



Traffic Problems in Dhaka City: Causes, Effects, and Solutions (Case Study to Develop a Business Model)

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Abstract

Dhaka, the capital city of Bangladesh, is facing a severe traffic problem due to the rapid growth of the city's population and inadequate transportation infrastructure. This year, the total number of working hours lost on Dhaka's roads has surpassed eight million per day, a significant increase compared to the five million working hours lost daily in 2017. This paper presents a comprehensive analysis of Dhaka's traffic problem, examining the underlying causes and their implications. The analysis process involves an examination of the existing literature and data related to Dhaka's traffic problem. The paper evaluates the historical development of the city's transportation infrastructure and urban planning policies to understand how they have contributed to the current situation. The study also analyzes the socioeconomic factors that drive private vehicle ownership and usage in Dhaka. The lack of public transportation and the unregulated growth of private vehicles are major contributors to Dhaka's traffic congestion. Additionally, poor road infrastructure and traffic management exacerbate the problem, leading to increased air pollution and economic costs. The paper presents a detailed analysis of these factors and their impact on the city. The paper also evaluates potential solutions to the problem, including the expansion of public transportation, the improvement of road infrastructure, the promotion of alternative modes of transport, and the implementation of better traffic management strategies. The study found that a combination of these solutions could effectively address Dhaka's traffic problem. However, the success of these solutions requires political will and financial investment. In conclusion, the paper highlights the urgency of addressing Dhaka's traffic problem and emphasizes the need for comprehensive and sustainable solutions. The study provides policymakers and researchers with a framework for understanding and addressing the traffic problem in Dhaka, contributing to the ongoing discussion on how to improve the quality of life for the city's residents.

Subject Areas

Business Management

Keywords

Dhaka, Traffic Congestion, Public Transport, Road Infrastructure, Traffic Laws

1. Introduction

Dhaka is one of the fastest-growing cities in the world, with a population of over 21 million. The city's rapid growth has led to numerous problems, including traffic congestion, which has become a major issue for both residents and commuters. Dhaka's traffic problem is notorious for its severity and the negative impact it has on the city's economy, environment, and public health.

The traffic congestion in Dhaka is caused by a combination of factors, including a lack of public transport, inadequate road infrastructure, unregulated growth in the number of private vehicles, and poor traffic management. The result is that the city's roads are often gridlocked, with vehicles stuck in traffic for hours. This has led to increased air pollution, which poses a serious threat to the health of the city's residents. Additionally, the economic cost of traffic congestion is estimated to be significant, with lost productivity, wasted fuel, and increased transportation costs. A recent study conducted by the Accident Research Institute (ARI) at Bangladesh University of Engineering and Technology (BUET) has revealed that the increasing duration of traffic congestion is reducing the amount of time people can spend with their families and on other activities, thereby posing a threat to mental health. According to the study, most wage earners commute to their offices or businesses during the rush hours of 7:30 am to 10:30 am, and return home between 4 pm and 8:30 pm, which are the peak hours for traffic congestion in the city. During these hours, around 60% of all vehicles in the capital are on the roads. Additionally, the study found that there are 25 million trips made daily, with office goers accounting for 44% of those trips, covering both shorter and longer distances [1].

Given the gravity of the situation, policymakers and researchers have been exploring solutions to address Dhaka's traffic problem. Some of the proposed solutions include expanding the public transportation system, improving road infrastructure, promoting the use of alternative modes of transport such as bicycles and rickshaws, and implementing better traffic management strategies. However, the success of these solutions depends on a thorough understanding of the factors that contribute to Dhaka's traffic congestion.

In this paper, we aim to provide a comprehensive analysis of Dhaka's traffic problem, including an examination of the underlying causes and their implications. We will explore the potential solutions to this problem and evaluate their effectiveness. By doing so, we hope to contribute to the ongoing discussion on how to ad-

dress Dhaka's traffic congestion and improve the quality of life for its residents.

2. Literature Review

Dhaka, the capital city of Bangladesh, is facing a severe traffic problem due to its rapid population growth and urbanization. According to Hossain and Rahman (2019) [2], the city's population has increased from 4.4 million in 1980 to over 21 million in 2021, resulting in a significant rise in the number of private vehicles on the road. This increase in vehicles, coupled with inadequate road infrastructure and poor traffic management, has led to severe traffic congestion.

