

# Light Engineering Industry

## Light Engineering Industry Sector in Bangladesh: Challenges and Prospects

Sacchidanand Majumder

PhD Fellow

Department of Statistics

University of Chittagong

Bangladesh.

E-mail: mithu.m2011@gmail.com

Soma Dey

Assistant Professor

Faculty of Business Administration

BGC Trust University Bangladesh

BGC Biddyanagar

Chandanaish Chittagong.

E-mail: somaais99@gmail.com

### Abstract

Light engineering industry (LEI) sector is an important sub-sector of the overall manufacturing sectors in Bangladesh and it is fuelling the growth of many other industries of the country. The main objective of this study is to identify challenges and prospects of LEI sector in Bangladesh. The study was carried out by both qualitative and quantitative approaches. Primary data was collected from 35 LEIs located in Dhaka, Gazipur, Narayongonj and Chittagong on August-October, 2019 through a structured open-ended questionnaire with a set of questions. The study revealed that LEI sector faced a lot of challenges such as, shortage of work force; imported LE products with low price; lack of quality raw materials, modern technologies, positive attitude, communication, marketing, access to finance, industrial facilities and policy support. The study also illustrated that there are a lot of prospects in the LEI sector of Bangladesh such as, poverty alleviation through employment generation; increasing contribution to GDP; growth of local industry; reducing import of LE product and increasing export opportunity. Government and respective authority should take initiative properly and quickly to review the existing policies so that the LEI sector can overcome the current challenges.

**Keywords:** Light Engineering Industry, Challenges, Prospects, Bangladesh.

### 1. Introduction

The light engineering industry (LEI) sector as 'the mother of all sectors,' provides backup support to cement, paper, jute, textile, sugar, food processing, railway, shipping, garments capital machineries by repairing and maintaining those (LEPBPC, 2016). This sector has been fueling the growth and advancement of many other industries by supplying various types of machinery and spare parts and by providing repair services.

LEI is a sector which deals with small engineering objects like machine parts, auto parts, small machineries, and plastic products or even in some cases full scale small industrial machine. It helps industrial, agricultural

and construction sectors by manufacturing a wide range of spare parts, castings, moulds and dices, oil and gas pipeline fittings and light machinery, as well as repairing those (INSPIRED, 2013). It is claimed that in Bangladesh, the LEI sector is producing about 50% spare parts for the industrial sector, the rest are imported mainly from China and India (LEPBPC, 2016).

All progressive countries have been intensifying their efforts to develop the LEI sector that acts as a prime mover for the development of a country's industrial base (Uddin, 2010). LEI sector can be more value-adding and can earn substantial foreign currency next to the ready-made garments (RMG), if provided with proper financial, technical, infrastructural and marketing support. In addition, LEI owners have stated the LEI as a prospective industry to be an alternative to RMG. The Prime Minister of Bangladesh announcing the "Light Engineering goods" as "Product of Year" for 2020 in the inauguration of the 25th Dhaka International Trade Fair (DITF). She also mentioned that "as a part of the export policy, we are declaring Light Engineering (goods) as the product of 2020 aimed at encouraging the product based export while we are calling for more investment (BSS, 2020).

LEI sector has a very significant role in the socio-economic development of the country. Last few decades, the industry has been contributing considerably to GDP of Bangladesh, reducing the poverty level through employment generation, producing import substitute products, and supplying necessary items for other sectors. The LEI sector has the ability to produce a wide range of diversified products. While the international LEI sector are using hi-tech machinery, most of the Bangladeshi LEIs have been using outdated conventional technologies and indigenous machinery through unskilled and semi-skilled workers. Most of the LEIs have lack of modern technologies like modern heat treatment, material testing, magnetic crack tester, etc. and the common use of machineries in each of the industry are lathe machine, grinding machine, shaper, planner, milling, etc. (Uddin, 2010). In consequence, LEIs capability and the products quality have not yet been able to meet the competitive challenges that come from the global market (ADSL, 2007).

As Bangladesh's economy is gradually emerging as an open market and friendlier toward foreign companies; local small and medium LEIs have been facing pressures

for producing quality products at competitive prices. But, there is a growing concern among the LEIs that they are facing several challenges from imported spare parts mainly from China, Taiwan, Thailand and India. They complained that cheap foreign onetime spare parts, tools and light machinery are being dumped in Bangladesh due to Government inaction. The study focus on identify challenges which are currently facing and prospects of LEI sector in Bangladesh.

## 2. Objectives of the Study

The main objective of this study is to identify challenges and prospects of light engineering industry sector in Bangladesh. The specific objectives of this study are to:

- (a) Find out the current challenges of light engineering industry sector in Bangladesh;
- (b) Identify the prospects of light engineering industry sector in Bangladesh;
- (c) Propose recommendation to overcome the identified challenges of light engineering industry sector in Bangladesh.

## 3. Literature Review

### 3.1. Definition of Light Engineering Industry (LEI)

There has no specific universal definition of light engineering industry (LEI) sector. But several authors defined LEI sector using common characteristics like, small firm, engineering or technological production process, related to metal working or electromechanical components making, indigenous technical skill etc. (Rabbani, 2005; Ahmed & Bakht, 2010; and Quadir & Mahmud, 2009).

Rabbani (2005) defined light engineering industry as LEI should have a local engineering aspect in the design of a product or its making, i.e., where indigenous engineering intellect or skill has a contribution. The main processes are cutting, blending, machining, shaping, milling, hobbing, rolling, extruding, drawing, sawing etc. (Adhikary & McVay, 2006).

LEIs are small firms that produce small machinery, equipment, tool, metallic household appliance or sanitary ware, and electrical, electronic, electromechanical and mechatronic products mainly by metals through engineering and technological processes (Uddin, 2009).

