

Manufacturing Firm Productivity: An Empirical Study on Textile and Clothing mills of two different industrial zones in Bangladesh

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Abstract: The garment industry has played a pioneering role in the development of industrial sector of Bangladesh. Though it took a rather late start i.e., in 1976 but it soon established its reputation in the world market within a short span of time. Resultantly now Bangladesh is the second largest exporter of readymade garment products trailing China. As China is finding it challenging to make textile and foot wear items at cheap price, due to rising labor costs, many foreign investors, are coming to Bangladesh to take advantage of the low labor cost. Though Bangladesh produces garment with lowest cost but poor productivity. To survive and prosper in today's economic times, companies should utilize its resources to generate more value added output. Only then the productivity will be high enough to accelerate the economic growth cycle. Most of the companies of Bangladesh are not conscious about productivity analysis. That's why they lack behind in competitive market. The objective of the study is to introduce productivity, importance of productivity and its measurement technique so that companies can find their competitive position in the market. We have conducted this research on two representative Textile and Clothing Mills from two different industrial areas by collecting data through questionnaire. We have found difference in productivity between these two mills due to various reasons. We have also found that they are not concerned about productivity measurement. This research finding has very significant impact on the Textile and RMG industry because it will define the importance of identifying the economic position of any company.

Keywords: Productivity, Clothing sector, Efficiency, Effectiveness, Ready Made Garments (RMG), Bangladesh.

1. Introduction

After independence, some observers of developed countries were pessimistic about the developmental progress of Bangladesh. Many believed that the country would remain permanently locked in a 'below poverty level equilibrium trap'. Although there is little room for bliss, Bangladesh has come a long way from there. Through exports, imports, and commodity markets about two-fifths of the economy is now connected with the global economy; the degree of openness of the economy currently stands at 40%. As a result, Bangladesh can now claim that she has graduated from a predominantly aid receiving nation to a

trading nation (1). The industry that has been making crucial contribution to rebuilding the country and its economy is none other than the readymade garment (RMG) industry which is now the single biggest export earner for Bangladesh. The sector accounts for 81% of total export earnings of the country (2). RMG sectors took place at the declining stage of jute markets and gradually it injected mobility in the exports.

Productivity is the ultimate engine of growth in the global economy. Productivity is about "working smarter" than "working harder" (3). In other word productivity express the ability to produce more output by the better combination of inputs, new ideas, technological innovations and business

models. Innovations such as the steam engine, electrification and digitization have led to radical changes in the production of goods and services, raising living standards and well-being. Raising productivity is therefore a fundamental challenge for countries going forward (3). Increased productivity increases the power of an economy through driving economic growth and satisfying more human needs with the same resources. Increased gross domestic product (GDP) and overall economic outputs will drive economic growth, improving the economy and the

2. Background

From 1947 to 1971 the textile industry, like most industries in East Pakistan, were largely owned by West Pakistanis. During that period, in the 1960s, local Bengali entrepreneurs had set up their own large textile and jute factories. Following its separation from East Pakistan, the newly formed Bangladesh lost access to both capital and technical expertise (3)(5). Until the liberation of Bangladesh in 1971, the textile sector was primarily part of the process of import substitution industrialization (ISI) to replace imports. After the liberation, Bangladesh adopted export-oriented industrialization (EOI) by focusing on the textile and clothing industry, particularly the readymade garment (RMG) sector (6).

In liberalized apparel market, productivity is gaining greater importance as a factor of competitiveness in Bangladesh, given sustained pressure for wage increases and for competition. Moreover, there is still strong demand for wage increases in Bangladesh. Furthermore, enforcing compliance with labor regulations is becoming critical for the sector after the recent collapse of a

participants within the economy (4). Over the coming decades, there will be several challenges to global growth, in spite of the continued rise of emerging economies. More than ever, productivity will be the main driver of future growth and prosperity. Higher productivity growth is also essential to accommodate the impact of demographic pressures on public budgets, to escape the middle income trap that afflicts many emerging economies and to foster a new era of efficiency that drastically shrinks our footprint on the environment(2).

factory building (Rana Plaza) and a series of factory fires.

