

# Challenges Adversely Affecting the Performance of the Manufacturing Sector of Developing Countries

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## ABSTRACT

The manufacturing sector of Ghana is bedeviled with many challenges, both external and internal, ranging from poor regulatory environment to inadequate level of skilled labour. Manufacturing firms in Ghana were surveyed, using a sample size of 120, based on purposive sampling. The study was poised to determine those variables that were available and those that were not available in the firms and were a setback. In addition a rating scale was used to determine those that were more critical and could adversely affect the performance of the sector. The results revealed there were high rent costs (84.2%) and influx of foreign products (87.5%) as well as inadequate level of skilled labour (77.5). The study was also intended to determine which variable was critically challenging and its absence could affect the performance of the sector. Clearly, poor regulatory environment was ranked the highest on the part of external challenges while inadequate skilled labour was rank the highest on the part of internal challenges. It is therefore recommended that skills development should be the priority of manufacturing firms, with the aim of closing manufacturing skills gap. Further, the government should make conscious attempt to regulate the influx of foreign products into the country.

**Keywords--** Developing Countries, Challenges, Ghana, Industry, Manufacturing Firms

2018). Weber (1909) defines a manufacturing industry as that in which raw materials are transformed into finished goods on a large scale. Kayanula and Quartey (2000) define manufacturing as the process of converting raw materials into finished goods. While Bartlesman and Gray (1996) define manufacturing as a branch trade based on the fabrication, processing, or preparation of products from raw materials and commodities. Manufacturing industries include any industry that is engaged in the fabrication and processing of items in the form of new creation or in value addition. The final product serves as a finished good for customer consumption or as an intermediate good used in the production process. The manufacturing industry in developing countries currently have a number of challenges impeding its ability to contribute effectively to economic growth and to curb the problem of graduate unemployment. The performance of the industrial sector influences the nature of growth and the level of employment or unemployment in an economy (GPRS II, 2006 - 2009) and (GSGDA, 2010 - 2013). It is pertinent to mention that the impact of manufacturing manifests in areas such as rapid industrial growth to meet domestic demand; improvement of the export performance of the economy; provision of employment and diversification of the economy and the development of a diversified technological base (Chenery, 1960). Literature has informed that many developing nations have slowed in their economic transformation because of lack of vibrant manufacturing sector; Ghana is no exception. Whereas this study is poised to identify both internal and external challenges that affect the manufacturing sector of Ghana, Osei (2017) enumerates a number of factors confronting the manufacturing sector of Ghana; these include lack of access to risk capital, high cost of borrowing, inadequate education and lack of poor legal and regulatory environment. Hence, the main aim of this study was to examine the challenges affecting the performance of the manufacturing sector, and the specific objectives were:

- To identify the major external and internal challenges affecting the sector.
- To measure the challenges that are most critical by ranking them.

## I. INTRODUCTION

Across many fast developing countries, the manufacturing sector is the backbone of industrialisation; developing this sector is important in moving a step closer towards inclusive growth (NESG, 2018). Manufacturing is generally viewed as an end product of innovation and is the production of goods in large scale. In recent times, manufacturing plays a huge role in modern socio-economic environments of many nations, since everything from knitting textiles to steel production falls within this sector of business. Manufacturing industries are those that engage in the transformation of goods, materials or substances into new products. The transformational process can be physical, chemical or mechanical. Manufacturers often have plants, mills or factories that produce goods for public consumption (Levinson,

## II. LITERATURE REVIEW

It is ideal to describe manufacturing as the use of equipment and machines to turn out new products during the process of manufacturing. However, in some cases goods can be manufactured by hand. Manufacturing is the process of converting raw materials into finished goods (Kayanula and Quartey, 2000). In this section, the manufacturing outlook and contribution to growth, employment and export in some countries has been discussed.

In Canada manufacturing accounted for 9.4% of the jobs in the Canadian labour force in 2016 and employed 1.7 million people across the country. However, manufacturing's role as a source of employment has been declining steadily with a -1.2% CAGR between 2010 and 2016. The manufacturing sector is a significant contributor to Canada's revenue, exports and employment, accounting for 10.5% of Canadian GVA and 68% of exports in 2016.

Over the past 30 years in UK, the value of manufacturing output has remained largely the same, but the number of people employed in the industry has fallen significantly. These trends partly explain why productivity in manufacturing has (until recently) grown more quickly than productivity in the whole economy. Since the late-1990s, imports of manufactured goods have grown more quickly than exports. This means that the manufacturing trade deficit has widened over this period. The government's industrial strategy was published in November 2017 and includes a number of policies designed to help manufacturing, including a number of sector deals and 'challenges' for industry. In 2017 manufacturing in the UK accounted for 8% of jobs, 2.7 million in total (Rhodes, 2018). Manufacturing: statistics and policy, Published Monday, November 12, 2018.

