Analysis of Possible Causes of Road Congestion Problem in Dhaka City

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\textbf{Abstract:} Dhaka is considered as one of the most densely populated cities in the world. Everyday millions of people living in Dhaka suffer from miserable traffic jam. Due to this, annual financial loss is increasing and the adversity of common people is touching the intolerable limit. Therefore, this research has carried out to identify the major causes of road congestion problem in Dhaka city. Opinions of the passengers, vehicle operators and experts were collected based on a questionnaire survey. Traffic rules violation, rapid socio economic changes, growth of population, lack of city planning and control etc. can be defined as the main reasons that have made the road congestion problem more complicated. However, the most participants recognized private car as the reason for traffic congestion. By reducing traffic jam, we can ensure traffic less financial growth of Bangladesh and moreover, we can ensure a better environment. Overall, this report contains an analytical discussion of ten major causes of road congestion problem in Dhaka city.

\section{Introduction}

The mega city Dhaka is one of the world's most populated cities with about eighteen million people \cite{1}. However, traffic jam of Dhaka city is considered as one of the most awful problems in Bangladesh. Every day the passengers have to suffer from this intolerable misery and therefore, the residents are compelled to undergo physical stress. Due to traffic jam, a large portion of working hours have to be left on the road which put sluggish impact on our economy. Experts, common people and media have been continuously highlighting the worst impact of this issue. In recent time, Bangladesh government has taken some steps for controlling this huge traffic congestion. Some projects are bringing in good feedbacks; however, the overall scenario is still alarming.

In today's world, the success of a city depends on its economy, and a sound economy depends on its infrastructure. Besides, a planned structured city is essential to have a good transport system. The citizens of Dhaka can highly feel the importance of organized infrastructures, as they have to waste their valuable working hours on road due to traffic jam. For a city like Dhaka, traffic congestion is like a block for economic development. According to experts, Dhaka's traffic jams eat up about Taka 550 billion every year \cite{2}. The study jointly conducted by the Metropolitan Chamber of Commerce and Industry (MCCI) and Chartered Institute of Logistics and Transport Bangladesh in 2010, found that about 3.2 million business hours were lost every day due to the traffic jams \cite{2}. Moreover, environmental effects of traffic congestion are resulting in struggling with pollutant related health problems. Therefore, major causes of road congestion are needed to be identified so that planners can work on it and as a result, Bangladesh can achieve a high rate of economic development and in addition, the populations of Dhaka can have a better city life.

By time, this traffic congestion problem will become significantly worse, unless actions are not taken according to plans. Even though government is planning to build more roads and add more public transit, none is easy or cheap. Lack of education and consciousness of traffic rules, improper implementation of traffic rules, encroachment of roads and sidewalks, unplanned road design, shortage of man power, public transport inadequacy, land consumption and decentralization etc. are some of the reasons why it has become more difficult to solve road congestion problem in Dhaka city.

Due to traffic jam, people are suffering economically, physically and mentally as well. However, traffic jam of Dhaka city cannot be solved in overnight. Short term and long term plans are needed together to reduce this road congestion problem. Therefore, in our research, we found out the possible major causes of traffic congestion problem in Dhaka city so that later we can predict the possible solutions for them.

\section{Related Works}

Traffic problem in Dhaka has been a matter of concern for over fifty years. Many researchers have been analyzing this intense road congestion problem. However, the situation has not been improved. In 1979, Baquee studied the traffic problem of old Dhaka city. She analyzed the causes and identified...
that the city road was not designed to cope up with increasing numbers of vehicles. She recommended some of the traffic management techniques to control the problem such as time restriction for the related vehicles, parking provisions improvement, one-way system, banning of selected vehicles from selected roads etc. Moreover, she suggested that growing number of vehicles are responsible for traffic jam

The scenario had not been changed in 1997, when Md. Masud Karim conducted his research on the topic. He identified limited resources, rapid rise in transport demand, existence of a huge number of non-motorized vehicles on roads, lack of application of adequate and proper traffic management schemes as the reasons for traffic congestion problem in almost all the urban areas of Bangladesh [4].