Now the worry is about labor productivity and making production flexible; because the fashion industry is highly volatile and if the orders are not fulfilled on time, the fear for losing business is real. In some cases it has been observed that, in developing countries the garment industries are run as family business lacking skilled personnel as well as capital to implement new technologies for improving productivity and flexibility (7).

Productivity change is essential for the sustained growth of Bangladesh's garment sector. In early 2014, The DFID-ESRC Growth Research Program (DEGRP) and the Centre for Policy Dialogue (CPD) brought together key academics and policy-makers in Dhaka to explore the "challenges of economic transformation and growth in Bangladesh." This set of policy essays draws on discussions from the event, as well as new DEGRP research and practical examples from other countries, to suggest where policy-makers could focus their efforts. (Dirk Willem teVelde Overseas Development Institute (ODI).

compare the productivity of Textile and Apparel mills of two different industrial zones in Bangladesh. In order to achieve this broad aim following objectives has been emerged:

3. Objectives of the study

3.1 Broad Statement:

The main aim of the research is to analyze and

3.2 Specific Objectives:

- ❖ To study about productivity of the manufacturing firms.
- ❖ To study detail about productivity of textile mills in Bangladesh.
- ❖ To sort out the factors which drive the textile firms' productivity.
- ❖ To identify the major conditions and processes that causes variation in organizational productivity.
- ❖ To establish reasonable goals for improvements of productivity.

4. Significance of the study

"Productivity isn't everything, but in the long run it is almost everything. A country's ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker".

The productivity measurement has always been an important aspect in manufacturing firms. Nowadays, the issue of productivity improvement, especially in developing countries, has become important for manufacturing firms' managers, strategic planners, government policy makers and it is becoming a key factor affecting the overall performance of firms (8). Productivity means optimized utilization and management of all available resources, the emergence of new resources, through creative thinking, innovation technology, and research and development. It combines the best use of all areas of knowledge, improvement techniques, methods, and approaches for the production and distribution of quality goods and services at minimum unit cost in an ethical and legal manner with due regard for the total environment (9).

Low level of productivity in manufacturing firms implies a low growth of national as well as organizational economy (10). In Bangladesh, Textile & Clothing sector plays an important role in the economy which is highly labor intensive. Most of textile manufacturing firms are inadequate in their resource utilization, and low productivity is a common feature for most of them. Almost all of these firms are characterized by low profit due to the high cost of production. Firms do not clearly identify the factors influencing the productivity and the existing productivity status is not known (11). The purpose of the present study is to show the productivity of textile & clothing sector in Bangladesh.

5. Methodology

In this study, the following research strategies have been adopted:

❖ Literature review:

Literature review has been conducted to understand the concept of productivity and its necessity in RMG factories. Articles that are related with productivity are reviewed. The ideas of

productivity measurement and its implementation in the firm level are also known from it.

❖ Data collection:

A thorough study has been done to analyze the present condition of garment factories. A questionnaire is developed to obtain maximum related information about productivity. Data has been collected through e-mail, phone interviews from 2 factories and analyzed. Besides interviews, Short visits at the plant are made. By this study, the productivity of garment factories is reviewed.

❖ Data Analysis and Constructive

Discussion:

After collecting data, data analysis is done by using productivity formula and these outcomes are compared against various input's (labor, material, capital, energy etc.) productivities. Beside that the comparison between two RMG factories has been shown through pie chart, bar diagram. Here MS word and MS excel are used.

6. Literature review

6.1 Concept of Productivity:

6.1.1 Definition of Productivity:

Productivity can be defined as an economic measure of output per unit of input. Inputs generally include labor, capital etc. while output is typically measured in revenues. Productivity measures may be examined collectively or viewed industry by industry to examine trends in labor growth, wage levels and technological improvements.

