The Effect of Traffic Congestion on Employee Productivity in Dhaka Bangladesh

Mohammed Kamruzzaman  
Senior Lecturer, College of Business Administration,  
International University of Business Agricultural and Technology, Bangladesh

Zannatul Ferdous Rumpa  
Student Department of Master of Business Administration,  
International University of Business Agriculture and Technology, Bangladesh

Abstract: 
This study examined the impact of road traffic congestion on workers’ performance in Dhaka, Bangladesh. The population for this study emanated from the staff quoted from different public and private companies within Dhaka city. The data was collected through a structured questionnaire from 63 sampled from different companies of Dhaka. Information was solicited on how traffic congestion affect their effectiveness, efficiency, development, satisfaction, innovation, quality of work and how it affect the set target at work. Workers performance measures the bottom-line results on which traffic congestion variables has an impact. The performance construct was indicated by items such as effectiveness, efficiency, career progression of worker, satisfaction, innovation, and quality of work. These data were subsequently analyzed through descriptive statistics and multiple regressions.

Keyword: Traffic, congestion, workers, performance, satisfaction, efficiency, innovation, Dhaka, Bangladesh

1. Introduction

Urbanization is a global phenomenon. Transportation system is an integral part of a modern day society, designed to provide efficient and economical movement between the component parts of a country and offer maximum possible mobility to all citizens (Leshem and Ritov, 2007). Bangladesh is the world’s most densely populated country with 993 people per square kilometer (Bangladesh Economic Review 2011). Like other countries in the world, Bangladesh has also been experiencing intense traffic problem which is increasing day by day. Dhaka is only one percent of the country’s total area but its contribution to GDP is 36 percent and it has created 44 percent of the country’s total employment (Daily Star, 19/07/2017). Among the major urban cities like Dhaka, Chittagong, Khulna and Rajshahi especially the Dhaka city is now facing serious traffic problem along with drainage, housing, water, sewerage, gas and electricity scarcity (Osman, 2010). Monayem (2001) reveals that the average speed of a major road of Dhaka city, named “Mirpur road” is 15 to 17 kilometer per hour during peak period. According to (Leshem et al, 2007), road transportation is a critical link between all the other modes of transportation and their proper functioning. It is the lifeblood of industrialized economies. Unfortunately, the existing road network, including the motorway system, is becoming explosively congested due to increase in the number of vehicles and inability to build new and larger motorways (David and Gregory, 2010). Everyone detests traffic congestion, but it keeps getting worse in Dhaka city, in spite of attempted remedies. Since activities within organizations are performed by employees, it could be logically inferred that employee productivity translates to overall organizational productivity. Workers’ productivity therefore can be affected by various factors one of which is commuting to and from workplace.

2. Literature Review

Most firms in Dhaka adopt a fixed work schedule under which all workers start working at the same time, typically at 9:00 a.m. This situation causes concentration of travel demand around the work start time and consequent heavy congestion. The transportation system of Dhaka is predominantly road based and non-motorized transportation (mainly rickshaws) has a substantial mode share. Dhaki’s road network is nearly 3,000 kms (of which 200 km are primary) with few alternative connector roads. Only 7% of total land space is devoted to the roadway and transport facilities. Approximately 400kms of footpaths are available for pedestrians of whom 40% are being occupied illegally by vendors and others (Rahman 2008).

