

## Research Article

# An Empirical Study on Lead Time of Readymade Garments in Bangladesh

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This paper addressed the issues that lead up to the higher lead-time in readymade garment industries of Bangladesh. Lead-time involve the time required to deliver any good to the specified destination since receiving the order. For Bangladesh, usual lead time is 90-120 days which is very high compared to competing countries like China, Vietnam etc. This time span is prolonged by issues such as worker unrest, political instability, poor productivity, poor production planning etc. The aim of this paper was to pin point these factors and explain exactly how these issues increases the lead-time. Another objective of this study was to propose realistic solutions to the stated lead time problem. This study was conducted with a combination of quantitative and qualitative approaches. The factors working behind higher lead time and the proposed solutions are being suggested by industry experts working in the supply chain management sector. This study was conducted with hope to help the supply chain professionals working in the readymade garment industries in reducing lead-time by various SCM strategies.

**Keywords:** Readymade garment industry; Supply chain management (SCM); Problems; Solutions

## Introduction

Since the advent of the concept of fast fashion, the readymade garment industry has become very much concerned about lesser lead time. Fashion taste of the consumers' changes rapidly in this era of fast communication. The fashion seasons are becoming shorter and shorter. The clothing retailers want to put new products on the shelf every other week. In addition, the manufacturers are pressurized to deliver products within a very strict time frame. A little bit of deviation from the scheduled delivery date might be a huge consequence on the future business opportunity. So reducing the lead-time has become a requisite in the fashion industry [1]. Easier said than done, reducing the lead-time is not only difficult but also requires all the drivers of supply chain to be prompt. Sometimes the drivers are not in control of the manufacturers. Hence bottlenecks are created in the supply chain which ultimately affect the lead time. Now-a-days Bangladesh has become one of the global leaders in manufacturing readymade garments. Many famous clothing retail brands such as Zara, H&M, Uniqlo, M&S, Walmart, Gap etc. are regularly buying clothes from Bangladesh. Although the success story of Bangladesh's readymade garment industry is ever increasing, this country faces hindrances in the way of becoming the one stop source for the clothing retail brands. One such hindrance is the inability to response quickly to the fast fashion industry [2]. The strength of Bangladesh's readymade garment industry is the ability to sell products at cheaper rates due to availability of cheap labor. But the industries fail to keep pace with the fast changes of the customer's demands. In the 90's lead-time was 120-150 days [3]. Now it has reduced to 90 to 100 days [4]. Still this not satisfactory as other competitor such as China can deliver products within 30-35 days. In case of Vietnam it is 60 days. These countries have optimized supply chain network for faster response to market

changes. But Bangladesh is way behind the top two competitors in the race of becoming the top of the list. So lead time reduction is of prime importance in supply chain management for readymade garment industries in Bangladesh. All the previous study conducted on the supply chain of readymade garment industry of Bangladesh shows little or no affiliation with the lead time reduction strategies. So there are some research gaps in this area. In this study the sole focus is kept on the factors that increases lead time and the strategies to reduce the lead time. The aim of this study is to help the different supply chain analysts of the garment industries and other stakeholders so that they can find out the factors creating bottlenecks in the supply chain network. Also to provide realistic approaches to reduce the lead-time.

## Literature Review

Li [5] defined lead time as the time duration that is between the act of receiving an order from buyer and delivering the ordered goods. The idea of lead time is further explained by Marc [6]. He discussed about customer lead time and manufacturing lead time. There is distinction between these two concepts. Customer lead time is the time span between the order placement by customer and received of the ordered goods. Whereas manufacturing lead time is the total time duration of raw materials input to production process and the final operation to deliver the output. In case of supply chain management, the highly acclaimed JIT production concept first popularized the idea of lead-time reduction although the sole focus of JIT was waste reduction [7]. But JIT principle is mainly suitable for repetitive manufacturing which is not completely analogous to garment manufacturing system. Garment manufacturing system is more comparable to batch flow environment. Lead time reduction is discussed in case of a batch flow environment in study conducted by Goldratt and Cox [8]. They also discussed effect of bottleneck and