According to Talukder and Jahan, (2016), LEI sector is small firms employing engineering or technological

process that produce small machinery, equipment, tool, metallic household appliance or sanitary ware, and electrical, electronic, electromechanical or mechatronic products mainly by metals; produce spare parts for different types of industrial, agricultural, automobile and small machinery and provide repair service.

### 3.2. History of Light Engineering Industry (LEI) Sector

There is no historical reference about LEI in Bangladesh, the common saying is that the industry started by providing maintenance support to the large-scale industrial units commissioned in the 1950s in Bangladesh (then East Pakistan). But, the industry has been demonstrated a tremendous growth since 1985 (Quadir & Mahamud, 2009).

Before 1970, there were a few industrial establishments in Bangladesh that relied on foreign machines and spare parts. Some mechanics having experience in the industries started producing some parts (Talukder & Jahan, 2017). After liberation of Bangladesh, non-Bengali industry owners left the country. The government of Bangladesh took over their factories under large public sector corporations. Government set up more units of the industry under the corporations. It created a huge demand of spare parts and mechanical fittings which were earlier imported by the private owners (Talukder & Jahan, 2016).

After 1980 indigenous LEIs emerged around Dholaikhal, Jinjira, Mirpur, Syedpur etc. (Talukder & Jahan, 2016). The 1980s saw the explosive growth of LEIs with the patronization of the government of that period (Talukder & Jahan, 2017). Even now LEIs sector is providing critical support to automobile, industrial, agricultural and construction sectors by supplying cheap spare parts, castings, moulds and dices, oil and gas pipeline fittings and light machinery as well repair services (Talukder & Jahan, 2016).

In 1984, Dholaikhal caught attention of the Government. It was felt that although the LEIs had praiseworthy skills they could not make quality parts due to lack of modern machinery, continuity of demand and staff with formal technical qualification. Bangladesh Small and Cottage Industries Corporation (BSCIC) provided targeted low interest loans to LEIs to purchase machinery and as working capital. To address continuity of demand government passed a circular making it mandatory for sector corporations to purchase local spare parts if available. BSCIC enlisted the LEIs with product category so that the industrial buyers including government sector corporations could get access to the LE producers.

### 3.3. Location of Light Engineering Industry (LEI) Sector

LEIs are in all cities, towns and growth centres. In most of the places such industry is concentrated in specific locations although they are not as big as clusters. According to SME Foundation (2013), a total of 31 light engineering clusters located in 18 districts of Bangladesh have been identified with about 7,500 industries. LEIs are scattered throughout Bangladesh, which implies employment generation in a wider span of areas. Most of the industrial units are located in Dhaka, Chittagong, Narayanganj, Bogra, Gazipur and Kishorganj (Figure 1).

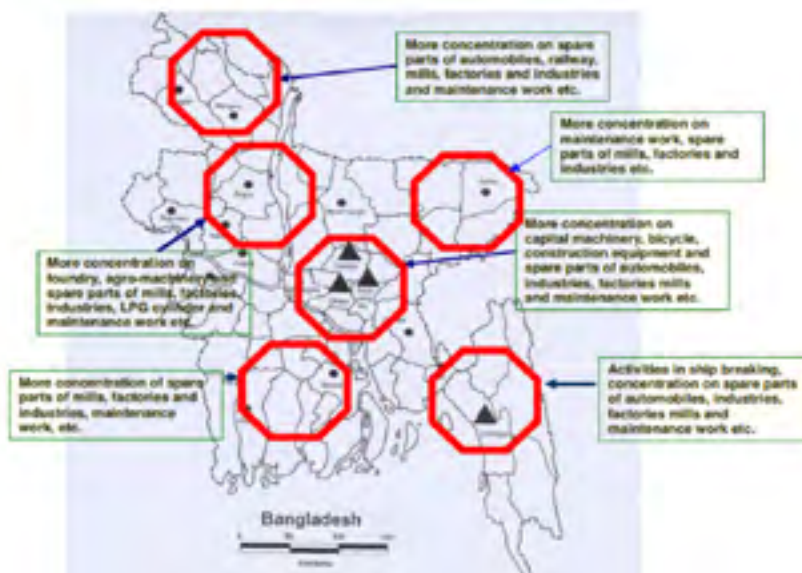


Figure 1: Map of LEIs in Different Parts of the Country.

[Source: SME Foundation (2008)]

### 3.4. Size of Light Engineering Industry (LEI) Sector

There is no census and scientific estimation regarding the correct number of LEI in Bangladesh. The actual amount of LEI is not available in the Bangladesh Bureau of Statistics (BBS).

According to President of Bangladesh Engineering Industry Owners' Association (BEIOA), after independence in 1971, the sector had only 100 enterprises, now it reached more than 40,000 (Rahman, 2018). According to BEIOA (2011), there are 40,000 LEIs in Bangladesh. This figure is supported by European Union (EU) (EU- INSPIRED, 2013).

A recent study was conducted by International Finance Corporation (IFC) in partnership with UK Department for International Development and Norwegian government, the LEI sector has in its employment 600,000 people involved in 50,000 micro enterprises and 10,000 Small and Medium Enterprises (SMEs) (Haque, (2013).

### 3.5. Sub Sectors of Light Engineering Industry (LEI) Sector

The LEI sector is an important sub-sector of the overall manufacturing sector of Bangladesh. It is fuelling the growth of many other industries of the country. It is providing support to agricultural, industrial and other sectors of the economy by manufacturing a wide range of spare parts, casting, moulds and dices, oil & gas pipeline fittings, light machinery, etc., as well as by providing extensive repair services to those. According to BIET (2011), a total of 17 sub sectors are mentioned in the publication published on the occasion of 2nd International Industrial & Engineering Technology Trade Show & Symposium.

