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EXPLORATION OF PRODUCTION METHODS BEING USED BY CLOTHING MANUFACTURING COMPANIES IN ZIMBABWE TOWARDS A COMPETITIVE STRATEGY

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Abstract

Purpose: The purpose of the study is to analyse production methods used by clothing manufacturers in order to improve competitiveness of clothing products on the market.

Methodology: The study adopted a qualitative research approach and utilised a descriptive case study design. The population of the study comprised of clothing manufacturing companies in which company managers, supervisors and designers were the study participants. Data was gathered using telephonic interviews. Thematic analysis was used to get meaning out of the collected data.

Findings*:* The findings were presented in narrative form. The findings reflected that clothing manufacturing industries used batch production hence they did not meet the demands of the market. They also used progressive bundle system. It was suggested that the manufacturing companies should use work study as strategy to enhance productivity levels, meeting lead times, reducing costs as well as producing competitive clothing products among other recommendations.

Unique contributions to theory and practice: The Fit manufacturing framework by Pham and Thomas (2012) was used to explore the production methods being used by clothing manufacturing companies in Zimbabwe. Themes that emerged from the data analysis helped the researcher gain a better understanding of the production processes used. The clothing manufacturing industry is lagging behind with regards to advanced machinery, skilled manpower and good quality fabrics. If these areas are improved it may help improve productivity and competitiveness of products, enhance growth of clothing industry and boost the economy at large.

Keywords: *Clothing, Production methods, Competitiveness, Market.*

INTRODUCTION

Asian firms are organized functionally. They have cutting assembly, quality control, finishing and packaging planned in weekly cycles. Lots of work in progress is passed from one assembly area to the other in the production cycle (Morris & Staritz, 2017). China is the largest producer in the world and its success is due to the use of work study. China has achieved great rewards and has set standards to the world, through work study (Chisosa & Chipambwa, 2018). China, India, Bangladesh, turkey and Cambodia are implementing lean tools such as 5S management, VSM (Value Stream Mapping) as noted by Cao and Ji (2021). These lean tools reduced work in progress inventory, increased production and efficiency of the production lines.

India, Malaysia, Brazil, Thailand. Sri Lanka, Kuwait, Indonesia and turkey are examples of developing countries that have also adopted lean manufacturing to improve operations (Maware & Adetunji, 2019). Maware and Adetunji (2019) also noted that in southern Africa, countries like Botswana, Namibia, South Africa and Zambia are still researching on the effect of lean manufacturing on operational performance.

In Africa, Lesotho and Swaziland are locked into a particular set of low value adding assembly processes. This is due to lack of appropriate operator skills, technical skills management and professional skills. The Taiwanese firms brought to Lesotho and Swaziland relatively new production processes but there have been very limited improvement due to technology used, capital investments, efficiency enhancing production processes and skill training (Staritz, Gereffi & Cattaneo, 2011). On the other hand, South Africa firms are engaged in different production dynamics, generally smaller and shorter runs (Morris & Staritz, 2017). Staritz et al. (2011) pointed out that Cape Town firms adopted world class manufacturing processes. It is not clear as to which production approaches are used by clothing manufacturing industries in Zimbabwe response to such developments in the countries discussed above and considering the challenges being experienced by the industry. As such manufacturing industry needs to bench mark its production approaches with leading manufactures on the market in order to produce competitive products.

This study therefore, examines clothing production methods used by the clothing manufacturing companies in Zimbabwe in order to suggest strategies that would enhance competitive clothing production that may benefit the Zimbabwe clothing manufacturers. The Clothing manufacturing industry is the key sector within the fashion supply chain since it is very important in the economic development of any country (Sedex, 2021). It provides jobs, income and foreign currency giving a country an opportunity for a sustainable economic development. Due to economic hardships, many companies in Zimbabwe have closed down and some have reduced production capacity resulting in a low domestic share (Chingono, 2016).The study intends to come up with improved production strategies that can be implemented by the clothing manufacturing companies for production of competitive products.

It is difficult for the clothing manufacturing companies to survive in an economy that is facing a down turn. This has motivated the researchers to carry out the study in order to identify the manufacturing competitive strategies manufactures can utilise to stay competitive on the market. The industry requires investment in new technology and strategies that will enable it to be competitive (Mohan, 2015). With the fast changing product production approaches worldwide, business leaders are expected to monitor changes on the production approaches and

work towards aligning their strategies to the realities of the context in which most organisations operate in this new millennium.

Studies on production of competitive products have been carried out around the world. Some of these studies are, "Asian firms and the restructuring of global value chains." A study conducted by Azmeh & Nadvi (2014). They state that, the garment industry is highly competitive, marked by pressures for higher quality, greater choice, and more fashion content and reduced costs. This has spurred moves to what is often referred to as fast fashion, high quality fashion intensive but yet low priced garments. Fast fashion is the need for cost efficiencies (Azmeh & Nadvi, 2014). It has led to the widespread adoption of Just- in- time manufacturing practices, lowering inventories, reducing manufacturing waste and reducing time to market with small batch production in the garment sector (Banton, 2019).