Figure 1: A flow chart of the methodology.

size of lot on lead-time. Nuruzzaman and Ahasanul [9] explained the lead time management concept in case of the Bangladeshi readymade garment industries. They also discussed the importance of lead time reduction to increase business profit and its necessity for survival and business growth. Kader and Akter [2] discussed the fundamental concept of lead-time and its importance from the perspective of garment manufacturing. They discussed the reasons associated with the increase of lead-time and provided some solutions. But the identified factors require enhanced explanation and other views should be incorporated. So This study will be helpful to explore the horizon. Garment manufacturers desire reduced lead-time for better market control and better response to the customers. In this era of fast fashion, to be able to stay ahead in market competition reduction of lead-time is requisite. Fast response to market demand and changes requires modernized business model. The competitive advantage enjoyed by responsive business model is discussed by Cachon and Swinney [10]. All the studies previously done discussed more about the fundamental concept of lead time and lead time from the global context. In this paper we discussed solely from the perspective of Bangladesh.

## Methodology

This research has been completed using a combination of quantitative and qualitative methods. For the quantitative part secondary data have been collected from various published research articles and trusted government published statistical reports. For the qualitative part personal interviews were taken from leading corporate personnel who have been working for years in the top management of different readymade garments industries & sourcing offices. Then these two sets of data are combined together and descriptive analysis technique is used to generate results. A flow chart of the methodology may be shown as follows (Figure 1).

## Results

During survey, following problems have been identified as the critical reasons behind increasing the lead time:

### Inefficiency in planning

In the planning stage, the industry suffers from inefficient work force, non-productive time and poor strategic decision. People involved in the production line planning acquires skill by trial and error basis, which yields poor performance. To some extent this has to do with poor recruitment policy [11]. Moreover, poor communication skill and reluctance to share actual information between managerial team and production team create barriers in achieving efficiency in planning stage. Conducting this research, it has been seen in many industries that during sample making stage the samples are rejected by customer numerous times due to poor planning and understanding of what the customers require. This back and forth activities lead to delay in starting of production. Most of the industries have higher Defects per Hundred unit (DHU) percentage.

If the DHU is 2-3 % then it is considered good. If any factory has DHU% of 5% then it will lose 15% of productivity meaning it will require 3 times more time for completing a task.

### Traditional production system

The readymade garment industries of Bangladesh rely mainly on the traditional Progressive Bundle System where various components of the garments after being cut in the cutting room are tied up in bundles and distributed out to the sewing section as bundle form. In this system balancing a line is difficult and an efficient supervisor is needed which is not available in every industry. Planning for each batch of each style takes a lot of time. This is somewhat an ineffective practice, as production managers are unable to manage or plan the production effectively every time. Implementing newer production methods such as Modular Production System or Unit Production system requires higher financial investments as well as trained personnel. Most of industries are unwilling to change any of their production processes as they are satisfied with their existing facilities. Another fact is that Progressive Bundle System is suitable for producing large number of low priced products such as readymade garments.

### Weak transportation network

Congested roads, limited inland transport alternatives add inefficiencies to apparel export lead-time. The apparel industry is highly dependent on the Dhaka-Chittagong highway route as Chittagong sea port is the main doorway from the country. Most of the apparel industries are situated in Dhaka & Chittagong. As a result, Dhaka-Chittagong route is very important for apparel export. Currently it is a two lane road with busy traffic and a four lane highway is under construction. 287 kilometers of road from Dhaka to Chittagong sea port takes a day long for a cargo to reach. The goods laden vehicles have to stand for hours in the traffic jam on the way to Chittagong from Dhaka and its adjacent areas due to poor road facilities. Many apparel exporters complained that they cannot meet the strict lead-time set by the international buyers due to this problem. Lack of rail road transportation adds to the miseries.