1. Agriculture Machinery & Spares
2. Bread, Biscuit and Food Processing Machinery and Spares
3. Component & Spares of Gas Transmission and Distribution
4. Construction Machinery and Spares
5. Jute Machinery and Spares
6. Kitchen Wear and Bathroom Fittings
7. LP GAS Cylinder & Fire Extinguisher
8. Metal Furniture
9. Metal Product and Hard Ware
10. Mold and Dies

11. Motor launch and Marine Transport Spares
12. Paper and Pulp Machinery and Spares
13. Pharmaceutical Machinery and Spares
14. Poultry Machinery and Spares
15. Printing and Packaging Machinery and Spares
16. Tea plant Machinery and Spares
17. Textile Machinery and Spares

### 3.6. Government Policy regarding Light Engineering Industry (LEI) in Bangladesh

By nature, the LEI sector is different from many other manufacturing sectors. So it's required special attentions in many cases. The LEI sector has received the highest attention from the part of the government of Bangladesh. In recognizing this fact, the government has declared this sector as a thrust sector in its National Industry Policy 2010; In the Export Policy 2009, the sector has been attached as one of the highest priority sector and 10% cash incentive is granted for the export of light engineering (LE) products (JICA, 2014).

The Government of Bangladesh has declared LEI sector as one of the special development sectors in the export policy 2015–2018, with a vision to encourage the growth of the sector. In the export policy 2015– 2018, a number of points like, supply of investment credit at reduced rate of interest on a high priority basis; moratorium on income tax; various cash assistances; export credit on easy terms and reduced rate of interest; and subsidized rate for air transportation, duty drawback and bond facilities are included.

In order to develop the LEI, the government of Bangladesh has undertaken a plan to establish 'Light Engineering Cluster Village' near Dhaka. In the 7th-Five-Year Plan, the government has given emphasis to attract Foreign Direct Investment (FDI) in the LEI sector to increase investment, for greater and easier market access, and for easier transfer of technology. To facilitate FDI in the LEI sector, the government of Bangladesh is planning to set up special economic zones (SEZs) and hand over these SEZs to investors from Japan, China, India and other countries. In the National Industrial Policy 2016, LEI sector has been considered as one of the highest priority sectors. Several facilities, including cash and investment incentives, would be provided to facilitate the LEI sector of Bangladesh.

### 3.7. Current Scenario of Light Engineering Industry (LEI) Sector

LEI sector produces spare parts, small machinery, repair services for cement, paper, jute, textile, sugar, food processing, railway, shipping, garments manufacturing sectors. The sector produces three types of products/ services: complete machinery, spare parts and repair service. LEIs have a great potential to contribute technological advancement and economic development. In fiscal year (2012-13), LEI sector contributed about 3.08% of the GDP and now it provides at least 50% substitutes of the imported items and has emerged as a potential sector in Bangladesh (Keystone, 2015).

LEI sector is mainly a capital intensive sector (INSPIRED, 2013). According to BITAC, Country's total investment in the LEI sector is only \$15 billion against the demand of \$7 trillion LEI products in the global market (Rahman, 2018). Whichever country wants to grow this sector must be ready to infuse enough capital into the sector. Due to lack of capital in the sector, Bangladesh LEI sector is reeling (Ahmad & Jahan, 2017).

According to Export Promotion Bureau (EPB), the government has set the export target amounting at US\$ 169.55 million from LEI sector during the first half (July to December) of the on-going fiscal 2018-19 but the sector earned \$172.08 million. The export growth is 1.49%. The total fiscal target is \$352 million. Country achieved \$355.26 million export earnings from LEI sector. Out of the engineering products, stainless steel ware export increased 86.01% from the target, followed by 36.53% for engineering products, 62.69% for engineering equipment, and 10.25% for electronic product (Sazzad, 2019). Apart from the local consumption, the sector also contributes to the export of the country albeit negligible as compared over 82.01% in financial year 2015-16 of total export from RMG sector (BGMEA, 2017). According to BITAC, export earnings from the sector stood at \$510 million in the fiscal year 2015-16 and \$689 million in FY 2016-2017 and are expected to reach \$9.0 billion by 2030 and \$15 billion by 2041. The Export Promotion Bureau (BPB) data showed that engineering products fetched \$355.96 million in FY 2017-2018 (Rahman, 2018). A recent study on light engineering industries by IFC-SEDF estimates that annual turnover is US\$ 1600 million of which import substitute products is around US\$ 200 million (BPC- 2015).

LEI sector create wider opportunity for employment generation in Bangladesh. There are about 40,000 light engineering industries operating all over the country in which around 0.8 million semi-skilled, skilled and technically educated people and innovative entrepreneurs are actively engaged (BPC, 2015). Most of the LEIs are micro and small, self-financed and employing about 05 (five) persons and managed by the owners. Input of human capital comes mainly from the families and surroundings of clusters. These workers are completely unskilled initially. Over years of work, they gain skills and in many case later forms independent shops themselves (Ahmad & Jahan, 2017).

The people who work in the sector are really skilled albeit they mostly depend on their human measurements and judgments rather than any computer aided designs. LEIs sector of the country use mostly ship scraps as input material. In most cases these input materials are not quality checked hence arbitrary (Ahmad & Jahan, 2017).

The LEI sector works on the basis of order placed on random basis. It is like local grocery shop; delivery of product occurs when ordered. If there is no customer walking in, there is no business (Ahmad & Jahan, 2017). Organized and coordinated business model are almost non-existent. The sector is running on outdated technology. In countries where this sector is well established like China, Japan or India, use of modern technology is very pervasive. CNC (Computerized and Numeric Controlled) technology is so common in these countries. In Bangladesh's case, CNC is very rare. Only few big firms use CNC technology. Most shops depend on intuitions and previous designs as far as designs and execution is concerned. Trial and error method is used in day to day operation (Ahmad & Jahan, 2017).