Measures of Output: Output is the quantity of goods or services produced in a given time period, by a firm, industry, or country.

- Physical Quantity
- Financial Value

Measures of Input

Resources such as people, raw materials, energy, information, or finance that are put into a system (such as an economy, manufacturing plant, computer system) to obtain a desired output.

Labor

Labor can be measured in three ways:

- Number of hours worked
- Number of workers engaged
- Cost of labor

Capital

Capital refers to financial assets or the financial value of assets, such as cash and funds held in

deposit accounts, as well as the tangible machinery and production equipment used in environments such as factories and other manufacturing facilities (12).

Enterprise:

Organization, as a factor of production, refers to the task of bringing land, labor and capital together. It involves the establishment of co-ordination and co-operation among these factors (13).

6.2 The relationship among efficiency, effectiveness and productivity:

Efficiency: Economic efficiency implies an economic state in which every resource is optimally allocated to serve each individual or

entity in the best way while minimizing waste and inefficiency (12).

Effectiveness: Effectiveness is a measure of doing the “right things.” Highly effective individuals and companies act in ways that move their highest priorities forward on a regular basis (14).

Productivity: Productivity is determined by looking at the production obtained (effectiveness) versus the invested effort in order to achieve the result (efficiency); in other words, if we can achieve more with less effort, productivity increases.

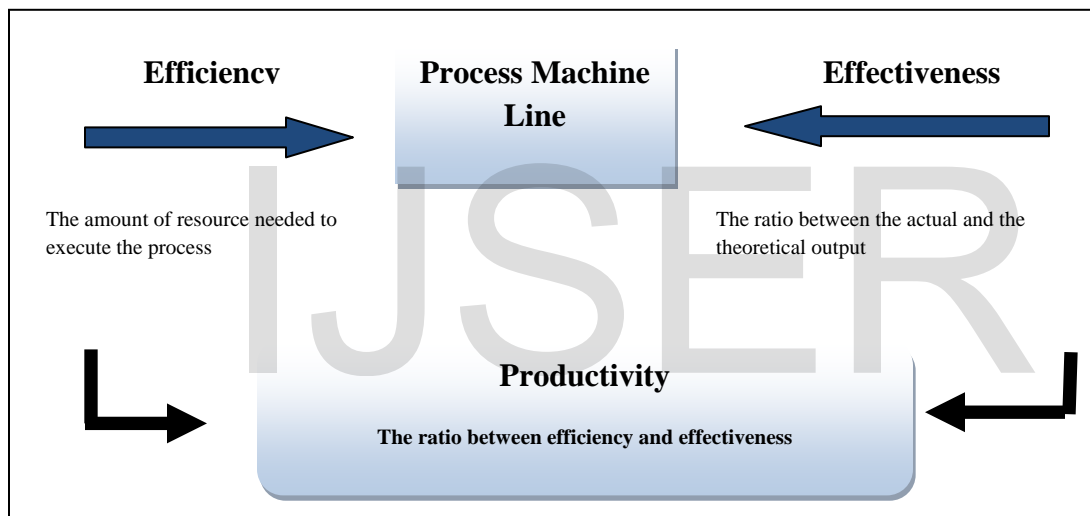


Figure-1: Relation among efficiency, effectiveness & productivity(15)

Productivity = Output / Input
Efficiency = Doing things right
Effectiveness = Doing the right things

6.3 Textile and Clothing Mills in Bangladesh

SL	Sub-sector	No. of units	Installed Capacity	Production Capacity in a year
1	Spinning	385	8.7 million spindle 0.23 million rotor	2050 million kgs
2	Weaving/Fabric manufacturing	721	17250 shuttle less 13500 shuttle	2150 million meter
	1. Weaving	584		
	2. Denim			
	3. Home Textile	20		

	4. Knitting	17 100		
3	Dyeing-Printing-Finishing	233		2200 million meter
4	Export oriented garment industry	5150		561 million dozen

