



# Public Transport Mismanagement and Its Effects in Dhaka City

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**Abstract.** Dhaka is the most disordered city in the world ranking as the 10th largest megacity in the world. Most of the main roads in Dhaka city are blocked for 24 hours. Pedestrians and sidewalks are jammed at roadside shophouses, road signs are lacking, simple directions, zebra crossing, people don't know how to use bridges, parking turbidity. It's bad in the area, institutional failures and regulatory systems, unprofessional drivers, a tendency to overtake and corruption of traffic controllers is a daily occurrence. Of all traffic accidents, 70% of victims are pedestrians. For the ultimate solution to the burning issue, it is time for the Government to come forward for the safety and comfort of citizens on the roads. This study is intended to provide an overall summary of daily street scenarios of Dhaka city life and analyze solutions to traffic jams especially. The 3-step review process consists of searching and retrieving articles, screening and sorting, and final inclusion. It turns out that much is needed to bring about change in the Bangladeshi Transport sector in the city of Dhaka. Government should come forward with proper transportation facilities, put skilled drivers, contactors, maintain and repair existing local buses and provide good number of new buses on roads r. The conclusion obtained in this study is that the main problems of Dhaka city arise due to several reasons, namely a densely populated city with unaware people, lack of public transportation, corrupt police officers and lack of footpaths and roadblocks with mini shops.

**Keywords:** Transportation system · Traffic mismanagement · Intelligent transportation system

## 1 Introduction

The transportation system in Dhaka is based on a Non-Motorized service known as a rickshaw. Buses and minibuses are the cheapest and easiest mode of transportation for middle and low income families. Transportation services in Dhaka consist of unorganized narrow road modes, traffic jams, long waiting times and journeys, higher costs which place the point of service at a level that is inefficient, unproductive and unsafe [1]. Failure in the traffic management control system is an intersection accident where buses and trucks are the main contributors. Most roads are useless due to inefficient use of corners, parking without permits and proper planning and poor operating conditions. Gate lock

services, seated services, ticket services are more expensive where the operating behavior is like local services [2]. According to a report by the Dhaka Tribune, 500 people have died in the last three months due to road accidents.

Bangladesh Road Transport Authority (BRTA), Dhaka Metropolitan Police (DMP), Dhaka Transport Coordinating Authority (DTCA) blamed drivers for their negligence whereas drivers filed claims about the movement of passengers distracting them from driving fast and distracting their focus on the road. The importance of this research is because traffic in the city of Dhaka, has less authority so it is necessary to analyze an effective model and steps to be applied to public transport services.

This study aims to investigate the impact of traffic on Dhaka City, road conditions focusing on traffic congestion. This review is also intended to measure the lack of authority and analyze effective models and steps to be implemented to smoothen public transport services. The data can be used to identify important issues and questions in the literature and help shape the future trajectory of Dhaka city traffic congestion research.

## 2 Method

Data and collected from Dhaka Tribune, New Republic, Reports from Bangladesh Road Transport Authority (BRTA) and Journals are well published and resourceful sites. There is a three-step review followed in this study. First, research articles were searched for transportation issues in Dhaka city from various database sites such as ScienceDirect, IEEE, ResearchGate, etc. Second, articles were selected based on research questions related to transportation issues. Lastly, articles unrelated to transport issues in Dhaka city were excluded and related papers were selected for final inclusion.

Textual analysis is a methodology – a data collection process – for researchers wishing to understand how members of various cultures and subcultures understand who they are, and how they adapt to the world in which they live [1]. We interpret texts to try and make sense of the ways in which, in a given culture at a given time, people make sense of the world around them [2].

## 3 Literature Review

The term sustainability defines a system essential for sustaining the quality of life of human society. Sustainable development is committed to ensuring that the needs of the present situation are met without compromising their ability to meet the needs of future generations. The concept of sustainable transportation and peace on the streets begins with promising a city system that is progressive and livable in quality. The transportation system consists of “human behavior, network configuration, system geography, and available modes of travel”. The stakeholders involved in the transportation system are “markets, companies, governments and other actors” who use various infrastructure and vehicles in their daily lives. Transportation sustainability is related to human well-being, the environment, and human economic expansion [3]. Developing countries, especially South Asian countries, are still struggling to balance the urbanization process along with ecological balance, value systems, urban planning and resource planning and management. New urban development needs to be shaped as an eco-city by considering the