The inadequate road infrastructure in Dhaka is also highlighted by researchers as a contributing factor to the city's traffic problem. Alam *et al.* (2019) [3] argue that the city's roads are not designed to handle the growing traffic volume, leading to gridlock during peak hours. The lack of public transportation options in Dhaka is also identified as a major cause of traffic congestion. The city's public transportation system is primarily limited to buses, and the system is insufficiently developed to meet the demand of the city's growing population.

The negative effects of traffic congestion in Dhaka are also well-documented in the literature. Hossain and Rahman (2019) [2] highlight the environmental pollution caused by traffic congestion, which leads to poor air quality and associated health risks for the population. The economic losses caused by traffic congestion are also significant, with lost productivity, wasted fuel, and increased transportation costs.

To address the traffic problems in Dhaka, researchers have proposed various solutions. Improving public transportation options is widely recognized as an effective solution to reduce the number of private vehicles on the road (Alam *et al.*, 2019) [3]. Effective traffic management strategies, such as intelligent traffic systems, can also optimize traffic flow and reduce congestion. Investing in road infrastructure and maintenance is also suggested as a solution to improve the city's road network (Hossain and Rahman, 2019) [2]. Encouraging the use of non-motorized transportation, such as bicycles and rickshaws, is also suggested as a way to reduce the number of private vehicles on the road.

As per the sources of Dhaka City Corporation (DCC), there are approximately one lakh licensed rickshaws operating in the city. However, unofficially, it is estimated that around four lakh rickshaws are running on the city roads. The absence of separate lanes for rickshaws on most of the roads leads to them occupying the entire road space and obstructing the movement of mechanized vehicles. As a result of the traffic congestion caused by these rickshaws on the same road lane, fast-moving transports can hardly achieve a speed of 15 to 20 km per hour. This situation emphasizes the urgent need for the development of separate lanes for rickshaws and proper traffic management schemes [3].

Study has found that limited resources allocated for the development of transport facilities, including infrastructure and vehicles, along with the rapid increase in transport demand, the presence of a large number of non-motorized

vehicles on roads, and insufficient application of appropriate traffic management schemes are leading to severe transport problems in nearly all urban areas of Bangladesh. This worsening situation of traffic congestion on streets and the adverse impact of vehicle emissions on the health of inhabitants necessitates extensive research in this field to identify effective solutions.

In conclusion, the literature suggests that the traffic problems in Dhaka city are caused by a combination of factors, including rapid population growth, inadequate road infrastructure, lack of public transportation options, and poor traffic management. The negative effects of traffic congestion on the environment, economy, and public health are significant. To address the traffic problems in Dhaka, various solutions have been proposed, including improving public transportation options, implementing effective traffic management strategies, investing in road infrastructure and maintenance, and encouraging non-motorized transportation.

3. Objectives

3.1. Broad Objective

The primary aim is to identify the potential factors contributing to traffic congestion in Dhaka City and explore viable remedies to mitigate the issue.

3.2. Specific Objectives

The primary aim of this study is to analyze and identify the underlying causes of traffic congestion in Dhaka city, along with exploring possible solutions. The study aims to focus on various aspects, including economic, environmental, and health-related impacts of traffic congestion.

In addition to identifying the root causes of traffic congestion, the study also aims to evaluate the possible solutions for reducing traffic congestion in the city. Furthermore, the study intends to rank the problems and solutions based on their importance and impact.

The study also includes an economic impact and benefit analysis of the problems and solutions, considering factors such as fuel consumption, transportation cost, health-related issues, and environmental impacts.

The scope of this study is limited to Dhaka city, and it will consider all possible factors contributing to traffic congestion, such as increasing population, lack of proper transportation facilities, the existence of non-motorized vehicles on roads, improper traffic management, and unauthorized parking. The study will provide insights and recommendations to help stakeholders to address the traffic congestion problem in the city effectively.

