Lead-time management in Bangladesh garments industry: A system dynamics exploration

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ABSTRACT

The demand driven apparel industry is increasingly being marked by its players (brands, retailers and specialty stores) competing for who can move faster their fashions to better respond to today’s time sensitive customers. This competition of running against time has posed a great deal of challenges which are ultimately to be kept pace with by the apparel manufacturing firms. Therefore, time (lead time for garments delivery) has become a crucial performance parameter among apparel manufacturing economies around the world. China and India have a 55 and 65 day delivery time respectively while Bangladesh remains at a 90 to 120 day delivery time. To stay competitive in the global apparel market, Bangladesh needs to improve its lead time and research shows the opportunity is ample if it can achieve textile sufficiency from domestic production along with its inherent backward linkages. Thus, a system dynamics model has been developed to show how the domestic fabric production capacity can reduce lead-time and enhance the backward supply chain strength for the Bangladesh ready-made-garment industry.

JEL Classification: L11, L23, L60

Keywords: system dynamics model, Bangladesh garments, lead-time management, domestic fabric production

INTRODUCTION

As the impact of physical boundaries is decreasing with the advent of the latest information and communication technologies, markets are continuously becoming more globalized, and new competitors are progressively entering the market with newer and more innovative products and services to
compete with the existing ones. The apparel industry is highly globalized with a number of key exporters and importers from Asia, Europe and the Americas. Moreover, the product life cycle of apparel products, many of which are fast fashion items, is decreasing quickly. Consequently, the time allowed for design-to-market is decreasing over time, which is directly pushing suppliers or manufacturers of garments to reduce the duration of the “order issue date to the shipment date”. Bangladesh garment manufacturers don’t deal with the design and the marketing stages, dealing with only “raw materials sourcing to garment manufacturing to shipments at Chittagong port”. With the emergence of new competitors, the presence of existing players, and the Bangladesh garment sector no longer enjoying the MFA (Multi Fiber Arrangement) in the US market since 2005; the garment business is increasingly becoming more and more competitive in terms of quality, cost and lead time. In such a competitive environment, many suppliers from China, Hong Kong, India, Sri-Lanka, Vietnam and Turkey etc. are supplying similar or better quality apparel at a reasonable cost. However, an industry that can supply a reduction in the product life cycle will garner more customers, who are time sensitive, over competitors who are still struggling with lead-time.

It can be concluded that while several competitors can simultaneously serve higher quality products and at a reasonably low cost, reduced lead time is the last and most important criteria for the industry clientele. So, this study is dedicated to investigating the reasons of long lead time in the supply chain and providing solutions for the Bangladesh Ready-Made-Garment (RMG) industry. In our investigation, these problems are identified in both the backward and forward supply chain links.

LITERATURE REVIEW

Time has become such a valuable asset that any company that can exploit it can increase its competitiveness to a greater extent than ever before. Timing has become a crucial factor in many aspects of business including but not limited to planning, innovating, manufacturing, selling, distributing, and adopting strategies and policies (Stalk, 1988). Stalk (1988) also suggested that while cost, quality, manufacturability, newness /innovation evolved as a source of competitive advantage, time has positioned itself as the latest weapon to compete in the marketplace.

Christopher (p.149, 1998) also asserted that time has become very important to compete against competitors and the main reason for this change is the change of the customers’ awareness and preference for time. In the fashion market, new styles are released frequently, lasting for a short period of time, being replaced by new trends. Thus, end consumers are also becoming more conscious about the latest fashion trends in the apparel market. Now, innovative designers around the world are also bringing new designs to the market with an ever-increasing frequency. It has been noticed that a new and fantastic style, which conquered the market in one season (summer/winter), will also be replaced the following season. So, it’s very
difficult to forecast whether the same popular fashion trend will continue into the following season. As a result, seasonal and cyclical demands are fluctuating severely. So, it clearly indicates a shortening of the fashion life cycle in the end consumer market.

Source: Cornell University (2013)
Figure 1. Comparison of life cycle pattern between fashion and basic products

Products usually pass through the different stages of the life cycle, which requires different planning strategies in order to enhance its success. Each successful product goes through at least the four stages in the product life cycle, which are: introduction, growth, maturity and decline. The product life cycle length is also different depending on the product, where the fashion life cycle usually experiences a sharp decline at the end of the growth stage. According to Figure 1 (Cornell University, 2013), the growth stage is noticeably shorter when compared to a basic product. This means that the declining stage starts immediately after its apex in the growth stage, making fashion item inventories very difficult to manage. Due to the sharp decline seen in Figure 1, there is immense pressure on the manufacturing industry to deliver apparel within and short and limited time span. Hence, the lead-time for manufacturers is also decreasing.