Most of owners and managers in this sector have no formal financial and managerial training. They do not have any knowledge of the modern market system or mechanism. The term "value chain" is completely unknown to them while people with knowledge of the sector are asking the local LEI sector to align with the global value chain (Ahmad & Jahan, 2017). Most of owners and managers in this sector do not have any modern marketing capability either. The LEIs lack contacts with foreign companies or international R&D firms which is necessary for technical improvement and for seeking export markets (Ahmad & Jahan, 2017).

## 4. Methodology of the Study

In this study, the primary method for data collection is In-depth interview of the LEI owners or top-level management. In-depth interview provides more insight into a particular individual than do focus group study (Zikmund, Carr, Adhikari & Griffin, 2013). In-depth interview is much the same as psychological, clinical interview, but with a different purpose, in which the researcher asks many questions and follows up each with investigations for additional elaboration.

The study was carried out by both qualitative and quantitative approaches. Primary data was collected from 35 light engineering industries located at Dholaikhal, Tipu Sultan road, Tahegbagh, Lalbagh and Ashulia in Dhaka; Konabari BSCIC industrial Estate, Gazipur; Narayongonj and Pathanthuli, Pahartali and Muradpur in Chittagong from August 2019 to October, 2019 through a structured open-ended questionnaire with a set of questions. As a secondary data, different literatures were collected and reviewed to develop a general idea on various aspects of the light engineering sector. Different Industry related policies, such as the National Industrial policy 2016, Export policy 2015-18, the 7th-Five-Year plan, Diagnostic Trade Integration Study (DTIS), published research papers, journal publications, relevant web sites and newspapers from internet were used for the purpose of the study.

## 5. Findings of the Study and Discussion

### 5.1. Challenges of Light Engineering Industry (LEI) Sector

#### 5.1.1. Lack of Quality Raw Materials and Poor Quality of Product

Lack of quality raw materials and poor quality of product is one of the greatest challenges in the LEI sector of Bangladesh. All the respondents reported that they faced challenge due to low quality of raw materials. They informed that near about 85% to 90% raw materials come from ship breaking industries of our country. A few amounts of raw materials are exported from China and India. According to BEIOA, most of the raw materials come from ship scraps. Local ship breaking industries meet 90% of the demand for raw materials (Sazzad, 2019). Quality is a major disadvantage for export potential of the LE products. All the respondents agreed that due to

poor quality of raw materials, they have been failed to ensure quality of their products. Similar finding was found by Talukder and Jahan (2016). The large buyers of sector corporations and heavy industry need world class quality of spare parts, tools and other engineering products. But the LE industry failed to ensure quality requirement of large buyers and heavy industry mainly due to poor quality raw materials, old technology and unskilled staffs.

#### 5.1.2. Lack of Modern Technologies

Lack of modern technologies is one of another greatest challenges in the LEI sector of Bangladesh. All most, all of the LEIs faced to lack of modern technologies. The study revealed that most of the LEIs are still now using back dated manual technologies. As a result, production capacity and quality of products are low in many cases. This is not only hampers the quality of the products, but also impedes the yield of the sector. Consequently, the LE industry is not able to meet the production requirements for local and international markets. Several authors revealed same challenge (Sazzad, 2019; Banik & Swarna, 2018). Absence of modern technological knowledge and appropriate machineries to increase productivity and product quality is major challenge of LE industries (Abdin, 2015). According to Bangladesh Foreign Trade Institute (BFTI), the quality productivity could not be raised up to the global standards due to absence of modern technology and required machinery (Sazzad, 2019). Besides, the back dated machineries and technologies need comparatively more raw materials for a unit of product because of manual handling of settings. As a result, near about 30-40% raw materials were wastage. So, it affects in cost of unit product. This finding is also strongly supported by Banik and Swarna (2018). The modern technologies and machinery has perfect and accurate settings. So, modern technologies and machinery are required to meet domestic and global market demand.

#### 5.1.3. Shortage of Work Force

Work force is the main part of each and every industry. All surveyed industries mentioned that work force shortage is one of the major challenges in the LEI sectors. The study portrayed that LEI are facing work force shortage due to various reasons. Firstly, guardian and children are not interested to work in this type of work place due to negative attitudes. They feel that this work is dirty jobs and have no social status in the

society. Secondly, most of workers came from poor family through existing workers, guardian, neighbour. Most of them are never enrolled children and some cases are school dropped out children. After that they see this is high rick and dirty job and also work with hazard environment in the most cases. So, they faced difficulties in the work place. As a result, they left job. Thirdly, when a worker came in the LEI, they are fully unskilled. After a certain period, a worker becomes experienced through on job training. When a worker acquired technical skills at semi-skills or skills level, he left industry due to two main reasons; first one is that they go to overseas country with high wages. So, LEIs face shortage of skilled work force. Another one is that they left the job to start independent ownership industry. A study was conducted by Talukder and Jahan (2017) found the similar results. The sector is not getting vital new blood as the new generation is not opting to work in the LE factories as the work is hard, ill paid, and not prestigious in the society. Most of the factories are being run by middle aged workers who joined this sector 10-20 years ago. Organizational culture of factories is not attracting new recruits and not retaining the existing staffs. On the other sides, after a staff becomes experienced in factory job and acquires technical skills he leaves the job to set up independent factory of his own. The factory owner hires a new staff who does not have the required skill level. Acquiring skills is time consuming. So, the factories often find it hard to fill the skill gap created by loss of core technical staff. Some factories were found to be shut due to shortage of core technical staffs (Talukder & Jahan 2017).