Nimlaor, Trimestoontorn and Fongsuwan (2015) in the study "ASEAN Economic Community (AEC) Garment Industry Competitiveness: A structural equation model of Thailand's role", highlighted that the fashion industry has significantly evolved in over the past decades. The results pointed out that to maintain competitiveness, larger industry members are expanding their operations by relocating their production to lower wage members that Thai garment industries have already ceased trading with, for example countries of Combadia and Vietnam. The changing dynamics of the industry has forced retailers to desire low cost and flexibility in design, quality and speed to the market which are the key strategies to maintaining a profitable position in the increasingly demanding and competitive market. The study states that Thailand's garment institutions need to embrace research and development thereby raising the international image and competitiveness of its apparel products.

In Zimbabwe there are no much researches that focus on production competitiveness and how the clothing manufacturers can expand their operations. There is need to carry out an analysis on the operations of the clothing manufacturers to see where overall costs are incurred and how they can be reduced (Chisosa & Chipambwa, 2018). Therefore, there was a need to conduct this study to find an improved framework that can be implemented by clothing companies in Zimbabwe, so that they can be effective and efficient in production and expand production competitiveness. That could help reduce production costs and increase the industry's ability to gain a competitive edge.

Goriwondo, Mhlanga and Mutsambwa (2013) in their study "Agility for sustainability in Zimbabwe: A case study for manufacturing companies in Bulawayo" found out that competitive pressure on manufacturing companies is presented by customer demand which transforms from being general to individualistic, demanding in specific terms and more inclined to choose to be treated as an individual entity defined by his/her own preferences. The study assumes that meeting the dynamics and provision of a good quality product at an acceptable cost, with high delivery speed as well as manufacturing the product in the shortest time frame possible will result in the manufacturer having a competitive advantage over his/her competitors. Therefore, there was need to conduct this study to establish competitive production strategies that can be utilised to improve production in order to meet customers' expectations.

The economic hardships have led the Clothing manufacturing companies to struggle for survival under tough operating environment (Mangudhla, 2014). This has led the researchers wanting to carry out a research that would help on building competitive strategic production

techniques. Such techniques may help in improvement of production approaches which may yield competitive products. The production of competitive products helps the companies to be effective and promote competitiveness on the market. The study is based on Fit manufacturing framework by Pham and Thomas (2012) and is discussed below.

Fit manufacturing framework

Pham and Thomas (2012), proposed a Fit Manufacturing framework (F.M.F), the adoption that can help manufacturing companies to become economically sustainable and operate efficiently in a global market. The F.M.F is an improved manufacturing strategy that creates economically sustainable organizations. The framework builds upon the principles of existing manufacturing paradigms, along with innovative management concepts, to set up the conditions necessary for sustainability. Fit is a competitive manufacturing model. It combines activities like manufacturing, marketing and product innovation strategies that can lead to economic sustainability. It is recognized as a strategy that help organizations to handle market place complexities, consumer expectation (in terms of product and price), adaptation of production capacities to meet new product design challenges, waste elimination in processes, market fluctuations and supply chain management (Pham & Thomas, 2012).