Source: Christopher, p.151 (1998)
Figure 2. Obsolescence problem for late entrant in the fashion market
Christopher (p.151, 1998) explained (see Figure 2) that if any company introduces its apparels in the market later than its trend, it would probably have a huge number of outdated items as shown in the grey area. Owing to these two important factors; short duration of fashion apparels and obsolescence resulted by late delivery (combining with Fig. 1 and Fig. 2), the lead-time from designing to market will be shorter and crucial. As Bangladesh garment factories begin manufacturing only after obtaining orders, their concerns revolve mainly around manufacturing lead-time. Thus, the time from design to market has become crucial for all fashion garments worldwide.

**Bangladesh garment industry in the global value chain:**

The apparel industry is a perfect example of a buyer-driven value chain (Gereffi & Memedovic, 2003) and lead firms who are mainly from the United States, Europe and Japan, dominate the market structure in terms manufacturing location (Fernandez-Stark et al., 2011). They also determine the market prices of apparel products.

Fernandez-Stark et al., (2011) classified the global apparel supply chain into five identifiable sectors: (1) raw material supply, including: natural and synthetic fibers; (2) provision of components, such as the yarns and fabrics manufactured by textile companies; (3) production networks made up of garment factories, including their domestic and overseas subcontractors; (4) export channels established by trade intermediaries; and (5) marketing networks at the retail level. Our analysis shows that the Bangladesh RMG industry is partially involved in the second category and fully (100%) involved in the third category to produce garments as per buyers’ orders. How this positioning of the Bangladesh RMG industry makes it profitable is explained in Figure 3.

Source: Frederick (2010); Fernandez-Stark et al. (2011)

**Figure.3.** Phases of value addition in global apparel value chain
Value added activities are carried out in different stages and this is shown in the above Figure 3. Most top firms from America and Europe carry out new research and production initiatives with an aesthetic and style design, distribution, market and services, which add high value. Thus those top firms obtain the major part of the profits as well. The Bangladesh apparel sector supplies a small portion of woven fabrics as well as a major portion of the knit fabrics. Therefore, the Bangladesh apparel sector carries out its “production” activities in the low value added stage as shown in Figure 3 above. Thus, the Bangladesh RMG must capitalize on cheap labor and quick delivery in the production process within a short lead time in order to turn a profit.

**Concept of lead-time in Bangladesh garment industry:**

Lead-time is the duration between the start and ending of a process. Within lead-time, every necessary activity is carried out to fulfill a consumer demand and ultimately brings the product within the consumers reach (Elsmar, 2013). It includes the elapsed time that starts at the moment an order is placed and the moment when the goods are delivered to the final destination (Chopra, p.317, 2010; Nuruzzaman & Haque, 2009; Christopher, p.157, 1998). In the case of the Bangladesh RMG, we have been informed by the respondents and experts’ opinions that lead-time is mentioned nowhere in the order confirmation paper. Rather it is implied by two dates; 1) order issue/confirmation date and 2) the shipment date. The time gap between these two dates is treated as lead-time in the Bangladesh RMG business. The lead-time in this case is somewhat different from that, which is described by Chopra (p.317, 2010) and Christopher (p.157, 1998). Chopra and Christopher included shipment time into the lead-time equation however, the Bangladesh RMG doesn’t account for that factor. This factor is considered and dealt with by the merchants from Europe and the Americas rather than the garment manufacturers in Bangladesh.

Nuruzzaman & Haque (2009) and Antonin (2013) have divided lead-time into two parts such as “information lead time” and “manufacturing lead time”. Information lead time includes the time when correspondence between buyers and the RMG factory merchandisers takes place to negotiate about the garments quality, color break down, cost/price per unit, order quantity and required delivery date. Order lead time can be defined as starting immediately after the order issue date and spanning up to the last shipment date, in general, at the Chittagong sea port. During manufacturing lead-time, factories source/buy fabrics, the main raw material, either from local markets or outsource from China, India, Pakistan, Sri Lanka, Indonesia or other countries. Sourcing fabrics is a big time consuming factor in the RMG business and it’s included in order lead-time.