The manufacturing sector in India has seen three major changes in the recent past. These include mechanisation at the initial stages, a movement towards mass production and technology-governed production, using pneumatically controlled machines. The Indian economy started to gain some real momentum a few years ago when top international companies started to move their manufacturing facilities to India. Increase in the production capacity of manufacturers and increment in the value of exports show that the Indian economy is more stable now and has a strong future ahead. The key impediments to exports of India includes competition from other countries in terms of price, limited export incentives, competition from other countries in terms of quality and absence of trade agreements to promote exports.

Manufacturing has played a vital role in the economic transformation in Malaysia. The manufacturing business is diverse but has shown long-standing dominance in rubber and palm oil processing as well as in

pharmaceuticals, medical technology and electronics, among others. The MoF reported that the sector grew 5.1% y-o-y during the first half of 2018 and for the whole year, it is expected to grow at 4.9%, largely driven by export-oriented industries. The manufacturing sector contributed 23% to GDP in 2017, while production grew by 6.1% and sales value by 13.7% to RM765.8 billion (FMM, 2018). The Malaysian manufacturing sector was forecast to expand 4.7% year-on-year (y-o-y) in 2019, supported by export-oriented industries, following continuous expansion in electrical and electronics (E&E) as well as chemicals and chemical product subsectors.

Over the years, Nigeria's high import of manufactured products and weak export of processed goods are evidences of the inherent weakness of the sector. Meanwhile, the weak performance of the manufacturing sector is also reflected in the low share of non-oil exports to total exports earnings as well as the high share of manufactured goods in total imports (NESG, 2018). Nigeria's economic growth, since the year 2000, has not been able to deliver adequate poverty reduction, not even significant unemployment reduction. Nevertheless, GDP growth increased from 6.7% in 2006 to 9.5% in 2010. On the contrary, unemployment rate moved from 12.3% to 21.4% in the same period. By the year 2015 prior to the economic recession, unemployment and underemployment rate had reached a peak of 29% (NESG, 2018). According to the National Bureau of Statistics (NBS), the Nigerian manufacturing sector is dominated by the production of food, beverages and tobacco, with sugar and bread products generating the greatest value of output. To encourage more output in these and other sectors, the government has been making it cheaper for consumers to purchase locally manufactured goods by making the smuggled foreign alternatives prohibitively expensive or totally unavailable through prohibitions (Raji, 2018).

Kenyan manufacturing sector has achieved considerable success since independence, although there has been relatively slow growth in the 1980s. Statistics show that the performance of Kenya's manufacturing sector during the first fifteen years of independence was comparatively impressive (Walter, 1991). In recent times, the manufacturing sector in Kenya grew at 3.5% in 2015 and 3.2% in 2014, contributing 10.3% to gross domestic product (GDP) (KNBS, 2016). On the average, however, manufacturing has been growing at a slower rate than the economy, which expanded by 5.6% in 2015. This implies that the share of manufacturing in GDP has been reducing over time. As a result, it can be argued that Kenya is going through premature de-industrialisation in a context where manufacturing and industry are still relatively underdeveloped.

Tanzania's manufacturing sector performance in comparison with other sectors in two decades showed that

the sector had remained stagnant, in spite of various efforts and strategies proposed, such as; adoption of development vision 2025 in 1999 focusing on industrial development, establishment of export processing zones (EPZs) 2003, and introduction of Integrated Industrial Development Strategy (IIDS) in 2010 (Mwang'onda et al, 2018). The sector contribution to GDP has remained low, and currently statistics shows a decline (Wangwe et al, 2014). Tanzania's manufacturing sector is relatively small; its share in GDP is about 10% (TCRA, 2014). Formal employment in manufacturing accounts for less than 5% of the labour force (Government of Tanzania and UNIDO, 2012). Generally, much of the formal employment is concentrated in the largest 40 manufacturing companies, which employ 36% of all manufacturing workers. Job creation dynamics is weak, with only 11% of industrial employment having been generated by firms established in 2005 or later.

