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CHALLENGES OF IMPLEMENTING WORLD CLASS MANUFACTURING TECHNIQUES IN ZIMBABWE

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ABSTRACT

The world is facing a new war in the manufacturing arena; companies are competing for the same customers. The control of market share in the globalised world has become stiff such that companies are forced to change their manufacturing paradigms, philosophies and strategies to remain afloat. Those companies which are maintaining traditional manufacturing models and business models are sinking. This could be one reason why Zimbabwean companies are failing to take of the ground from the downward trend experienced from 1999 to 2008. The worlds over companies that are adopting world class manufacturing techniques are positioning themselves to compete globally. This paper explores the challenges which are being faced by companies in Zimbabwe in trying to implement world class manufacturing technologies and techniques. A case study was done with company X a beverage manufacturing company and a survey of fifty manufacturing companies was carried out. The results revealed that challenges experienced at the plant included use of old equipment, erratic supply of electricity, erratic supply of water, irregular raw material supply, lack of investment in research and development, lack of specialized skills and difficulties of bringing in spare parts for machinery. The business challenges included low demand for some products, high labour costs, lack of working capital, high utility bills, liquidity constraints in the market and competition from imports.

Key words: manufacturing paradigms, research and development, imports, competition, strategies.

1. INTRODUCTION

Zimbabwean industry is in limbo. Companies are operating below plant design/ installed capacity. Manufacturing sector contribution to Gross domestic product (GDP) has been going down since 1986, from a high of 27% to 13% in 2010 (CZI, 2012; Mzumara, 2012). Several companies have closed down, with most of them coming to a standstill in 2008. After dollarization of the country's economy, some companies were given a lease of life and started operating. From 2011 more companies which had opened started closing again, with Harare recording 700 closures between July 2011 and July 2013 (Zimbabwe independent, 18 October 2013). Some companies are closing due to competition from imports, others are facing viability challenges and others might be using wrong strategies. The result of company closures is the loss of jobs and loss of income to thousands of workers. The manufacturing sector in Zimbabwe is facing operational challenges. There is need to identify the major problems that are causing such failures in manufacturing

1.1. Background

Zimbabwe had the most diversified manufacturing infrastructure in sub-Saharan Africa outside South Africa at its independence. The question is how did it all start? And why are we in this situation.

The first white immigrants who came and settled in Southern Rhodesia concentrated in the mining of minerals such as gold, coal, chrome and asbestos. Agriculture was later introduced to supply food to people who were working in the mining sector. Agriculture expanded with the growing of maize, Virginia tobacco and breeding of cattle (Tow, 1960). Small manufacturing entities were started to support agriculture and the mines. The actual expansion of industry came after World War II due to higher demand for commodities; manufacturing became, for the first time, 50% of both agriculture and mining (Tow, 1960).

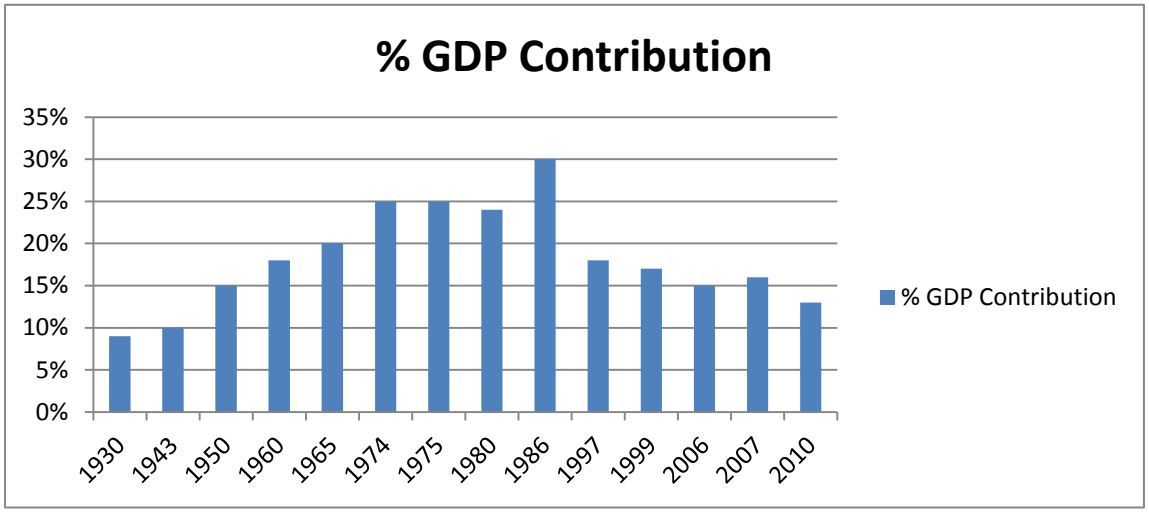


Figure 1: The contribution of manufacturing as a % of GDP to the economy of Zimbabwe Adapted from (Arrighi, 1966; Mzumara, 2012).