Order lead-time plus shipment time is the replenishment lead-time for the overseas merchants who procure garments from Bangladesh. The less replenishment lead-time is allowed, the more pressure there is on every
supplier in the supply chain, which is a source of competition among manufacturers (Nuruzzaman & Haque, 2009; Christopher, p.149, 1998). However, any company who can supply with a shortened lead-time will increase sales as this gives rise to positive customer response. Another reason for shorter lead-time need is the safety inventory, which is an idle investment of capital. If lead-time can be reduced by “X” percentage then the safety inventory will be reduced by •X (Chopra p.326, 2010). Many merchants, including Wal-Mart (Chopra p.326, 2010) are demanding the delivery of garments within a short lead-time to reduce their investment in safety inventory in order to minimize idle capital in the business.

Considering expert opinions gathered through phone-discussions, we have identified the key activities that are carried out during order lead-time by garment companies in Bangladesh. At first, RMG companies import fabrics from overseas countries, mainly from China, India, Pakistan, Indonesia, Sri Lanka, Thailand, or buy from local producers in Bangladesh, then manufacture the garments according to the merchant requirements and, finally, ship out at the Chittagong sea port. So, Bangladesh factories mainly have the following components in lead-time:

For Bangladesh garments (in general):

Lead time = Fabirc manufacturing time + time to import fabrics + fabric inspection / other processing + Garments Manufacturing (cutting, sewing, washing, finishing and packing) + Garments Final Inspection and sending to Chittagong sea port + buffer time (woven garments)  
Lead time = 25 + 28 + 7 + 20 + 5 + 5 = 90 days  
Lead time = manufacturing time of fabrics + manufacturing time of garments (knit garments)  

RESEARCH QUESTIONS OF THE STUDY

On the basis of this literature review, this study was focused to answer the following research questions.

- What are the crucial factors for long lead-time?
- How long time can be reduced so that it can increase competitiveness of Bangladesh apparel industry?
- What might be the impact of different policies that can be adopted by the government and industry players?

METHODOLOGY

Both qualitative and quantitative research strategies were applied to deeply look into the breadth of the research questions and to find their possible solutions. Quantitative research method was applied for conducting a survey among target respondents in which a well-defined survey questionnaire was used as the research instrument, which was full of close-ended questions.
other set of the questionnaire was distributed among experts, which was full of open-ended questions. Most merchandisers responded from different factories because they usually deal with lead-time including order negotiation and import of necessary raw materials such as fabrics and accessories. Survey questionnaires were developed proceeded by a literature research and expert discussion over the phone. The structured questionnaire was composed mostly of “yes/no” and multiple choice questions. The questions for identifying reasons behind long lead-time were asked by using a 5-point Likert scale. These questions had the following multiple choice rating scale given by: 1 = strongly disagree, 2 = Disagree, 3 =Neutral, 4 = Agree, 5 =strongly agree.

Variables and their inter-relationships:

Here we define, explain, and show the inter-relationships among the different variables. The variables are listed in Table 1 including their type and measurement units.

The primary strength of the Bangladesh RMG industry is low cost labor availability and good quality in garment sewing. However, respondents of the survey have identified long lead-time as the most critical problem to compete against China, India and Sri Lanka. For woven garments, China and India can deliver the products within 50-60 days and 60-70 days respectively whereas Bangladeshi exporters can deliver within 90-120 days on the average. This long lead-time is appearing as a potential threat to the future growth of the apparel industry. The respondents opined that China and India have their own textile factories to produce woven fabrics, which have enabled them to deliver within a shorter lead-time. Bangladesh textile mills, as the domestic source of woven fabrics, can only supply 40 percent of the total demand and the other 60% are mostly imported from China, India, Pakistan, Indonesia, Indonesia and Turkey. Contrary to the woven fabrics, Bangladeshi textiles can supply 90% knit fabrics of the total domestic consumption per year. As a result, the knit sector can compete almost equally to the lead-time of both China and India. So, this study has identified the lack of woven fabric production in Bangladesh or import from other countries as the major cause of long lead time. It takes about 28 days to import fabrics from overseas countries (count is based on the major source, China). Some experts have suggested that lack of a deep sea port at Chittagong is another determining factor for long time to import as it takes almost one extra week at a Singaporean or Sri-Lankan (Colombo) deep sea port to change ships. At present, only some feeder vessels ply directly from Shanghai to Chittagong, which only covers 10 percent of the total shipment of Chittagong Port from China, however, the other 90 percent of the time, the route through Singapore is employed, where mother vessels unload to feeder vessels.

