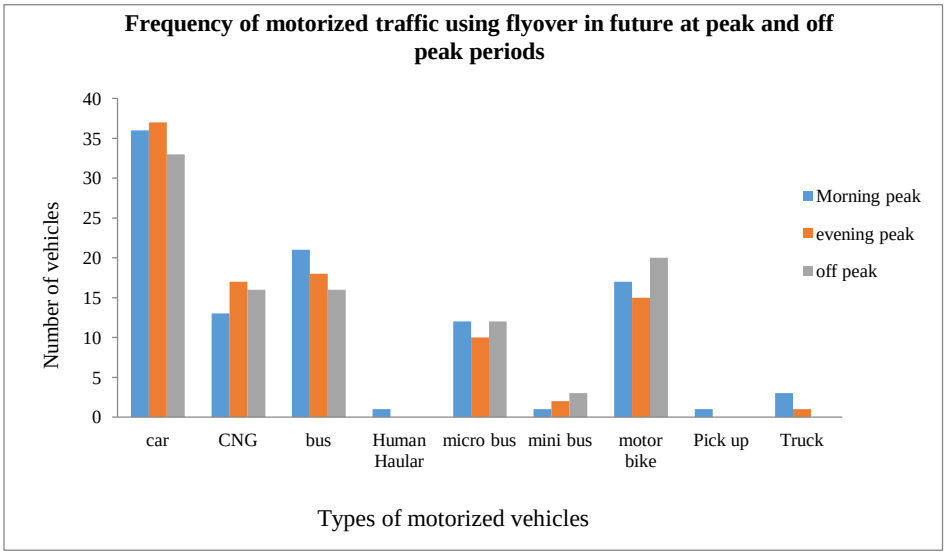
Source: Author's calculation, 2014

Figure 9: Expected modal share on flyover

Public transport, like bus will be in the second dominant mode which would have higher concentration in Shantinagar to Mogbazar" and "Rampura to Mouchak link. Pickup and human hauler have the lowest percentage of using the flyover in the future (Field survey, 2014). So it has been assumed that the flyover would attract more private transport in comparison to the public transport and thereby contributing to the overall traffic congestion of Dhaka city.

Expected Modal Share at Peak/Off-peak Hours

Variation in modal share of different peak and off-peak hours is expected in the flyover.



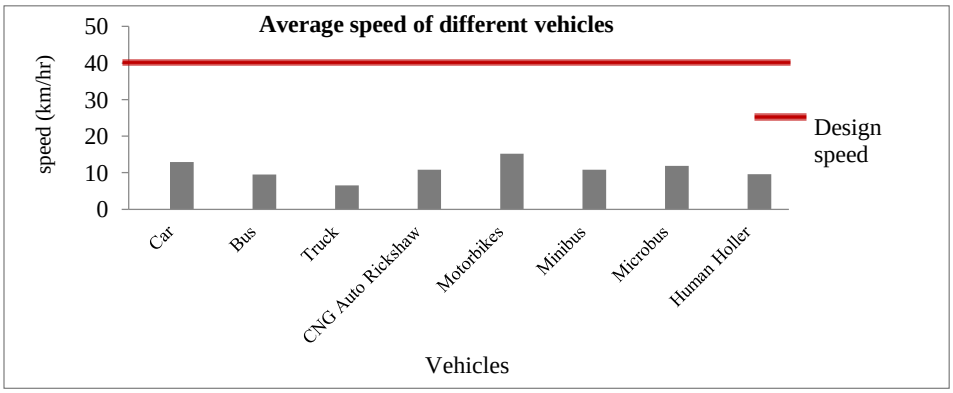
Source: Author's calculation, 2014

Figure 10: Modal share at peak and off peak hours on the flyover

Figure 10 shows the peak and off peak hour uses (30 minute morning and evening peak each) of the future flyover by different motorized modes of transport. In the evening peak, car has higher concentration of flyover use than the morning and off peak hours. As high concentration of private transport leads to the traffic congestion, so there will be the highest likelihood of occurring traffic congestion in that period. But buses will have the higher concentration of flyover use in the morning peak than from the evening and off peak hours. This implies that due to over congestion of traffic and high concentration of private vehicles in the evening peak period people will be reluctant to travel in public transport and find their way to home by means of shifting the routes of flyover or by means of Para-transit like CNG. For this reason, the concentration of flyover use by CNG is higher in evening peaks in comparing to the morning peak.

Expected Impact on Vehicle Speed and Delay

It has been expected that due to the higher volume of generated traffic and attracted traffic the average speed of all types of vehicles would be much lower than the design speed (Figure 11).