According to Eddington (2006), an effective transportation system is significantly important in sustaining economic growth in contemporary economies since it provides linkages between different parts of the country and the global world. Downie (2008) also opines that traffic congestion occurs when the volume of vehicular traffic is greater than the available road capacity, a point commonly referred to as saturation. He describes a number of specific circumstances
which cause or aggravate congestion. Most of such circumstances are concerned with reduction in the capacity of road at a
given point or over a certain length, or increase in the number of vehicles required for the movement of people and goods.
Downie (2008) further argues that economic surge in various economies has resulted in a massive increase in the number of
vehicles that overwhelms transport infrastructure, thus causing congestion on roads in cities.
Traffic congestion and crowded public transportation systems are the top causes of stress and declining productivity
among employees of Dhaka city, a recent survey by workplace solutions provider suggested recently. The problem of road
traffic congestion and its influence on the performance of employees is increasingly gaining a space in the academia
discussions and employers in particular time spent on road traffic congestions and time spent on work among the
employee's plays a significant role on employee's performance in an organization (Lupala, 2010). Employers are feeling the
negative impact of the daily traffic jams on their business. According to studies related to stress; job dissatisfaction and job
changes are influenced by commuting factors (Novaco, Stokols, & Milanesi, 1990). Recent study in the United States report
that 48% of working adults reported their job dissatisfaction as an impact of commuting, 32% took commuting into
consideration when deciding their current job, 27% of the respondents stated that they could perform their duties from
home and 15% of the respondents reported they would change their jobs for a shorter commute (Road Wage Survey,
2011). Also as stated by Kluger (1998), long distance commuting can easily be associated positively with tardiness.
Along with increases in productivity; motivation level, financial savings and employment opportunities enhance according
to the quality of the commuting. Individual time and monetary costs and individual consequences such as distortion of
work-life balance, some health issues, increased stress and environmental concerns such as carbon emissions and
increased traffic congestions should also be considered (IBM Corporation, 2009) (Lyons & Chatterjee, 2008). As being
equilibrium for workers in residential and financial decisions, the work of Costa (et al., 1988) states that the main cause of
the daily trips of half of the commuters is the difficulty in finding close residences to the workplace. This difficulty may
arise both from limited supply of 3 available houses or prices. Almost same proportion of commuters state that they would
sustain their commuting status for current jobs or even travel further for prospects of finding more satisfying and well-
paid jobs. Thus a commuter individual is likely to change jobs or to be in search of new residences, both in some instances
(Gottholmseder et al., 2009).

2.1. Effect of Traffic Congestion on Employee Productivity

The traffic congestion on the road is highly occurs during the peak hour or the rush hour that normally happens
twice a day which is once in the morning and once evening. This is because of the standardized working hours as the
employee so to work in the morning and coming home in the evening. There is also a third peak hours which occurs during
the afternoon. This phenomenon happens because of the lunch break and the end of the morning school sessions. The
heavy traffic during these hours usually occurs at the school area and food centers. There is proof that business sees traffic
congestion as bringing about a major issue. The conviction is that it causes a huge cost burden. A study from the United
Kingdom found that traffic congestion was seen as the most imperative component prone to influence expenses and
administration in the following three years (Fernie, and Marchant, 2000). A substantial number of transport financial
aspects concentrate on the time segment of driving costs (Small and Verhoef, 2007). According to UN, (2011) higher level of
road traffic congestion causes stress and fatigue among people which have a significant impact on health and
performance of employees. Oni (1992) argued that traffic congestions creates workers fail to realize time management in
their work done as the result affect their work progress at an institutions. According to the co-location hypothesis,
congestion simply induces employer-employee suburban co-location (Crane and Chatman, 2003; Gordon et al., 1989;
Levinson and Kumar, 1994). In contrast, empirical research on job–housing imbalance (Cervero, 1996; Cervero and Wu,
1998; Schwanen et al., 2004) suggests significant commuting burdens while theoretical urban economic models likewise
implies congestion-induced urban economic inefficiencies (Arnott, 2007; Anas and Xu, 1999; Fujita and Thissse, 2002;
Weisbrod, Vary, and Treyz, 2001), most notably by reducing agglomeration benefits (Graham, 2007). Moreover, research
suggests industry-variant sensitivity to congestion’s potential drag—most notably, service industries are least sensitive
while manufacturing industries are most sensitive, indicating that industry mix is important. Commuting has inevitable
consequences for workers. Monetary costs of transportation outstands as one of the most important factors upon deciding
the job search location, intention to change jobs and to quit, and evaluating the wage offered for job candidates. Besides
wasting quality time, it may lead to stress and loss of productivity. Along with monetary costs, time wasted during daily
trips should also be considered. Based on recent OECD reports, average amount of time spent travelling to and from work
in OECD countries is 38 minutes per day. South Africa, Japan and Turkey have the longest daily commuting times as 56, 55
and 47 minutes respectively. Ireland, Denmark and Sweden on the other hand, have shorter daily commuting trips (OECD,
2011). Physical or mental, any commute is an effort and expenditure of resources for the individual. As stated, it is not only
time, but the way it’s allocated and individual differences that are important to interpret the outcomes. Van Hooff (2013)
reports that psychological detachment from work during the commute is also important for commuters. According to the
utilization of the commute or the subjective experiences about the process, commute from work can be the time for
individual to relax and unwind from work. It is a transition between work and home and helps people change their mood
and provides a transmission between roles. Depending on the 5 pleasantness of the commute, it can be considered a form
of recovery. According to Gatersleben & Uzzell (2007), this might be the only part of the day when individuals have the
chance to dedicate to themselves.
3. Research and Findings