From the analysis of the survey questionnaires, we have identified two main variables that contribute to the major factors of lead-time and where policies can possibly be adopted to reduce it. The domestic supply of fabrics and the deep seaport at Chittagong can drastically reduce lead-time as well as build a strong and integrated backward supply chain of the RMG industry.
### Table 1. Variables in the model

<table>
<thead>
<tr>
<th>Variable name</th>
<th>Type</th>
<th>Measurement unit</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic fabric production</td>
<td>Stock/level</td>
<td>Million meters</td>
<td>Million kgs</td>
</tr>
<tr>
<td>Total fabric demand</td>
<td>Stock/level</td>
<td>Million meters</td>
<td>Million kgs</td>
</tr>
<tr>
<td>Growth in fabric production</td>
<td>Auxiliary</td>
<td>million meters/ year</td>
<td>millkgs/year</td>
</tr>
<tr>
<td>annual demand increase in fabric consumption</td>
<td>Auxiliary</td>
<td>million meters/ year</td>
<td>millkgs/year</td>
</tr>
<tr>
<td>import requirement</td>
<td>Auxiliary</td>
<td>million meters</td>
<td>mill kilograms</td>
</tr>
<tr>
<td>production capacity addition</td>
<td>Flow</td>
<td>million meters</td>
<td>mill kilograms</td>
</tr>
<tr>
<td>percent that can work 60 days</td>
<td>Auxiliary</td>
<td>Dimensionless</td>
<td>Dimensionless</td>
</tr>
<tr>
<td>import lead time</td>
<td>Auxiliary</td>
<td>Days</td>
<td>Days</td>
</tr>
<tr>
<td>demand accumulation</td>
<td>Flow</td>
<td>million meters</td>
<td>mill kilograms</td>
</tr>
<tr>
<td>time reduction factor</td>
<td>Auxiliary</td>
<td>Dimensionless</td>
<td>Dimensionless</td>
</tr>
<tr>
<td>total lead time reduction</td>
<td>Auxiliary</td>
<td>Days</td>
<td>Days</td>
</tr>
<tr>
<td>forecast lead time</td>
<td>Auxiliary</td>
<td>Days</td>
<td>Days</td>
</tr>
<tr>
<td>present lead time</td>
<td>Auxiliary</td>
<td>Days</td>
<td>Days</td>
</tr>
<tr>
<td>impact of deep sea port</td>
<td>Auxiliary</td>
<td>Days</td>
<td>Days</td>
</tr>
</tbody>
</table>

Based on the survey and its analysis, domestic fabric production (DFP) has been identified as the key stock variable that will determine future lead-time. DFP is primarily determined by two factors (see Fig.4). The first factor is the present amount of production, which is already taking place in existing textile factories in Bangladesh. The amount of present DFP is collected from the website of the Bangladesh Textile Mills Association (2013). The other factor is growth in fabric production \((r)\), which is calculated on the average growth of production capacity during the last three years. Thus DFP can be expressed as:

\[
DFP(t) = DFP(0)e^{rt} \quad (1)
\]
Figure 4. System dynamics diagram for lead-time management.

After domestic production capacity, the second most influential factor is total fabric demand (TFD), which determines the lead-time and import requirements. This demand is increasing every year depending mainly on two factors. First, the number of newly established garment factories is growing and, second, the production capacity is also increasing through their experience, expansion and increase of orders. Forecasted TFD may be viewed as the total potential for growth of the Bangladesh RMG industry. So, the higher value of TFD for any time and its increasing trend is a good sign for Bangladesh’s economy. However, TFD at any time in the future will be characterized by two factors such as present TFD and annual demand increase in fabric consumption (a). The value of “a” is estimated based on the average growth in fabric consumption during the last five years in Bangladesh. Thus TFD (t) at any time is expressed below as:

\[ TFD (t) = TFD (0) \text{ eat} \quad (2) \]

