

# Horizontal Collaboration Opportunities across Industry Sectors in Bangladesh to Reduce Traffic Burden. Capture more Opportunities & Make their Supply Chain more Efficient. A Case Study Research of Dhaka

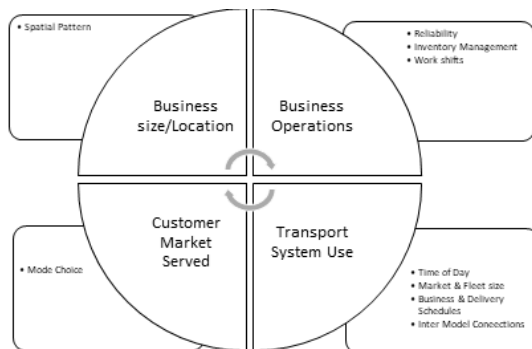
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**Abstract**— The industries in Bangladesh in general depend on a large number of local and remote vendors. The lead times taken by vendors in delivering the items are generally high in Dhaka. Further, the lead-times have often larger variances due to traffic congestion and other logistics related problems. This influences the functioning of industries, and also reflects upon the performance of vendors in the overall supply chain. Collaboration in supply chain is widely recognized as one of the core challenges for the next future. In this context, horizontal collaboration is believed to be one of the innovative solutions to effectively tackle the growing logistic challenges from both, environmental and economic points of view. In this paper, a close look has been taken on the horizontal collaboration opportunities across industry sectors in Bangladesh to reduce traffic burden, capture more opportunities and make their supply chain more efficient.

**Index Terms**— Bangladesh, Dhaka, HLC, Horizontal Collaboration, Logistics, Supply Chain, Traffic, Traffic Congestion, Traffic Burden,

## 1 INTRODUCTION

**T**RAFFIC congestion in the capital eats up around Tk 20,000 crore a year. Some 32 lakh business hours are also lost to the curse every day [1]. Average traffic speed has dropped from 21 km to 7 km (hour). Based on current trends, Dhaka will have more than 35 million people by 2035[2]. The megacity of Dhaka cannot afford the burden of 18.273 million people on its 360 kilometers of land. It is one of the most densely populated areas in the world, with a density of 23,234 people per square kilometer. The city's vehicle is not enough to fulfill the demand of mass transport. In addition, the minimum road requirement is 25% for a standard city, whereas Dhaka has only 7.5% road of its total area which is creating huge traffic congestion [3]. Traffic congestion in Dhaka city governance perspective said the cost of Dhaka's congestion is about \$11.4 billion a year or loss of around 7 per cent of gross



domestic product (GDP)[4].

Fig. 1. Conceptual Model of Processes by Which Traffic Congestion Leads to Impacts on

### 1.1 Horizontal collaboration

Horizontal collaboration occurs between two companies in the same industry that, while not competing directly, normally produce or trade similar products sell to the customers and consumers. Industries may share the supply chain assets such as- Transportation, Production facility, Warehouse etc. to gain higher efficiency. Moreover, competitors in business come together to build a trade association jointly negotiate with the government in securing benefits for the industry. They may also collaborate and drive joint initiatives to develop markets that will eventually benefit them.

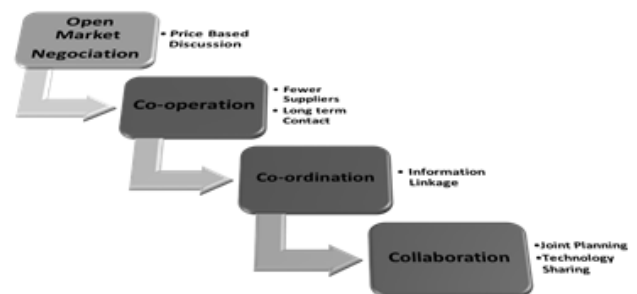


Fig. 2. Horizontal Collaboration Chart

### 1.3 Research Objectives

Transportation is one of the most important elements in all the industries and determining the overall logistics costs. Every Company is constantly trying to figure out the most efficient and cost-effective way to get their products from one point to another. As Dhaka is the capital of Bangladesh it is now one of

the most densely industrialized regions as well as major financial center in the country. Horizontal collaboration due to traffic congestion has been investigated, such as in the case of Bangladesh Future industries. To support this, the paper aims to propose possible solutions, new comprehensive framework in existing model & develop a supply chain-driven model for HLC.