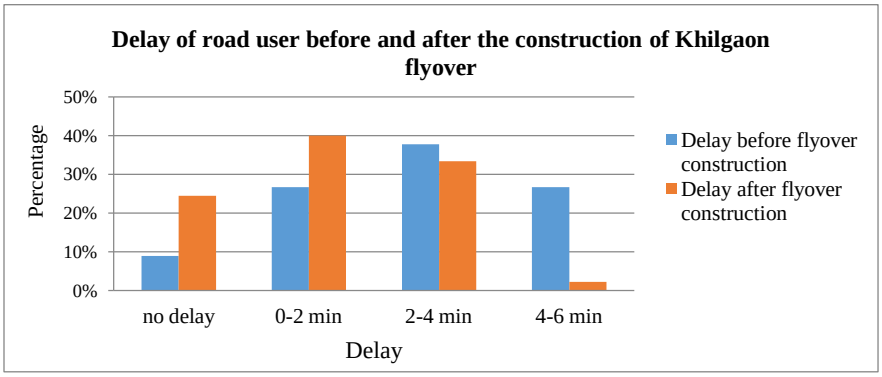


Source: Field survey, 2014

Figure 11: Average vehicle speed at different points of Khilgaon flyover

The flyover has a designed speed of 40 kilometers per hour, the evidence of Khilgaon flyover depicted that speed could drop out to less than 10 kilometers per hour. The output has been generated comparing the design speed of Mouchak-Mogbazar flyover for motorized transport to the average existing speeds at the flyover links along the routes of Khilgaon flyover. So, Mogbazar-Mouchak flyover might experience less speed than its design (Figure 11).

Although, motor vehicles might not play on desired speed, finding from Khilgaon flyover, indicates that traffic delay might be reduced due to flyover construction. Data of road user survey at Khilgaon flyover shows that delay at major points has been decreased after flyover (Figure 12). Average traffic delay with a range of 2-4 minutes (38% of the total delay) has been dropped to 0-2 minutes which indicates positive impact on congestion scenario after the construction.



Source: Field survey, 2014

Figure 12: Traffic delay at before and after Khilgaon flyover construction

The similar results may be functional in case of the likely impacts of Mogbazar-Mouchak flyover.

Comparison between Designed and Estimated Level of Services

A large discrepancy existed between the design volumes in 2025 and the projected volume (assuming 8% growth per annum and the base year, 2014). Again, from the perspective of level of service, both at grade and at the ramps of the flyover in the design year, the traffic congestion will increase to a large amount. In most of the cases, the projected level of service of the roads at grade and the ramps of the flyover will get worse than the designed one. In a word, the flyover will lead to create more congestion rather than curtailing it. Table 3 shows the design information of the flyovers.

Table 3: LGED designed and estimated LOS at Grade and Flyover

Direction	Total Peak Volume (PCU/hr) in2025 (Design year volume by LGED)	Total Peak Volume (PCU/hr) in 2025 (Estimated)	LOS (At grade) (Design)	LOS (At grade) (Estimated)	LOS (At flyover) (Design)	LOS (At flyover) (Estimated)
Tejgaon To Mogbazar	4482	2538.57	C	C	D	D
Mogbazar to Tejgaon	4835	2493.10	C	C	D	D
Moghbazar to Banglamotor	1553	3629.20	C	C	C	F
Banglamotor to Moghbazar	1378	8569.94	C	F	C	F
Mogbazar to Mouchak	2588	4058.80	C	C	C	F
Mouchak to Mogbazar	3057	4028.49	C	C	C	F
Malibagh to Rajarbag	1758	4378.24	C	C	C	F
Rajarbag to Malibagh	1888	4211.52	C	C	C	F
Ramna to Moghbazar	3962	2782.23	C	C	D	D
Moghbazar to Ramna	3163	2833.52	C	C	C	D
Rampura to Mouchak	3539	6605.53	C	D	C	F
Mouchak to Rampura	3698	8113.52	C	F	C	F
Shantinagar to Kakrail	2942	13300.25	C	D	C	F
Kakrail to Shantinagar	2962	8259.25	C	C	C	F

Source: LGED and Authors' calculation, 2014

From this estimation, it can be summarized that the Mogbazar-Mouchak flyover would barely be able to take part in reducing traffic congestion of Dhaka city; rather it might create more congestion at both on the flyover and at grade links along the routes of flyover by attracting more traffic. Wrong prediction and estimation of future traffic volume using the flyover are mainly responsible for the inefficient implementation of the flyover in reducing traffic congestion of Dhaka city.