Furthermore, Khaled Mahmud, Khonika Gope and Syed Mustafizur Rahman Chowdury (2012) identified some of the major causes of traffic congestion problem in Dhaka city. They found that over 95 percent buses do not abide by the Motor Vehicle Act (MVA). Besides, manual traffic control system and therefore, traffic mismanagement let the whole traffic system inactive in rush hours. Moreover, they portrayed the other reasons such as lack of proper planning of the city, inadequate road space, unplanned stoppage or parking, different speed vehicle in the same road, and over population, etc. [5]

In addition, the situation has not been improved in years when Marshal illustrates the present condition of traffic jam in Dhaka in 2016. In his report he demonstrates that around half of the city dwellers go to work on foot, while the rest does so by using private cars, buses, motorcycles, rickshaws or other means of transport. Besides, when the standard requirement of roads for a modern city is 25 percent, Dhaka uses only 7.5 percent of its total area. He depicts the negative impact of traffic jam as foreign investment has been reduced dramatically over the years [1].

From the above review, it is appeared that there is certain number of reasons why traffic congestion occurs in Dhaka city. Traffic mismanagement, inadequate road space, lack of proper planning and over population etc. are identified as the major causes for the problem. Even though Bangladesh government has been trying to ease the scenario, the situation is getting worsen day by day. Unfortunately, there have been limited studies dedicated to this traffic congestion problem. However, effective and efficient researches and some realistic solution might give us some prospect to solve the traffic congestion problem in Dhaka city.

3. Experimental Methodology

The main purpose of this research was to analyze the major causes of traffic congestion problem in Dhaka city. However, we could not manage to cover the whole area to collect the information due to time and resources constraints. Therefore, we selected Motijhil-Mohakhali route, Farmgate-Mirpur 14 route, Mohakhali-Abdullahpur route and Jatrabari-Bahundhara route for buses; Gulisthan-Banani route, Mirpur-Farmgate route, Nabisko-Uttara route and Gulshan 1-Bashundhara route for CNG three wheelers; and for rickshaws, we choose Tejgaon industrial area, Dhaka university area, Karwan Bazar area and Niketon area.

The main objective of data collection process was to know the opinions of the citizens of Dhaka city. We categorized the participants into three different sections. Firstly, we interviewed the general people who are the daily travellers in Dhaka city. They participated in our questionnaire survey and besides, they shared their own views on the traffic congestion problem. Moreover, they shared their personal opinions on the possible causes of traffic jam. In addition, we collected the views of the vehicle operators who are possibly the most experienced figures on traffic congestion problem. As many reports directly blame the drivers to be responsible for violating the traffic rules and thus hamper the traffic management system, we interviewed them to collect their own opinions. Besides, based on their practical experiences, they shared their judgments on the possible reasons of traffic jam and how this congestion problem can be reduced.

Furthermore, we consulted with the expert government officials from South Nagar Bhaban, Dhaka; Bangladesh Roads Transportation Authority (BRTA); and Roads and Highways Department, Dhaka, Bangladesh to collect their ideas on the possible causes of the problem.

4. Experimental Result & Explanation

According to our survey result, the passengers of Dhaka city usually choose the media of transport based on their daily purposes. For instance, some people prefer to reach their destinations by foot or by using a bicycle or a rickshaw. However, on the other hand, most of the commuters usually use public bus, private cars or CNG three wheelers to go to their target places.

The survey result states that the majority of the passengers generally use bus (either public bus or office bus) to reach their work places. The availability and low fare rate usually inspire them in choosing this mode of transport. Besides, CNG three wheelers and private cars are very popular in Dhaka city. When close to ten percent people usually prefer
CNG three wheelers as a mode of transport, it is almost two times higher than this number for private cars. However, there is not much gender variation in selecting the modes of transport. But in general, women prefer to avoid adversity in public bus.

In addition, following our survey results, we identified the major causes that were stated by passengers, vehicle operators, and the experts. According to result, there are several causes that are responsible for the road congestion problem such as excessive number of private cars on the road, traffic rules violation, traffic mismanagement, low road space, over population, insufficient roads, illegal possession of roads and sidewalks, lack or driving training/sense, unplanned city growth, different speed vehicles, u turn, and inadequate parking facilities etc. However, only the major causes are illustrated in the pie chart and then discussed in the following paragraphs.

