



Analyzing Export Potentiality of Light Engineering Sector in Bangladesh: Problems and Prospects

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ABSTRACT

Purpose: This study analyses the export potentiality of the light engineering sector in Bangladesh from two perspectives, including global positioning in terms of product-specific comparative advantage and the experience of the industry participants while trading globally.

Methodology: This study applied quantitative and qualitative research methods to approach the current research objectives. The quantitative measure of Revealed Comparative Advantage (RCA) –Balassa’s Index has been applied to explore the positioning of Bangladeshi light engineering export items in the global market. Later, a qualitative interview was conducted to validate the opportunity sought in RCA outcomes and identify relevant problems and prospects of the industry.

Findings: The results from quantitative data analysis are notably linked with qualitative data analysis. Because Bangladesh scores low RCA in light engineering export items and, thus, faces significant obstacles in the natural trade environment. The observed challenges lie in infrastructure, technical support, financial access, global market information, and promotion.

Practical Implication: This study will support relevant policymakers in addressing the currently identified challenges to explore global opportunities for the light engineering sector.

Value/Originality: Limited research on challenges and opportunities for the light engineering sector in Bangladesh presents this research outcome as a value-adding one.

Limitation: Since the research reliability depends on the quality of data from industry respondents, the academic time frame for the dissertation and the COVID-threatened pandemic limited the scope of the current study for expanding the qualitative sample for data collection.

1. Introduction

The Light Engineering (LE) Sector in Bangladesh is a sub-sector of Small and Medium Enterprises (SMEs) that produces spare parts, equipment, and capital machinery domestically to reduce the cost of importing (Akhtaruzzaman, Sarkar & Rahman., 2020; Majumder & Dey, 2020). The sector includes around 1,200 industries serving public and private sector customers, including various industries (BPC, 2018a). Thus, it links various sectors, including cement, paper, jute, textile, sugar, food processing, railway, shipping, and clothing capital machinery companies (Chakma, 2018). It is

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also a growing export sector for potential export diversification in Bangladesh (GED, 2015). The sector has witnessed the growth and contributed 1.5% to the country's export revenue in the fiscal year 2015-16 (EPB, 2016). Despite its potential, the sector needs to receive more attention from policymakers, and there have been fluctuations in export figures. However, the sector has emerged as a cost-cutting industry capable of producing at least 50% of import substitutes (Chakma, 2018). Therefore, the sector can be considered a driver for developing the country's industrial base and technological advancement (Ahmed & Bakht, 2010).

In addition, the LE sector can potentially reduce poverty and unemployment by employing many educated and semi-educated young people (Akhtaruzzaman et al., 2020). Moreover, since it has already employed 600,000 people in 50,000 micro firms and 10,000 SMEs, it is identified as the source of future export earnings like the Ready-Made Garments (RMG) sector (BPC, 2018b).

Light engineering could be a potential sector to assure a trajectory rise in globally export in order to achieve the vision 2030: Bangladesh government export diversification program. High value-added export goods are essential for long-term growth. On this matter, light engineering products will serve as a first step toward a high value-added export basket for the Bangladeshi economy. A few research have examined the LES's revealed comparative advantage (RCA) at the disaggregated Harmonized System (HS) code level, despite the fact that some sectoral benefits of light engineering have been observed and are inferred from earlier literature studies that were stated in the previous section. Moreover, though some sporadic news coverage spotlight on the obstacles faced by the current industry traders, a few studies (Banik & Swarna, 2018) have undertaken in-depth qualitative measures to understand the issues. Therefore, the current research aims to examine the export position of Bangladesh's light engineering industry in the global market through comparative advantage analysis and explore the current potential and obstacles of the sector.

2. Literature Review

The majority of research has been done by researcher and academician on potential of other sector sectors while there is no considerable research on light engineering sector of Bangladesh. The study's goal is to investigate Bangladesh's potential in the field of light engineering. The study employs the revealed comparative advantage index to calculate the potential of Bangladesh's light engineering sector in order to meet its research goal.

The law of comparative advantage describes how, under free trade, an agent will produce more of and consume less of a good for which they have a comparative advantage. (Dixit, 1980) In 1817, David Ricardo published what has since become known as the theory of comparative advantage in his book *On the Principles of Political Economy and Taxation*. Revealed comparative advantage indices (RCA) compare the trade profile of the country of interest with the global average to discover the sectors in which an economy has a comparative advantage. According to Khalid, Hans and Sohail (2012) Based on actual export performance, revealed comparative advantage (RCA) indexes provide a useful method for examining a country's comparative advantage. This contrasts with other widely used metrics like the domestic resource costs coefficients (DRCs), which are employed frequently in ex-ante sorts of analyses of export prospects and are thought to be indicators of potential competitive advantage.