The situation before 1938 was that industrial manufacturing was only two thirds of mining alone by economic value. *Figure 1* shows that contribution of manufacturing to the national income rose from 9% in the early 1930s to over 15% in the early 1950s and to 18% in the early 1960s (Arrighi, 1966). At the same time, industry moved from small family business shops to large corporates (Arrighi, 1966). Stoneman (1990) stated that the contribution of manufacturing to GDP rose from 10% before World War II to 20% in 1965 and in 1974 it reached 25% due Rhodesia's policy of Import substitution industrialisation (see Figure 1). At independence in 1980 there was no significant change in manufacturing policy; the growth of the sector continued until 1986 when it peaked at 27% (CZI, 2012) of the GDP. The sector was the largest contributor to GDP at 24% on average from 1980 to 1990, ahead of agriculture which was at 14%. There was a notable decline in the contribution of manufacturing to GDP, from 24% to 16% in 2007 (Mzumara, 2012).The contribution of manufacturing to GDP went down to 13% in 2010 (see *Figure 1*).

The manufacturing sector plays a critical role in the Zimbabwean economy through revenue generation and employment creation and it is a major driver of growth. The performance of the manufacturing sector within the country can be measured in terms of capacity utilization and its contribution to GDP.

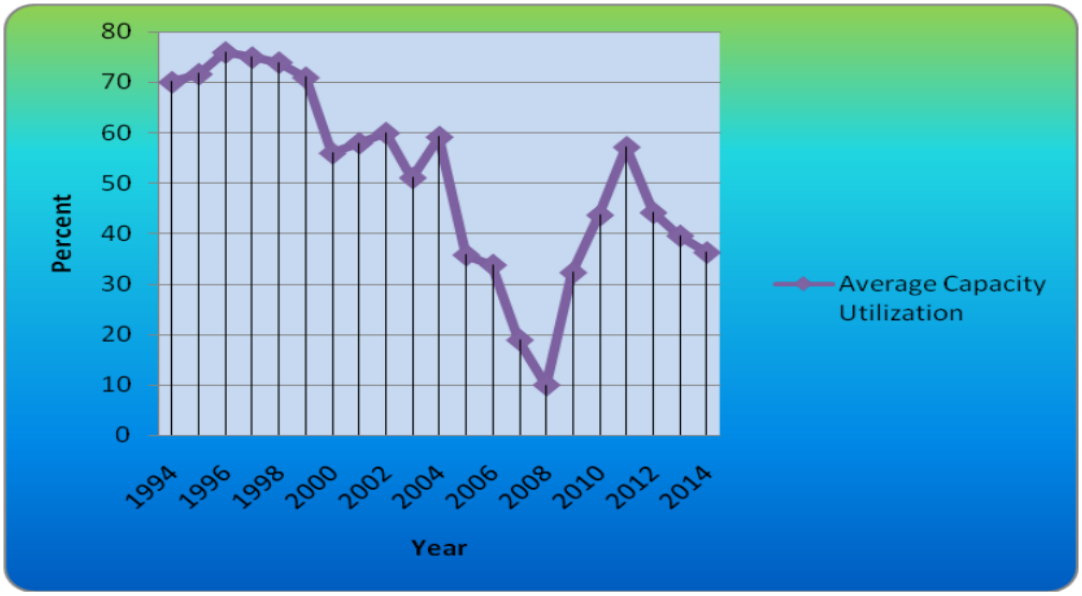


Figure 2: Capacity utilization of Zimbabwe manufacturing companies 1994 to 2014 Source: (CZI, 2014).

In *Figure 2*, CZI (2014) compiled a twenty year record of industrial capacity utilization, from 1994 to 2014. The Manufacturing Sector Surveys indicate that industrial capacity utilization declined sharply from 35.8% in 2005 to 18.9% by 2007 and to less than 10.0% by 2008. It increased to 33.0% in 2009, 43.7% in 2010 and 57.2% in 2011, before declining again to 44.2% in 2012 and 39.6% in 2013. The points to note are the peak in 1996 dropping down to 2008 and a rise in 2011 and continued dropping to 2014.

World class manufacturing enables companies to compete globally by improving their capabilities so that they are able to compete in the areas of cost, quality, delivery, flexibility and innovation (Swinehart, Miller and Hiranyavasit, 2000). World class manufacturing involves techniques such as: Total Productive Maintenance (TPM), Total Quality Control (TQC), Computer Aided Design (CAD), Computer Aided Manufacturing (CAM), Flexible Manufacturing Systems (FMS) and Just in Time (JIT).

Luc (2012) of ArcelorMittal Company has defined world class manufacturing as the seeking for continuous improvement of the overall effectiveness of the organisation by eliminating the causes of losses in the production systems through the implementation of activities called pillars. The term world class is broad but it should include the following: a new approach to product quality, just in time production techniques, changing the way the workforce is managed and a flexible approach to customer requirements. World Class Manufacturing is an innovative programme based on Continuous Improvement that provides the elimination of all types of waste and loss of production through the involvement of people at all levels of the organisation and all departments.

Sweeney (1990) defined world class manufacturing as the development of the role of manufacturing into one which fully supports the marketing strategy of the business and at the same time provides the capability to establish a competitive advantage from manufacturing activity itself. Ajalla (1998) has explained world class manufacturing techniques as those that result in: an increase in customer service, an increase in annual inventory turnover, an increase in production flexibility, an increase in employee morale, decrease in investment in inventory and decrease in space to produce the product.

Summarizing the definitions, it can be established that WCM is about improving customer satisfaction and overall business

efficiency through quality improvement, innovation, flexibility of manufacturing, streamlining the supply chain, worker participation and elimination of all forms of waste.