**4.1. Causes of Traffic Congestion**

In general, experts’ blame unplanned urbanization as the main reason for traffic congestion problem in Dhaka city. However, there are many other reasons to be considered such as traffic rules violation by both the drivers and travelers, apathy of the authorities and several unplanned bus stoppages in road sides, centralization of Dhaka and as a result, the movement of huge population towards the city, traffic mismanagement, inadequate parking facilities, excessive numbers of private cars on the road, illegal possession of roads and sidewalks, u turn and sometimes political reasons are also responsible for the gigantic road congestion problem. The explanations of these causes are as follows:

**4.1.1. Traffic Rule Violation**

Traffic rules violation is a very common practice in Dhaka. Due to lack of knowledge and unwillingness and moreover, the absence of law enforcement let the people violate the rules. Travelling in the opposite direction, violating traffic signals and changing road lanes every now and then etc. are the common examples of traffic rules violation in Dhaka city. Therefore, on one hand, these are posing a serious safety threat and on the other hand, these are causing serious road congestion problem. According to our survey results, close to 80% vehicle operators’ respondent that they were sensible (either strictly or moderately) in following the traffic rules. However, the actual scene did not support their opinions. Among the participants, while half of hundred percent usually followed the rules moderately, it was more than half of this percentage who strictly obeyed the rules. Besides, interrupting normal flows of traffic by the highly powerful government employees is a very common issue. Moreover, the impact of traffic rule violation is very alarming because if the travellers do not show respect to the traffic rules, it would be difficult for the authorities to control traffic congestion problem.

**4.1.2. Centralization of Dhaka City**

The population of Dhaka has risen in recent years because of the unplanned industrialization and
urbanization. Bangladesh’s centralized economy policy is letting the people more ambitious about Dhaka city. Most of the major export oriented industries, corporate offices, the head office of almost all multinational companies, higher educational facilities and even the major international airport of the country are located in or around the greater Dhaka city. Therefore, the rate of migration to Dhaka is increasing by days. According to Social Watch Report 2012, Dhaka controls 70 percent of the country’s total money supply, and thus it attracts 60 percent of total investment [6]. Due to this centralization policy, close to half a million people move to Dhaka every year [8]. However, the city is not rich in infrastructures to accommodate the extra residents. As a result, urban problem such as traffic congestion is increasing.

4.1.3. Traffic Mismanagement

Dhaka experiences traffic mismanagement because of insufficient traffic polices and lack of their training on traffic management, absence of automatic traffic lighting system and manual traffic control by traffic police etc. Inadequate number of traffic police is assigned to control the whole traffic system of Dhaka city. However, they do not get training on traffic management. Statistical data depicts the shortage of traffic police as only 558 sergeants out of the 3,327 traffic personnel, assigned to manage city traffic and moreover, 83 percent of the personnel, from constables to inspectors, appointed for controlling traffic without proper training [7]. Besides, traffic police themselves sometimes become the reason for traffic congestion when they stop vehicles at the side of busy roads in the name of document checking. Furthermore, manual traffic handling system occur the congestion as they fail to maintain it properly. Moreover, absence of automatic traffic lighting system has multiplied the problem.

4.1.4. Unplanned Bus Stoppage

The commuters of Dhaka experience the worse impact of bus stoppages which are placed at wrong places and moreover, the absence of bus-bays at busy areas. Experts also shared the same views as these are the two major reasons for traffic congestion problem. Even though there are many authorized bus stoppages, bus drivers usually stop their buses wherever they want to. Besides, they often pick up or drop passengers at the middle of the road which are risky and meanwhile, it creates inconvenience to others. Long routes buses are also parked outside of the bus terminal and thus they block the normal flow of the traffic and therefore, traffic congestion results in.

4.1.5. Overpopulation

Dhaka is a city of approximately eighteen million people. However, it has an area of about 350 square kilometers. The population density in Dhaka is nearly 43,000 people per square kilometer [8]. It is estimated that the population in Dhaka is increasing by 4.2% per year. Over and above, ‘Far eastern economic review’ anticipated that Dhaka would be a home for 25 million people by the year 2025 [9]. The increase citizen will certainly ascend the demand for private cars, public buses and CNG three wheelers etc. Nevertheless, the area will not be increased. Generally, the residential and commercial areas in Dhaka are situated in side by side and mostly concentrated beside the narrow roads. Therefore, the city might experience a dramatic rise of human and traffic pressure and consequently, the traffic congestion will get worsen.