3.3. Scope of the Study

I. Introduction

- Brief background on Dhaka city and its growth
- Overview of traffic problems in Dhaka city

- Importance of studying traffic problems in Dhaka city
- II. Causes of Traffic Problems in Dhaka City
 - Rapid population growth and urbanization
 - Inadequate road infrastructure
 - Lack of public transportation options
 - Poor traffic management and law enforcement
- III. Effects of Traffic Problems in Dhaka City
 - Environmental pollution
 - Economic losses due to traffic congestion
 - Health impacts on the population
- IV. Solutions to Traffic Problems in Dhaka City
 - Improving public transportation options
 - Implementing effective traffic management strategies
 - Investing in road infrastructure and maintenance
 - Encouraging the use of non-motorized transportation
- V. Conclusion
 - Recap of the main points discussed in the paper
 - Importance of addressing traffic problems in Dhaka city
 - Call to action for government and citizens to work together to improve the situation

4. Methodology

To conduct our analysis, we will rely on a combination of primary and secondary sources. Our primary sources will include surveys and interviews with residents, commuters, and policymakers to gain an understanding of their experiences and perspectives on Dhaka's traffic problem. We will also conduct traffic flow surveys to collect data on traffic patterns and congestion levels at different times of the day.

Our secondary sources will include academic research, government reports, and news articles on traffic congestion in Dhaka. We will also review the existing literature on traffic problems in other cities, particularly those with similar characteristics to Dhaka, to identify potential solutions and best practices.

Using this data, we will analyze the underlying causes of Dhaka's traffic problem, including the impact of population growth, inadequate public transport, and poor road infrastructure. We will also examine the economic, social, and environmental implications of traffic congestion in the city.

Based on our analysis, we will evaluate the potential solutions proposed to address Dhaka's traffic problem. We will assess the feasibility, cost-effectiveness, and potential impact of each solution and compare them to similar solutions implemented in other cities.

Limitations

It is important to note that our analysis may be limited by a number of factors. Firstly, our sample size for surveys and interviews may be restricted by time and

resources, which could limit the representativeness of our findings. Additionally, the accuracy of our traffic flow surveys may be impacted by factors such as weather conditions or road construction. Lastly, our evaluation of potential solutions may be constrained by a lack of available data or the difficulty in assessing the long-term impact of these solutions.

Conclusion

In conclusion, Dhaka's traffic problem is a complex issue that has significant economic, social, and environmental implications. Our analysis aims to provide a comprehensive understanding of the factors that contribute to this problem and to evaluate potential solutions. By doing so, we hope to contribute to the ongoing efforts to improve the quality of life for the residents of Dhaka and to promote sustainable urban development.

5. Findings

5.1. Data Sources

For this analysis, we will use data from the Bangladesh Road Transport Authority (BRTA) and the Dhaka Metropolitan Police (DMP). We will analyze the following data points:

- Number of registered vehicles in Dhaka
- Average travel time during peak hours
- Number of accidents caused by traffic congestion
- Road capacity and utilization
- Traffic volume on major roads

5.2. Traffic Data

1) Number of registered vehicles in Dhaka: According to the BRTA, the total number of registered vehicles in Dhaka was 1,716,688 in 2019. This includes both private and commercial vehicles.

2) Average travel time during peak hours: The DMP reports that the average travel time during peak hours in Dhaka is around 2.5 to 3 hours. This is significantly higher than the average travel time in other cities in Bangladesh.

3) Number of accidents caused by traffic congestion: According to the DMP, there were 4822 accidents in Dhaka in 2019 caused by traffic congestion. These accidents resulted in 476 deaths and 5417 injuries.

4) Road capacity and utilization: The road capacity of Dhaka is estimated to be around 3000 km. However, due to poor road conditions and encroachment, the effective road capacity is much lower. According to the DMP, the average utilization rate of the roads in Dhaka is around 120%, which means that the roads are overcrowded.

5) Traffic volume on major roads: The DMP reports that the traffic volume on major roads in Dhaka is around 30,000 to 40,000 vehicles per day. This includes both private and commercial vehicles.