1.2 Barriers to implementing world class manufacturing strategies

There are several barriers that are faced by companies trying to implement WCM strategies. These were indicated by Yakashima, (2000) through the challenges in implementing TPM such a lack of top management commitment, how to relate WCM with cost reduction, difficult to get competent consultancy, how to get competent managers to drive WCM strategies to higher levels. Shortage of process improvement engineers, the need to convince senior managers who react politically to WCM principles, resistance by managers to empower lower level workers in the organisational hierarchy, how to convince unionised workers on the need to implement WCM because it creates excess workers and the need for redeployment. Some companies are afraid of the risk of losing people after training them and risk of leakage of confidential information to consultant. Murugesan et al. (2012) pointed out that in south India investment costs, lack of understanding of world class principles and workforce resistance as the most significant barriers to implementation of WCM.

In the UK manufacturing companies which are failing to compete in the world are attributing their competitiveness to inadequacy of investments in the past, attitudes of management, labour and the short term expectation of investors (Sweeney, 1992). In Egypt, Salaheldin (2007) identified poor planning and lack of knowledge as the major barriers to implementation of world class manufacturing practices. Seyeddhosseini and Soloukdar(2011) have pointed out why certain companies are failing to implement fully fledged world class manufacturing systems as the lack of clear relationships among widely spreading elements of manufacturing processes, poor attention to non-linearity and time delays during implementation. Schonberger (1996) pointed out that some would want to implement world class manufacturing strategies but they fail even to start due to inertia or due to lack of relevance of advice available on what world class manufacturing means and the steps that need to be taken to achieve WCM status. In some cases managers are afraid to implement this strategy because they are afraid that, their lack of knowledge would be exposed. In other cases people are afraid of abandoning traditional methods because they give them power to organise and control workers unlike in the new philosophy (Koskera, 1992).

In Iran, Gharakhani (2011) has identified management, manpower, technology and organisational culture as main problems faced by companies trying to implement world class manufacturing strategies. Gharakhani used the fuss logic tool to rank the four identified obstacles into their sub criteria. He found that Management focussed on the national vision rather than global vision, employees lack commitment towards organisational goals, some companies exhibit lack of innovation and lack of capacity to take risks, instability of management at a local level where managers frequently change companies, thus leaving companies without leadership continuity to implement WCM. Gharakhani also pointed out that some companies lack expertise and skill on international and economic strategy issues and that companies continue to use old equipment. World class manufacturing has too many solutions; picking the right combination for a given environment and particular company becomes a challenge for many organisations. The serious issue here is the inability to synchronize the non – congruent manufacturing policies such that they become consistent (Harrison, 1998).

Murugesan et al,(2012) identified partial implementation of WCM techniques as one of the major challenges faced by companies trying to implement WCM techniques. Lack of a well-defined route to

take in order to achieve the objectives, cultural resistance to change, lack of education and training, lack of WCM organisational techniques and lack of communication lead to failure in the implementation of world class manufacturing techniques (Crawford et al, 1998).

Confusion as to what constitutes WCM is another challenge which organisations face before implementation of world class manufacturing(Syfayeni et al, 1991).Major barriers would be the inability of a company to organise its workers, management policy and technology(Fredendel et al., 1997).

1.3 Drivers of world class manufacturing include the following.

Salaheldin and Eid (2007) have summarised the drivers of world class manufacturing implementation as:World competition.

- Changes in international customer needs.
- Recent developments in IT.
- Cost servings
- WCM gives the ability to quickly respond to ever changing customer needs.

2. METHODOLOGY

The study started with a survey of fifty (50) manufacturing companies in Zimbabwe. The research focused on the manufacturing plant section of the organisations. Respondents were asked to list the challenges which the organisation is facing. A case study was conducted with beverage a manufacturing company in Zimbabwe which is already implementing world class manufacturing techniques. The questionnaire targeted managers and supervisors in the manufacturing plant. Twenty-one (21) managers and supervisors responded to the questionnaire. The other questionnaire was administered to technicians and operators. The respondents were asked to indicate the challenges which the organisation was facing as world class manufacturing techniques were being implemented at the company. The question was open ended and respondents wrote different challenges which were then grouped into thematic categories for analysis.

3. RESULTS

The results here show the challenges faced by manufacturing companies. They are constraints that may prohibit them from implementing world class manufacturing strategies. These challenges have been divided into manufacturing and business challenges. The second results show the challenges which are being faced by a company implementing world class manufacturing strategies in Zimbabwe.

3.1 Challenge facing manufacturing companies in Zimbabwe

The research question asked about the challenges which the manufacturing companies are facing in Zimbabwe. The question was open ended and respondents would write any challenges which they were facing. Emerging themes helped to categorize the challenges into groups for analysis.

The challenges which Zimbabwean manufacturing companies are facing are many; they have been divided into two categories: the challenges faced in the manufacturing plant and business challenges. Challenges experienced at the plant included use of old equipment, erratic supply of electricity, erratic supply of water, raw material supply, lack of investment in research and development, lack of specialized skills and shortage of spare parts for machinery. The business challenges included low demand for some products, high labour costs, lack of working capital, high utility bills, liquidity challenges in the market and competition from imports.