#### **5.1.4. Imported LE Products with low Price**

All the surveyed industries reported that imported spare parts with cheap price are one of the major challenges to survive LEIs in Bangladesh. Spare parts are mainly imported from China, India, Taiwan and Thailand. Most of respondents stated that about 50% LE industries have been shut down due to over imported spare parts with low price. Talukder and Jahan (2016) mentioned that after 2000, Chinese cheap spare parts flooded the local market. Chinese enterprises operate on a very large scale as it has big export market worldwide. There is a widespread belief that Chinese enterprises are subsidized by the Government of China and they sell products at prices below their costs. In this study, all respondents reported that for surviving and developing LE

industries, its need to stop import LE products from foreign countries. These spare parts and product which are produced in the country, these are not needed to import from abroad.

#### **5.1.5. Lack of Positive Attitude**

Lack of positive attribute regarding technology up gradation and scale up of operation is the one of challenges in the LEI sector. The study portrayed that most of the surveyed LE industries are a little bit interested to upgrade technologies. It is worried fact that most of the LE industries are not interested to procure latest technology. They are satisfied with present traditional technology. It seems that they do not want to improvement quality of their products and working efficiency. In the most cases, they do not interest to buy new and modern technology based machines as the traditional machines are good enough for their purpose. Lack of sufficient space to install modern technology based machine is one of the major reason of this type of attitude. Besides, lack of access to finance is another major reason of the install modern technology based machine. According to Talukder and Jahan (2017), if they feel difficulty in getting loans from commercial banks, they did not interest to take any loan for expansion or running of business.

It is also observed that most of LEIs are proprietorships and by generation family owned business. The next generation of LEI owners is not willing to take charge of the family owned LE business. Without large scale production, it is not possible to supply big order locally or internationally. Due to small scale production, production costs per unit are increasing. Due to lack of scale benefit the cost per unit is higher than imported Chinese, Taiwanese, Thai or Indian products. So, together with poor quality and lack of compliance higher cost make the local LE products less competitive in the domestic and overseas market (Talukder & Jahan, 2016). The study funded by European Union (EU) found that LEI is a capital intensive industry, which due to lack of capital, is dominated by small manufacturing enterprises scattered throughout the country in various clusters (EU- INSPIRED, 2013).

#### **5.1.6. Lack of Communication**

The study revealed that more than 70% of LEIs are proprietorships and by generation family owned businesses established for the purpose of livelihood. It

is observed that a big communication gap has existed between LEIs and heavy industries and other sub-sectors. Due to this, LEIs produce their product with small scale for local and small buyer. As a result, the market of LEI has become narrow and the production cost per unit has increased. So, they are being faced with challenges for sustainability in the competitive market. On the other hand, heavy industries and other sub-sectors fulfilled their demand through importing their required machinery spare parts from foreign countries. As a result, a large amount of money is going to abroad. Bangladesh is lost a large amount of GDP. Although, still now a large share of spares and machinery are met by imported products local LE industry produces those products (EU- INSPIRED, 2013).

### **5.1.7. Lack of Marketing**

The study observed that most of LEIs (more than 90%) are producers. They produce spare parts, small machinery, agro machinery, auto mobile spare parts, assemble and repair services for auto mobile, cement, pharmaceuticals, jute, textile, sugar, food processing, shipping, garments manufacturing sectors. It is also observed that they have a little bit knowledge of marketing and calculating unit cost. They are being faced with challenge to handle big order and heavy industries. It is true that the LEI sector has not established marketing mechanism with the small scale of operation and culture of on-demand production. There is no branding of LE products or industries in Bangladesh. So, they are being faced with challenge to sale their product in domestic and international market. Due to lack of marketing skills, timid or complacent mindset and uncertain demands LEI owners take the safe path of on-demand low quantity production (Talukder & Jahan, 2016). If market linkage can be strengthened with the local industry both LEI and manufacturing sector can benefit (EU- INSPIRED, 2013). It is noted that the garment manufacturers do not know marketing. But, the buying agents do the job of marketing for garment manufacturers. The buying agents collect orders from international brand makers for garment manufacturers. The LEI sector has not developed such market intermediary. (Talukder & Jahan 2016).

Bangladesh does not have any dedicated standard certification body or institution to undertake standardization and testing of machinery and spare parts of the LE sector. BSTI provides standards of

different products produced in Bangladesh, but they are mostly not capable of making standards on LE products. Due to lack of quality certification, this sector is facing branding problem in the international market (Banik & Swarna, 2018).

### **5.1.8. Lack of Access to Finance**

Access to finance for the sector investors is one of major challenges for the LEI sector. All most, all of the respondents argue that LEIs have limited access and most cases have no access to finance due to unmeetable condition, bank guarantee and high interest rate. But, for attracting investors and developing LEI sectors easy access to finance must be needed. Most of respondents demanded that they have need financial support with easy condition, low interest rate and long time period. According to the president of BEIOA, the conditions for accessing finance are stringent, making it inaccessible for the small businessmen (Banik & Swarna, 2018)

A report showed that if investment in this sector increases by just taka. 60 billion every year, productions from this sector can replace imports worth taka. 650 billion. At present, lengthy and complicated lending procedure to receive bank loans, high interest rates on bank loans, non-availability of sufficient working capital, non-availability of venture capital are financing-related constraints (BFTI, 2016). The commercial banks do not consider the LEIs bankable as they do not have specialized staff to keep papers. Traditional collateral policy of commercial banks discourages them to provide loans to LEIs. The government does not have any window till today to provide preferential loans to them (Talukder & Jahan, 2016).

### **5.1.9. Lack of Industrial Facilities**

The study revealed that LEI operate in short spaces where most utilities are not available and there have no industries facilities. All the respondents mentioned that lack of industrial facilities is one of the main constrained to growth of LEIs. All surveyed industries demanded a separate LE Industrial Park with sector friendly regulations and low fees for LEI sector where government must be ensured all kind of industrial facilities, supply of electricity, gas and water and sewerage system, metal and heat treatment facilities, etc. Government should take initiative to establish metal and heat treatment plant in the cluster wise. A study was conducted by Talukder and Jahan (2016) mentioned that there is no affluent treatment plant.