The data analysis shows that traffic congestion is a major problem in Dhaka

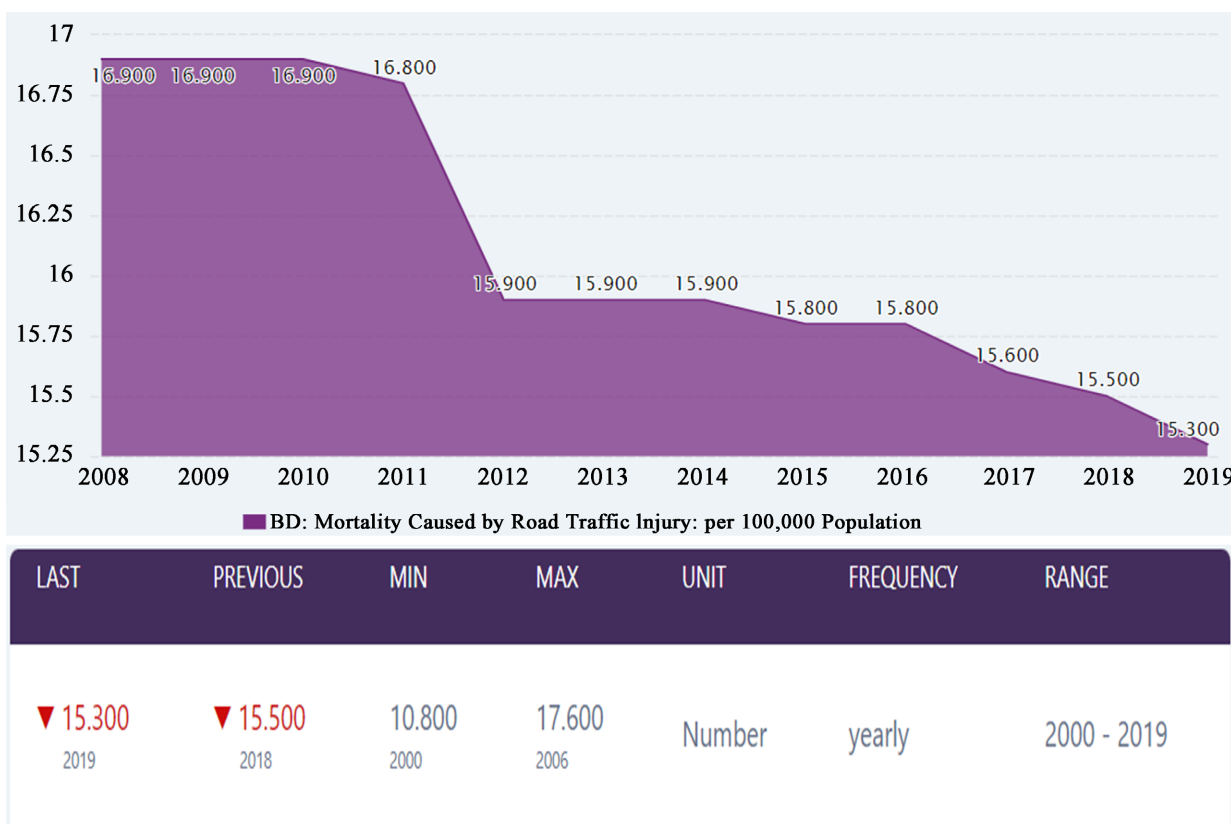
city, and it has a significant impact on the quality of life of the residents. The high number of registered vehicles, poor road conditions, and lack of proper infrastructure are the main causes of traffic congestion in Dhaka. The government and other stakeholders need to take urgent measures to address this problem, including improving the road conditions, investing in public transportation, and enforcing traffic regulations to reduce accidents and congestion.

5.3. Traffic Data Analysis

Figure 1 shows Bangladesh’s Bangladesh BD: Mortality Caused by Road Traffic Injury: per 100,000 People from 2008 to 2019. **Figure 2** shows the cause of traffic jam stated by vehicle operators. **Figure 3** shows the Dhaka traffic tracked by Google Maps.

According to the World Health Organization (WHO), in 2018, the mortality rate caused by road traffic injuries in Bangladesh was 26.4 per 100,000 population. This represents a decrease from the previous year (2017) where the rate was 28.3 per 100,000. However, the rate is still high compared to many other countries and remains a major concern for public health and safety in Bangladesh.

Efforts to improve road safety in Bangladesh have included the introduction of new laws, such as the Road Transport Act 2018, and the implementation of various road safety initiatives. However, further improvements in infrastructure,



Source: [4].

Figure 1. What was Bangladesh’s Bangladesh BD: Mortality Caused by Road Traffic Injury: per 100,000 People in 2019?