3.1. Methodology

Research type- Qualitative (Online) Respondents- 63 employees (working in different private and public ltd companies in Dhaka, Bangladesh) There are several factors that causes impact on human lives due to traffic congestion faced by them everyday. Some of the factors that are discussed below, are: impact on productivity, time, health, expense, and work-life-balance. The pie-charts below describes the impacts that are caused due to traffic blockage, and to determine the factors, a survey was conducted online by maintaining the Likert Scale format.

3.2. Data of 63 Responses to the Survey Question About Traffic Congestion

| Statements                                                                 | Scale             | Frequency | Rate (%) |
|----------------------------------------------------------------------------|-------------------|-----------|----------|
| Traffic Nowadays greatly affects an individual’s productivity at workplace. | Strongly disagree | 0         | 0        |
|                                                                             | Disagree          | 0         | 0        |
|                                                                             | Uncertain         | 0         | 0        |
|                                                                             | Agree             | 9         | 14.1     |
|                                                                             | Strongly agree    | 54        | 85.7     |
| You are late at work maximum time because of traffic jam.                   | Strongly disagree | 0         | 0        |
|                                                                             | Disagree          | 5         | 8.1      |
|                                                                             | Uncertain         | 5         | 8.1      |
|                                                                             | Agree             | 21        | 32.9     |
|                                                                             | Strongly agree    | 21        | 32.9     |
| Do you feel any negative effects on your health due to spending a lot of time in traffic jam? | Strongly disagree | 0         | 0        |
|                                                                             | Disagree          | 0         | 0        |
|                                                                             | Uncertain         | 5         | 7.9      |
|                                                                             | Agree             | 26        | 41.3     |
|                                                                             | Strongly agree    | 32        | 50.8     |
| Government is giving enough effort to solve the traffic problem.            | Strongly disagree | 12        | 19.4     |
|                                                                             | Disagree          | 24        | 37.7     |
|                                                                             | Uncertain         | 12        | 19.4     |
|                                                                             | Agree             | 7         | 11.1     |
|                                                                             | Strongly agree    | 7         | 11.1     |
| There is more than enough transportation on road than needed.               | Strongly disagree | 7         | 11.1     |
|                                                                             | Disagree          | 10        | 15.9     |
|                                                                             | Uncertain         | 6         | 9.5      |
|                                                                             | Agree             | 18        | 28.6     |
|                                                                             | Strongly agree    | 22        | 34.9     |
| You remain stressed because of traffic jam you face every day.              | Strongly disagree | 0         | 0        |
|                                                                             | Disagree          | 0         | 0        |
|                                                                             | Uncertain         | 1         | 1.6      |
|                                                                             | Agree             | 28        | 44.4     |
|                                                                             | Strongly agree    | 34        | 54.0     |
| Most of the time you leave office late to avoid traffic congestion.         | Strongly disagree | 0         | 0        |
|                                                                             | Disagree          | 6         | 9.5      |
|                                                                             | Uncertain         | 10        | 15.9     |
|                                                                             | Agree             | 32        | 50.8     |
|                                                                             | Strongly agree    | 15        | 23.8     |
| Traffic congestion increases your expense for hiring quicker transportation to reach on time. | Strongly disagree | 0         | 0        |
|                                                                             | Disagree          | 2         | 3.3      |
|                                                                             | Uncertain         | 3         | 4.9      |
|                                                                             | Agree             | 18        | 29.5     |
|                                                                             | Strongly agree    | 38        | 62.3     |
| Traffic congestion is a strong fact that affects your work-life balance.    | Strongly disagree | 0         | 0        |
|                                                                             | Disagree          | 1         | 1.6      |
|                                                                             | Uncertain         | 1         | 1.6      |
|                                                                             | Agree             | 32        | 51.6     |
|                                                                             | Strongly agree    | 28        | 45.2     |
| Avoiding road-side parking can decrease traffic congestion.                 | Strongly disagree | 1         | 1.6      |
|                                                                             | Disagree          | 1         | 1.6      |
|                                                                             | Uncertain         | 2         | 3.2      |
|                                                                             | Agree             | 23        | 36.5     |
|                                                                             | Strongly agree    | 36        | 57.1     |