### **2.1 Structure of the Industrial Sector of Ghana**

The Ghanaian economy is made up of three main sectors; they are the agriculture, the industry and the services sectors. The services sector currently is the driving force of the Ghanaian economy based on its contribution to gross domestic product (GDP); it contributed about 49.5% of GDP in 2013. The question is, why not the manufacturing sector which has been proven to be an engine of growth (Kalirajan, 2004; Tkalec et al., 2009). This study uses the term manufacturing as a proxy for industrialisation. As far as the economy of Ghana is concerned, the rhetorical question is “what would the economy of Ghana be like without strengthening its manufacturing sector?” however, the industrial sector of Ghana is made up of public and private sectors, consisting of four major sub-sectors; construction industry, manufacturing industry, mining and quarrying, electricity and water. In recent times, the government of Ghana considers private sector development which includes the improvement of investment and enhancement of basic service delivery as a means of sustaining business, stimulating growth and reducing poverty (GPJ, 2009). The relative share of manufacturing value added to GDP, for instance, has declined in Ghana from 11% to 9% in real terms over the last two decades and manufacturing value added per capita is down from US\$48 to US\$42 during the same period (SGE, 2004). The GSS (2020) report clearly indicated that the manufacturing sector contribution to the economy decreased slightly over the past decade, this was in large part due to the growth of the contribution of the oil sector to GDP. By that the manufacturing sector grew by an impressive 9.5% in 2017, up from 7.9% in 2016 and 3.7% in 2015. The very recent report by GSS (2020) shows that manufacturing in Ghana decreased to 4132.79 GH¢ Million in the second quarter of 2020 from 5112.15 GH¢ Million in the first quarter of 2020.

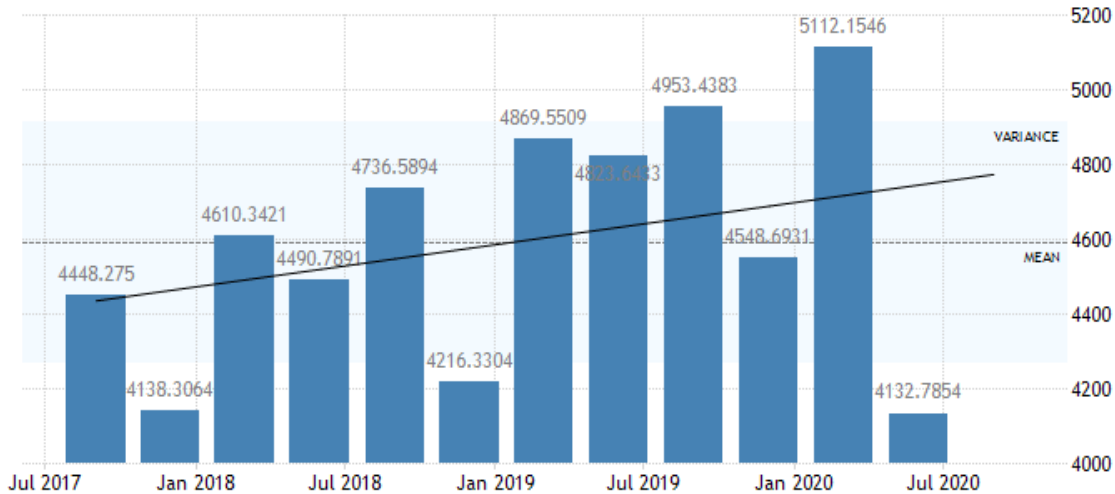
### **2.2 Manufacturing Drive**

Immediately after independence, the government of Ghana launched an industrialisation drive that increased manufacturing's share of GDP from 10 percent in 1960 to 14 percent in 1970. This resulted in the creation of a relatively wide range of industrial enterprises, the largest including the Volta Aluminum Company (Valco) smelter, saw mills and timber processing plants, cocoa processing plants, breweries, cement manufacturing, oil refining, textile manufacturing operations, and vehicle assembly plants. Osei, (2017) listed important manufacturing companies in Ghana as electronics manufacturing, car manufacturing, electric car manufacturing, automotive manufacturing, light manufacturing, aluminum smelting, food processing, cement and small commercial ship building. A relatively small glass-making industry has also developed due to the high-quality sand available from the Tarkwa mining area. The foreign capital has increased in recent years. Most products are for local consumption and exportation. Other industries include the production of food and beverages, textiles, chemicals and pharmaceuticals, and the processing of metals and wood products (Osei, 2017). The relative share of manufacturing value added to GDP, for instance, has declined in Ghana from 11% to 9% in real terms over the last two decades and manufacturing value added per capita is down from US\$48 to US\$42 during the same period (SGE, 2004).