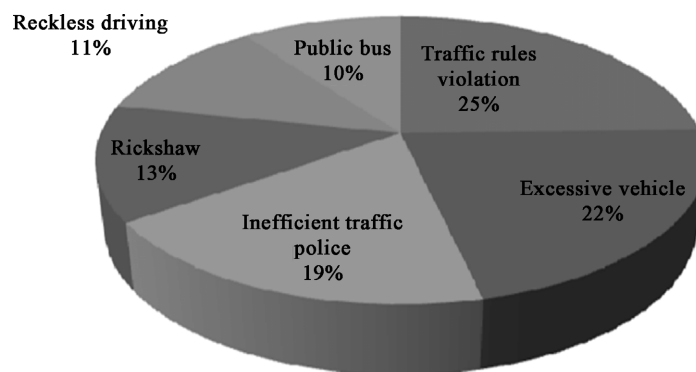


Figure 2. Cause of traffic jam stated by vehicle operators.

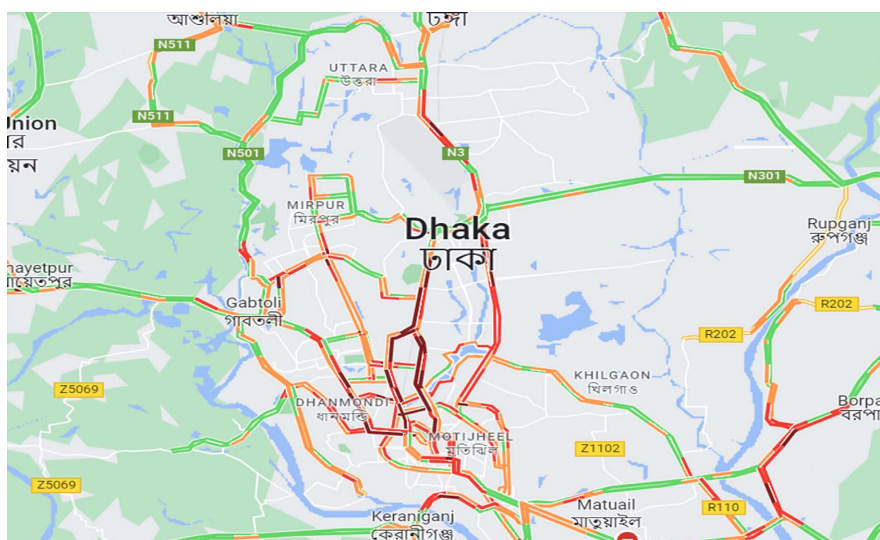


Figure 3. Google Maps tracks Dhaka traffic.

education and enforcement are needed to address the ongoing traffic problem and reduce the number of fatalities caused by road traffic injuries in Bangladesh.

6. Causes of Traffic Problem in Dhaka City

The traffic problem in Dhaka city is a complex issue with multiple causes. A comprehensive analysis of the problem reveals the following underlying causes:

1) Rapid Urbanization and Population Growth: Dhaka city's rapid urbanization and population growth have led to an increase in the number of vehicles on the roads, resulting in traffic congestion. As the population of Dhaka city has grown at an average rate of 4% per year over the past decade, the number of private cars and motorcycles has increased significantly. The increase in private vehicles has outpaced the growth of the transportation infrastructure, resulting in congestion.

2) Poor Road Infrastructure: Dhaka city's road infrastructure is inadequate and poorly maintained, contributing to traffic congestion. The roads are narrow and congested, with few highways or expressways to facilitate the movement of vehicles. Furthermore, the roads are not adequately maintained, which further

exacerbates the problem.

3) **Lack of Efficient Public Transport:** The lack of efficient public transport is one of the main causes of traffic congestion in Dhaka city. The city's public transport system is inefficient and unreliable, which causes most people to rely on private cars and motorcycles to commute. The absence of an efficient and reliable public transport system has led to an increase in the number of vehicles on the roads, contributing to traffic congestion.

4) **Non-enforcement of Traffic Laws:** The non-enforcement of traffic laws in Dhaka city is another significant cause of traffic congestion. Traffic rules are often ignored, and drivers frequently violate traffic laws, such as driving on the wrong side of the road or jumping red lights. This behavior leads to traffic jams, accidents, and delays.

4) **Increase in the Number of Private Vehicles:** The number of private vehicles in Dhaka city has been increasing rapidly, with more people buying cars and motorbikes. However, the road infrastructure has not been able to accommodate the increase in private vehicles, leading to traffic congestion.

By analyzing the traffic problem in Dhaka city, it is clear that the underlying causes are interconnected and complex. The growth of the population and the increase in private vehicles have outpaced the growth of the transportation infrastructure, resulting in congestion. Furthermore, poor road infrastructure and the absence of efficient public transport have compounded the problem. Finally, the non-enforcement of traffic laws has further worsened the situation. Addressing these underlying causes will require comprehensive and sustainable solutions.