Table 1
The pie-chart illustrates the effects on productivity that causes due to heavy traffic problem faced by an individual in a daily basis. The above result shows that more number of people strongly agrees with the fact regarding effects on productivity.

The pie-chart illustrates the impacts of intense traffic jam on reaching the workplace on time. The above result shows that more number of people agrees with the fact regarding being late at work due to traffic problem, but there are some individuals who are unsure and certainly disagree with the fact.

The pie-chart illustrates the negative impacts on health due to spending a lot of time in traffic jam. The above result shows that more number of people agrees that traffic jam actually affects their health immensely, but there are very few individuals who are still unsure about this fact.
Figure 4: Government’s Effort on Solving the Traffic Problem

The pie-chart illustrates the attempts Government is taking in terms of solving the traffic problem. The above result shows that more number of people disagrees with the fact that Government is actually putting enough effort to solve this serious problem, but there are some individuals those who agree with the fact and some of them are still not sure whether the government is doing something about the problem or not.

Figure 5: Impact of Excess Transportation

The pie-chart illustrates the impact of excess transportation present on road than needed. The above result shows that more 50% people agrees that there are actually excess transportation present on road than needed for which the roads remain blocked and packed which creates a chaos, but there are very few individuals those who disagree with the fact.

Figure 6: Impact of Traffic Congestion on Stress Level

The pie-chart illustrates the stress level that is caused due to traffic jam faced on a daily basis. The above result shows that more number of people agrees with the fact that they are highly stressed due to heavy traffic congestion and it is immensely affecting their life, but there are very few individuals those who are still unsure about the fact maybe because they face traffic not as much as others or maybe they are less stress takers.
The pie-chart illustrates the loss of time due to traffic problem. The above result shows that more number of people agrees with the fact that people actually stay back late at office to avoid traffic congestion that occurs at the end of office hour, but there are very few individuals those who are unsure and disagree with the fact maybe because they prefer not to stay back rather than become a part of the traffic congestion.

The pie-chart illustrates the impacts on increasing expenses due to availing quicker personal transportation to work. The above result shows that more number of people agrees with the fact that traffic congestion do increases their expenses for hiring quicker transportation to reach destination on time, but there are very few individuals those who are unsure and disagree with the fact maybe because they prefer regular transportation rather than hiring personal ones.

The pie-chart illustrates the impacts of traffic jam on work-life-balance of a working person. The above result shows that more number of people agrees that work-life-balance is truly being affected by traffic congestion as they are not being able to spend more quality time with their loved ones, but there are very few individuals those who disagree with the fact maybe because they manage to balance their work and personal life differently.
The pie-chart illustrates a solution that can be undertaken as a step towards decreasing the traffic jamming problem. The above result shows that more number of people agrees with the fact that avoiding road-side parking can actually decrease traffic congestion problem, but there are very few individuals those who are unsure and disagree with the fact maybe because they are less concerned and bothered about the dilemma and its solution.