relationship between transport and urban form and prioritizing advances in public transport systems, increasing road capacity, non-motorised mode, human orientation and protecting high density environments. In the era of globalization, the public transportation system also needs to prioritize economic activities, creativity, innovation, sustainable urban planning principles and a vision-oriented lifestyle for the community [4]. The development of urban transport causes large negative externalities and impacts in the country. The costs of greenhouse gas emissions and air pollution, water pollution, vibration, visual intrusion are the core interventions of the environmental protection strategy. In addition, the congestion costs in terms of “time delay, additional fuel consumption accidents, infrastructure damage” cannot be ignored for urban development purposes. Sustainable [5]. Over the past decades, developing countries such as Bangladesh have experienced alarming levels of traffic accidents due to traffic and road errors, lack of traffic accident and road geometry analysis, road driver unawareness and inadequate traffic control parameters.. A study conducted by [6] reported that 97% of traffic accidents occurred on straight roads and more than 70% occurred on divided roads [6]. “The total annual cost due to traffic congestion in Dhaka was found to be USD 3868 million” [7]. Another neighboring country of India has reported death risk in 16 out of 35 states and union territories while 50% of cities are in danger compared to mofussil counterparts. The management of India’s transport is the responsibility of the central or state government and any specialized agency is not involved. The central government failed to keep track of vehicle testing, road design, enforcement of road safety laws, and medical treatment facilities due to non-participation of local agencies and duplication of functions [8].

A similar study conducted by [9] assessed the impact of Road Traffic incidents (RTI), current policies, mechanisms, and interventions for accident prevention in the Indian Context. The study reports on the involvement of coordinating agencies in public transport and road management systems and the integration of health professionals to support implementation of road safety plans and reduce the burden of road traffic injuries. Poland is another developing country with lower economic performance struggling since 1998 for the implementation of the concept of Sustainable Smart Cities. A study in Wroclaw, a Polish city until 2018 reported that, the country failed to create a link between citizen participation and the concept of sustainable urban development during the evolution of a Sustainable Smart City (SSC). Again limited use if ICT and budget constraints together with the wrong development framework, lack of coordination between decision-making units intervenes in the promotion of sustainable cities [10]. It is a challenge for developing countries to maintain road safety, vehicle fleet, mortality, reckless driving, control of unregulated vehicle movements, maintenance and documentation of traffic data. To deal with city counterattacks, modernized advanced city systems require government efforts regarding “smart city technology installations, Intelligent Transport Systems (ITS), cloud and ITS services, computation experiments and parallel execution approaches (ACP), parallel transport management and control systems ( PTMS), computational experimentation, transportation knowledge automation”. The new generation of transportation systems recognizes how advances in Internet and Web Technologies are related to social development, and how it is affected by society and people. Researchers claim the social transportation system as the fundamental core

of the transportation system and following it Intelligent Transportation System (ITS) in the process of urbanization seeks to ensure people's safety, provide route guidance, protect the environment, and human-centered improvement on a regular basis. The Parallel Transportation Management and Control System (PTMS) approach has been carried out by [11] following a computational experiment to make a connection between the actual system and the artificial system. According to him, PTMS-based optimization and planning follows the steps of utilizing various sensors to track real-time data in actual transportation systems, solving problems in a short time with parameter adjustments, pre-testing new solutions and original solutions in parallel transportation systems., monitor execution performance and control solutions against certain standards. The model name Decision Support System (DSS) has been proposed by [12] to effectively manage large transportation systems with dynamically changing control parameters. By using system software capable of processing algorithms for traffic information and data analysis, changing road network connections and reducing excessive movement of private vehicles. The system is expected to use intelligent heart customization and assist management in troubleshooting, selecting custom control systems and reducing environmental impact with high population mobility. According to [13] a line in a major public transportation system must offer essential travel services besides being a line on a map. There is a significant need for higher frequencies in public transport services, according to various market research. Comparative studies of several cities reveal the importance of high frequency for public transportation use. High-frequency service levels are especially important when the goal of a policy is to discourage people from driving. Although often assumed in practical planning, the relationship between frequency and demand is not that simple.