Recent empirical works of some scholars confirmed the hypothesis that industrialisation is an engine of growth in developing countries when the most dynamic industries are targeted and investment in skills are undertaken (Tregenna, 2007; Kuturia and Raj, 2009; Szirmai, 2009; Timmer and de Vries, 2009). Ghana has launched a multifaceted programme aimed at increasing its industrial capacity and output. This initiative was to strengthen the investment environment for manufacturing, also to boost the value added component of the country's manufactured exports. According to the Ghana statistical service (2020), manufacturing contributed GH¢28bn (\$6.1bn) to GDP in 2017, up from GH¢23.9bn (\$5.2bn) in 2016 and GH¢20.5bn (\$4.4bn) in 2015. This was equivalent to 11.7% of GDP in 2017. The GSS report clearly indicated that the manufacturing sector contribution to the economy decreased slightly over the past decade, this was in large part due to the growth of the contribution of the oil sector to GDP. By that the manufacturing sector grew by an impressive 9.5% in 2017, up from 7.9% in 2016 and 3.7% in 2015. The very recent report by GSS shows that manufacturing in Ghana decreased to 4132.79 GH¢ Million in the second quarter of 2020 from 5112.15 GH¢ Million in the first quarter of 2020. GDP From Manufacturing in Ghana averaged 3702.88 GHS Million from 2006 until 2020, reaching an all-time high of 5112.15 GHS Million in the first quarter of 2020 and a record low

of 1801.31 GHS Million in the fourth quarter of 2007. Ghana GDP from Manufacturing-values, historical data and

charts - was last updated on September of 2020, Figure 1 (GSS, 2020).



**Figure 1: Ghana GDP from Manufacturing-values**  
**Source: Ghana Statistical Service**

African Development Bank (AfDB) (2019) indicated that the value of Ghana’s machinery imports increased four-fold for the period of 2000 and 2017 to \$6770m, reflecting the country’s growing industrial capacity. Some literature measure the impact of manufacturing on an economy based on growth (GDP), employment and export; some scholars look at output while others consider productivity.

**2.3 Challenges of Manufacturing Firms**

The manufacturing firms in developing countries have been bedeviled with a multitude of challenges that affect their performance. These challenges have been categorized by this study into internal and external. The challenges have serious repercussions which include the inability of some firms to survive while others fail to expand to other markets. Among other challenges are inadequate education and lack of managerial skills, the infiltration of foreigners into the Ghanaian market has made it difficult for Ghana industries to compete in the market. It includes lack of access to risk capital, high cost of borrowing, inadequate education and lack of poor legal and regulatory environment (Osei, 2017). Other challenges confronting the sector is lack of capacity to expand and employ trained graduates, followed by lack of enabling environment for expansion. High cost of production and lack of adequate productive resources also account for a decline in industrial growth, hence its inability to employ graduates in the labour market.

A report on the Nigerian manufacturing sector by the National Bureau of Statistics (NBS) in 2014 put the challenges of the manufacturing sector as follows:

inadequate and epileptic power supply, high taxes, poor infrastructure, and supply variability of rain-dependent agricultural inputs. In terms of strengths, the NBS observes that labour is cheap, domestic demand is buoyant, and some inputs are available and cheaper domestically.

The problems in infrastructure are illustrated by the repeated water-supply crises in the capital area, which generates as much as 70-80 percent of total industrial output in the country (DANIDA, 2000). The lack of stable water supplies is first of all affecting the breweries and distillers in Dares Salaam. Moreover, irregular power supplies from the Tanzania Electricity Supply Company (Tanesco) are continuously causing inconveniences for the local manufacturers. Also, there is a significant shortage of appropriate skills in the workforce, especially of higher level skills. The case may be that the skill supply does not meet the companies’ skill demand for quantitative or qualitative reasons (UNIDO, 2012). Were (2016) listed a number of factors, among others are:

**2.3.1 Taxes:** A key issue hampering the manufacturing sector has to do with tax policy implementation. VAT refunds from KRA take too long to come through, which constrains activity in the manufacturing sector and limits cash flows. This is a concern for a sector that is capital-intensive. Further, there are concerns about government tariff application: Staff at customs is not sufficiently trained to apply the right tariff to products. This makes the customs process for manufacturers more problematic than it ought to be.

**2.3.2 Financing:** The manufacturing sector seeks financing mainly locally, partly informed by the relatively

developed financial sector in the country. Firms also self-finance and use family funds and financing from friends. Commercial banks are the most sought-out source of financing for the manufacturing sector outside of financing sourced from personal sources. Although there is a willingness to finance the manufacturing sector, conditions of financing are unfavourable. Interest rates are very high, often around the 18% range and, although smaller financing is available via microfinance institutions, this is at even higher rates.

**2.3.3 Management:** Nevertheless, the sector has several management challenges. The sector cannot attract good managers into manufacturing because the sector is so small—and perhaps the slow growth of the sector is precisely because management capacity is low. Kenya is perceived to have relatively high level of management skills when compared with Africa and East Africa countries. Ideally Kenyan management skills need to be strengthened through executive education courses and the development of local case studies during management training.