#### 1.4 Research Limitations

The research conducted on Theoretical based information but keep consider on the situation of Dhaka metropolitan city and therefore possible outline HLC model proposed.

#### 1.5 Findings

The paper identified several consideration factors; synergies and enablers that support the development of HLC projects are identified, such as legislation, trust among partners, common suppliers and delivery bases, capable third party logistics (3PL) and an effective commercial model, including a fair sharing of benefits.

#### 1.6 Practical Implications

The importance of taking a supply chain approach when evaluating the feasibility of HLC is demonstrated & taking account of all supply chain partners, namely suppliers, 3PLs and customers (in this case, retailers).

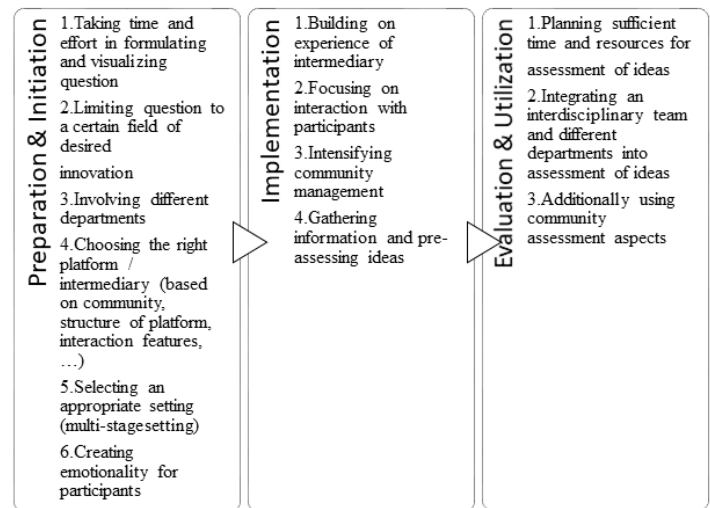
## 2 LITERATURE REVIEW

Horizontal collaboration is defined by European Union (2001) as a concerted practice between companies operating at the same level(s) in the value system. This is consistent with Cruijssen, who qualifies such a type of partnership in Horizontal collaboration projects aim to identify and achieve win-win situations among two or more firms operating at the same level of the supply chain.[5]. Gore & Coldwell[6] proposed a model to study the effects of traffic congestion on mode of material supply for a developed nation like New Zealand. It consider the timely deliveries of items as critical to the success purchase system.[7] Some authors[8] suggested the concept of 'safety time' similar to 'safety stock' to reduce the congestion effect on the manufacturing system. Grenzeback [9] suggest that shipments of items during night can be made mandatory to reduce the traffic congestion on the road.

## 3 CASE STUDY

Case study to explore the "whys" behind our survey findings, case study was conducted. Data collection for the case study came from many sources includes company websites, Ministry of Road Transport and Bridges, Bangladesh websites & specific journals.

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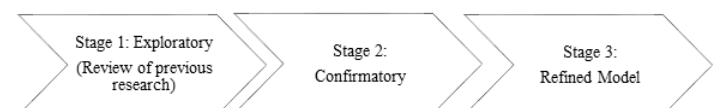


### 3.1 Success Factors in Innovation

Fig. 3. Success Factors in Innovation Contexts derived from the Hermes

## 4 METHODOLOGY

This research presents a multi-stage qualitative study, which takes a network perspective to examine horizontal logistics collaboration. The supply chain is taken as the main decision-making driver. In addition to typical logistics elements such as freight transport, wide supply chain metrics, e.g. stock levels of finished products close to the market, product availability, inventory, fixed and working capital, and product waste are considered in evaluating the feasibility of HLC. In particular, this study intends to identify and examine the main considera-



tion factors, ideal synergies, assisting enablers and output metrics that could influence the performance of HLC.