Cost of doing business is high due to lack of industrial facilities such treatment plant, narrow roads in inside area, supply of electricity, gas and water and sewerage, etc. The experts claimed that lack of infrastructure, fund constraints and absence of policy are the major barriers that are hindering the growth of the country's LEIs (Sazzad, 2019).

#### **5.1.10 Lack of Policy Support**

All the surveyed industries reported that LEI sector is neglected by the government. The government is not considering the contribution of poverty alleviation through employment generation and reducing import expenditures. The LEIs owners informed that the customs duty for raw materials of LE machineries is 35%, but it is 1% for imported LE spare parts and products. Again, the LEI owners pay value added tax (VAT), but importers are not paid VAT because of they are not produced here. As a result, the local LE products become more costly as compared to imported LE products.

According to the BEIOA, government policies should be consistent and framed in a way that encourages the thrust sectors. This sector is enjoying 10% cash incentive by the government, but it needs support in terms of taxes and increased tariff for imported light engineering products for protecting the domestic industries (BFTI, 2016). The Ministry of Industries had not prioritized the LEI for financing and investment in the last five years (Talukder & Jahan, 2016). According to SME foundation, Small and Medium Enterprise (SME) loans do not reach the LEI sector, The SME loans channelled through the commercial banks and financial institutions are diverted to large industries due to faulty definition of SME in the policy. The small LE enterprises those need the loan most do not meet the fixed asset amount criteria for SME (Talukder & Jahan, 2016)

#### **5.2. Prospects of Light Engineering Industry (LEI) Sector**

LEI sector is recognized as 'the mother of all industries' because it provides backup support of spare parts and repair to almost all industrial sectors including plastic, cement, paper, jute, textile, sugar, food processing, railway, shipping, and garments. There are a lot of prospects in the LEI sector in Bangladesh. The study tried to find out some of prospects.

#### **5.2.1. Poverty alleviation through Employment Generation**

LEI sector continues to support the economy by creating employment. Reducing poverty through employment requires three major thrusts: (1) generate employment, (2) increase employability, and (3) make the labor markets more efficient. The first thrust works on the demand side of the labor market by creating job opportunities appropriate to the skills of the poor. The second thrust works on the supply side of the labor market by increasing the employability of the poor through education and vocational training programs. The link between economic growth and poverty reduction is mediated by job creation. It is possible to have economic development without significant job creation, which then leads to a lesser impact on poverty reduction (Karnani, 2011).

Bangladesh is a developing country of the South Asia where the LEI sector has been playing a very significant role in the socio-economic development. LEI sector has potential to contribute more in terms of reducing poverty with significant employment generation. All surveyed LEIs mentioned that they are being faced challenges with skilled and unskilled workforce shortage. They informed that after 1-2 years working the industries, an unskilled worker becomes a skilled worker. After that, this skilled worker creates demand in the LE market with high salary. Even, they get access to the international labour market with high salary mainly, Middle east countries, Malaysia, etc. It is clearly understood that LEI sector has a high potency to contribute to the poverty reduction along with a vast scope of employment generation. By realizing the situation, the government of Bangladesh has considered this LEI sector as one of the major thrusts sectors. The government of Bangladesh constituted National Skill Development Authority (NSDA) for overcoming shortage of skilled manpower through respective industry skill council (ISC). The aim of NSDA is to provide utmost assistance to make Bangladesh a developed nation by 2041 declared by the Government by creating skilled manpower in the country according to the demand of skilled workforces in home and abroad.

#### **5.2.2. Increasing contribution to GDP**

LEI sector have potential to contribute more in terms of increasing GDP (gross domestic product) growth. Ayyagari, Beck & Demirguc-Kunt (2003) conducted a study with aiming the contribution of SMEs and

the informal sector to the total GDP across a broad spectrum of countries. The SME sector generates a higher fraction of GDP in high-income countries than low-income countries (Ayyagari et al., 2003). In Bangladesh, the contribution of the LEI sector has been 2.15% of Bangladesh's GDP in the last few decades (Quadir & Mahamud, 2009) and 3.08% of the GDP in 2012-13 (Keystone, 2015). According to Ministry of Finance (MoF), LEI sector is a big manufacturing sector in the Bangladesh that contributes about 20% of GDP (MoF, 2016). By realizing the situation, the government of Bangladesh has considered the LEI sector as one of the booster sectors.

### 5.2.3. Growth of Local Industry

LEI sector has a huge growth prospect. LEI sector produces spare parts, small machinery, repair services for cement, paper, jute, textile, sugar, food processing, railway, shipping, garments manufacturing sectors. According to BITAC, country's total investment in the LEI sector is only \$15 billion against the demand of \$7 trillion LEI products in the global market. Its annual turnover is \$1600 million of which import substitute products worth around \$200 million (Rahman, 2018). The government of Bangladesh has undertaken a plan to establish 'Light Engineering Cluster Village' near Dhaka and has given emphasis to attract FDI for increasing investment in 7th Five-Year Plan for greater and easier market access, and for easier transfer of technology. In the Industrial Policy 2016, LEI sector has been considered as one of the highest priority sectors (BFTI, 2016).