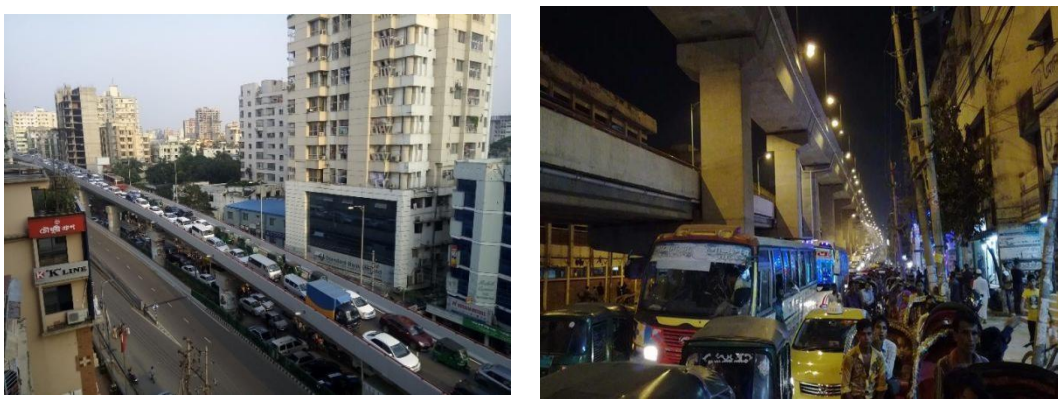
Operational Experience of Mogbazar-Mouchak Flyover

Although flyovers aim at ensuring free traffic flow, it may cause congestion when the road capacity is full during peak hours and if the volume of vehicles travelling during that time is greater than the capacity of the flyover. Unfortunately, it is the constant

problem with the flyovers in Dhaka city (Dhaka Tribune, 2017). The Mouchak-Mogbazar flyover is also acutely faced by this problem.

Mouchak-Mogbazar flyover was opened to all traffic on 26 Oct 1pm in 2017 with a view to reduce congestion and travel uncertainty of the commuters (The Daily Star 2017, and bdnews24.com, 2017). But within several hours of its inauguration, the flyover experienced massive traffic congestion and two-storied flyover was fully craped.

Due to the huge tailback in the links, travel time increased abnormally. Serious congestion was observed in Mouchak intersection, Rampura to Shantinagar and Razarbagh to Mouchak via Maligabagh stretches, Saat Raasta-Moghbazar-Holy Family stretch, Moghbazar to Holy Family Hospital and from there to Saat Raasta. Only Shantinagar to Hazipara Shahidi mosque via Malibagh-Mouchak route had less waiting time at signal.



Source: Dhaka Tribune, 2017

Figure 13: Traffic jam in Mogbazar Mouchak flyovers

It took more than 45 minutes to travel Iskaton to Mouchak. Several hundred vehicles were stuck at the Mouchak and Malibagh traffic signals on the second floor of the flyover (Figure 13). The jam stretched to Mouchak from Iskaton because of the traffic signal at Bangla Motor area. A similar situation was seen on the streets below the flyover where hundreds of vehicles were stuck in traffic signals (Dhaka Tribune, 2017).

Although flyovers are made to facilitate signal free smooth traffic flow, automated signal system has been introduced in Mouchak-Mogbazar flyover to control traffic movement. Despite having automated signal system, traffic policmen were seen controlling traffic manually and preventing vehicles from using it, confusing many drivers.

With reference to the transport expert, Dhaka Tribune on 28 October 2017 reported that 30-second traffic signal at Mouchak and Malibagh intersections of Moghbazar-Mouchak flyover is not nearly enough to prevent gridlock (Dhaka Tribute, 2017). Due to these increase in traffic congestion and interruption in traffic flow, the flyover has earned its nickname as "the burden of Dhaka" (Dhaka Tribune, 2017).

Furthermore, flyover adds suffering to the user during monsoon. As shown in Figure 14, due to inappropriate design of drainage, flyover was water logged by several hour's rainfall (Daily Sun, 2018).

Source: Collected from social media, 2017

Figure 14: Rainwater logging on Mogbazar-Mouchak flyovers

Conclusion

Although, flyovers are constructed to solve the congestion problem, sometimes they are contributing to the problem. The experts blamed faulty design and shortsighted planning as the reason of increased traffic congestion and the non-functionality of the flyover. The flyover had criticism for two consecutive cost hikes and its faulty design. Despite Bangladeshi roads drive on left side, the flyover was designed for driving on the right side. Furthermore, the flyover pillars were randomly placed considering the utility lines along with a number of unnecessary dividers forcing traffic flow to slow down.

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