**2.3.4 Technology:** Three elements related to technology in the manufacturing sector need to be analysed. The first is the use of technology, the second is related to the manufacturing of technology products and the third is the extent to which the large technology community intersects with the manufacturing sector. In terms of the prevalence of modern technology, as previously mentioned, MSMEs constitute 67% of manufacturing firms in Kenya, and most of these do not and/or cannot effectively leverage technology, usually because of the related cost of doing so, but larger players use technology effectively, smaller entities cannot.

**2.3.5 Labour and Skills:** On the issue of labour and skills, the labour force is well educated but not well skilled. This is echoed by the World Bank Kenya Economic Update, which states that Kenya has a relatively well-educated labour force but a majority of adults remain functionally

illiterate. Productive jobs require a skilled labour force. The manufacturing sector has identified issues with skills in its labour force, with a clear gap between education and skills. Again, the mismatch is not as large as that in most of Africa and the region, but it constrains the growth of the sector. It is clear there is an insufficient number of technicians to service the manufacturing sector or even public infrastructure projects.

**2.3.6 Research and Development:** It is generally acknowledged that R&D is an under-funded and under-utilised sector in Kenya, even in the manufacturing sector the situation is no different. Several factors related to R&D affect the sector: the paucity of R&D by manufacturing firms themselves, the weakness of the link between university R&D and industry needs and finally the factors that prevent research institutes from feeding actionable R&D into the manufacturing sector.

**2.3.7 Politics:** Political dynamics in Africa affect the manufacturing sector both positively and negatively. In terms of negative effects, the first concern is that politics can lead to imprudent decisions made for political gain, not for the sector's commercial and economic interest. Meanwhile, political uncertainty can also discourage investments in the country and negatively affect the manufacturing sector. Areas prone to politically instigated ethnic violence are particularly unstable during election periods, when ethnic tensions tend to be more pronounced (Were, 2016).

**2.3.8 Ethics and Integrity:** Ethics and integrity issues are viewed as a concern for developing countries of Africa. With regard to how ethics and integrity affect the sector, the full extent cannot be determined partly because there has been no study on this, focused on the manufacturing sector and questions on corruption are often not answered openly (Were, 2016). A report by the Ethics and Anti-Corruption Commission published in 2016 stated that two out of every 10 people are forced to bribe to get access to services (Were, 2016).

**Table 1:** Challenges of manufacturing firms in Ghana

| External Challenges |                                | Internal Challenges |                                     |
|---------------------|--------------------------------|---------------------|-------------------------------------|
| 1                   | Inadequate power supply        | 1                   | Inadequate level of skill-labour    |
| 2                   | Lack of access to risk capital | 2                   | Lack of access to initial capital   |
| 3                   | High cost of borrowing         | 3                   | Inadequate managerial skills        |
| 4                   | Poor regulatory environment    | 4                   | Lack of optimal cost of production  |
| 5                   | High Rent cost                 | 5                   | Inadequate technical infrastructure |
| 6                   | Unfavorable competition        | 6                   | Lack of access to modern technology |
| 7                   | High taxes on firms            | 7                   | Lack of Prompt product patronage    |
| 8                   | Influx of foreign products     | 8                   | Lack of Affordable products         |
| 9                   | Lack of government support     | 9                   | Inability to close skills gaps      |
| 10                  | Rapid technology change        |                     |                                     |

Source: Organized from literature

### III. RESEARCH METHODOLOGY

#### 3.1 Research Design

The survey research questionnaire was used, of which data were collected in the form of field research by distributing self-administered questionnaires including online Google form via e-mail. The data were gathered from 10 public and 10 private manufacturing firms with a sample of 120 participants within the Kumasi and Accra metropolises; these are where the nation's big time manufacturing companies are located. The respondents were generally from the engineering background. The sample was deemed a representation of the population who had substantial knowledge and experience about manufacturing. The study employed two-stage research approach to addressing the challenges of the manufacturing sector. The first stage involved the review

of literature to identify those challenges while the second part involved the use of survey questionnaire to measure and rank the challenges. Ten (10) external and nine (9) internal challenges had been identified. A five-point likert scale was then rated by respondents on the identified challenges where "not at all challenging"=1, "little challenging"=2, "moderately challenging"=3, "very challenging"=4 and "critically challenging"=5. The respondents were required to answer the questions in accordance with their experience on prevailing manufacturing challenges. Data collected were entered into SPSS for analysis.