### 5.2.4. Reducing Import of LE product

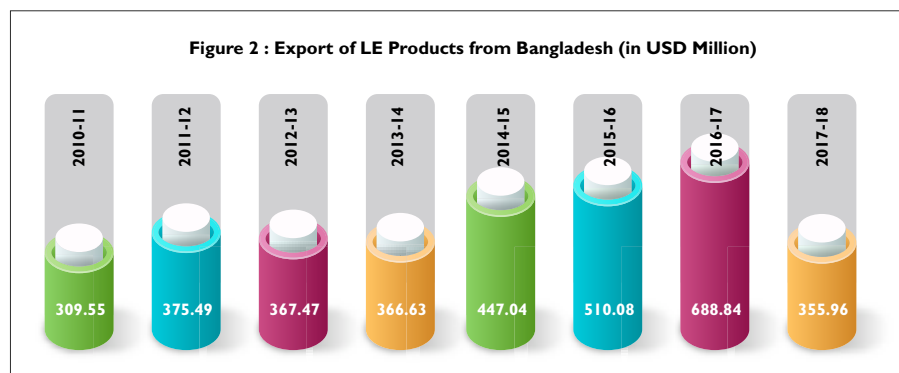
LEI clusters have potential to contribute more in terms of reducing import expenditures. In fiscal year 2012-13, LEI sector provides at least 50% substitutes of the imported items in Bangladesh (Keystone, 2015). The LEI sector is saving a lot of foreign currency every year. Now, most of industries do not need to import machines and spare parts from foreign countries as these are produced in Bangladesh.

For example, electrical products like substations, switch, socket, light shed, channel, cables and fans

which are manufactured by the LEI sector are now meeting 48% to 52% of the country's demands. Many household appliances can also be supplied by LEI sector. With the growth of economy demand of these goods is increasing. It can provide a big market for LEI sector if import can be reduced (Talukder & Jahan, 2016). At present, a large share of spares and machinery are met by imported products although local LEI produces those products. If market linkage can be strengthened with the local industry, both LEI and manufacturing sector can benefit (EU- INSPIRED, 2013).

### 5.2.5. Increasing Export Opportunity

LEI sector is a huge sector. There is possibility of exporting small machines and spare parts to developing countries. A number of potential export-quality LE products are exported directly or through subcontracting. These are; spare parts of paper & cement mills, bicycle, fancy light fitting, construction equipment, battery, voltage stabilizer, iron chain, cast iron articles, carbon rod, automobile spares, electronics items, stainless steel wares etc. The data from Export Promotion Bureau of Bangladesh shows in the following figure 2 that export of this sector has been growing over the years. However, the growth rate is found to be fluctuating. Export earnings from the sector stood at \$510 million in the fiscal year 2015-16 and \$689 million in FY 2016-17 and are expected to reach \$9.0 billion by 2030 and \$15 billion by 2041, the BITAC data showed. The Export Promotion Bureau data showed that engineering products fetched \$355.96 million in FY 2017-2018 (Rahman, 2018).



Source: Export Promotion Bureau of Bangladesh

The LE product iron and steel are exported in Saint Barthélemy, Singapore, Indonesia, India, Myanmar, Thailand, Japan, Sri Lanka, Turkey, USA, Italy, Taiwan, UAE, Australia and bi-cycle are exported in Germany,

UK, India, Belgium, Ireland, Spain, Denmark, Sweden, Italy, Australia, Finland, Russian Federation, Austria, Brazil, France.

This newly emerging sector has witnessed exponential growth and contributed about 1.5% to our export earnings during the financial year end June 2016. Statistics of the Export Promotion Bureau (EPB), Bangladesh show more reasons to boast. The export figure from engineering products stood at \$510.08 million in FY 2015-16, making it a booster sector in our industrial policy. In the export policy 2015-2018, LE products, including bicycle and auto parts, have been considered as one of the special development sectors. Several points are mentioned in the policy including: supply of investment credit at reduced rate of interest on a high priority basis; moratorium on income tax; various cash assistances; export credit on easy terms and reduced rate of interest; and subsidized rate for air transportation, duty drawback and bond facilities.

## 6. Conclusion and Recommendation

LEI sector is one of the elementary sub-sector in Bangladesh in terms of its involvement to socio economic growth and poverty reduction. LEI sector has been playing an important role in the economy of Bangladesh. LEI sector is frequently referred to as a mother industry that supports all other industries by providing machinery, equipment's, spare parts, accessories, and import substitute items (Quadir & Mahamud, 2009). But the movement of LEI sector is very insignificant in Bangladesh.


The LEI sector in Bangladesh is faced challenge with low quality of raw materials. Due to this, the quality of LE product is low. As a result, they cannot attract big manufacturers properly. To increase supply the quality of raw materials by import from foreign countries, government should come forward more actively to reduce VAT for imported raw materials. The limit for VAT free turnover should be judiciously determined with lessons from neighbouring countries. Rationalization of tax structure on the imported raw materials and components of LE products that are not made locally should be judiciously settled. To prevent under-invoicing and associated fraudulence and corruption, government should develop a database of raw material price.

Most of LEIs are still now dependent on backdated indigenous technologies. As a result, production capacity and quality of products are low in many

cases. Again, the workers who are using technologies are unskilled or semi-skilled. Since LEI sector requires a high level of modern technical upgradation and common facilities such as heat treatment plan, BITAC, BMTF, NSDA and others government institute or authority should be better equipped and staffed with technical experts to create a platform for the LEI owners to have adequate access to all forms of technical and industrial assistance. To overcome the shortage of unskilled and skilled workforce, NSDA, government and respective industry skills council (ISC) should take initiative to sensitize the respective community and other stakeholders. NSDA, government and respective ISC should implement effective training program which are reflected the industry demand driven curriculum. So that, industries will get skilled workforce as their requirement at one side and another side, the poverty level of Bangladesh will decrease with employment generation.

Most of LEIs are proprietorships and by generation family owned business. In most of cases, these LE industries are not capable to supply big order locally or internationally as their product standard are not satisfactory for the international market. Due to quality od product standard and lack of quality certification, this sector is facing branding problem in the international market. For growth of LEI sector, government should take initiative to assess to finance with flexible conditions and low rate of interest with long team instrollment. To develop a market linkage in locally and internationally, government should take initiative to develop buying agent of LEI sector as like garment buying agents, so that the export of LE product will be increase for earning foreign currencies. Government should introduce high rate of VAT and Tax for imported LE product which are produced in Bangladesh, so that, the import of LE product with low price will be reduce.