## 4 Result and Discussion

### 4.1 Transportation Crisis

According to a study by [14], Dhaka is known as the most densely populated and unplanned city with traffic jams. The main vehicles that play on the road are buses, minibuses, rickshaws, CNG rickshaws, Pig-Taxis and private cars. The urban area is a mix of high density, widespread poor slums, and squatter settlements. People don't want to walk because of inefficient infrastructure facilities. There are also many people and mini-shops blocking footpath encroachment, as per a 2010 report from BRTA on traffic jams people sitting on the road every day for 10–12 hours which is becoming more dangerous day by day with estimated population numbers. Dhaka will be 24 million in 2024 and currently light vehicles are 38.5% of the total vehicles [15]. Neither bus drivers nor bus service users follow any rules, traffic police always stop local minibuses on the road and besides their responsibility to check license documents, drivers control them always busy for bribes once they are not satisfied they bargain with drivers while waiting for passengers and creating traffic jams [16]. Bus services are urgently needed but only about 5% are controlled by the government while 7,000 buses and minibuses in the city with more than 60 companies from various ownership structures operate on an unknown number of routes, with weak regulation of fares and service levels. 25% of

traffic accidents are caused by poor bus quality, competition for passengers on the road, overcrowding and weakness of pedestrian facilities.

## 4.2 Unplanned City Structure

There seems to be a disorganized road network plan within the city structure that is not focused on the demands and needs of the public and travel. There is no planning for housing development, the existing roads are irregular, narrow, intersections such as flyovers and railroad crossings add to congestion at the entrances of the ramps [17]. Physical geography of Bangladesh represents 7% of country surface which is covered by 24000 long inland waterway network and 27% paved road network, road density is 1000 persons per kilometer where applied road maintenance budget is less than 50% of actual. This mismatch between infrastructure and demand causes congestion, pollution, and road accidents [18]. The development in Old Dhaka originates from the East-West direction and the new Dhaka is developed from the North-South direction with a distance of 3000 km, of which 200 km is the main road, 110 km is a secondary road and 50 km is a feeder road. The remaining 2640 km are alternative and herb-free connecting roads for bicycle paths and sidewalks that are safe for pedestrians. In the city, there are 100 open-air markets on the streets and 3000 shopping malls beside the roads without following parking and land registration procedures. This takes up 20,000–50,000 volumes of pedestrian space per day and creates roads. Coalition and accounted for two-thirds of congestion [1].

## 4.3 Beck Neck Situation

According to a study by [19], the rapid growth of Non-Motorized Public Transport (NMPT) is around two million according to the latest statistics. Public bus drivers and crew rent the buses on a daily or monthly basis. They want more revenue and need additional passengers for each trip to cover their fuel, maintenance and rental costs and to earn more. As a result, they wait too long at passenger stops and they stop every two minutes at every point causing traffic jams [20]. They appear to be overtaking without adequate warning, brakes failing, cell phone conversations while driving, speeding and encouraging passengers to sit on the roof of the bus. Lack of education and awareness about traffic rules and regulations on every actor (passengers, drivers, pedestrians, traffic police) creates this dangerous situation. The buses don't stop at the bus stop they head for at the main point, an intersection where there are always rickshaws waiting for passengers at any time. Passengers do not use crossings, zebra crossings or bridges that cause road damage [21]. Traffic rules appear to be very flexible because traffic police do not stay at their selective point and they have no control over vehicle offenders. Additionally, vehicular traffickers control the military police and traffic controllers through bribes and fines.

## 4.4 Peace on the Road

The rapid and continuous urbanization of Bangladesh is generating extreme levels of traffic congestion and tremendous demand for infrastructure, service provision. Footpaths

and city side streets are blocked with building materials, garbage, hawkers, beggars, homeless and their belongings forcing pedestrians to move on the main roads. Regular stores and shops should be moved away from street corners and living areas should be allocated for the homeless. Regulatory Authorities must be harmonized. In particular the Dhaka City Corporation (DCC), Roads and Highways (RHD), Bangladesh Road Transport Authority (BRTA), Bangladesh Road Transport Corporation (BRTC), Dhaka Metropolitan Police (DMP) have to coordinate with each other from the planning step to recording and reporting. The width of the road must be proportional considering the traffic load and the structure must be within the maximum limit (Dhaka Metropolitan Development Plan, DMDP, 2013). Inter-City Railroads and the intervals for trains to get on and off should be controlled in important central business districts and busy streets. Government authorities should properly ensure adequate parking space compared to site traffic conditions prior to building approval, shopping malls, commercial state construction, and residential parking should be monitored regularly. Bangladesh Road Transport should control the fees of Rickshaw Drivers so that people are motivated to use other vehicles either buses. The crash site must be properly plotted. Unreporting and under-reporting make it difficult today to understand the true magnitude of the problem of traffic accidents. The responsibility to the Bangladesh Police Department, in this case, should be strictly assigned by and Signal Time should be reduced as the causes of vehicle operation due to congestion consist of excess fuel burn costs and additional lubricant costs and other maintenance costs for the vehicles. Bangladesh Road Transport officers must be capable and skilled enough to handle fare setting, equipment manufacturing, and good governance standards for the franchisor to meet [16]. The media should be allowed to report on every incident so that citizens become more aware of road conditions and move around more safely.