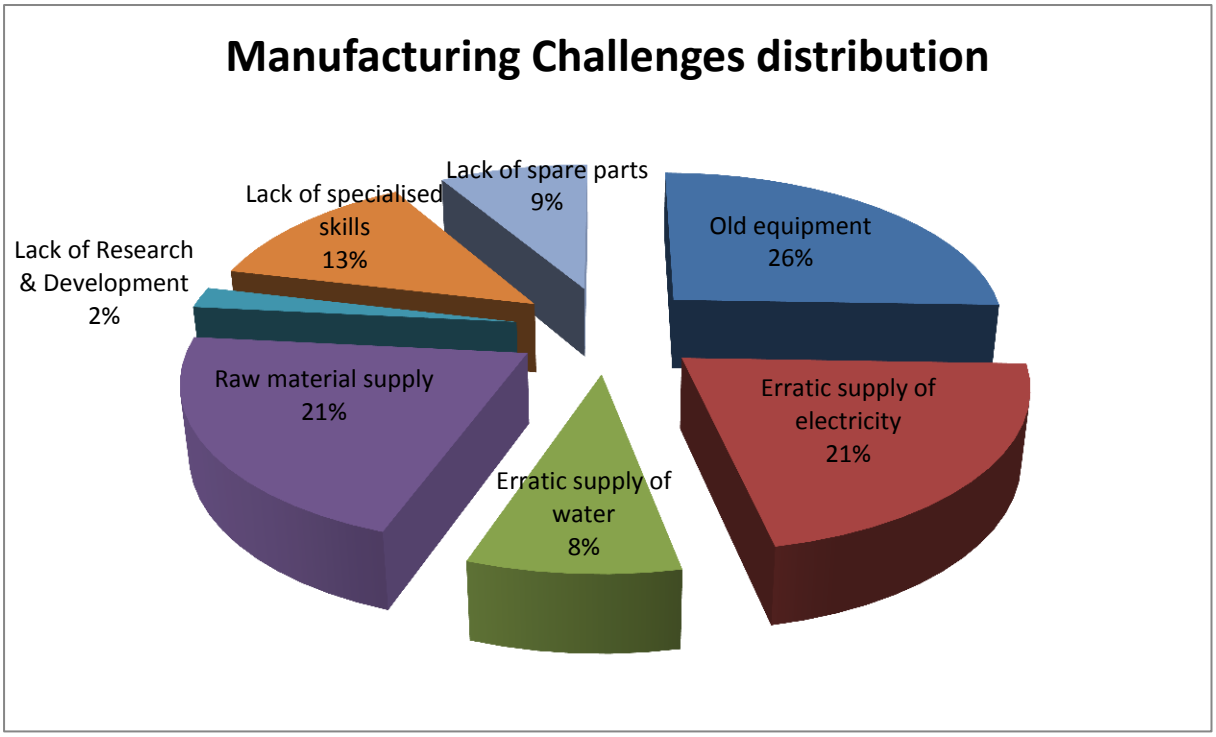


Figure 3: Pie chart for manufacturing challenges.

Figure 3 shows that the major challenge found in Zimbabwean industry is old equipment. Some of the equipment found in Zimbabwe is as old as fifty years. The challenges which come from old equipment are frequent breakdowns leading to plant non-availability, high cost of maintenance, speed losses, poor quality products, high energy consumption and high environmental pollution levels. The overall effect of old equipment is high manufacturing cost, which makes the product less competitive in a global environment.