7. Findings & discussion

The practice of an effective productivity measurement system is essential for a continuous productivity improvement. What is needed, then, is a productivity measurement system that not only provides a firm-level total productivity index

7.1 Formulae for calculating the productivity:

The basic formula of measuring productivity is,

$$\text{Productivity} = \frac{\text{units produced (output)}}{\text{input used}}$$

Where T= L, M, C, E, M_c, PP= Partial productivity, OF = Total output (Quantity or Price) of a firm, I_T = Input of a firm, L = labor input, M = material input, The five basic partial productivities can be calculated by:

1. Labor productivity = OF/I_L
2. Material Productivity = OF/I_M

1. Human inputs: these include the values of salaries and benefits of all employees of the company.
2. Material inputs: these include major raw materials, such as knitted and woven fabrics; accessories, such as buttons, sewing threads, zippers, bands, etc.

to indicate the productivity health of the firm, but it also points out the growth or the decline in the productivity and the profitability of its products or services (16).

Partial Productivity = OF/I_T

$$\frac{\text{Total output (Quantity or Price) of a firm}}{\text{Partial Input of a firm}}$$

C= Capital input, E= Energy input, M_c= Miscellaneous input.

3. Capital Productivity = OF/I_C
4. Energy productivity = OF/I_E
5. Miscellaneous Productivity = OF/I_{M_c}

Total Productivity=

$$\frac{\text{Output}}{(\text{Human input} + \text{Capital input} + \text{Material input} + \text{Energy input} + \text{Miscellaneous input})}$$

3. Capital inputs: uniform annual cost of both fixed and working capital
4. Energy Inputs: these include electrical power and water consumption.
5. Miscellaneous inputs: these include taxes, professional fees, advertisement cost, insurance, travel and per diem, etc.

7.2 Productivity calculations:

7.2.1 Productivity calculation of Shore to Shore (Firm 1)

Table 1: Data for the calculation of productivity of Shore to Shore Textiles Ltd.

Inputs (BDT)	Partial Productivity					Total Productivity
	Labor Productivity	Material Productivity	Capital Productivity	Energy productivity	Miscellaneous Productivity	
Human inputs = 35,00,0000	$= \frac{OF}{I_L}$ $= \frac{160000000}{35000000}$	$= \frac{OF}{I_M}$ $= \frac{160000000}{40000000}$	$= \frac{OF}{I_C}$ $= \frac{160000000}{8000000}$	$= \frac{OF}{I_E}$ $= \frac{160000000}{50490000}$	$\frac{OF}{I_{Mc}}$ $= \frac{160000000}{10000000}$	$= \frac{160000000}{143490000}$ = 1.12
Material inputs =4,00,00,000	=4.57	=4	=20	= 3.16	= 16	
Capital inputs =80,00,000						
Energy Inputs =50,49,0000						
Miscellaneous inputs =1,00,00,000						
Value of total input =143490000						
Value of total output =16,00,00,000						