Fig. 4. Methodological path of the research undertaken

## 5 PROPOSED SOLUTIONS

In this section, we are trying to discuss the maximum possible way of horizontal collaboration across industries as well as capturing more opportunities for making the supply chain more efficient.

1. **Regulatory Committee:** First, there should be a negotiation among the industries. Then they have to form a regulatory committee. The function of the committee is to survey the progression of the overall situation, strategic planning and development of the company by overcoming the traffic burden.
2. **Negotiate with constructor and Government:** Players can negotiate with the road constructors and the gov-

ernment for constructing Flyover, Metrorail and a different lane for freight transportation. They can also negotiate with the govt. for widening the road, repair damage road, the bridge as well as implementing traffic rules and regulation strictly.

3. **Developing IT sector:** The IT sector of the company must be developed. This can help the freight road vehicle to know the position of another vehicle through Global positioning system (GPS). By using GPS vehicles can be monitored from the station. The news of traffic congestion road and the free road can be derived from the Google Map. This is how the freight road vehicle can avoid a traffic jam.
4. **Bypass road and Alternative routing:** Queue bypass are short sections of exclusive roadway located near an intersection that enables transit vehicles to bypass congestion at the intersection. Using Bypass is helpful for avoiding traffic congestion. Construction of circular embankment-cum-road along the periphery of Dhaka city is also effective. Companies must negotiate with the government for creating the alternative route only for freight delivery.
5. **Car-free Zone:** 25% of the vehicles are a private car. By upgrading and developing public transport facilities a car-free zone can be created. This is effective for minimizing traffic congestion. This may happen by proper negotiation with the government.
6. **Emphasize on Railroad:** It is much faster and more reliable as it is least affected by weather conditions and traffic congestion. Railway transport can carry larger volumes over greater distances, making it more economical, and much quicker for transporting. Though it doesn't provide door-to-door services but effective for avoiding traffic.
7. **Off-Peak Hour Transportation:** It is recognized that Dhaka cities with severe traffic congestion during peak hours but have available road capacity during nights, evenings and early mornings. Companies may shift goods deliveries from daytime to off-peak hours have the potential to increase the efficiency of the freight distribution as well as to reduce negative external impacts.
8. **Relocation of industries:** In Bangladesh, all the industries and their offices are remain confined in Dhaka. Much of the Dhaka city's congestion will be eased if the industries and offices can be spread over adjoining districts and all over the country. It would be one of the effective collaboration among companies to relocate Dhaka based industry for traffic burden.
9. **Green Logistics:** Green logistic is to create a sustainable company value using a balance of economic and environmental efficiency. The main objective of Green logistics is to coordinate the activities within supply chain in such a way that beneficiary needs are met at "least cost" to the environment. Traffic congestion at Dhaka city and the roads leading to it have resulted in spiraling inland trucking costs, delayed transit times, and alarmingly high levels of CO2 emissions. Imple-

menting green logistics there are regarding several factors

- Labeling.
- Performance evaluation.
- Life cycle analysis.
- Communication and Auditing.
- Planning about the legal obligations and targets will be met.
- Implementation (including control of relevant documentation) and operation of the plan.
- Training and communicating with staff.
- Reduce trucking lead time.
- Leads to a reduction in traffic congestion which means lower transit delays, toll fees, and trucking idle time