Acknowledging the previously limited research on the export potential of the LE industry, this study aims to provide a comprehensive overview of the industry, its structure, cluster perspective, and potential with a focus on a comparative evaluation of the sector from the perspective of Bangladesh.

The LE industry is consumer-oriented and less capital-intensive, producing simple technical consumer goods. Due to requiring fewer raw materials, space, and power, this industry causes less pollution than heavy industry production (Wikipedia, 2020). Bangladesh's LE industry is diverse, with various sectors ranging from low-tech to highly sophisticated products. These enterprises are mainly founded in geographic clusters, and 40% of the entrepreneurs are in Dhaka, mainly in the crowded and traffic-congested Sutrapur and Lalbagh sub-districts of the old Dhaka. The industry has four types

of entrepreneurs, with blacksmiths being the most common. However, most engineering industries are minor in Bangladesh (Mottaleb & Sonobe, 2012).

The concept of export potential is an aggregate of strength and opportunity. It refers to a region's ability to produce enough export-oriented products to meet the external market quality requirements. Economic literature must define this potential, clearly addressing its spatial and temporal features. The economic potential is a complex structural phenomenon that includes a cumulative capacity to fulfill production activity, the potential to meet the needs of foreign markets, and the availability of technical resources considering socioeconomic factors. Theory suggests that a potential exporting country with comparative advantage produces more of and consumes less of a good to supply the global market (Dixit, 1980). In 1817, the British economist David Ricardo introduced this concept, explaining why countries engage in international trade even when one country is more efficient at producing all goods. The theory shows that each country will increase its overall consumption by exporting the goods for which it has a comparative advantage and importing the other goods, provided there is a difference in labor productivity between countries. This theory is one of the most potent and counter-intuitive economic insights, suggesting that comparative advantage drives much international trade. The RCA is an index used in international economics to measure a country's relative advantage or disadvantage in the trade of a particular class of goods or services (Rahman & Akter, 2020; Islam & Siddique, 2014). A country with an RCA in a particular product is considered to have an export strength. The higher a country scores on the RCA index, the higher it has export strength in that product.

The light industry uses partially processed materials to make high-value products. "Light engineering comprises small enterprises that produce various products, including metal and electrical goods, supporting several sectors by manufacturing spare parts, casting, molds, dies, and other equipment" (Ahmed & Bakht, 2010). Such industrial firms are spread throughout the country. Though they produce goods mainly for the local market, they have export potential. Consequently, the sector has already developed strong backward and forward linkages. Talukder & Jahan (2016) evaluated institutions' readiness and observed the institutions' need for more vision, resources, and understanding of sector requirements, highlighting the need for a dedicated organization to unlock sector potential.

Rahman (2016) studied the buyers' decision-making process for SMEs of LE products. The study found price, quality, and country of origin highly significant in purchasing decisions, with price having the most decisive impact. Following the study suggests that SME owners, managers, and policymakers should prioritize cost reduction, quality improvement, and branding Bangladesh as a manufacturing hub for light engineering products. In a similar study regarding the perceptions and attitudes of buyers towards local spare parts, Ahmad & Jahan (2016) analyzed the characteristics of parts, purchase frequency, productivity, and other factors affecting demand. The study observed that though local and imported parts have similar product attributes, imported parts create a better perception regarding marketing, distribution, production scale, and comparable prices. However, the LE industry in Bangladesh primarily serves local needs with 15% cash incentives for exports, trainable labor, and a particular development state (BPC, 2018b).

The LE enterprises are geographically clustered in different areas of Bangladesh. Forkan (2012) observed that applying the cluster concept to small LE organizations would enhance their marketing capability, especially for companies with higher asset value and more employees. Clusters are frequently termed as 'industrial districts', 'systems of production', 'networking', or for the broader environment 'a regional innovation device' (Maguire & Davies, 2016). The geographically related businesses and institutions are grouped as a cluster in a specific field (Ortega, Molina & fernandez, 2016; OECD, 2007). These firms usually emphasize linkages and interdependencies among actors in the value chain to accommodate cross-sectorial networks of complementary firms specializing in a specific link or knowledge base (Hertog, 1999, p.9). Such cluster initiatives are crucial in regional industrial policy to promote collaboration and networking within the enterprise sectors (Lagendijk,

1999). However, the current LE clusters in Bangladesh struggle with their survival and, thus, require government initiatives for upgrading (Imranul, 2016).