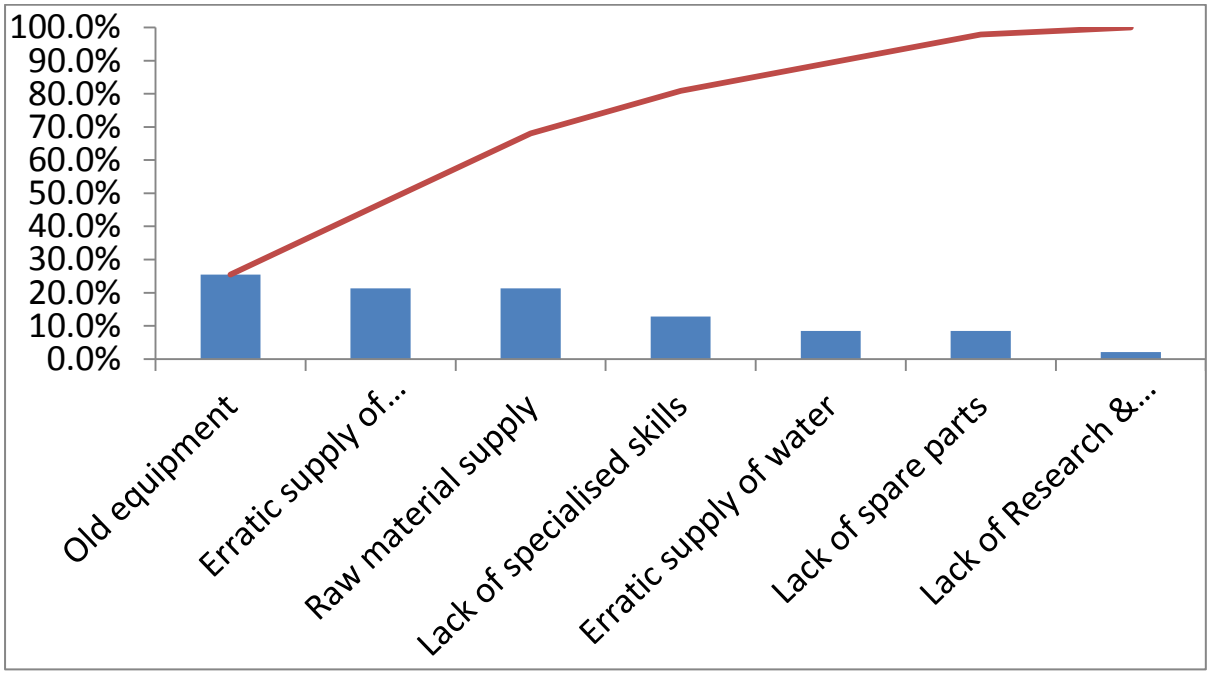


Figure 4: Pareto chart for manufacturing challenges

Figure 4 shows that old equipment and energy supply are major challenges facing the country. Manufacturing industry is powered by energy. Electricity supply is very erratic in Zimbabwe due to load shedding. Companies are cut off in the middle of production or they go for hours without power. The effect of power shortage is failure by companies to meet production schedules and customer delivery times. There is also loss of raw material, e.g. in furnaces for melting metals, glass and plastic products.

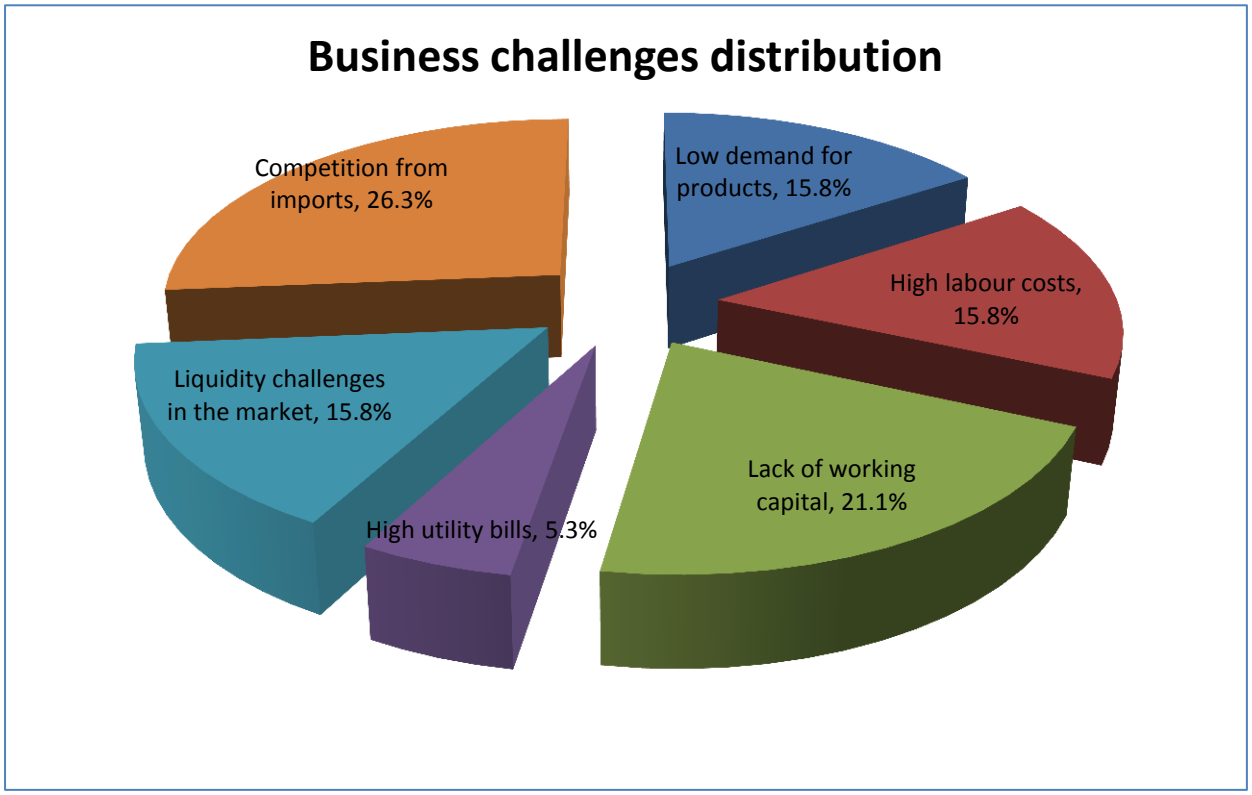
Companies require water for ablutions, various cleaning processes and for steam generation. There have been challenges facing councils to provide adequate water due to dwindling levels of water in the dams and also pumping challenges.

Many companies have witnessed erratic supply of raw materials. There are problems with management of the supply chain; companies are not getting raw materials in time, e.g. the supply of coal to companies is erratic. For those in the food industry, farmers are not supplying raw materials in a reliable and continuous way, for example the supply of cotton and wheat seed to processors. There are also problems with raw material which is imported as it takes time to come into the country.