4. References
   i. Arnott, R. (2007) Congestion tolling with agglomeration externalities, Journal of Urban Economics, 62(2), pp. 187–203.
   ii. Bangladesh Road Transport Authority (BRTC), 2017
   iii. Crane, R. and Chatman, D. G. (2003) Traffic and sprawl: evidence from US commuting, 1985 to 1997, Planning and Markets, 6(1), pp. 14–22.
   iv. Daily Star-19/07/2017
   v. David, H., & Gregory F. (2009). Gridlock and growth: The effect of traffic congestion on regional economic performance. Retrieved from www.reason.org.
   vi. Downie, A. (2008) The World Worst Traffic Jams time. Available at http://www.time/world/article/0,8599,1733872,00.html. (Retrieve on 28th August, 2018.
   vii. Eddington, R. (2006). The Eddington Transport Study Main Report: Transport’s role in sustaining the UK’s Productivity and Competitiveness. UK Department for Transport, London. Retrieved from www.dft.gov.uk/about/strategy/transportstrategies/eddingtonstudy. (Accessed on 10th September, 2018)
   viii. Gottholmseder, G., Nowotny, K., Pruckner, G. J., & Theurl, E. (2009). Stress Perception and Commuting. Health Economics, 18(2009), 559–576. Doi:10.1002/Hec.
   ix. Ibm Corporation. (2009). The Commuter’s Challenge: The Impact of Traffic Congestion in The U.S.
   x. Leshem G & Ritov Y (2007). Traffic Flow Prediction using Adaboost Algorithm with Random Forests as a Weak Learner. International Journal of Intelligent Technology Vol. 2 No. 2 ISSN 1305-6417.
   xi. Lupala, J. (2010). Sustainable urbanization and spatial growth of the cities in the least industrialized countries; The case of Dar es Salaam City. Journal of Building and Land Development, 17.
   xii. Lyons, G., & Chatterjee, K. (2008). A Human Perspective on The Daily Commute: Costs, Benefits and Trade-Offs. Transport Reviews, 28(January 2012), 37–41. Doi:10.1080/01441640701559484
   xiii. Mun, S., Yonekawa, M. (2004): “The Effects of Flex Time on Traffic Patterns with Bottleneck Congestion,” in Kobayashi, K, Lakshmanan, T. R., Anderson, W. P. eds., Structural Change in Transportation and Communications in the Knowledge Society, Edward Elgar.
   xiv. Osman, S. (2010) Dhaka’s Traffic Problem - Opportunities and Suggested Solutions.
   xv. Road Wage Survey. (2011). Retrieved From Http://Www.Kronos.Com/Pr/Road-Wage-Survey.Aspx.
   xvi. Rahman, M.S. (2008), “Future mass rapid transit in Dhaka city: Options, issues and realities”. Jahangirnagar Planning Review, Volume 6, 69-81.
   xvii. UN-HABITAT and UNEP. (2005). The sustainable Dar es Salaam project, 1992-2003, Nairobi.
   xviii. Van Hooff, M. L. M. (2013). The Daily Commute From Work To Home: Examining Employees’ Experiences In Relation To Their Recovery Status. Stress and Health: Journal of The International Society For The Investigation Of Stress. Doi:10.1002/Smi.2534.
   xix. Weisbrod G. (2010). The Connection between Public Transportation & Economic Development in Chicago. Economic Development Research Group, Inc.www.edgroup.com.
   xx. ZM Yusoff, D Omar, ZA Latif, AM Samad 2010 Applicability of Geographical Information System in Assessing the Accessibility and Mobility of Urban Lower-income Family Living Signal Processing and Its Application (CSPA 2010).