Although there is available research on the export competitiveness or potential of many industries, including RMG, the leather industry, shrimp and frozen foods, and agriculture, there needs to be more in-depth research on the LE sector in Bangladesh. Though the sector currently contributes 2% to GDP, its turnover can be extended 10-12 times with proper government initiative (Sharif, 2020). The LE industry has a market size of Tk 25,000 crore, with over 90% meeting local demand, including automobile, railway, textile, chemical, food, and metal industries. In addition, the industry is viewed as a significant area for investment to prevent foreign firms from taking over the market (Chakma, 2018). Thus, it can contribute to technological and economic growth while generating employment and saving foreign currencies (Chowdhury, 2015).

3. Research Gap

Therefore, there is a specific research gap in the analytical review of the comparative advantage of Bangladesh in global LE industries. In addition, while a considerable amount of literature is available on clusters and the industry structure, there is a need for more research on the specific challenges and opportunities for the industry to capitalize on any global export opportunity. These gaps in the literature provide an excellent opportunity to dig down the area.

4. Methodology

The study combines qualitative and quantitative research approaches to achieve its research goals. Qualitative research is used to gain insights and understanding of a respondent's views on a research phenomenon, while quantitative research converts data into statistics. The study design is solely based on objectives for accuracy and simplicity.

4.1 Research Design for First Objective

The study first applied a quantitative technique to empirically assess Bangladesh's global trade and relevant positioning in terms of RCA scores (Zikmund, Babin & Griffin, 2013). Then, undertaking the global LE industry as a population, the sampling frame for the current study objective was the four sub-sectors of the LE industry, including more than 50 products, including machinery, spare parts, electrical and electronic goods, plastic goods, and accessory goods. The study derived trade data from International Trade Center (ITC) Trade Map, acknowledging the convenience sampling procedure. Thus, the sample unit of the research was 5, representing the population of 72 to 90 international harmonization product standards. These include HS codes: 72 (iron and steel), 74 (copper and articles), 84 (machinery and machinery parts), 85 (electric machinery and related parts), and 87 (vehicles other than railway and parts).

Later, the Balassa RCA index is used to compare the export share of the Bangladeshi LE industry with that of the world market. The analysis is performed using Microsoft Excel and with the following basic RCA index formula,

$$RCA_{ij} = \frac{X_{ij}/X_{wj}}{X_i/X_w}$$

where,

- X_{ij} = ith country's export of commodity j
- X_{wj} = world exports of commodity j
- X_i = total exports of country i
- X_w = total world exports

When a country has an RCA score of more than one for a given product, it is inferred as a competitive producer and exporter relative to a country producing and exporting that good at or below the world average.

4.2 Research Design for Second Objective

The in-depth qualitative interviews addressed the study's second objective using an interview guideline for unstructured, open-ended questions. Again, following the current study limitation, convenience sampling was utilized for communicating and, finally, selecting four respondents who are directly and indirectly connected with the light engineering sector of Bangladesh.

Table 1

Detail of Interview Respondent

Respondent Id	Designation
1	Expert and Employee of Export Promotion Bureau (EPB)
2	Exporter and Entrepreneur
3	Exporter and Entrepreneur
4	Member of Bangladesh Engineering Industry Owner’s Association (BEIOA)

Source: Authors Developed.

The current interviewees are anonymized to address the concern of research ethics. Later, the collected data was edited and analyzed through interpretive coding to extract valid information. Moreover, the research themes were created and analyzed using Microsoft Excel to address the research gap and measure the internal validity of data coding.

5. Findings & Discussions

5.1 Prospect of Light Engineering Sector

5.1.1 Export Performance of Light Engineering Industry

The LE enterprises produce a wide range of products, including import-substitute equipment spares, plant machinery, small tools, toys, customer items, paper merchandise, bicycles, etc. In addition, the sector produces labor-intensive items for domestic and international markets (BOI, 2020). It comprises 40,000 SMEs manufacturing cost-effective engineering items and services, generating employment and contributing to technological and economic development (Forkan, 2012). Therefore, the government considers LE a priority sector offering a 15% cash incentive for exporters on their export value (BIDAa, 2020).