Research and development (R&D) is a tool that ought to be used by companies to identify areas that require attention in the organization. It can also be used as a cost reduction tool, market research, innovation and quality improvement programs. Most Zimbabwean companies are taking R&D as an unnecessary expense. This has in part contributed to the decline of the manufacturing industry in the country.

Respondents put forward lack of specialized skills as a challenge. When new equipment comes, technicians might lack the know how to operate the machines properly and to maintain them well. Other challenges come when the recruitment process has not taken the required skilled person. Other companies were affected by the brain drain which happened from 2000 to date.

Figure 5: Pie chart for business challenges



Lack of spare parts is one challenge which most companies are facing. Zimbabwean industry relies heavily on imported equipment. Some of the equipment being used is no longer being manufactured in the countries of origin. Some of the spare parts are no longer being manufactured.

Figure 5 and figure 6 show that most companies are facing competition from imports, especially from China and South Africa. Imports in the form of food and clothes are sold at a cheaper price than locally produced products. The clothing and textile industry were hard hit leading to the closure of many companies. Manufacturing companies are facing the effect of globalisation. The challenge is a wakeup call for Zimbabwean companies to embrace world class manufacturing techniques.

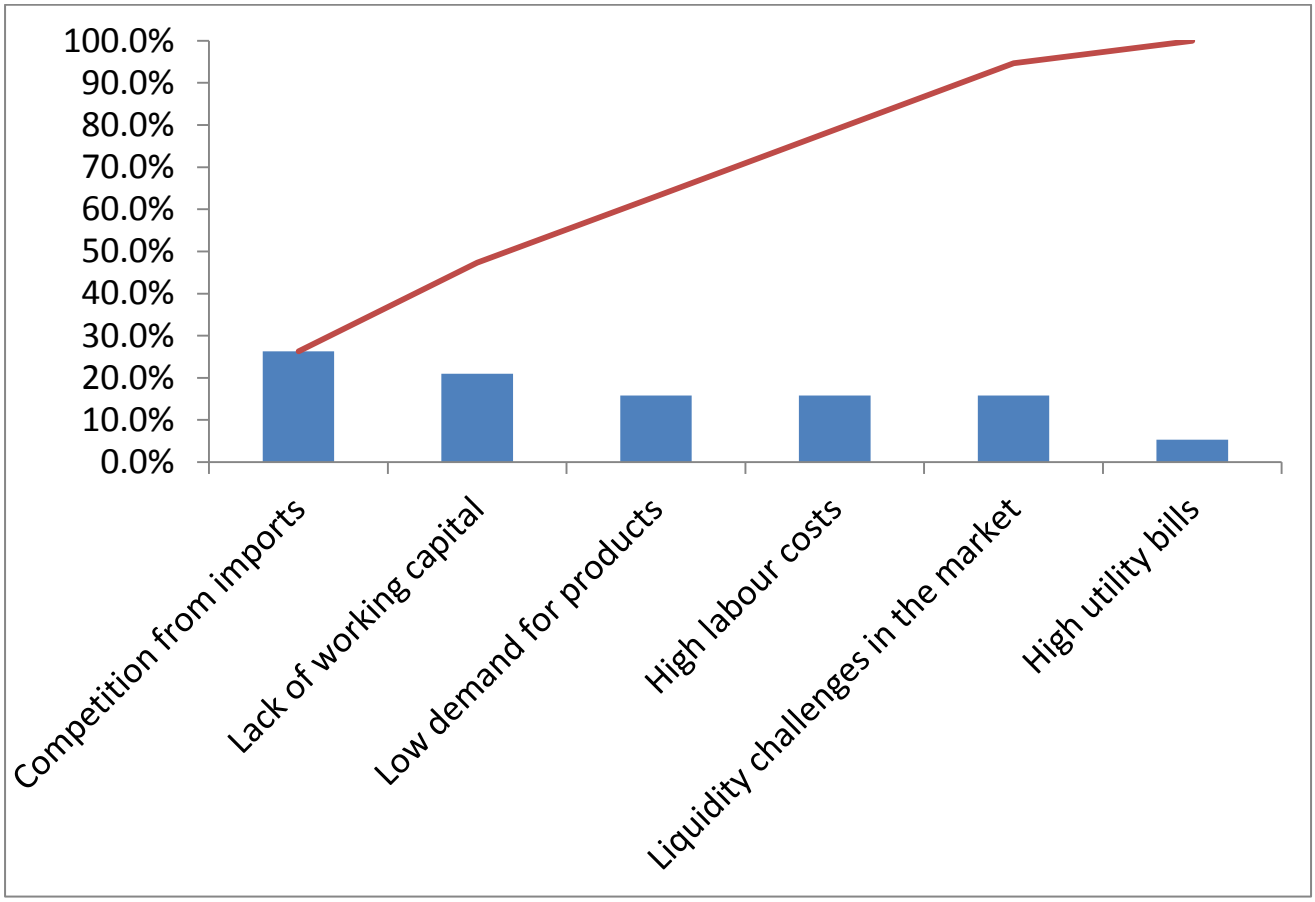


Figure 6: Pareto chart for business challenges

Since the dollarization which started 2009, companies have been failing to raise capital for equipment, spare parts and operations. Some companies are even failing to meet their wage bill. Banks are failing to raise the required cash and in the event where they manage to finance, the lending is short-term and interest rates are high.