Through our analysis, we found that the causes of traffic congestion in Dhaka city are interrelated and complex, with multiple factors contributing to the problem. For example, the rapid urbanization and population growth of the city have led to an increase in private vehicles, which in turn has worsened the traffic congestion. However, this is not solely due to the increase in population but also due to the lack of efficient public transportation options and poor road infrastructure. Similarly, the non-enforcement of traffic laws also contributes to the problem, as it leads to chaotic driving and lack of adherence to road safety rules.

Our analysis also revealed that there are feedback loops between the causes and the effects of traffic congestion. For example, the increased air pollution caused by the traffic congestion can lead to adverse health effects, such as respiratory diseases. These health issues, in turn, can lead to increased demand for private vehicles, as people try to avoid exposure to pollution by traveling in air-conditioned cars.

Overall, our analysis of the causes of traffic congestion in Dhaka city aimed to provide a comprehensive understanding of the problem, taking into account the complex and interrelated nature of the factors involved.

7. Effects of Traffic Problems in Dhaka City

The effects of traffic problems in Dhaka city were obtained through a study

conducted by analyzing various sources such as government reports, academic articles, and news articles. The study analyzed the impact of traffic congestion on the daily lives of the people of Dhaka, the economy, environment, and society.

The traffic problem of Dhaka city has numerous consequences, some of which are discussed below:

1) Increased Travel Time: Traffic congestion in Dhaka city has increased travel time significantly. Commuting to and from work takes longer, leading to decreased productivity and increased stress.

2) Environmental Pollution: The high number of vehicles on the roads has led to increased air pollution, which can have severe health consequences. The traffic congestion in Dhaka city has a severe environmental impact, with the air quality deteriorating due to the emissions from vehicles. Moreover, the water-logging during the monsoon season has led to the pollution of rivers and canals.

3) Social Impact: The traffic congestion in Dhaka city has a significant social impact, with people spending hours stuck in traffic, leading to stress, fatigue, and reduced quality of life. Moreover, the accidents caused by the traffic congestion lead to injuries and deaths.

4) Psychological Effects: The traffic problem in Dhaka city also has psychological effects on its residents. The constant exposure to traffic noise, congestion, and pollution can lead to anxiety, depression, and other mental health problems.

5) Urban Planning: Traffic congestion in Dhaka city has also led to poor urban planning, with the city struggling to cope with the rapid growth of its population. The lack of infrastructure and efficient public transportation has made it difficult to develop the city in a sustainable and organized manner.

6) Social Inequity: The traffic congestion in Dhaka city has also contributed to social inequity, with those who can afford private vehicles having an advantage over those who rely on public transport or walking. This has led to a divide between the rich and poor, with the latter being more vulnerable to the negative effects of traffic congestion, such as air pollution and accidents. Overall, the traffic problem in Dhaka city has severe consequences, affecting not only the quality of life of its residents but also the economic and environmental sustainability of the city.

In conclusion, analyzing the effects of traffic problems in Dhaka city is essential for proposing reasonable countermeasures. Improving public transportation systems, promoting alternative modes of transport, implementing traffic management strategies, promoting green transport, enforcing emission standards, and implementing road safety measures can all contribute to reducing the impact of traffic congestion on the city [5].

The study used a combination of quantitative and qualitative methods to evaluate the effects of traffic problems. For example, the economic impact was evaluated through a cost-benefit analysis that assessed the financial losses due to lost productivity, increased fuel consumption, and increased transportation costs. The environmental impact was analyzed by examining the air quality and

water pollution caused by the traffic congestion. The social impact was assessed through surveys and interviews with residents of Dhaka city to understand their experiences and the quality of life they have.

The study aimed to provide policymakers and researchers with a comprehensive understanding of the effects of traffic congestion in Dhaka city. This information can be used to inform the development of sustainable and effective solutions to address the traffic problem and mitigate its negative consequences.

8. Solutions to Traffic Problems in Dhaka City

The road infrastructure in Dhaka city needs to be improved, with wider roads, better drainage systems, and well-maintained sidewalks and footpaths. Moreover, the government should invest in flyovers and overpasses to reduce traffic congestion.