Table 2

Export Performance of Selected LE Products (USD thousand)

Year	Iron and steel	Copper and articles	Machinery and machinery parts	Electrical machinery and parts	Vehicles other than railway and parts
2010	46,819	56,554	48,207	31,868	129,725
2011	52,323	61,703	62,713	48,992	105,656
2012	40,994	63,396	119,983	76,277	117,126
2013	31,544	51,247	79,896	45,033	113,437
2014	32,414	48,261	85,518	92,810	129,838
2015	19,000	26,263	171,256	59,518	130,520
2016	14,886	24,785	14,781	24,780	89,649
2017	23,630	51,011	17,889	33,407	84,970
2018	31,774	59,579	21,063	49,731	82,222
2019	32,337	53,518	14,728	24,505	93,624

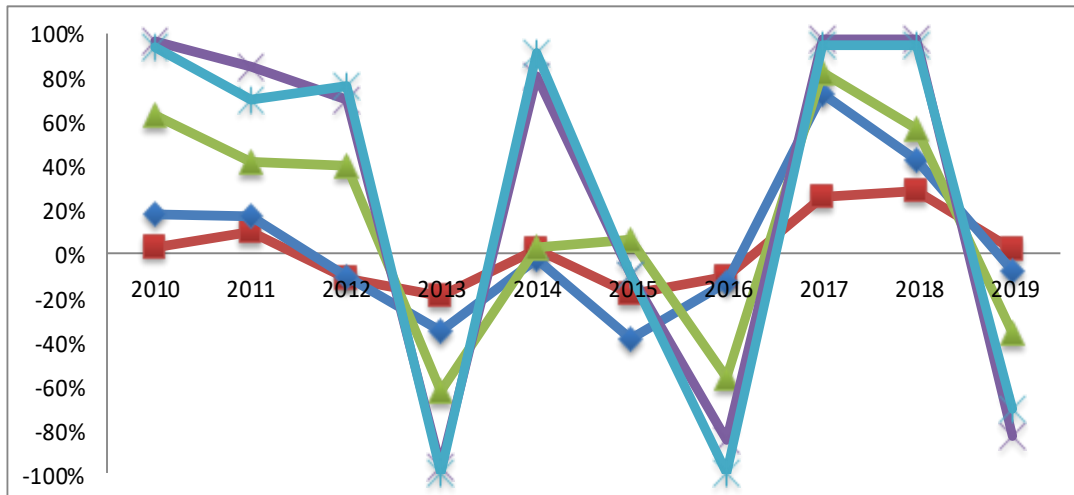
Source: ITC, COMTRADE center

Table represents the export performance of Bangladeshi LE products. However, the overall trend has been so discontinuous that measuring the export growth seems more interpretive and, thus, presented in Table 2. Thus, whenever an export volume of any product starts a growing trend, it has been discontinuous very recently and even in negative growth rate. Such inconsistent growth of the sectoral exports has been more vivid after presenting the trade data in Figure 1.

Table 3*Export Growth of LE Products*

Year	Iron and steel	Copper and articles	Machinery and machinery parts	Electrical machinery and parts	Vehicles other than railway and parts
2010	11	50	157	119	-10
2011	12	9	30	54	-19
2012	-22	3	91	56	11
2013	-23	-19	-33	-41	-3
2014	3	-6	7	106	14
2015	-41	-46	100	-36	1
2016	-22	-6	-91	-58	-31
2017	59	106	21	35	-5
2018	34	17	18	49	-3
2019	2	-1	-30	-51	14

Source: Authors' calculation based on ITC, COMTRADE center (data)

**Figure 1***Growth Pattern of LE Product Exports*

Source: Authors' calculation based on: ITC, COMTRADE center (data)

5.1.2 Revealed Comparative Advantage Analysis

The study analyzes the pattern of RCA in the Bangladeshi LE industry from 2010 to 2019. The RCA index takes a value between zero and positive infinity. A value greater than unity indicates an RCA in a product, and a value lower than unity indicates a comparative disadvantage. Therefore, anything that distorts the trade pattern might affect the index, including trade barriers.

Table 3

RCA Value of LE Products

Year	Iron and steel	Copper and articles	Machinery and machinery parts	Electrical machinery and parts	Vehicles other than railway and parts
2010	0.1245	0.3675	0.0276	0.0167	0.1232
2011	0.0964	0.2929	0.0267	0.0202	0.0729
2012	0.0819	0.3139	0.0494	0.0299	0.0763
2013	0.0638	0.2506	0.0309	0.0158	0.0673
2014	0.0556	0.2209	0.0284	0.0279	0.0658
2015	0.0364	0.1280	0.0557	0.0160	0.0621
2016	0.0278	0.1193	0.0044	0.0061	0.0376
2017	0.0386	0.2161	0.0052	0.0079	0.0359
2018	0.0463	0.2300	0.0057	0.0111	0.0332
2019	0.0464	0.1993	0.0035	0.0048	0.0335