The import requirement (I_{req}) to meet the total demand TFD (t) is simply the algebraic difference between domestic production and total
demand by garment manufacturers. Import requirement (I_{req}) is mainly determined by two other factors of DFP (t) and TFD (t). These two factors are “r” and “a”. Government entities or policy makers can manipulate these two growth rates to control future imports and exports. The simulation scenarios manipulating these two variables may be used for policy making.

\[ I(t) = TFD(t) - DFP(t) \quad (3) \]

The less the value of “I” is, the less the lead time the apparel sector will be for Bangladeshi exporters which is the top competitive advantage. So, the objective of policy makers should be to minimize I (t) whereas they have to maximize both DFP (t) and TFD (t).

For the sake of analysis, if we assume that all domestically produced fabrics are consumed by some factories to meet their 100% demand and they will not import any fabric from overseas, then we find that those factories can deliver garments within 60 days of lead time as they don’t need to wait 28 days for the fabric to arrive. This shows a strength level of the apparel sector revealing a smaller dependence on imported raw material. In this study, the percent of factories that deliver within 60 days of lead-time (\eta) is measured below as:

\[ \eta(t) = \frac{DFP(t)}{TFD(t)} \times 100 \quad (4) \]

The time reduction factor (TRF) is a ratio, which is dependent on import lead time (ILT) and total fabric demand. With the welfare of several local and bilateral trade facilitation initiatives (in forms of reducing trade barriers among nations and improving infrastructure development of international ports, etc.). We, presently, enjoy fabric import lead times of 28 days and 20 days respectively from China and India while these were respectively 38 days and 28 days just 15 years back. There is only a little scope of further improvement in fabric import lead-time through infrastructure development (Chittagong Port’s capacity and efficiency and inland roads / waterways capacities to and from Chittagong Port) within the existing system. Albeit it remains as a matter of hope, this will not substantially improve lead-time even if it occurs. Hence the remaining alternatives are domestically sufficient fabric supply (which makes input import time zero) and a deep seaport (which will reduce both import time, albeit at a minimum, and export time to a substantial extent (not less than a week)). So, we focus on building textile and fabric production capability and setting a deep seaport.

\[ TRF(t) = \frac{ILT(t)}{TFD(t)} \quad (5) \]

Total lead-time reduction (TTR) is the multiplication of domestic fabric production and the time reduction factor plus the impact of the deep
seaport (DSP). TTR is an important objective, which is achieved through a controlled growth of the domestic capacity and the imports of fabrics. The deep sea port is another option which will have a very good effect to reduce both import and export lead time. However, for more than a decade there has been many political and social debates in Bangladesh regarding this solution. No government agency has made the decision and started the construction work necessary to construct a deep seaport at Chittagong. That is why this study basically focuses on the enhancement of domestic fabric production capacity to reduce dependence on imports. Simulation results are shown without a deep seaport in the next section.

$$TTR (t) = TRF (t) \cdot DFB (t) + DSP$$  \hspace{1cm} (6)

The final outcome on which the policy will be based on is the forecasted lead-time (LTF). Forecasted lead-time is the difference between the present lead time (LT) and the achievement in lead time reduction (TTR). The significant reduction in LTF will be the best policy to adopt.

$$LTF (t) = LT(0) - TTR(t)$$  \hspace{1cm} (7)

**Impact of domestic fabric supply on lead-time**

We have assumed from the survey analysis that fabric production in Bangladesh is the best solution to reduce lead-time. Moreover, growth in domestic textile production capacity will reduce the dependence on other nations from where fabrics are imported as the prime raw materials, which will also increase the strength in the backward supply chain link. It is found that domestic fabric production growth is approximately 10 percent during the last three years and the growth in total fabric consumption is approximately 2.5 percent in the last five years. This data was collected from the BTMA (2013) and the Global Agricultural Information Network (2013).

Total fabric consumption has been kept constant at its present growth rate because it seems that the RMG sector has reached its mature phase and growth might not be experienced in an accelerated rate. Experts are saying that growth in total exports of RMG from Bangladesh may suffer because the US and European markets are facing economic recessions. The textile sector can grow more than the present growth rate because there is a huge gap between demand and available production in case of woven fabrics. Data is showing that 90% knit fabrics are supplied from domestic sources; thus we have limited our simulation analysis to woven fabrics. There is a big part of the other 10 percent of knit fabrics, which cannot be easily produced in Bangladesh because those are of special quality and their demand is too small to be feasible to be built a factor or enjoy economies of scale.