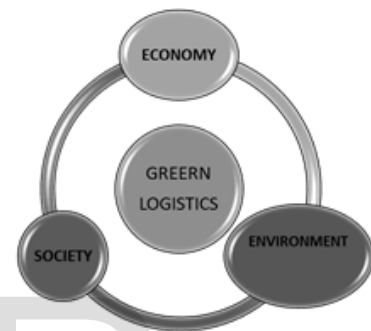


Fig. 5. Green Logistics Chain

10. **Warehouse Sharing & Design:** Collaborating companies can share their warehouse to minimize the space problem as well as cost-effectiveness. It should be constructed in a corner of the city so that no traffic congestion occurs.
11. **Just-in-time (JIT) delivery:** The aim of Just in time delivery is to achieve a continuous flow of materials through the supply chain to keep inventory to a minimum. The synchronization of transport with the production process and time criticality of JIT deliveries often make supply chain fluent and more efficient.
12. **Design of packaging and handling equipment:** Collaborating companies should concern about the nature of the packaging influences the efficiency with which space is used in buildings and vehicles across the supply chain. Its shape, dimensions, and stack ability can result in poor use of vehicle capacity. If they do a proper use of vehicle capacity. It would be utilized for faster and easier loading and off-loading of consignments which has an impact on traffic burden.
13. **Inaugurate Less-than-truckload (LTL) Service:** Sometimes it's difficult and costly for the company to deliver goods with a trailer truck in a narrow traffic congestion road. Now there is a transition in the marketplace, products are being warehoused closer. As a result, shipments are becoming smaller but more frequent and traveling shorter distances which is ideal for LTL.
14. **Price of Fuel:** Between 2004 and 2010, while the diesel

prices doubled, the road freight charges increased by approximately three times. Currently, the average road freight charges (per ton-km) are three times the cost of transport by alternate modes. For medium trucks, fuel constitutes 35% (Road and Highways Department, Ministry of Road Transport and Bridges, 2005), and maintenance costs are 33% of total road-user costs.

15. **Minimize Empty Running:** Traffic burden problem companies should have to minimize the empty or Figload truck running through horizontal collabora

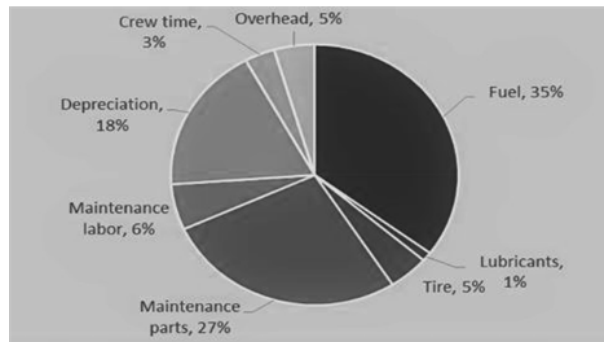


Fig. 6. Road users cost for users in Bangladesh

tion. Because Deadhead trips, as they are known, are a waste of fuel, money and time and a producer of greenhouse gases. Load-sharing between industries does not only reduce the number of trucks on the road and saves fuel, it also offers cheaper service for consumers.

16. **Milk Run System:** For traffic congested city like Dha-ka milk run system is very efficient for the company. Basically, milk-run systems represent transportation systems, where materials are delivered from a central storage area to several points of use on fixed routes and in short and defined intervals. It enables frequent deliveries in low lot sizes with short lead times and low inventories at the points of use.

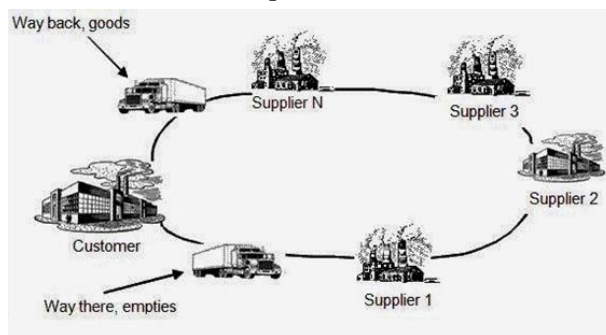


Fig. 6. Milk Run Logistics[10]

17. **Ancillary industries:** Companies can also establish ancillary industries for cost optimization. Ancillary industries are those which manufacture parts and components to be used by larger industries. The programmed of this industry includes motivation of public and private sector units to offload production of

components, parts, sub-assemblies, tools, intermediates services etc. to ancillary units. This parts and tools are manufactured in a nearby unit. So that transportation load does not become heavy and can be transported through a small freight car in a traffic congestion area.