The country is facing high unemployment; there is therefore a low demand for products. Consumers are buying products which are critical to them, leaving out luxury foods such as ice cream, yoghurt, etc. In the clothing industry, people are buying cheap imports.

The respondents also cited utility bills as one of the challenges. The electricity, water and phone calls are too expensive in Zimbabwe. For water bills, councils use estimates, so it becomes difficult for companies to practise water management. Electricity bills used to be estimated, but the introduction of pre-paid meters is

helping companies to manage their electricity bills. Subsequently, it will be important to have prepaid water meters.

3.2 Challenges faced by workers as WCM was implemented at a beverage manufacturing company in Zimbabwe.

In this section workers were asked to indicate any three challenges they faced as WCM was being implemented. Since the question was open-ended, respondents answered in various ways and the responses were put into nine emerging themes.

The analysis was done using a pie chart and a Pareto chart as shown in Figures 7 and 8.

In figure 7 it is shown that inadequate training was the major challenge, accounting for 24.2% of the challenges, followed by inadequate remuneration, accounting for 22.22 %; job insecurity and lack of incentives were tied at 11 % each. Shortage of manpower and lack of communication were tied at 8.9% each, increased workload, lack of motivation and non-involvement of workers are tied at 4.4% respectively.

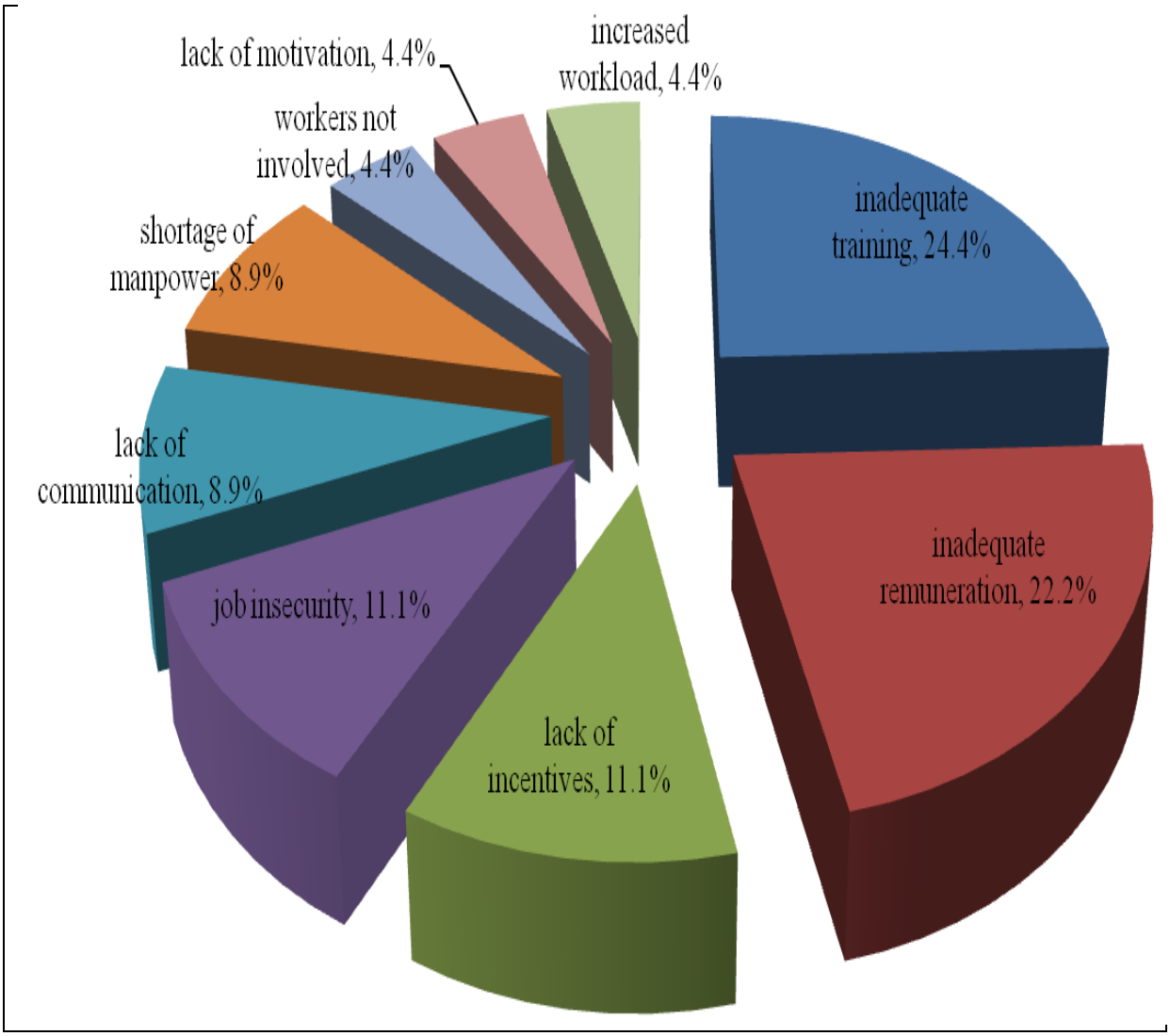


Figure 7: Challenges faced by workers during implementation of WCM.