Source: Authors’ calculation based on ITC, COMTRADE center (data)

The RCA analysis results (Table 3) show that, for all the selected products, the RCA index is lower than unity ($RCA < 1$). However, whenever the value exceeds 0, it indicates the country's comparative disadvantage in this industry. The index pattern is similar for each product over the years, with values between 0.00 and 0.50. This comparative disadvantage indicates that although Bangladesh has perceived export potentiality in the LE sector, the country needed help to detect the factor of comparative advantage to grab the export potentiality in the global market. This disadvantage hints at the challenges and internal obstacles explored in the later analysis.

5.1.3 Potential Factors of the Light Engineering Sector

Bangladesh is becoming an attractive destination for investors due to its growing domestic market and potential cost savings for sourcing materials and products for the global market (BIDA, 2020b). Moreover, despite being discontinuous, there is some observed growth potential in several years in several sub-sectors of the LE industry. Thus, the qualitative interview data analysis provides the following factors to be considered for such growth potentials of the LE industry.

1) *Standard Quality*: The LE products are of standard quality to satisfy the global buyers’ requirements. The manufacturers strive to preserve the expectation of both global and local buyers to hold and expand their market. According to respondent 1,

“All the LE export items are certified utilizing excellent global standards.”

2) *Free Market Access*: Bangladesh has free market access in the European Union (EU) market through the ‘Everything but Arms (EBA)’ under the Generalized Scheme of Preferences (GSP). The same market access also applies to exporting LE products to the EU market. According to respondents 2 & 3,

“Bicycles are a growing export for Bangladesh to the EU, boosted by the imposition of anti-dumping duties on Chinese bicycle imports by the European Commission, contributing to a steady increase in Bangladesh's bicycle exports to the EU market.”

3) *Local Demand*: The LE sector is helping to reduce costs by producing at least 50% of substitutes for imported items in the country. Thus, the contribution of the LE industry and the advantage of substantial local demand complement each other to bring tremendous growth potential. According to respondent 1,

“The sector produces a wide range of spare parts, machinery, and electrical goods, meeting up to 52% of the country's demands.”

Also, respondent 4 added that,

“Light engineering supports the industrial, agricultural, and development sectors through repairs and maintenance services.”

4) *Backward Linkage*: The LE area has already developed a backward linkage through collecting raw materials, mainly from ship scrap (Banik & Swarna, 2018). According to BEIOA, a leading sector association, such scraps come from the domestic ship-breaking industry in 90% of the cases.

5) *Low Labor Cost*: Bangladesh's labor-intensive industry benefits from its large population, resulting in lower labor costs than other countries. This advantage is also reflected in the LE sector, which has lower labor costs and a high potential for growth and development.

6) *Competitive Workforce*: Despite lacking formal academic education, the labor force in the sector becomes competitive globally due to their experience and practical knowledge. This factor makes the sector strong in exporting to the global market.

Finally, figure 2 ranked the core competence of the LE sector based on all respondents' opinions (from interpretive coding) regarding the core competence of the light engineering sector. At this point, all respondents agreed that,

“In most cases, the core factors related to the export potentiality of the light engineering sector are backward linkage, free market access, and cheap labor cost. Standard quality, local demand, competitive skill of workers, and standard pricing fall after that.”

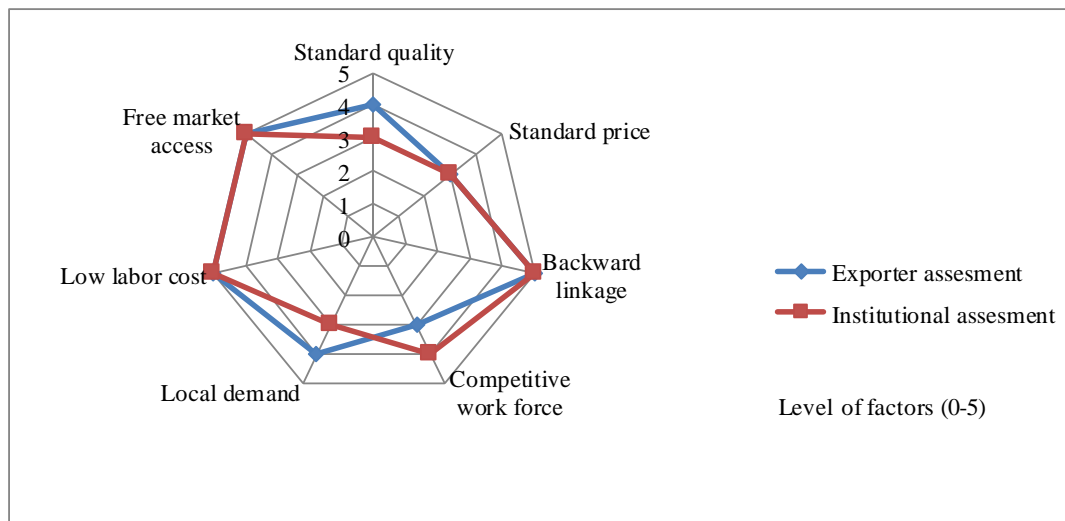


Figure 2

Factors for Core Competence of the LE Sector

Source: Authors' analysis of qualitative data based on respondent rank

5.2 Problems and Challenges of Light Engineering Industry

5.2.1 Internal Obstacles of the Light Engineering Sector

The LE sector in Bangladesh has the potential to boost economic growth and employment, as it supports various industries and accounts for a significant portion of domestic demand. However, despite its importance, the sector needs to be more developed (Talukder & Jahan, 2017). Nevertheless, the ironic fact is that the sector has yet to be tapped till now.

Based on the respondents' opinions, the study observed the following factors behind the causes of the untapped LE sector.

1) *Lack of Infrastructure*: Since the sector is mainly export-oriented, more infrastructure must be needed for natural growth. Respondents 1 & 3 mentioned that,

“Weak port and road infrastructure create problems for exporting, leading to longer lead times and higher production costs. In addition, adequate port services help the sector's export business.”

The lead-time and the fee of production make bigger due to lack of high-quality roads, highways and different infrastructural obstacles. Port services are additionally inadequate, which additionally hampers the business.

2) *Lack of Government Support*: Though the government is offering some policy support through its inclusion in Export Policy 2015-2018 as a special development sector and in National Industrial Policy 2016 as a priority sector, the offered incentives, credit facilities, subsidies, and duty drawback are still less considering the potentiality of this sector. Respondents 1 and 3 stated that,

“The government needs to give attention to light engineering as they do to RMG.”

Thus, the government should provide dedicated effort towards the development goal of the sector owing to earning higher value-added production benefits than that of the RMG sector.

3) *Lack of Utility Facility*: Utility facilities (such as electricity, gas, transportation, and telecommunication) must be increased for the sector. Respondents 1 and 4 also mentioned that,

“Most of the exporter has yet to receive enough utility facilities, whereas RMG exporters are always entitled to additional treatment.”

Ensuring utility facilities of light engineering sector institutional body are no careful likely other export-oriented sector.

4) *Lack of Research and Development*: Research and development is a significant challenge for this sector to become globally competitive (Chowdhury, 2015). Respondents 2 and 4 also agreed that,

“The lack of research and development makes it difficult for the sector to be creative in design and meet the demands of dynamic international buyers.”

5) *Deficiency of Financial Support*: Lack of financing became a significant challenge for domestic investors. Respondents 1 and 3 noted that,

“Because of financial deficiency, they sometimes miss out on high-volume export orders.”

The conditions for accessing finance are stringent, making it inaccessible for SME entrepreneurs in the LE sector (Banik & Swarna, 2018).

6) *Negligence of Association*: The concerned business groups or associations must be more active in developing the entire sector. However, the irony is that the current associations must show more determination to develop the sector. Even the associations must unite to realize the sector's growth potential.

7) *Lack of Technical Support*: Bangladeshi industries manufacture manual technologies, often producing low-quality products. Respondents 2 and 4 also added that,

“Manual technology use has reduced production capability, making Bangladesh's light engineering industries unable to meet buyer requirements and less competitive in the global market.”

8) *Lack of Land Facility*: Most LE industries are SMEs, and thus, the government's policies for Special Economic Zones need to be revised for them (Banik & Swarna, 2018). The BEIOA suggests that the industry needs better infrastructure, separate plots with lower fees, and improved logistics to operate efficiently and systematically. According to Respondents 1 and 4,

“Manufacturers complain that the lack of land facilities hinders the stable exporting of LE products.”

The region should have a Common Facility Centre, which is currently most indispensable.

Finally, the institutional personnel and exporter were requested to rank some of the existing internal challenges faced by the LE industry (Figure 3). Though the nature of the LE industry differs, some challenges are identical to all sectors. All respondents agreed that,

“Major challenging factors are lack of infrastructure, lack of land facilities, lack of technical support, lack of land facility, and deficiency of financial access. Besides, the negligence of association, lack of utility facility, etc., also poses additional challenges in this sector.”

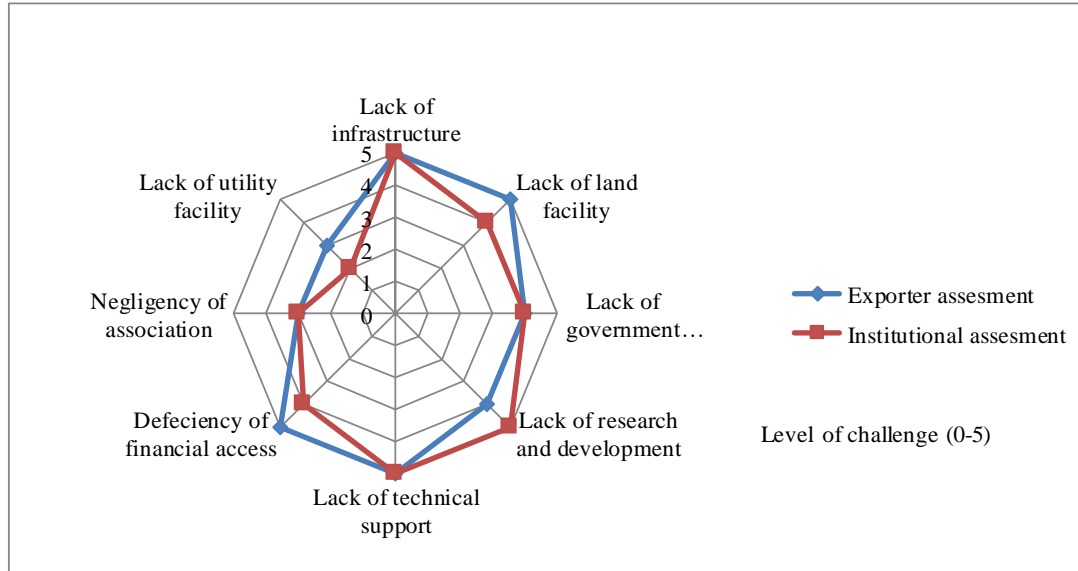


Figure 3

Internal Challenges Faced by the LE Sector

Source: Authors' analysis of qualitative data based on respondent's rank

5.2.3 Challenges in going Global Market

Though there is an estimated potentiality of the LE sector in diversifying and incrementing export items and earnings, the sector faces some global challenges, as revealed in interviews with industry experts.

1) *Lack of Market Information*: Respondents 2 and 4 mentioned that,

“Firms in the light engineering sector are not prospering as they need more information about market requirements. Such constraint makes them less competitive and obsolete in the global market than competitors.”

To create a new market for light engineering sector, market information is essential. Exporter face lack of information about market because of proper channel.

2) *Lack of Market Development*: Respondent 4 said that,

“This sector needs more attention from policymakers, including the Export Promotion Bureau. This lack of support has led to a lack of market development and promotional activities, hindering the sector's growth in international markets.”

To ensure a sustainable export growth, new market development should ensure first by the policy makers in international market.

3) *Lack of Design Facility*: To compete with the global market, the light engineering sector of Bangladesh needs more design capability to fulfill the dynamic demand of the buyer.

4) *Absence of Testing Lab*: Respondents 2 and 4 also noted that

“The light engineering sector in Bangladesh needs an International-level testing lab that can comply with the C-Standard, a required standard for the sector.”

Local LE SMEs face pressure to produce quality products at competitive prices in an open market economy. The lab will also help ensure quality products and improve competitiveness in the global market (Rahman, 2016).

5) *Documentation and Customs Clearance Issue:* Bangladesh export documentation is usually complex and time-consuming (Banik & Swarna, 2018). Additionally, respondent 1 also included that,

“Customs procedures create extra hurdles in the export process, and the RMG sector gets more support from customs than the light engineering sector.”

Documentation and customs clearance issue not create extra burden for light engineering exporter but also demotivated the small and medium enterprise to export in global market.

These challenges act as barriers to the development of the sector.

6) *Negotiation Problem:* When exporters negotiate with the buyer to sell the product, they need to gain proper knowledge regarding negotiation. Thus, they do not get a standard price for their products due to a lack of adequate knowledge about negotiation diplomacy.

7) *Unfair Competition:* This sector faces unfair competition from China, sometimes threatening local industries. Under-invoicing of Chinese products creates unfair competition for local businesses (Banik & Swarna, 2018). Respondents 2 and 4 added that,

“Many small or medium-sized light engineering enterprises in Bangladesh face challenges, with industry associations failing to take adequate action. In addition, under-invoicing by importers also harms domestic producers.”

8) *Lack of International Branding and Promotional Activities:*

The lack of product branding in the international market leads to a low image of Bangladeshi export items, negatively influencing buyer confidence. Respondents 2 and 4 also added that,

“Promotional activities, including domestic and international fairs, are crucial for growth. Participation in global fairs enables businesses to understand market demands and share resources, benefiting the sector.”

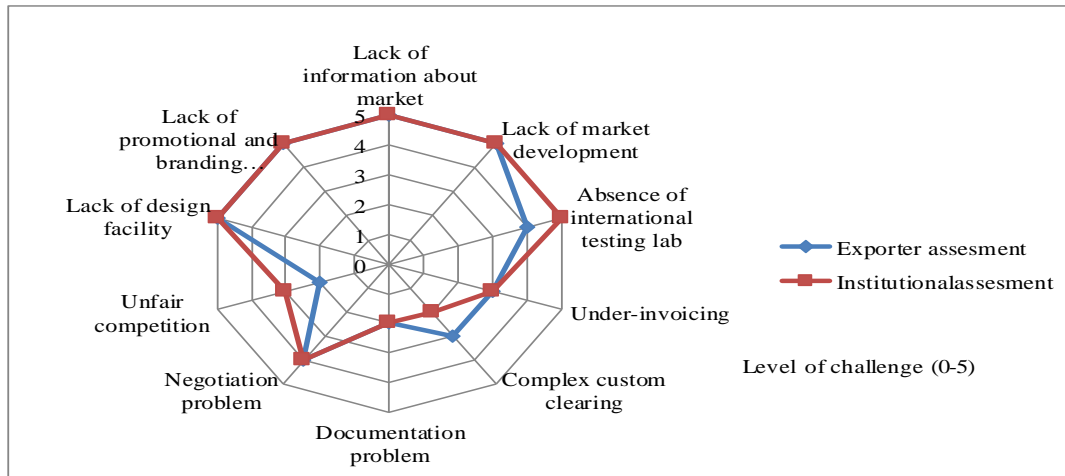


Figure 4
Challenges Faced in the Global Market

Source: Authors’ analysis of qualitative data based on respondent’s Rank

Finally, the current respondents ranked external challenges (Figure 4) faced by the LE sectors in the international market. According to their response,

“External challenges include a need for more information regarding the market, lack of market development, absence of a testing lab, and lack of promotional and branding activities. Along with these, complex custom clearing, documentation problem, negotiation problem, under-invoicing, unfair competition, etc., also creates obstacles in sectoral development.”

The conclusion drawn from the overall discussion is that Bangladesh has comparative advantage in some light engineering items, particularly in machinery and parts, electric machinery components, and cars and vehicles parts. Through a one-on-one deep interview process, the study examines the potential prospects of the light engineering sector and identifies the elements that will enable the industry to take off in the international market as one of the value-adding exporting sectors, such as high standards, local demand, affordable labor, etc. Ironically, the lack of government support, information, market development, and appropriate information are just a few of the problems the light engineering sector faces both internally and externally, preventing it from breaking the glass ceiling to boom in the international market.

6. Conclusion & Policy Implications

The study analyzes the performance of the LE industry in Bangladesh by using Balassa's RCA index from 2010 to 2019. Unfortunately, the study scores of the RCA index are lower than the unity for selected products. Thus, despite having significant potential in international exports, the country has been unable to detect and utilize this potential. The research identified the obstacles faced by the LE sector by employing in-depth qualitative interviews.

The study also found that the exports of LE products fluctuate due to the challenges faced by the sector, such as lack of infrastructure, technical support, land facility, financial access, information regarding the market, market development, and absence of testing lab. In addition, the need for promotional and branding activities also poses a significant challenge. However, despite these challenges, the study reveals that Bangladesh has the potential to invest and expand in the LE industry. Therefore, if policymakers care more about this sector, it will soon be a value-added export item for Bangladesh.

This observation is helpful for entrepreneurs and policymakers relevant to the LE industry. They can take appropriate strategies to overcome these challenges and explore the sector's potential by investing in infrastructure development, technical support, and global promotion. By addressing these challenges, Bangladesh can become a significant player in the global light engineering industry.

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