The study revealed that the LEI sector face challenges with lack of industrial space and common industrial facilities. Since LE sector needs separate industrial park or economic zone at least all divisional level with all industrial facilities, the government's proposed industrial park for LE sector should be implemented as early as possible. So that, the LEI sector will contributes more to GDP. Since LEI sector is considered as one of the highest priority sectors in the Industrial Policy 2016, a comprehensive sectorial policy for LEI alone be formulated to overcome the challenges, and to

provide a clear road map for the sector to flourish and contribute to economic growth of the country at desired level. 

## References

- Abdin, M. J. (2015, August 29). Tapping potential of light engineering clusters. *The Financial Express*.
- Adhikary, D. & McVay, M. (2006). *Market Development in Practice: Sector Development and Business Services Strategy*. International Finance Corporation (IFC) and The World Bank Group. Dhaka.
- Ahmed, N. & Bakht, Z. (2010). *Light Engineering Industry in Bangladesh: A Case Study*. Institute of Development Studies, pp-1-8
- Ahmad, F.U. & Jahan, S.M. (2017). Demand Dynamics of Light Engineering Sector of Bangladesh and Recommendations for Local Enterprises. *IOSR Journal of Business and Management (IOSR-JBM)*, 19(1-6), 01-07.
- ADSL (2007). "Industry Survey of Light Engineering Sector (LES) in Bangladesh", South-Asia Enterprise Development Facility, 1-248.
- Ayyagari, M., Beck, T. & Deminguc-Kunt, A. (2003). *Small and Medium Enterprises across the Globe: A New Database*. Policy research working paper 3127, The World Bank.
- Bangladesh Sangbad Sangstha (BSS) (2020, January, 2). Boost light Engineering. *The Daily Star*, p-16.
- Banik, T. C. & Swarna, N. R. (2018). A Study on Sector-based Need Assessment of Light Engineering Sector of Bangladesh. *American Journal of Economics*, 8(6), 244-253.
- BEIOA. (2011, 2-5 March). 2nd International Industrial & Engineering Technology Trade Show & Symposium Souvenir. BICC, Dhaka, Bangladesh.
- BIET. (2011). 2nd International Industrial & Engineering Technology Trade Show & Symposium. BIET, Dhaka.
- BFTI (2016). A Study on Sector-based Need Assessment of Business Promotion Council- Light Engineering Sector. Bangladesh Foreign Trade Institute (BFTI), Dhaka.
- BGMEA (2017). BGMEA. Retrieved January 9, 2017, from BGMEA: <http://bgmea.com.bd/home/pages/TradeInformation>
- EU- INSPIRED (2013), *Light Engineering Sector*. Dhaka.
- Haque, S. A. (2013). Light Engineering Sector of Bangladesh: An Import Substitution Option. *IDLC monthly Business*, 9(11), 2-6.
- INSPIRED. (2013). *Technical Report Light Engineering Sector Includes a Value Chain Analysis and Proposed Action Plan*. Dhaka.
- JICA (2014), Seminar on "Promotion of Light Engineering Industries through Import Substitute Spare Parts Manufacturing" and "Matchmaking" Event June 2015, available; <http://www.jica.go.jp/bangladesh/english/office/topics/speech141221.html>
- Karnani, A. (2011). Reducing Poverty through Employment. *Innovations*, 6(2), 73- 97.
- LEPBPC. [http://www.bpc.org.bd/lepbpc\\_current\\_sector\\_profile.php](http://www.bpc.org.bd/lepbpc_current_sector_profile.php)
- Quadir, N. & Mahmud, R. (2009). Technology, Innovation and Collaboration of Firms. *Tech Monitor*, Jul-Aug, 39-41.
- Rabbani, K. S. E. (2005). *Economic Policy Paper on Light Engineering and Electronics Firm in Bangladesh*. DCCI, Dhaka.
- Rahman, S. (2018, September 08). Shortage of capital, manpower hits light engineering industry hard: Entrepreneurs demand setting up of industrial park immediately. *The Financial Express*. <https://thefinancialexpress.com.bd/trade/shortage-of-capital-manpower-hits-light-engineering-industry-hard-1536337832>
- Ravallion, M. (2006). *Pro-Poor Growth: A Primer*. The World Bank, 2004. Washington DC.
- Sazzad, A. (2019, January 22). Light engineering sees emerging business hub. *The Daily Industry*. <http://www.dailyindustry.news/light-engineering-sees-emerging-business-hub/>
- SMFF (2013). *SME Clusters in Bangladesh*. SME Foundation, Dhaka.
- Talukder, M.A. & Jahan, S. M. (2017). Competitiveness and Growth Hindrances of Light Engineering Industry of Bangladesh: A Study on Micro, Small and Medium-Sized Enterprise (MSME) Owners. *Developing Country Studies*, 7(2), 30-41.
- Talukder, M.A. & Jahan, S.M. (2016). *Light Engineering Business Ecosystem in Bangladesh: A Study on Institutional Preparedness*. *IOSR Journal of Business and Management*, 18(12), 16-26
- Uddin, K.M. (2009). *Bangladesh's Light Engineering Industry, baseline, profile, performance and plans for upgrading*. SME Foundation, Dhaka.
- Uddin, K. M. (2010). *Bangladesh's Light Engineering Industry, baseline, profile, performance and plans for upgrading*. Center for Development Studies, SME Foundation, Dhaka, 7, 1-94.
- UNCTAD (2006). *The Least Developed Countries Report 2006. Developing Productive Capacities*. United Nations Conference on Trade and Development (UNCTAD), Geneva
- Zikmund, W.G., Carr, J.C., Adhikari, A. & Griffin, M. (2013). *Business Research Methods*, (8th ed.), Delhi: Cengage.