4.1.6. Illegal Parking

Even though Dhaka has limited road spaces for existing vehicles, a large portion of the road is illegally possessed by private cars, CNG three wheelers, motorcycles and sometimes by buses and trucks. This illegal car parking seriously hampers the natural flow of running vehicles. Because of absence of bus bays and inadequate car parking facilities, illegal parking is commonly observed. While conducting our survey, we recorded that vehicles such as private cars and motorcycles are most commonly parked in the streets adjacent to shopping mall, schools, colleges and government and private offices. Besides, inter district and city buses have their stoppage and ticket counter at roadsides and therefore, they park their vehicles on the street. We found number of private cars was parked illegally outside Gausia, Chadni Chowk and New Market area. However, a parking lot is situated at the south gate of New Market. Capital’s development authority Rajuk conducted a study in 2014 and they complained that Dhaka’s transport and traffic management system had no discipline which cost a commuter 10 minutes on an average at each busy intersection. Rajuk and two city corporations can accommodate only 1474 vehicles which are incon siderable in response to total number of vehicles in the street [10]. Overall, lack of monitoring, inadequate parking facilities, and traffic mismanagement are responsible for illegal parking.

4.1.7. Private Car

According to our survey result, the most 38% people identified private car as the main cause for road congestion problem. Population of Dhaka is
increasing day by day and so does the private car. Since facilities of public buses are not good enough, many citizens choose to own cars. While rich people are dedicated to have cars for their individual family members, middle class families are actually forced to buy cars as the fare of CNG three wheelers have increased in recent years and also the service of public bus is not up to the mark. Besides, a public bus can possibly carry thirty to forty passengers at a time; however, on the other hand, a private car can carry maximum four to five members. According to Bijoy Bhushan Paul (2015), Director of Bangladesh Road Transport Authority (BRTA), only 10 to 15 percent people in Dhaka daily travel in private cars, but these occupy 85 percent of the roads [11]. Every year the number of registered vehicles is increasing and it has increased in a significant number in last few decades. In the following pie chart, the number of registered vehicles is shown:

4.1.8. Possession of Roads and Sidewalks

The existing road network in Dhaka is not sufficient enough to hold the increasing number of vehicles. Nevertheless, this existing roads network has been excluded by the peddler which results in narrower the roads and therefore, it causes the traffic jam. Possession of roads and sidewalks is a common problem in Dhaka. Day by day the business of hawkers is expanding and therefore, it is making the problem more complicated. Street vendors, hawkers and street front shop owners occupy 60% of the 163 km footpaths of Dhaka city. Even sometimes the sidewalks are filled up by construction materials and garbage which make the situation more worsen. Besides, very often pedestrians are forced to walk on the main roads and it interrupts the normal flow of the vehicles.

4.1.9. U Turn

The people living in Dhaka daily experience the worst impact of traffic mismanagement. For instance, in many busy spots, sharp openings have been provided for U turn without considering its impact on the flow of other vehicles. U turn in major busy road section is considerably responsible for road congestion problem in Dhaka city. Again, most road intersections do not have proper arrangement for right turn. When number of vehicles turns at a time, it hinders natural speed of oncoming vehicles from the opposite side. As a result, all vehicles start moving in all possible direction and thus they cause traffic jam.

4.1.10. Political Reasons

Dhaka is a center of political activities for all the political parties in Bangladesh. Almost every day citizens become the witness of political programs which are arranged at the side of streets and thus it slow down the traffic flow during peak hour. The situation goes off when processions or protest occur in important streets. Moreover, while the president, the prime minister or the ambassadors travel in between the city roads, the general traffic are stopped for long period of time and consequently, it cause serious traffic congestion problem.

5. Conclusion

In Dhaka, the natural flow of vehicle is stopped daily for hours due to traffic jam. It has direct impacts on social life and significantly on country’s economy. On one hand, Bangladesh is losing valuable working hours; on the other hand, people are suffering physically and mentally due to stay in for long period of times. Bangladesh government has been trying to ease the situation; however the scenario is not changing at all. Recently, few flyovers have reduced the load of traffic in some particular points such Kuril Bisso Road, Sas Rasta, Malibag and Jatrabari etc. but overall, Dhaka is still in huge pressure of vehicles. In this research, we have analyzed particularly the major causes of traffic jam, since our intension is to find out the most feasible solutions of these specific problems in
future. Overall, the country is struggling economically and environmentally due to traffic congestion. Therefore, precise concentration and advanced level of coordination is needed to control the situation and possibly reduce traffic jam.

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7. References


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