## 6 PROPOSED MODEL

### 6.1 Proposed New Comprehensive Framework in Existing Model

The proposed framework identifies three incremental steps in the collaboration development inspired as in the Lambert et al. (1999) contribution (operational, tactical and strategic). As a consequence, it is impossible for two or more companies to implement tactical or strategic partnership without a previous adequate experience with the operational stage.

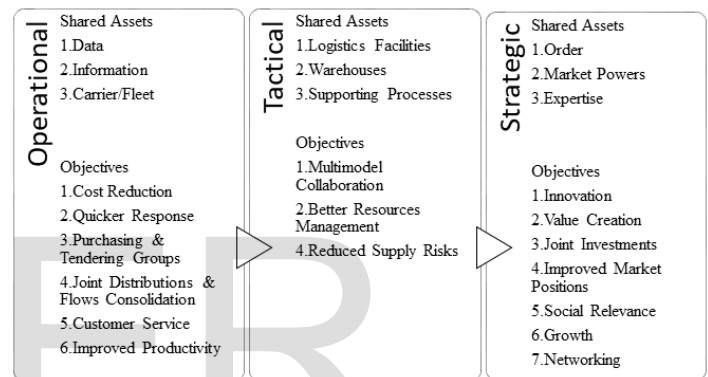


Fig. 7. New Logistic Comprehensive Framework in Existing Model

### 6.2 Proposed Supply chain-driven model for Horizontal Logistic Collaboration among competitors

The elements presented in the figure were judged by the researchers to be the most appropriate according to the intensity with which they had been discussed during different stages, combined with already published research and trends in this area.

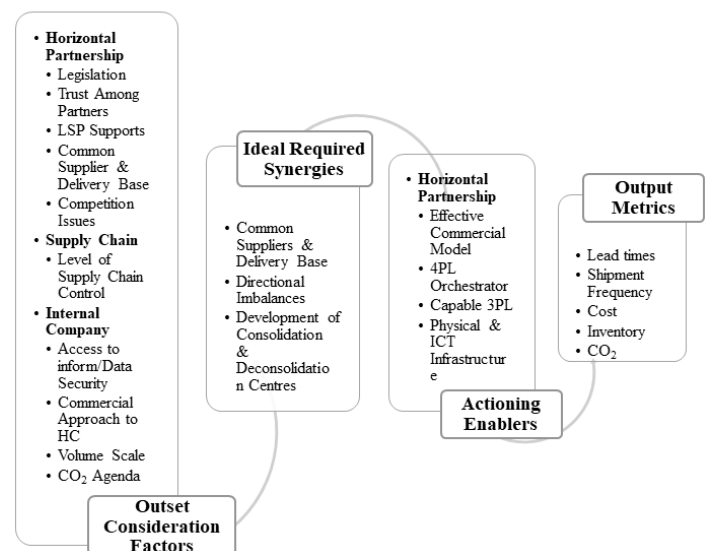




Fig. 8. Supply Chain driven model for Horizontal Logistic Collaboration

## 7 CONCLUSION AND IMPLICATIONS

The supply chain and logistics literature tends to concentrate on factors, enablers and conceptual models for horizontal collaboration.[11] with some empirical research studies on synergies and output metrics. The recent literature tends to take a single function approach to horizontal collaboration and is often based on a single sector [12][13] [14].In our paper, we have taken a supply chain approach where we present a supply chain-driven model for HLC that takes the perspective of many actors along the supply chain. Based on the two stage approach, the contribution of our research is threefold: i) the identification of the 'outset consideration factors', 'ideal required synergies', 'actioning enablers' and wider supply chain 'output metrics' of a successful HLC; ii) the development of a supply chain-driven model for HLC .The study developed in this paper has the potential to have significant managerial implications. The research demonstrates the importance of taking a supply chain approach when evaluating the feasibility of horizontal collaboration among competitors. The research demonstrates the crucial role a neutral third party company can play in a HLC project. This principle can be further extended in its application in other sectors and supply chain functions.

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