### Lack of deep-sea harbor

Export-import business by sea takes place through the two sea ports Chittagong and Mongla which are too shallow for large ships. Around 92% of the country's export take place through the Chittagong port. Chittagong port has draft of only 9.2 meters whereas the minimum draft is 15 meters to be considered as deep sea port. Thus, modern container ships cannot anchor. Interestingly after achieving independence in 1971 Bangladesh has actually failed to build new sea ports. Lead-time for sea freight is increased by at least a week due to the lack of a deep-sea harbor. The export ready products after loading in the feeder vessels have to approach to the mother vessel in Singapore. It takes 7 to 10 days for the feeder vessel to reach mother vessel, unload and load again. This extra step adds \$15000 per

day to the overall cost. A deep sea harbor can surely eradicate those extra time & cost for the sea freight.

### Inadequate port facility

A research paper by Rashid et al., [12] presented in 2<sup>nd</sup> International Conference on Business and Management (ICBM 2019) showed that due to inefficiency in the Chittagong port average daily ship cost is \$8000 on average. Manual processing, limited crane capacity, and strikes that sometimes span several days at a time. The average turn-around in Chittagong port is 2.46 days on average. On the other hand, average turn-around is 0-1 day at Singapore and Bangkok ports. Sometimes the containers are kept stuck in the port for even 15-20 days though they are supposed to be released within 3 days. Between January and July in 2017 the port had a congestion rate of 84.3 hours. To suffice it can be said that poor port facility is adding up to the lead-time.

### Labor unrest & political instability

Bangladesh apparel industry can supply the products at the cheapest rates as they have the cheapest labor in the offering. However, there is always a pressure from worker trade unions to raise the wages periodically. In addition, this pressure sometimes transforms into violent protests that forces factories to shut their operation. A Major labor unrest situation happened in December 12, 2010. In the Chittagong Export Processing Zone 11 factories of Youngone Ltd. were shut down for an indefinite period. During clashes between workers and management staffs 25 people were injured in Gazipur and Narayanganj area. On September 22, 2011 at least 10 garments workers including a journalist were injured at Square Garments Ltd., Narayanganj due to wage increase demand. The next incident happened on March 26, 2012 at Ishwardi Export Processing Zone where more than 100 people were injured as police and garment workers clashed with each other. Apart from increased wage demand garments workers take to streets and violent protests on rumors of co-worker's death or punishments from higher management etc. issues. Also the instable political situation of the country doesn't help the cause and factories have to remain closed for weeks some times. As a result, there are cases where manufactures often miss the agreed lead time with the buyers.

## Proposed Solutions

Based on the qualitative data some possible solutions are proposed here:

### Implementation of strong HRM policy

Most of the garments industries in Bangladesh either follow partial human resource management policy or no HRM policy at all. Generally, three levels of human resources are seen in the garments industries of Bangladesh: top level (mostly owner or top managerial team, CEO's), mid-level (Executives), Lower level (production line workers). Mostly the inefficiency and lower productivity are observed in the mid and lower level. In the mid-level, the executives suffer from issues such as underutilization by top management, poor performance appraisal, poor salary increment, insufficient training facility, overtime working. In case of the lower level employee's inefficiency is at the maximum limit. These low-level employees are controlled by production line supervisors who are not properly trained or well-educated and some of them are recruited by nepotism. Hence their

lack of knowledge about proper human resource management they cannot ensure optimum level of efficiency and productivity [13]. Also lack of proper safety in the regular operations and maladaptation of standard working environment add to the issues of accidents, injuries etc. The infamous Rana Plaza incident of 2013 is proper evidence. So in this paper implementation of strong HRM policy as one of the solutions is being suggested. HRM policy is not discussed here as the research focus was elsewhere.