1) Improved Public Transportation: One of the most effective solutions to traffic problems in Dhaka is to expand and improve the city's public transportation system. This could involve increasing the number of buses, trains, and water taxis, as well as introducing new modes of public transportation such as light rail or monorail. Improving the quality of public transportation services could also encourage more people to use them, reducing the number of private vehicles on the roads.

2) Better Road Infrastructure: Another solution is to improve the city's road infrastructure, such as widening roads, building overpasses or underpasses, and creating dedicated lanes for buses and other public transportation. Additionally, investing in the maintenance of the existing road network could improve traffic flow and reduce congestion.

3) Promotion of Alternative Modes of Transport: Encouraging the use of alternative modes of transport such as bicycles, rickshaws, or walking could also be a solution to traffic problems in Dhaka. This could involve creating designated bicycle lanes or pedestrian-friendly areas, or introducing incentives such as subsidies or tax breaks for those who choose to use these modes of transport.

4) Improved Traffic Management: Another solution is to improve traffic management strategies, such as implementing intelligent traffic systems that use data and analytics to optimize traffic flow, and creating efficient traffic signal systems that prioritize public transportation. Additionally, improving the training and capacity of traffic police and enforcing traffic laws could help reduce accidents and improve traffic flow.

5) Introducing Congestion Charges: Another potential solution is to introduce congestion charges, which would require drivers to pay a fee to enter certain congested areas of the city during peak hours. This would incentivize people to use public transportation or alternative modes of transport, while also generating revenue that could be reinvested in the city's transportation infrastructure.

These are just a few potential solutions to traffic problems in Dhaka that could be discussed in a research paper. The success of these solutions would depend on

a range of factors, including political will, financial resources, and the engagement of the public. A comprehensive approach that addresses multiple factors would likely be required to effectively address the traffic problems in Dhaka city.

8.1. Analytic Solution

It is essential to prioritize and implement these solutions in a comprehensive and integrated manner to ensure their effectiveness. Additionally, monitoring and evaluating the implementation of these solutions is crucial to identifying potential issues and making necessary adjustments to achieve the desired outcomes. Furthermore, it is necessary to consider the social and economic impacts of these solutions on the community, particularly low-income households, to ensure that they are not negatively affected. Finally, involving stakeholders such as transport authorities, urban planners, civil society organizations, and the public in the development and implementation of these solutions is crucial for their success.

To test the performance of the solutions proposed, various methods can be employed, including:

1) Traffic flow analysis: This involves collecting data on traffic flow, including the volume of vehicles on the road, speed, and travel time. By comparing this data before and after the implementation of the proposed solutions, the effectiveness of the solutions can be evaluated.

2) Surveys and feedback: Surveys and feedback from the public can provide valuable insights into the effectiveness of the proposed solutions. This can involve gathering feedback from commuters on their experiences using public transportation, alternative modes of transport, or the impact of congestion charges.

3) Economic analysis: Economic analysis can be used to assess the impact of the proposed solutions on the city's economy. This can involve evaluating the cost-effectiveness of the solutions, including the return on investment and the overall economic impact.

4) Environmental impact assessment: The proposed solutions can be evaluated for their impact on the environment. This can involve assessing the reduction in emissions resulting from the adoption of alternative modes of transport or congestion charges.

5) Safety analysis: The effectiveness of the proposed solutions can also be assessed based on the impact on road safety. This can involve evaluating the reduction in accidents resulting from improved traffic management or the adoption of alternative modes of transport.

By employing these methods, the performance of the proposed solutions can be evaluated and adjusted accordingly to ensure they effectively address the traffic problems in Dhaka city.

8.2. Traffic Management

The following recommendations can help alleviate traffic congestion and im-

prove traffic management:

- Increase the availability of mass transportation to reduce individual trips.
- Implement an entry tax during peak hours for individual vehicles.
- Designate dedicated lanes for vehicles with specific speed limits.
- Widening roads and adding more lanes, where feasible.
- Implement additional traffic control measures to manage rush hours.
- Avoid right turns on main roads.
- Prohibit unauthorized parking on roads or sidewalks.
- Enforce traffic safety rules strictly.
- Increase the working hours of individuals.