### IV. ANALYSIS AND RESULTS

#### 4.1 Data Presentation

**Table 2:** Sample of Both Public and Private Firms

| Manufacturing Firm                 | Frequency     | Percentage    |
|------------------------------------|---------------|---------------|
| <b>Public Manufacturing Firms</b>  |               |               |
| Managing directors                 | 20            | 33.3%         |
| Local managers                     | 15            | 25.0%         |
| Sectional heads                    | 10            | 16.6%         |
| Engineers                          | 10            | 16.6%         |
| Technicians                        | 5             | 8.3%          |
| <b>Total</b>                       | <b>60</b>     | <b>100.0%</b> |
| <b>Private Manufacturing Firms</b> |               |               |
| Managing directors                 | 20            | 33.3%         |
| Local managers                     | 15            | 25.0%         |
| Sectional heads                    | 10            | 16.6%         |
| Engineers                          | 10            | 16.6%         |
| Technicians                        | 5             | 8.3%          |
| <b>Total 60</b>                    | <b>100.0%</b> |               |

Table 2 displays the sample size for both public and private firms within the Kumasi and Accra metropolises, in that these are the areas where there are a cluster of manufacturing industries. The researcher sampled 60 participants each from public and private firms, making a total of 120 participants. Managing directors in each case were 20, representing 33.3% while the local managers constituted 15, representing 25.0%.

These categories of personnel, definitely, had detailed and comprehensive information with regard to manufacturing challenges. Notwithstanding, the sectional heads (N=10: 16.6%) and engineers (N=10: 16.6%) have their experiences with regard to challenges, therefore their views were elicited. Technicians were the least thus, 5 participants, representing 8.3%; their views were also solicited (table 1).

**Table 3:** External Manufacturing Challenges (EMC)

| Code   | Variable                       | N   | Yes  | No   |
|--------|--------------------------------|-----|------|------|
| EMC 1  | inadequate power supply        | 120 | 28.3 | 71.7 |
| EMC 2  | Lack of access to risk capital | 120 | 86.7 | 13.3 |
| EMC 3  | High cost of borrowing         | 120 | 91.7 | 8.3  |
| EMC 4  | Poor regulatory environment    | 120 | 79.2 | 20.8 |
| EMC 5  | High Rent cost                 | 120 | 84.2 | 15.8 |
| EMC 6  | Unfavorable competition        | 120 | 63.3 | 36.7 |
| EMC 7  | High taxes on firms            | 120 | 67.5 | 32.5 |
| EMC 8  | Influx of foreign products     | 120 | 87.5 | 12.5 |
| EMC 9  | Lack of government support     | 120 | 66.7 | 33.3 |
| EMC 10 | Rapid technology change        | 120 | 70.0 | 30.0 |

The descriptive statistics in table 3 displays the presence and absence or the availability of variables that influence the performance of the manufacturing firm. The availability of power supply, for instance, is 71.7%, all the same, suggesting further improvement in power delivery for the manufacturing sector. It also suggests that there exist sporadic power outages which can adversely affect the performance of the sector. Firms also do not have access to risk capital (86.7%), as a result manufacturers lack certain equipment and tools that could make them withstand basic skills needs of manufacturing. The manufacturing sector seeks financing mainly from local financial institutions, firms also self-finance and use family funds and financing from friends (Were, 2016). Commercial banks are the most sought-out source of financing for the manufacturing sector apart from personal sources. Clearly, 91.7% of the respondents indicated that where credit facilities are available to local firms the interest rates are usually high, making it practically impossible for accessibility, especially where collateral

security is a requirement. The business environment requires proper regulation from the central government, putting policy mechanisms in place and support to ensure the success of the sector. Another factor hampering the growth of the manufacturing sector is high rent costs, since 84.2% of the participants affirms to this fact. Most firms are not able to break even because of high rent cost; some eventually have to fold up. In addition, unfavourable competition between local firms and foreign companies inhibit the growth of the local firms(63.3%). This kind of unhealthy competition is a major constraint confronting the sector, as the local firms find it difficult rubbing shoulders with multinational companies within the country. Another inhibiting factor is the high taxes levied on local manufacturing firms; so exorbitant that local firms are not able to withstand the taxes, resulting in poor performance if not seizure of operation. Other factors that militate against the performance of the sector are influx of foreign products (87.5%), lack of government support (66.7%) and rapid technology change (70.0%).

**Table 4:** Participants Rating on External Manufacturing Challenges (EMC)

| Code | Variable  | N   | Mean | Std. Dev. | Rank            |
|------|---|-----|------|-----------|-----------------|
| EMC  | Poor regulatory environment                                 | 120 | 4.53 | 1.069     | 1 <sup>st</sup> |
| EMC  | Inadequate power supply                                     | 120 | 4.50 | 0.953     | 2 <sup>nd</sup> |
| EMC  | High Rent cost  | 120 | 4.02 | 0.518     | 3 <sup>rd</sup> |
| EMC  | High taxes on firms   | 120 | 4.02 | 0.710     | 4 <sup>rd</sup> |
| EMC  | Unfavorable competition ( thus, Influx of foreign products) | 120 | 4.01 | 0.865     | 5 <sup>th</sup> |
| EMC  | High cost of borrowing                                      | 120 | 3.90 | 0.738     | 6 <sup>st</sup> |
| EMC  | Lack of government support                                  | 120 | 3.81 | 0.930     | 7 <sup>th</sup> |
| EMC  | Lack of access to risk capital                              | 120 | 2.78 | 0.624     | 8 <sup>th</sup> |
| EMC  | Rapid technology change                                     | 120 | 2.45 | 0.708     | 9 <sup>th</sup> |

Table 4 provides respondents with the opportunity to indicate how critical each challenge is in relation to the

performance of the manufacturing industry. The table displays and compares the mean scores of each variable

with a test value (TV = 3.5) to examine how challenging the manufacturing firms consider each of the indicator variables making up the “external factors affecting its performance”. The firms are requested to give their views on a five point rating which ranges from critically challenging=5, to Not at all challenging =1. The results show that some variable’s mean scores are significantly greater than the test value, suggesting that they are more critical, and therefore their absence can significantly affect the performance of the sector. From Table 4, poor regulatory environment was ranked first, having attained a mean score of 4.53 and a standard deviation score of 1.069. Inadequate power supply was ranked second (Mean

= 4.50, Std. Dev. = 0.953). However, two critical factors tied in the third position; high rent cost and high tax on firms (Mean = 4.02: Std. Dev = 0.518) and mean=4.02: StdDev=0.710) respectively. Evidently ‘high rent cost’ has more data spread, and therefore preceded ‘high tax on firms’ in the ranking. High cost of borrowing was ranked fifth, having attained a mean score of 3.90 and a standard deviation score of 0.738. However, lack of access to risk capital (mean = 3.20, Std = 0.630) and rapid technological change (mean = 2.45, Std. = 0.708) were ranked 8<sup>th</sup> and 9<sup>th</sup> respectively, and are considered less critical when it comes to external factors affecting the performance of the manufacturing sector.

**Table 5:** Internal Manufacturing Challenges (IMC)

| Code  | Internal Manufacturing Challenges (IMC)   | N   | Yes  | No   |
|-------|---|-----|------|------|
| IMC1  | Inadequate level of skilled labour        | 120 | 77.5 | 22.5 |
| IMC 2 | Lack of access to initial capital         | 120 | 90.8 | 8.3  |
| IMC 3 | Inadequate managerial skills              | 120 | 66.7 | 33.3 |
| IMC 4 | Lack of optimal cost of production        | 120 | 45.8 | 54.2 |
| IMC 5 | Inadequate technical infrastructure       | 120 | 77.5 | 22.5 |
| IMC 6 | Lack of access to modern technology       | 120 | 53.3 | 41.7 |
| IMC 7 | Lack of prompt product patronage          | 120 | 47.5 | 52.5 |
| IMC 8 | Lack of affordable products to customers  | 119 | 58.0 | 42.0 |
| IMC 9 | Unable to close manufacturing skills gaps | 120 | 66.7 | 33.3 |

Table 5 displays internal challenges hampering the performance of the manufacturing sector. The response for adequacy of skilled labour of the sector registers as low as 22.5%. Corroborating the empirical results of Were (2016) which revealed that the labour force is well educated but not well skilled. It is common knowledge that Productive jobs require skilled labour force. There is however a clear gap between education and skills in the manufacturing sector which needs to be addressed. This is

largely due to insufficient number of skilled technicians to service the manufacturing sector or public infrastructure projects. Lack of initial capital outlay is another hindrance to the delivery of the sector (90.8%). The sector also needs management skills to be able to plan, organize, control and produce to an optimum levels (66.7%). Table 5 revealed that an optimum cost of production needs to be improved upon since 54.2% of the respondents affirmed this.

**Table 6:** Participants Rating on Internal Manufacturing Challenges (IMC)

| Code | Internal Manufacturing Challenges (IMC)   | N   | Mean | Std. Dev. | Rank            |
|------|---|-----|------|-----------|-----------------|
| IMC  | Inadequate level of skilled labour        | 120 | 4.68 | 0.840     | 1 <sup>st</sup> |
| IMC  | Inadequate technical infrastructure       | 120 | 4.65 | 0.763     | 2 <sup>nd</sup> |
| IMC  | Inadequate managerial skills              | 120 | 4.65 | 0.857     | 3 <sup>rd</sup> |
| IMC  | Unable to close manufacturing skills gaps | 120 | 4.62 | 0.832     | 4 <sup>th</sup> |
| IMC  | Lack of access to initial capital         | 120 | 4.53 | 0.995     | 5 <sup>th</sup> |
| IMC  | Lack of affordable products               | 120 | 4.50 | 1.021     | 6 <sup>th</sup> |
| IMC  | Lack of prompt product patronage          | 119 | 4.43 | 1.136     | 7 <sup>th</sup> |
| IMC  | Lack of access to modern technology       | 120 | 3.27 | 0.786     | 8 <sup>th</sup> |
| IMC  | Lack of optimal cost of production        | 120 | 2.09 | 0.850     | 9 <sup>th</sup> |