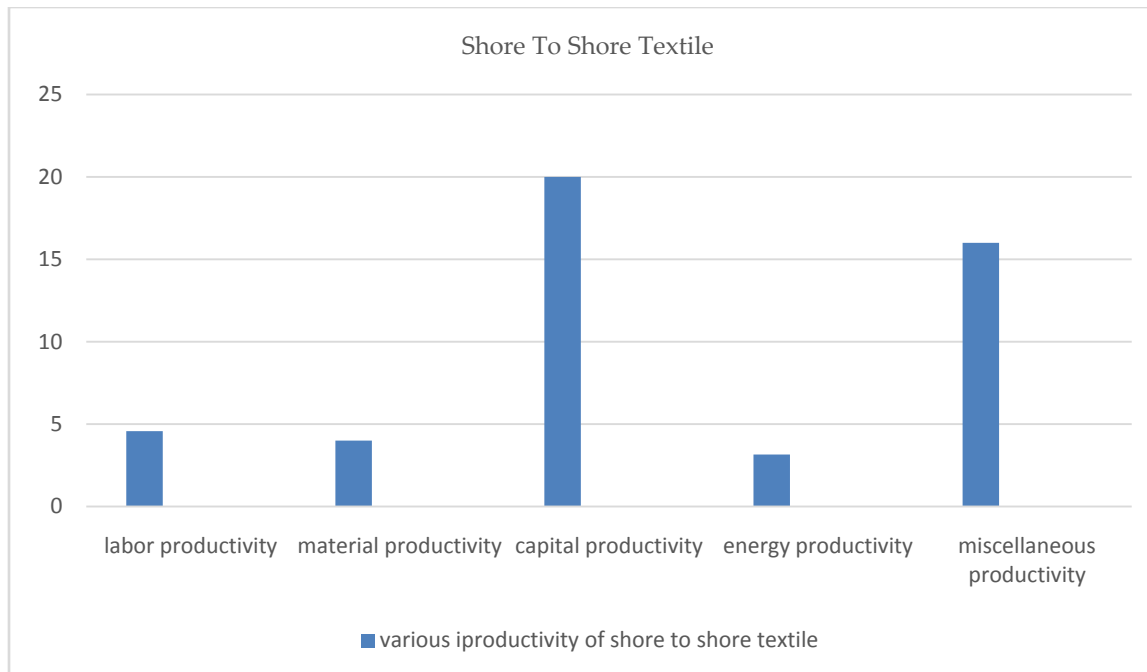


Figure 2: Various productivity of shore to shore textiles

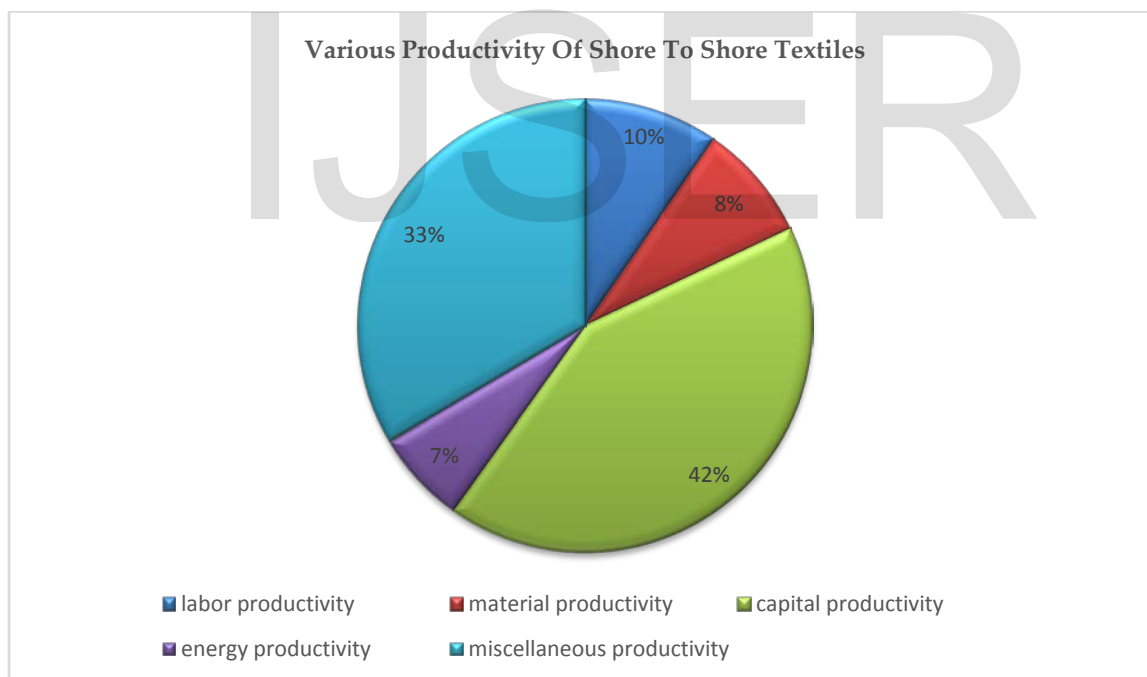


Figure 3: Various productivity of shore to shore textiles

7.2.2 Productivity calculation of Ehsan Knitwear Ltd (Firm 2)

Table 2: Data for the calculation of productivity of Ehsan Knitwear Ltd

Inputs (BDT)	Partial Productivity					Total Productivity
	Labor Productivity	Material Productivity	Capital Productivity	Energy productivity	Miscellaneous Productivity	
Human inputs = 3,04,55,000	$= \frac{OF}{I_L} = \frac{1200000000}{30455000}$	$= \frac{OF}{I_M} = \frac{1200000000}{24000000}$	$= \frac{OF}{I_C} = \frac{1200000000}{32000000}$	$= \frac{OF}{I_E} = \frac{1200000000}{43042000}$	$\frac{OF}{I_{Mc}} = \frac{1200000000}{9040000}$	$\frac{1200000000}{1138537000}$ = 0.866
Material inputs =2,40,00,000	=3.38	=5	=3.75	= 2.78	= 13.27	
Capital inputs =3,20,00,000						
Energy Inputs =4,30,42,000						
Miscellaneous inputs =90,40,000						
Value of total input =138537000						
Value of total output =12,00,00,000						