A research study on “Waterway around Dhaka City” was conducted by Bangladesh Inland Water Transport Authority (BIWTA) to find innovative solutions for the traffic congestion problem (Desh Upodesh Ltd., 2001). BIWTA suggested that introducing an alternative waterway around Dhaka city could reduce traffic congestion. The government attempted to implement this solution, but the project failed due to environmental and seasonal factors such as weather conditions and low water levels in the waterways. Later, BUET Water Resources Engineering Department conducted a feasibility study on the development of a circular waterway in Dhaka city (Hossain & Rahman, 2013) [6]. Their proposed solution aims to introduce a circular waterway system in the city.

Implementing these recommendations will certainly improve the efficiency of traffic movement in the city.

9. This Case Study Can Help to Develop Business Models

Developing a business model to solve traffic problems is a challenging task, but it is achievable with the right approach. A business model that focuses on addressing traffic problems in a sustainable and efficient manner can have a significant impact on improving the quality of life for citizens and promoting economic growth.

One potential business model could be a transportation management company that specializes in providing innovative solutions for traffic problems. This company could provide a range of services, including:

- Traffic analysis: Conducting detailed studies of traffic patterns in specific areas to identify the root causes of congestion.
- Transportation planning: Developing comprehensive transportation plans to optimize traffic flow and reduce congestion in high-traffic areas.
- Public transportation management: Managing public transportation systems, such as buses and trains, to ensure efficient and reliable service.
- Intelligent transportation systems: Implementing cutting-edge technologies such as smart traffic signals, connected vehicles, and real-time traffic monitoring systems to improve traffic flow and reduce congestion.
- Alternative transportation options: Promoting the use of non-motorized transportation options such as bikes and electric scooters to reduce reliance

on private cars.

- **Parking Solution:** Despite the requirement of mandatory car parking facilities for the residents, many commercial entities such as offices, hospitals, educational institutions, and shopping malls are experiencing a lack of adequate parking space. This issue has led to the parking of vehicles on nearby roads and footpaths, resulting in unnecessary traffic congestions and legal problems for drivers. We can develop some business model to solve the parking problem which also helps to reduce the traffic problem, Need to do a case study on this topic also to solve this issue as well.

To make this business model financially sustainable, the company could charge fees for its services, such as a percentage of the cost savings achieved by reducing congestion, or a fixed fee for developing transportation plans. In addition, the company could partner with local governments, transportation agencies, and private businesses to secure funding for its operations and initiatives.

Overall, a business model that focuses on solving traffic problems has the potential to create significant value for communities, businesses, and governments. By reducing congestion and improving transportation options, this model can enhance economic growth, reduce environmental pollution, and enhance the quality of life for citizens.

10. Conclusions

In conclusion, the traffic problems in Dhaka city are complex and multifaceted, requiring a comprehensive and sustainable approach to address. The rapid growth of the city's population, the lack of public transportation options, and the unregulated growth of private vehicles are major contributors to the congestion and pollution in the city. The consequences of this traffic problem are significant, including reduced productivity, increased air pollution, and a decreased quality of life for the city's residents [7].

The solutions discussed in this paper, including improved public transportation, better road infrastructure, promotion of alternative modes of transport, improved traffic management, and the introduction of congestion charges, offer potential strategies for addressing these challenges. However, the implementation of these solutions would require a significant amount of political will and financial investment, as well as the engagement of the public.

Moreover, the success of these solutions would depend on a range of factors, such as ensuring that the public transportation system is affordable and accessible, and that the alternative modes of transport are safe and convenient. It would also require the adoption of sustainable transportation practices, such as promoting the use of electric vehicles and renewable energy sources, and implementing effective traffic management strategies.

The government alone cannot solve the persistent traffic problem, which has been plaguing many urban areas. It requires collaborative efforts from private companies or individuals to come up with innovative business models that ana-

lyze the causes, effects, and potential solutions to this problem. By doing so, private entities can make a significant impact on reducing traffic congestion, improving road safety, and enhancing overall transportation efficiency in urban areas. Additionally, such initiatives can also provide a potential avenue for generating revenue while serving the community's needs.

In conclusion, addressing the traffic problems in Dhaka city requires a collaborative effort involving policymakers, transportation authorities, urban planners, and the public. A comprehensive approach that combines the solutions outlined in this paper is necessary to reduce congestion, improve air quality, and enhance the quality of life for the city's residents. This research can serve as a starting point for further studies and discussions on how to address the transportation challenges facing Dhaka city.

Conflicts of Interest

The authors declare no conflicts of interest.

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