### Adoption of automation in the production stage

As off now the fourth industrial revolution has been a topic of interest within table of discussion, summits and conferences in Bangladesh. Hence garments industries of Bangladesh are not yet getting any benefits of automation technology and robot controlled production. But automation or artificial intelligence is slowly making their way into the production processes. Newly established factories are leading in this chart of Industry 4.0 adopters. Statistically shown by Bangladesh Garments Accessories & Packaging Manufacturers & Exporters Association (BGAPMEA) 100 new factories are adopting advanced manufacturing technologies every year [14]. The total tally of adopting factories is around 250 (BGAPMEA). These factories are already enjoying increased productivity, reduced production time, value addition in products. Nevertheless, the industries will have to face challenges coming with implementing of Industry 4.0. The biggest challenge comes in the form of employee layoffs. However, there is always another side to the coin. Some new forms of jobs will also be created related to automation technology such as machine supervision, maintenance etc. However, enhanced skill set will also be required of the employees.

### Improvement of the railway network

Bangladesh's readymade garment industries rely heavily on Dhaka-Chittagong highway for transporting goods to the port city. This highway also known as economic lifeline remains super busy all the year round [15]. Traffic congestion on this highway takes up very valuable time from the lead-time. Frequent tailbacks are seen on this highway due to road constructions, accidents, public procession and VIP movements. Tailbacks as long as 110 Km have also been seen due to construction work of a flyover that cost five days from the lead-time (The Daily Star, 2018). So to reduce time consumption due to logistics we are proposing improved smart railway network. Currently it takes around 6 hours to reach Chittagong from Dhaka by trains. With the introduction of high speed trains as planned by Bangladesh Government it will take one hour to reach Chittagong as reported by The Daily Star, 2020 (16). If the containers transported by trains are equipped with GPS device, then the exporters might have an eye on the status of the goods. Also The rail transportation system is more environment friendly than road transportation system as CO<sub>2</sub> emission is less than 1/8 of that of the automobile (JICA).

### Implementation of vertical integration strategy

From the supply chain point of view, the benefits of vertical integration strategy over horizontal integration is well known. Implementation of vertical integration strategy is much easier in case of large industries having sufficient financial backing. However, generally the readymade garment industries in Bangladesh are more interested to source raw materials such as fabric, yarn, trimmings etc. from outsourced suppliers. These suppliers are often delayed in

delivering the goods, which ultimately adds to the lead-time. However, if the raw materials are manufactured within the facility then valuable time is saved as well as cost minimization; effective quality control can be achieved. If this strategy is implemented a firm may achieve time advantage, efficiency advantage, cost advantage and quality advantage (Sehgal, 2011). Also to gain the fullest advantages of the Computer-Aided Design (CAD), Computer-Aided Manufacturing (CAM) and Enterprise Resource Planning (ERP) software implementation of vertical integration strategy is ample. If the raw materials are nominated by the buyers, then sourcing strategy is governed by the buyers themselves. Hence many industries find it fruitless to invest in vertical integration. So willingness of the buyers is also needed for independently choosing sourcing strategy by industries.

## Conclusion

Bangladesh has been in a disadvantageous situation among the readymade garment supplying countries due to higher lead time. The competitive advantages earned by cheaper production cost are being nullified by higher lead times. Depending on foreign sources for raw materials is dragging the industries behind. Empirical data shows that just for fabric 30-40 days are being added to the production lead-time. So restructuring the backward linkage is highly suggested approach to solve the problem of higher lead-time. Also others factors discussed in this paper are adding up to the lead time. Now it is high time that Bangladeshi readymade garment industries focused on the supply chain management as well as products quality and price. Because only through proper supply chain management the bottlenecks in lead time can be eradicated. Through this paper we are also recommending the other stakeholders and policy makers of the readymade garment industry to come forward to solve issues such as worker unrest. Government must take necessary steps to improve the infrastructure of the communication network of the country which cannot be improved by the industry. So in a nutshell it can be said that reduction of lead time in the readymade garment industry of Bangladesh is not possible by industries only. They must be supported by the other parties involved.

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