However, we have simulated the parameters assuming four scenarios.

- Scenario 1: growth in domestic production will decrease up to 9 percent
- Scenario 2: growth in domestic production will continue with at 10 percent (current scenario)
- Scenario 3: growth in domestic production will increase up to 11 percent
- Scenario 4: growth in domestic production will increase up to 12 percent

**Table 2. Simulated values of four target variables**

<table>
<thead>
<tr>
<th>variables</th>
<th>Present (actual)</th>
<th>Year-5</th>
<th>Year-10</th>
<th>Year-5</th>
<th>Year-10</th>
<th>Year-5</th>
<th>Year-10</th>
<th>Year-5</th>
<th>Year-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>LTF</td>
<td>90</td>
<td>77</td>
<td>72</td>
<td>77</td>
<td>71</td>
<td>76</td>
<td>69</td>
<td>75</td>
<td>67</td>
</tr>
<tr>
<td>DFP</td>
<td>2100</td>
<td>3231</td>
<td>4972</td>
<td>3382</td>
<td>5447</td>
<td>3539</td>
<td>5963</td>
<td>3701</td>
<td>6522</td>
</tr>
<tr>
<td>I</td>
<td>4080</td>
<td>3761</td>
<td>2940</td>
<td>3610</td>
<td>2464</td>
<td>3454</td>
<td>1948</td>
<td>3291</td>
<td>1389</td>
</tr>
<tr>
<td>η</td>
<td>33.98</td>
<td>46.21</td>
<td>62.84</td>
<td>48.36</td>
<td>68.85</td>
<td>50.61</td>
<td>75.37</td>
<td>52.93</td>
<td>82.45</td>
</tr>
</tbody>
</table>

**Graph for forecast lead time**

Forecast lead time:
- 12% growth in DFP: 12 days
- 11% growth in DFP: 2 days
- 10% growth in DFP: 3 days
- 9% growth in DFP: 4 days
Graph for domestic fabric production

- Domestic fabric production: 12% growth in DFP (1 million meters)
- Domestic fabric production: 11% growth in DFP (2 million meters)
- Domestic fabric production: 10% growth in DFP (3 million meters)
- Domestic fabric production: 9% growth in DFP (4 million meters)

Graph for import requirement

- Import requirement: 12% growth in DFP (1 million meters)
- Import requirement: 11% growth in DFP (2 million meters)
- Import requirement: 10% growth in DFP (3 million meters)
- Import requirement: 9% growth in DFP (4 million meters)
This study shows how the fabric supply from inside Bangladesh can reduce total lead time and increase the response of the whole supply chain of the apparel industry. To cope with the increased competition from China and India, Bangladesh has no alternative but to develop a backward linkage of textile mills and a domestic fabric supply. A system dynamics model has been developed to analyze and simulate the variables that are linked with lead-time management. As it’s difficult to rapidly change the value of the stock variable, this analysis shows that it takes at least 10 years to raise the production capacity of fabric to meet about 80% of the total demand. However, government has two choices to follow. The best and inevitable choice is to invest more on textile mills specifically to produce woven fabrics. The second, which is the most probable and facilitating choice, is to build a deep sea port at Chittagong, which will further reduce import and export lead-time not only for apparel goods but also for other commodities. Thus, the investment in textile mills to produce fabrics is the best policy advice for the time being.

It must be noted that there are some restrictions of this model. It has not taken other affecting factors such as political instability and production cost of fabrics in Bangladesh. Experts have commented that China and India are supplying the same quality fabrics with 6 percent to 7 percent cheaper than Bangladesh can. Therefore, the government is expected to be more responsive in ways of extending Cash Assistance from its present 5 percent, reducing to a single digit bank interest rate of credit and increasing the time limit in loan repayment for this sector, making ways for Special Textile Zones (Textile Pallis), taking an initiative to create a Special Fund for Technological

Figure 5. Forecasted scenarios of main variables.
Up-gradation in this sector and granting some so voiced duty withdrawals and tax exemptions. All these variables could also be modeled but they are not included in this study. However, this model will help to understand the dynamic relationship among the stated variables and to also help build further complex models including the aforementioned additional variables.

REFERENCE:


