Foundry and Light Engineering Industries of Bogura: Present Scenario and Future Challenges

Executive Summary:

The nation's foundry and light engineering workshops are centered in Bogura. At least 85% of agricultural machinery, including 350 different types of motor engine-based filters, tube-wells, lathe machines, sawmills, flour mills, machinery for textile and jute mills, centrifugal pumps, spare parts for agricultural machinery, and grinders, are made here. This industry has created jobs, contributed significantly to the national income, and exported goods. Each year, Bogura's foundries and light industries produce 2,000–3,000 different finished goods valued at more than Tk 500 crore.

The foundry industry has been identified as a major thrust area with significant export potential. Bogura's foundry industry has the potential to employ hundreds of thousands of unemployed people, earn a lot of foreign currency, and generate significant revenue for the government.

Bogura's foundry and light engineering industries are currently facing several challenges. Locally, foundry and light engineering industries are available, and their quality has improved; however, further, improvement is required. Nonetheless, in light of globalization and liberalization, there is no problem with transferring technology from the Western world to help reduce development time and sell our castings to them at competitive prices while meeting international quality standards.

The foundry industry of today has recognized that it operates in a global economy. To compete in a global economy, it is critical to conduct an in-depth study on the feasibility, problems, and prospects of Bogura's foundry and light engineering industries. However, research in this field is extremely limited. In this regard, the proposed study will aid in the expansion of Bogura's foundry and light engineering industries.

Introduction:

Under the Ministry of Industries, the Bangladesh Small and Cottage Industries Corporation (BSCIC) is a statutory body (MoI). It was established in 1957 with the goal of assisting the nation's cottage and small businesses. A parliamentary act created BSCIC, formerly known as East Pakistan Small and Cottage Industries Corporation (EPSCIC), in 1957. BSCIC was founded with the goal of fostering the growth of the nation's small and cottage industries to spur industrial growth (BSCIC Act, 1957). The creation and maintenance of industrial estates, which were built at various points in history and various parts of the nation, is one of the main focuses of BSCIC activities. The entrepreneurs in BSCIC estates receive several advantages, including land allocations at discounted rates, initial tax exemptions, and infrastructure.

The government has the policy to create BSCIC industrial estates in every administrative district, and as a result, 74 estates have been created so far in 58 districts, except three (Magura, Khagrachori, and Narail). Some recent estates are ongoing. The estates that have already been established have helped to produce jobs and hence, reduction of poverty in rural areas. to offer assistance to small business owners BSCIC has a single head office in Dhaka, four regional offices, 64 district offices, industrial service center offices, 15 Skill Development Centers, and office buildings on industrial estates at various locations across the nation.

In Bangladesh, the Light Engineering (LE) sector contributes significantly to economic growth and the eradication of poverty. LE businesses can significantly contribute to both economic and technological progress, as well as provide numerous prospects for job creation. By offering various kinds of equipment, replacement parts, and maintenance services, the industry has been assisting in the expansion of numerous other sectors.

Bogura continues to lag well behind Chattogram, the nation's commercial capital, in terms of industrial growth. Even yet, it may take pride in what it has accomplished over the past two decades, particularly in the light engineering and foundry industries. In the past 24 years, investments totaling at least Tk40,000 crore have been made in a variety of businesses, including agro-based industries,

light engineering industries, tiles, paper mills, glass, and ceramics. The majority of the LE companies are situated inside the BSCIC Industrial Estate.

The majority of the LE companies are situated inside the BSCIC Industrial Estate. This study will provide an overview of Bogura's LE sector, focusing on the performance of various LE enterprises based on their size. The case study relies on both primary and secondary sources of information. To collect primary data, a survey of 49 Bogura LE enterprises was conducted, as well as a focused group discussion with owners of LE enterprises at the Light Engineering Association of Bangladesh. A recent study on this sector supplements the information from the primary survey.

Broad Objective:

This study seeks to investigate the problems and opportunities in the Bogura district's foundry and light engineering industries.

Specific Objectives:

To attain the broad objectives the researcher has determined the following specific objectives:

1. To explore the present scenario of foundry and light engineering industries of Bogura district;
2. To identify the problems of foundry and light engineering industries of Bogura district;
3. To explore the opportunities of foundry and light engineering industries;
4. To explore the ways to overcome the problem; and
5. To help in policy making regarding foundry and light engineering industries for BSCIC.

Survey Instruments and Sample Size:

The study used both quantitative (structured questionnaires) and qualitative (checklist) methods and approaches. We conducted an enterprise survey of 49 businesses, 35 of which are light engineering firms and 14 of which are foundry shops. In addition, we held ten focus groups with industry owners/managers/officers/employees and local community members. The qualitative assessment was conducted to better understand the raw material

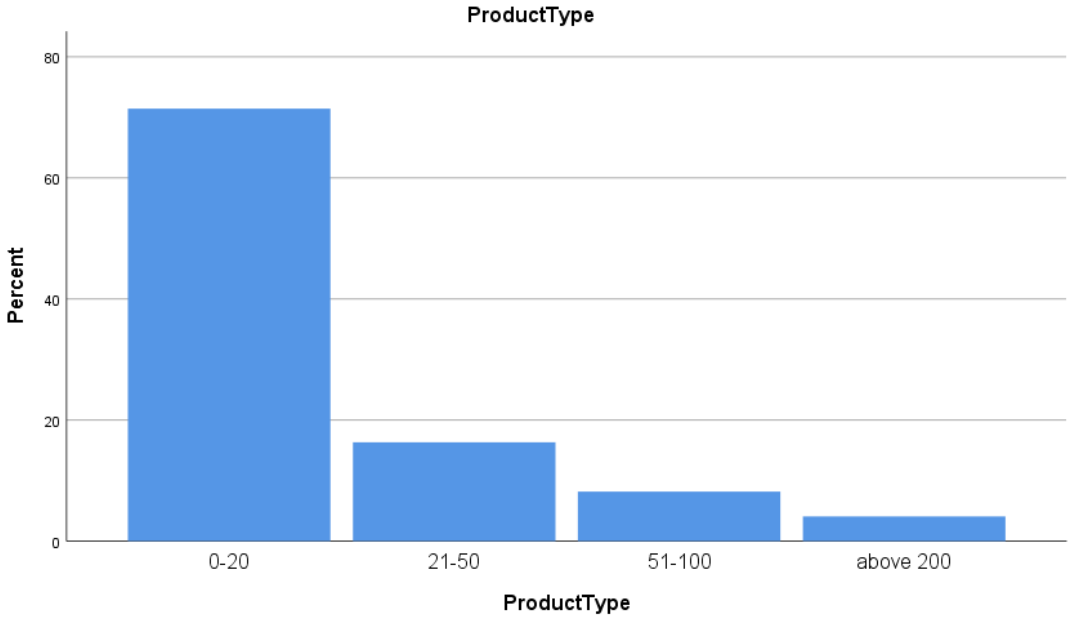
sourcing process, marketing, sales, capital, land acquisition, resettlement, and plot allotment processes of the companies, institutional and management challenges, and other related social issues such as urbanization, migration, safety compliances. We used BSCIC's MIS Reports and respondent data to determine land use, plot allotment, and utilization.

Findings and Discussions:

From the below chart we can see the ownership pattern of the organization. We can see among 49 organizations 42 are sole traders. Rest 4 are joint venture companies and 3 are limited companies.

Ownership

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sole Traders	42	85.7	85.7	85.7
	Joint Venture	4	8.2	8.2	93.9
	Limited Company	3	6.1	6.1	100.0
	Total	49	100.0	100.0	



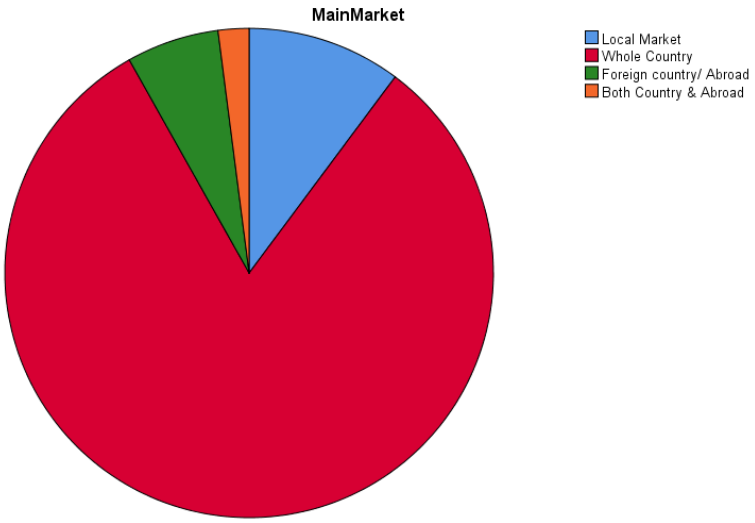
Product Type

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-20	35	71.4	71.4	71.4
	21-50	8	16.3	16.3	87.8
	51-100	4	8.2	8.2	95.9
	above 200	2	4.1	4.1	100.0
	Total	49	100.0	100.0	

Product variation is very important for a business organization. From the above chart, we can see that 75 percent of the companies produce 1 to 20 types of products. Only 4 of them have variation in the product in the range of 51-100. Above 200 types of products made in only by 2 industries.

Main Market

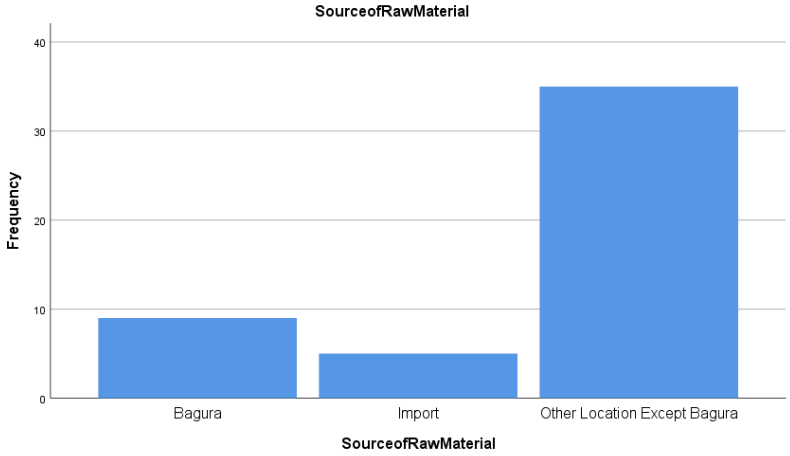
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Local Market	5	10.2	10.2	10.2
	Whole Country	40	81.6	81.6	91.8
	Foreign country/ Abroad	3	6.1	6.1	98.0
	Both Country & Abroad	1	2.0	2.0	100.0
	Total	49	100.0	100.0	



We can see the main market of the industries from the above figure. Most industries distribute and sell their products all over the country. Only 3 industries distribute products abroad which represents 1 percent of total industries.

Source of Raw Material

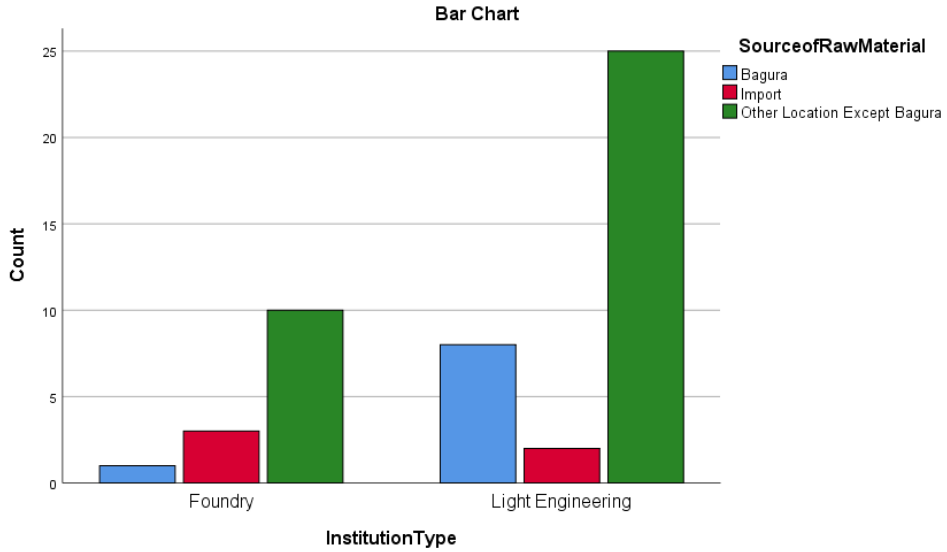
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bagura	9	18.4	18.4	18.4
	Import	5	10.2	10.2	28.6
	Other Location Except Bagura	35	71.4	71.4	100.0
	Total	49	100.0	100.0	



Most of the industries collect raw materials from outside of Bogura. 10 percent of them import raw materials from the international market. 18 percent of total industries manage resources from Bogura.

Industry Type * Source of Raw Material Crosstabulation

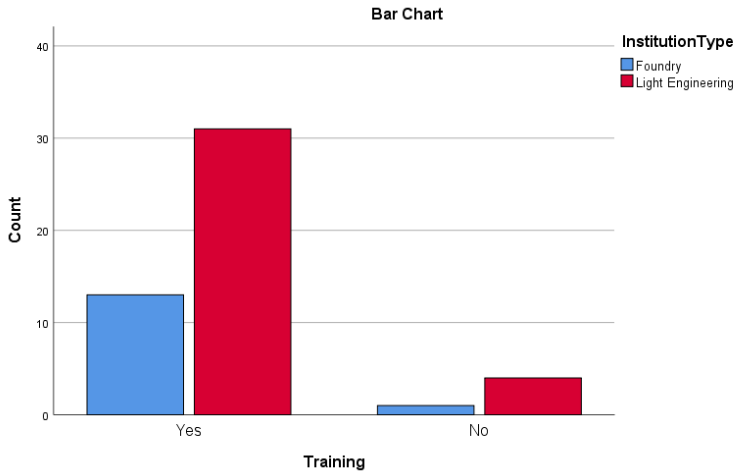
		Source of Raw Material			
		Bogura	Import	Other Location Except Bogura	Total
Institution Type	Foundry	1	3	10	14
	Light Engineering	8	2	25	35
Total		9	5	35	49



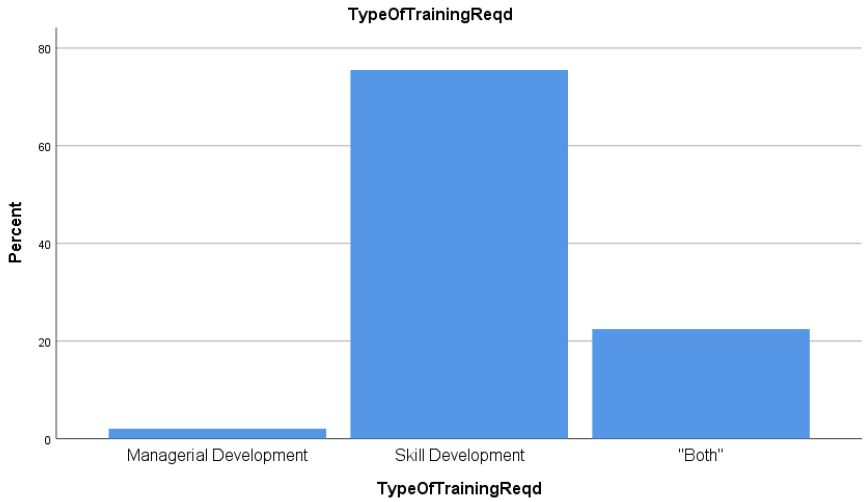
From above we can also see both the foundry and light engineering industries gather resources from all over the country except Bogura. The only exception is the percentage of foundry industries that import resources are greater than the light engineering industries, whereas the percentage of light engineering industries collecting resources from local place Bogura is higher than the foundry industries.

Training * Industry Type Crosstabulation

		Industry Type		
		Foundry	Light Engineering	Total count
Training	Yes	13	31	44
	No	1	4	5
Total		14	35	49



From our survey, we found that most industries do think that they need proper training for their activities. They especially emphasize skill development training. Almost 76 percent of respondents think that they need skill enhancement training and 22 percent of them think that they need both managerial and skill development training.

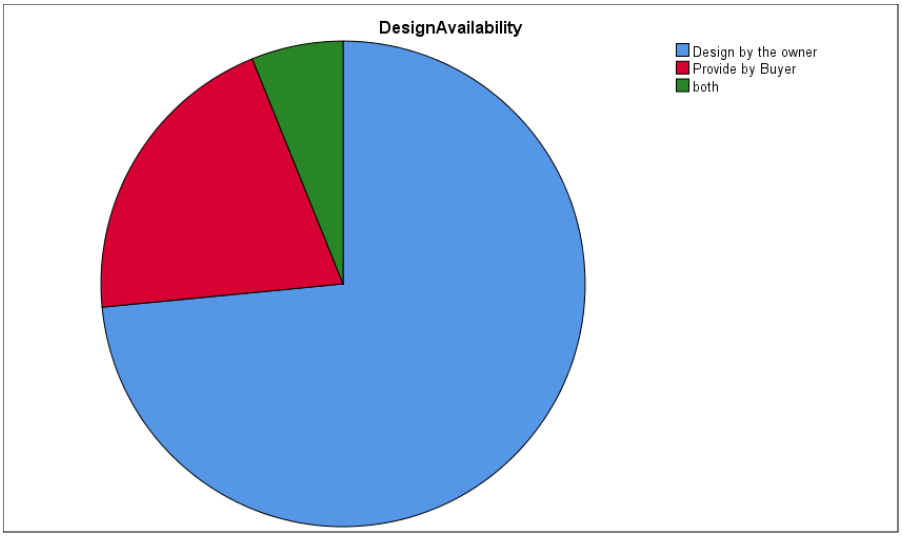


Type Of Training Reqd.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Managerial Development	1	2.0	2.0	2.0
	Skill Development	37	75.5	75.5	77.6
	"Both"	11	22.4	22.4	100.0
	Total	49	100.0	100.0	

Design Availability

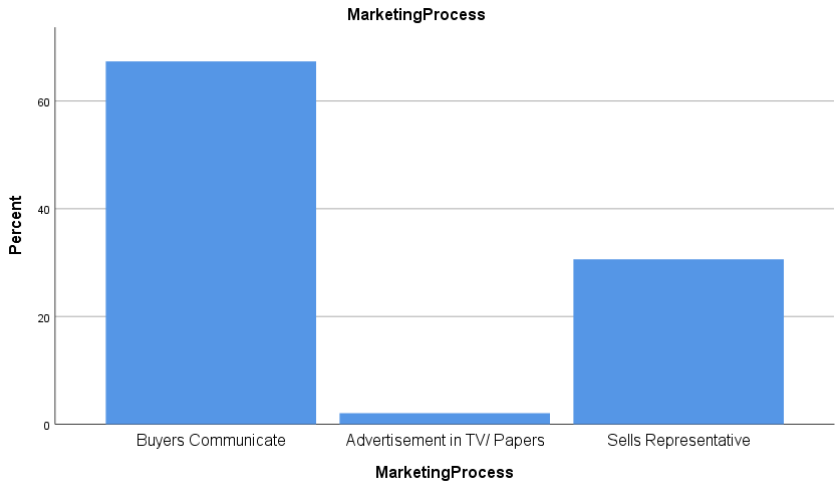
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Design by the owner	36	73.5	73.5	73.5
	Provide by Buyer	10	20.4	20.4	93.9
	both	3	6.1	6.1	100.0
	Total	49	100.0	100.0	



From our survey and the above chart, we can see that most of the industries designed their product on their own which stands for approximately 74 percent. In 20 percent of cases, the design was provided by the client.

Marketing Process

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Buyers Communicate	33	67.3	67.3	67.3
	Advertisement in TV/ Papers	1	2.0	2.0	69.4
	Sells Representative	15	30.6	30.6	100.0
	Total	49	100.0	100.0	



Our survey suggests that most industries reached their buyer by communicating on their own. Very few of them published advertisements on paper or telecast advertisements on television. 30 percent of the total industries employed sales representatives for marketing which can be seen from the above chart.

Case Processing Summary

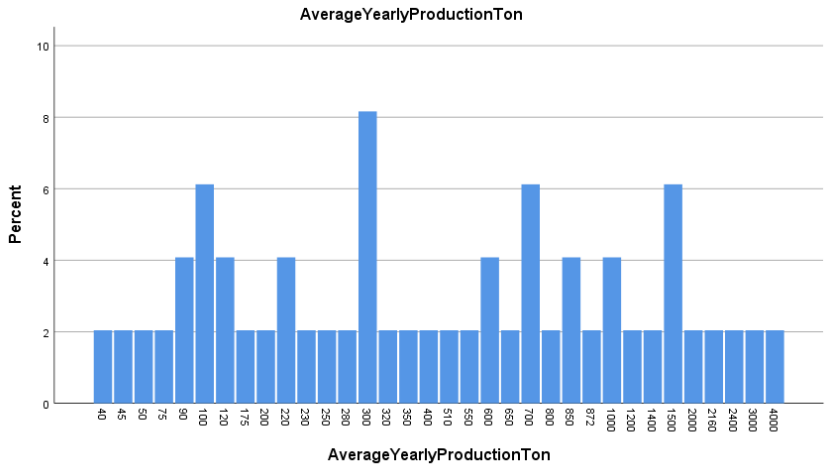
	Count
Overall	41
Excluded	8
Total	49

Ratio Statistics for Own Fund / Loan

Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
1.156	.556	96.3%

From our survey and the above chart, we can see the ratio statistics of own funds and loans. The value of the price-related differential is 1.156.

From the below data we can see the graph of the percentage of industries vs average yearly production in tons.



Location of the industries:

The survey was conducted in 49 industries. Among them, 19 industries (~39%) were in the BSCIC Industrial Estate (IE) and the rest 30 industries (~61%) were outside of the estate. Among the industries outside of the IE, 24 industries (80%) were keen to establish their industries in BSCIC IE and for that, the average land required was approximately 0.87 acres.

Furnace Type:

The light engineering industries do not require a furnace. But for the foundry industries, a furnace is a must. All the industries surveyed were using Cupola furnaces. For operation purposes, this is a simple and economical device. But one of the major drawbacks of this type of furnace is it is unable to maintain the close temperature required for the production. It results in poor efficiency. The introduction of induction or electric arc furnaces can solve the issue. But for that, an uninterruptible power supply must be ensured. Otherwise, it will cause a great loss in overall production.

Loan scenario:

77.6% of the industries had loans from banks or other financial institutions. The whole scenario is shown in the following table.

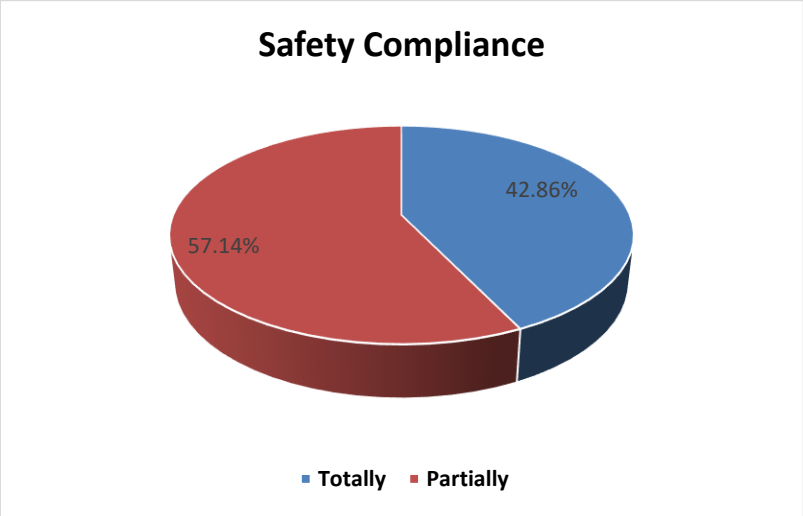
Whether have loan					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	38	77.6	77.6	77.6
	No	11	22.4	22.4	100.0
	Total	49	100.0	100.0	

Sub-contracting Linkage:

Only 8 of the 49 industries work on the subcontract. The average amount of the sub-contract linkage is 225.625 lakh taka.

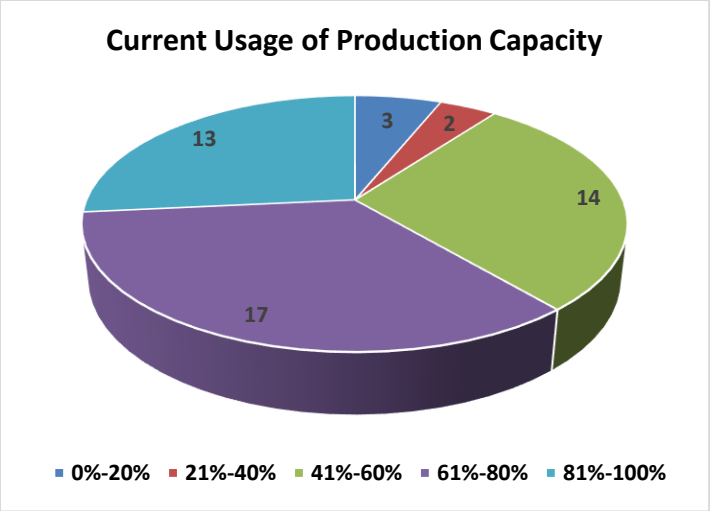
Safety Compliance:

57.14% of the industries were found to maintain partial safety compliance, while the rest of the industries were maintaining full safety compliance.



Current Usage of Production capacity:

The survey found the following result regarding the current Usage of Production capacity. Most of the industries were lagging at their full capacity. Only 6 industries, i.e., 12.25% of the industries were running in full swing.



Reasons for low efficiency in production:

a) COVID-19: Due to COVID-19, the economic condition got worse and the foundry sectors of Bogura also suffered from this. The owners were compelled to run production below their full capacity.
b) Low order: There was low order from the marketplace. So, the industries were forced to run production below their full capacity.
c) The low market value of the products
d) Chinese product
e) Lack of skilled manpower/technician
f) Job switching tendency among the workers
g) Electricity-based agricultural product
h) Interruptible power supply
i) Price hike of the raw materials
j) Lack of new technology and machines

Services provided from BSCIC:

a) Plot allotment
b) Industry Registration
c) Entrepreneurship Development Program (EDP) training
d) Loan from BSCIC
e) No Objection Certificate (NOC) for a bank loan
f) Security
g) Business plan
h) Infrastructure

Recommendations regarding foundry industries:

a) Facilities should be equal to garments industries. The garments industries enjoy many facilities that the foundry industries don't. These make the industries lag.
b) The workers/technicians in the foundry sector are unskilled/semi-skilled. This causes low efficiency in production. So, it is recommended that the workers/technicians should be skilled. They must be aware of the new technologies and machines. For that, skill training related to a foundry should be introduced.
c) The infrastructures of the industrial estate should be developed. Poor infrastructures result in higher production costs and lower returns on equity. So, proper attention should be given to the roads and drainage system.
d) If a power cut happens during production, then it results in a huge loss. If the industries move to an induction furnace or electric arc furnace for greater production, then this loss will be greater. So, an uninterruptible power supply must be insured for the smooth running of the production.
e) Service charges, VAT, and other charges should be minimized. This will encourage the entrepreneurs of the foundry sectors.
f) Most industries are eager to export their products. But due to some administrative issues, their products were not exported. So, the government should provide them with export facilities.
g) Access to finance is one of the most major issues for the foundry industry owners. Many of them couldn't expand their business due to financial bindings. Loans can promote their business. But loans should be given on easy terms and at a low-interest rate.
h) Delivery of certificates such as environment certificates, ERC, IRC, etc. should be fast and easy so that the industries run their business smoothly.
i) In this modern era, there is a continuous demand for new models and technologies. Otherwise, most industries won't be able to keep pace with the market demand. So, new technologies and machines like Computerized Numerical Control (CNC) machines should be introduced.
j) There is a variance in the product price in the market. This results in a loss for many factory owners. So, surveillance of the market price should be ensured.

k) Most industries can't afford a lab of their own. Consequently, an inspection of the raw materials and final products is not possible. A central lab in the industrial estate can mitigate the situation. So, a central lab should be established to ensure quality control of the product.
l) Almost all the industries face difficulties in paper works, i.e., obtaining different certificates, licenses, etc. If they get those documents easily, that will be a great opportunity for them. In that case, a one-stop service (OSS) can be a solution. BSCIC has an OSS platform. But it is not fully operating. So, we recommend that OSS be operated in full swing as soon as possible.
m) The whole survey was done in Bogura on a small scale. A further in-depth study should be carried out regarding these industries throughout the country to find the greater scope in this sector.

Conclusion

From the study, it was observed that the foundry and light engineering industries have great potential. It was also observed that there were many problems like lack of infrastructural facilities, scarcity of skilled workers, inadequate power supply, inability to explore the international market, etc. If these impediments are tackled with efficient strategic approaches, foundry and light engineering industries can play a vital role in the growth of our national economy. To do so, the above-mentioned recommendations should be implemented in a planned manner.