Table 6 provides respondents with the opportunity to indicate how critical each challenge is in relation to the performance of the manufacturing industry. Table 6 displays the means comparison scores of each variable with a test value (TV = 4.0). This is to examine how challenging the manufacturing firms consider each of the variables that make up the “internal factors affecting its performance”. The firms are requested to give their views on a five point rating scale which ranges from “critically challenging” =5, to “Not at all challenging” =1. The results show that some variable’s means scores are significantly greater than the test value, suggesting that they are more critical, and therefore their absence can adversely affect the performance of the sector. From Table 6, inadequate level of skilled labour was ranked first, having attained a mean score of 4.68 and a standard deviation score of 0.840. However, two critical factors tied in the second position; inadequate technical infrastructure (Mean = 4.65: Std. Dev = 0.763) and inadequate managerial skills (Mean = 4.65: Std. Dev = 0.857). Evidently ‘inadequate technical infrastructure’ has more data spread, thus, standard deviation, and therefore preceded ‘inadequate managerial skills’ in the ranking. Inability to close manufacturing skills gaps was ranked fourth (Mean = 4.62: Std. Dev. = 0.832). Lack of access to initial capital was ranked fifth, having attained a mean score of 4.53 and a standard deviation score of 0.995. Unaffordable products was ranked sixth (Mean = 4.50: Std. Dev = 1.021) while Lack of prompt product patronage was ranked seventh (Mean = 4.43: Std. Dev = 1.136). However, lack of access to modern technology (mean = 3.27, Std = 0.786) and lack of optimal cost of production (mean = 2.09, Std. = 0.850) were ranked 8<sup>th</sup> and 9<sup>th</sup> respectively, and are considered less critical when it comes to internal factors affecting the performance of the manufacturing sector.

## V. CONCLUSION

In conclusion, this study clearly addressed the challenges confronting the manufacturing sector of Ghana. Through extensive review of literature, the study categorized those challenges into external and internal factors. The study sought to determine if those challenges were present or not and to what extent do they affect the manufacturing process. The study further measured the challenges and ranked them to determine those that are critically challenging.

The results revealed that the availability of power supply, for instance, is 71.7%, all the same, suggesting further improvement in power delivery for the manufacturing sector. The results further suggest that there exist sporadic power outages which can adversely affect the performance of the sector. Firms also do not have access to risk capital (86.7%), as a result manufacturing

firms lack certain equipment and tools that could make them withstand basic skills needs of manufacturing. The response for adequacy of skilled labour of the sector registered as low as 22.5%, corroborating the empirical results of previous studies. It is common knowledge that Productive jobs require skilled labour force. There is however a clear gap between education and skills in the manufacturing sector which needs to be addressed. This is largely due to insufficient number of skilled technicians to operate in the manufacturing sector or to service public infrastructure projects. In addition, lack of initial capital outlay is another hindrance to the delivery of the sector (90.8%).

However, ten (10) external manufacturing challenges had been ranked from first (1st) to ninth (9th) in order to examine how challenging the manufacturing firms consider each of the variables that make up the “external factors affecting its performance”. The results revealed the following; poor regulatory environment was ranked first, having attained a mean score of 4.53 and a standard deviation score of 1.069; followed by inadequate power supply with a Mean value of 4.50 and Standard deviation being 0.953. Also, nine internal manufacturing challenges had been ranked from first (1st) to ninth (9th). This was to examine how challenging the manufacturing firms consider each of the variables that make up the “internal factors affecting its performance”. The results therefore revealed that inadequate level of skilled labour was ranked first, having attained a mean score of 4.68 and a standard deviation score of 0.840. Also inadequate technical infrastructure was another challenge that adversely affects manufacturing firms as the Mean score is 4.65 and a standard deviation being 0.763, likewise in adequate managerial skills attracted a mean score of 4.65 with a standard deviation of 0.857.

The study therefore recommend that practical skills development should be the priority of manufacturing firms as well as managerial skills, with the aim of closing manufacturing skills gaps. Further, the government should make conscious attempt to regulate the influx of foreign products into the country, assist the sector acquire technical infrastructure and also improve power supply for the sector for more effectiveness and efficiency.

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