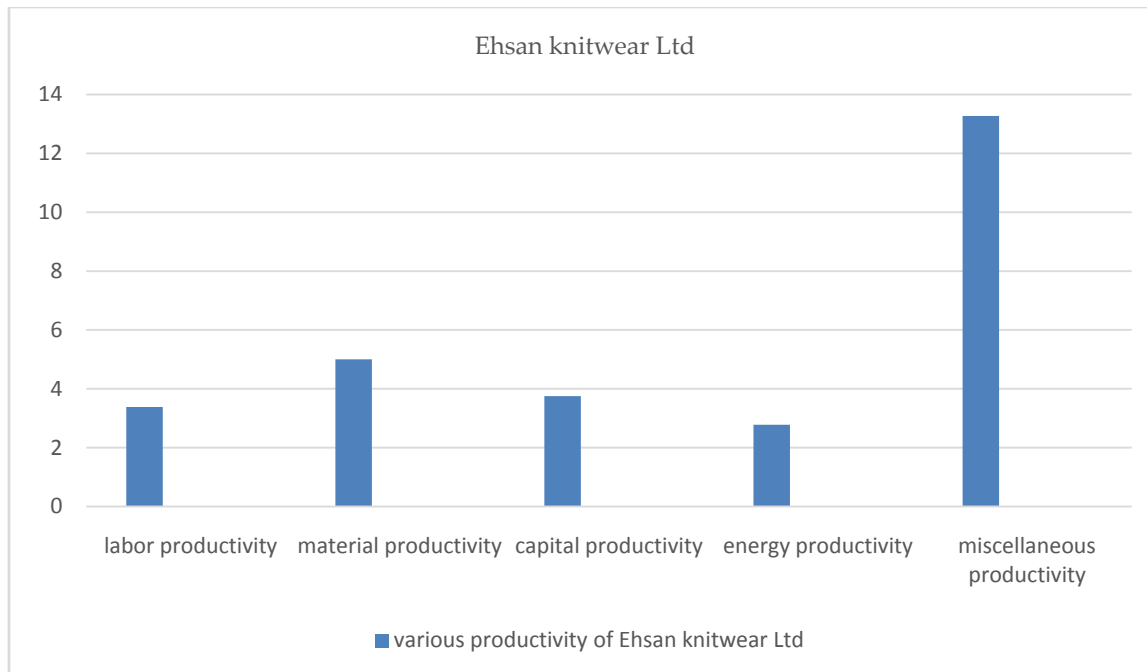


Figure 4: Various productivity of Ehsan Knitwear Ltd

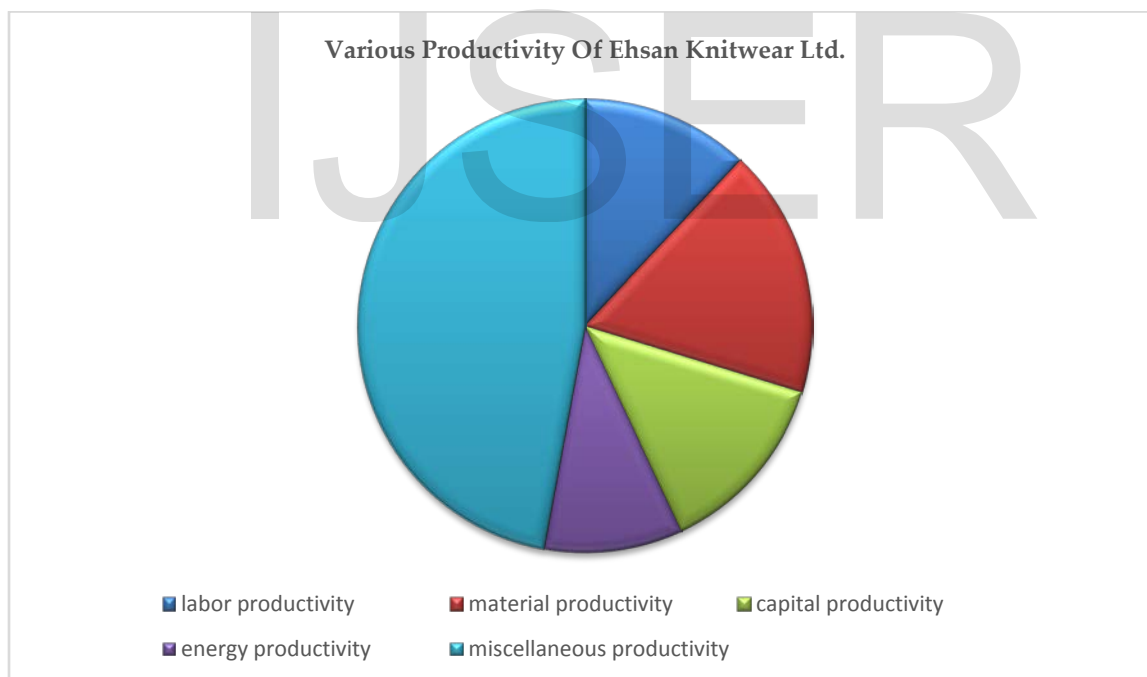


Figure 5: Various productivity of Ehsan Knitwear Ltd

There is also difference between two above Textile and Clothing mills. From the research, it has been found that productivity depends on its various types of input like labor, material, energy, capital

etc. Even the productivity differs from zone to zone depending on its availability on different resources, transportation facilities etc.

Table 3: Comparison of various productivity between two Textile and Clothing factory

Productivity	Shore to shore Textiles Ltd	Ehsan Knitwear Ltd
Human productivity	4.57	3.38
Material productivity	4	5
Capital productivity	20	3.75
Energy productivity	3.16	2.78
Miscellaneous productivity	16	13.27
Total productivity	1.12	0.866