#### **4.5 Transportation Operation Reform**

According to the Motor Vehicle Ordinance, every vehicle must be registered with the BRTA. As Motorized Rickshaws are not permitted, the Dhaka City authorities have to take note of the bicycle rickshaws to be registered and the license has to be confirmed from the City Corporation or Pourashavas concerned. Registration records provided by BRTA from 1994 do not represent records of correct route permits, number of motorized vehicles operated, details of bus and minibus owners, no list of inter-district buses operating not only in Dhaka city but also outside the city. Fare Fixation is recommended to be repaired taking into account the owner's capital investment, salvage value, operation, repair and maintenance, and profit margins, so they don't become aggressive to earn more. BRTC should increase the number of vehicles as they are in good condition but private buses dominate as a key player in the city. The government has transformed the current Dhaka Transport Coordinating Board (DTCB) into the Dhaka Transport Coordinating Authority (DTCA) to strengthen their capacity in planning coordination in Greater Dhaka. The DTCA Act 2012 has given authority to the DTCA to design, plan and implement public transport routes. However, this power has not yet been transferred to DTC.

#### **4.6 Intelligent Transportation System**

According to the article (Khan and Chowdhury) there are many causes behind the failure of the Transportation system in Dhaka City and it has become one of the worst congested cities in the world because it has complex socio-economic, administrative and technological constraints. The desired goal of reducing traffic congestion could not be achieved in recent infrastructure developments due to these constraints. Applications for intelligent transport networks are gradually being implemented in Dhaka City but they have the potential to minimize many existing congestion problems [22]. The information and telecommunications revolution that has changed the lives of people in Dhaka City provides an opportunity to explore the capabilities of ITS applications to solve these dire mobility problems. In addition, the local private sector should develop by investing in partnerships with the government. There are various applications of low-cost, high-return intelligent transport systems as seen in many developed countries; which reinforces the belief that Dhaka will jump to a scalable ITS infrastructure program in no time to overcome its congestion problems.

### **5 Conclusion and Recommendation**

The main problem of Dhaka city arises due to several reasons which are densely populated city with unaware people, lack of public transportation, corrupt police officers and lack of footpaths and blocked footpaths with mini shops. The unplanned urban structure is one of the main causes of irregular and narrow roads. There are many railway crossings in the city of Dhaka which cause traffic jams apart from parking on the roads. Rental car and bus drivers want more income even in cases of congestion. Flexible traffic rules, imprecise traffic measures and arrogant drivers with lack of training and awareness of traffic rules and regulations are other reasons behind this serious traffic situation in Dhaka city. The use of the Intelligent Transportation System application, which is low-cost and affordable by developing countries such as Bangladesh, is able to reduce traffic jams effectively in the city of Dhaka. There is much needed to bring about change in the Bangladesh Transport sector in the city of Dhaka. The government should come forward with proper transport facilities, hire skilled drivers, contactors, maintain and repair existing local buses and provide a good number of new buses on the roads. The domination of private companies and non-motorized vehicles in terms of collecting fares and services must be reduced considering the public transport budget per day. Lower middle class families cannot afford this fee, while they have no choice due to the availability of public buses and the condition of the available buses. For women, children and the elderly, separate vehicles or modes of transport should be introduced by either the government or a public-private partnership. The responsible authority should carry out a survey once every six months to measure service levels and to understand citizens' perspectives. The Ministry of Public Transportation must stop the tendency to bribe and take extra fines from police officers and surgeons as long as there are mistakes made by the drivers and bus owners. Police and Responsible Authorities must be accountable and responsible for their responsibilities. Government services need to be further expanded to support its additional population with a safe and secure life.

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