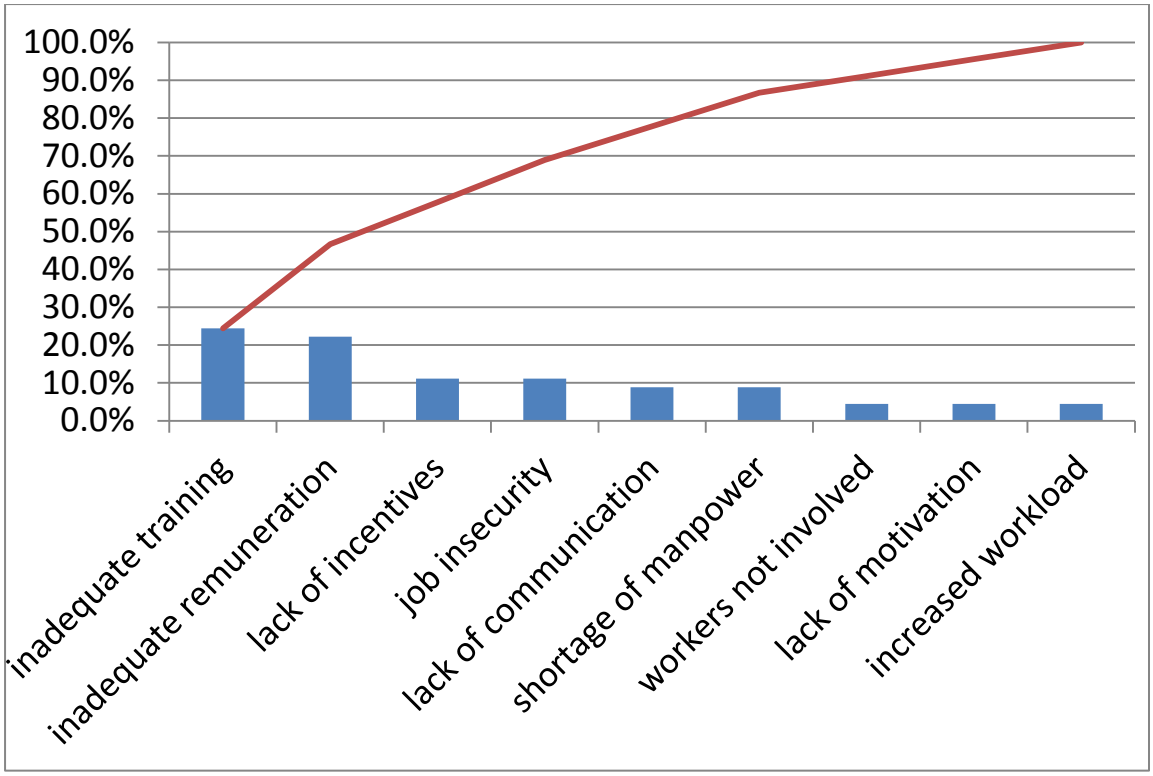


Figure 8: Pareto chart on challenges faced by workers.

The Pareto chart *Figure 8* shows that inadequate training and inadequate remuneration are the challenges which require attention first from the organisation.

4. Conclusions and Recommendations.

The country is facing a myriad of problems. It is recommended that Government and private sector come up with a strategy to ensure the availability of cheap and reliable source of energy. Industry is also encouraged to retool their machines so that they are able to produce competitive products. Companies need to invest in new equipment and technology to become competitive in product quality and price. This study has shown that most equipment which is being used in Zimbabwean industry is obsolete. It becomes expensive to maintain. Most of the machines are too old and have high energy consumption levels.

The introduction of dollarization has seen the pegging of salaries to unrealistic levels. The cost of labour in Zimbabwe is very high. The high cost is also attributed to bad business models which give high perks to company executives and managers which do not tally with the funds generated by the business. The high labour cost experienced by companies is because their operations are labour intensive. Companies are using older machines which need to be manned by many people. High labour costs translate into higher manufacturing costs. The price of the product coming out of such plant is expensive, hence less competitive. The respondents pointed to the cash liquidity problems as one of the challenges. The generation of income is very low. This reduces their buying power for goods and services.

At company X were the company is implementing world class manufacturing techniques workers complain of inadequate training, inadequate remuneration, lack of incentives, job insecurity, lack of motivation and increased work load. The problems experienced by workers can be reduced when total quality management is implemented at the company. Employers

must equip their workers with technical skills that match their duties.

The machines which Zimbabwean companies are using are mainly imported from outside the country; it is needed to match the operational skills and maintenance skills of the worker to technological dictates of the machines. Government should give priority to the development of the energy sector so that companies receive cheap and reliable energy to power industry. The current load shedding makes manufacturing companies non-competitive in terms of delivering products on time. Customers move to companies whose delivery schedules are reliable.

The development of the manufacturing sector cannot be taken in isolation, there is need to develop the entire infrastructure which supports the supply chain such as roads, rail, airports, dams and telecommunication systems. This will give the country a competitive edge.

Control measures should be put in place on the pricing of utilities which are too high for the manufacturing companies. These utilities include water, electricity and communication. The research has shown that most manufacturing companies are being weighed down by high utility bills and in some cases the bills were arbitrarily charged, making it expensive for organisations to run meaningful businesses.

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