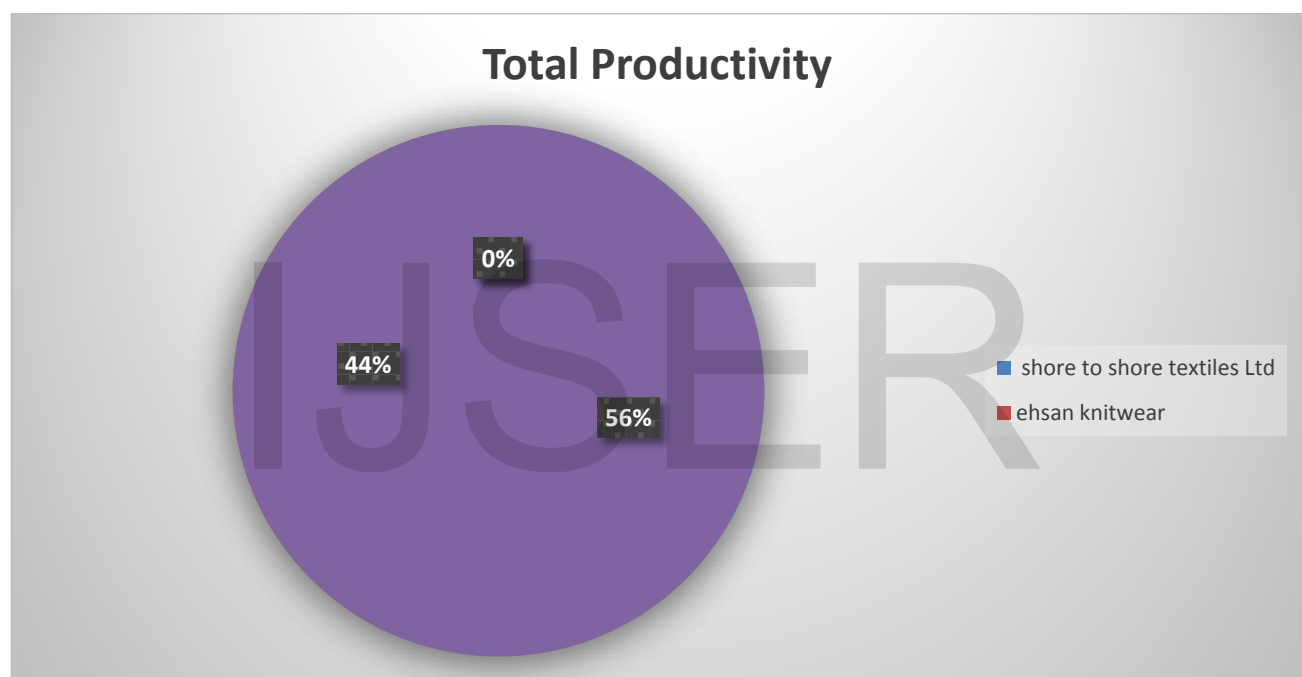


Figure 6: Difference in productivity of two Textile and Clothing mills

- ❖ Though Bangladesh is a labor intensive Country, Ehsan Knitwear has very lower labor productivity which is not satisfactory. The main problem is that most of the labors are not so skilled. Moreover, sufficient benefits are not provided to the workers. That's why their interest on work is low.
- ❖ On the other hand, shore to shore garment utilize their manpower effectively than

Ehsan Knitwear. Most of the workers are given training and other benefits.

- ❖ Material which is another important input of production has poor utilization on both the mills. Both the firms depend on imported raw materials. So the cost generally increases. This results in a low productivity.

from two Textile and Clothing mills from two different industrial zones.

8. Limitations of the research

- ❖ The main limitation of the research is data availability. Data has been collected only

- ❖ It was difficult to collect data from the factories because most of the data are confidential.
- ❖ Due to time and cost constraints the sample size was restricted to two industries only.
- ❖ Due to insufficient research on this topic it was difficult to gather knowledge.
- ❖ In this project only partial productivity formula has been used.
- ❖ It's a theoretical approach on productivity analysis.

9. Conclusion

Though there are about 6000 textile and apparel mills in Bangladesh, most of them are inadequate in their resource utilization, and low productivity is a common feature for most of them. These

mills are characterized by low profit due to the high cost of production. Manufacturing mills do not clearly identify the factors influencing the productivity and the existing productivity status is not known. For this reason, they have to struggle for the survival in the global competitive market. Now-a-days it is the burning issue to introduce the productivity measurement along with the production with a view to sustaining the most competitive global market. From this research it has been extracted out that productivity is not same for all the industrial zones in Bangladesh. Hence, the proper steps should be taken to enhance the overall productivity of the Textile and Clothing Industry of Bangladesh.

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