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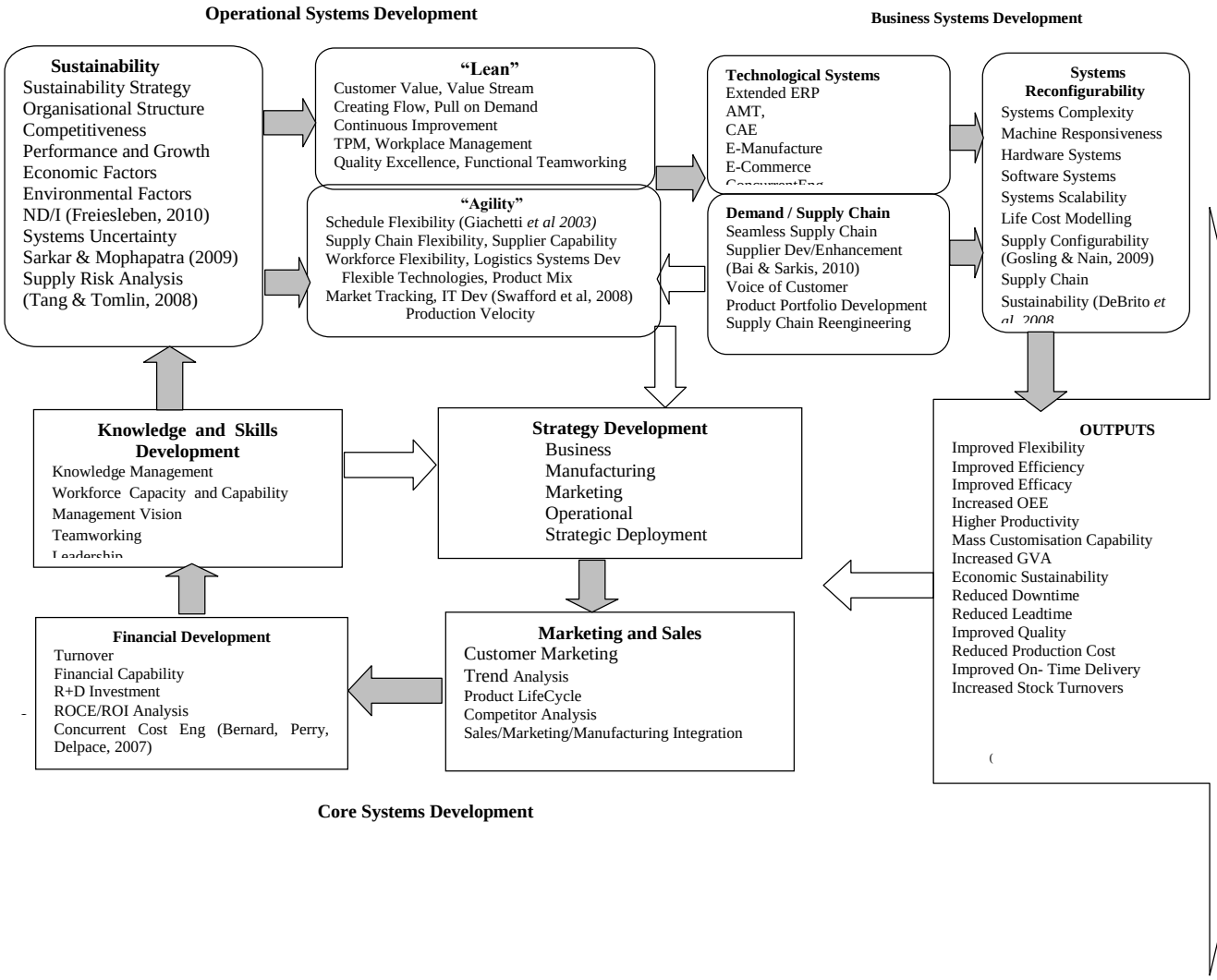

Figure 1.1: Fit manufacturing framework adopted from Pham and Thomas 2012

This study benefits from the Fit manufacturing framework through its strategies that allow the companies to define and measure failure of production processes with less effort. The framework also helps manufacturing companies to analyse these failures and allow the companies to decrease production lead times and increase product output with fewer expenditures. Fit helps organizations to remain agile and sustainable (Pham & Thomas, 2012). It is achieved through a strategic approach that emphasizes on motivated and skilled workforce, the use of advanced computer technologies and flexible organizational structure. The F.M.F links very well to the study because it works on helping manufacturers to be economically sustainable and be competitive globally. However, F.M.F. may not exclusively match the clothing production environment in Zimbabwe. Therefore, the main aim of this study is to help the Zimbabwe clothing manufacturers to competitively operate and match the economic situation being experienced by the country.

Research question

1. What production methods are used by the Clothing manufacturing companies in Harare, Zimbabwe?

Statement of the problem

Zimbabwe's clothing manufacturing industry has gone under pressure due to the current economic hardships, increase of cheap new and second or third hand clothing imports from countries like China, Mozambique and Dubai (Chingono, 2016, Mhlanga, 2020). The industry has also suffered challenges that include high input costs, high service costs and power shortages (Mangudhla, 2014). The clothing manufacturing companies are failing to sustain the local as well as the international market share due to the production costs that have gone high (Mpofu, 2013). This has led to a continuous collapse of the sector, hence the need for revival. Therefore the study sought to explore production strategies which may lead to production of competitive products to meet market demand.

LITERATURE REVIEW

The Zimbabwe manufacturing industry needs to find how work can be made simple and analyse techniques that can be used to improve production, reduce production costs and produce expected quality goods that can compete on the local and global market and survive in today's competitive environment (Chisosa & Chipambwa, 2018). Manufacturing systems help manufacturing sectors to enhance business performance (Esmaeel, Zakuan, Jamal & Taherdoost, 2017). Chisosa and Chipambwa (2018) note that there are some production methods that are used in the clothing manufacturing industries and these are work study, lean production and just-in-time methods of production. However, the implementation of the production methods varies from one manufacturing industry to the other. The next section presents literature on work study

Work study

Work study is defined by Singh (2016) as the systematic examination of the existing methods of carrying out activities so as to improve the use of resources and to set up standards of performance for the activities being carried out. It is used in the examination of human work in all contexts, leading systematically to the investigation of factors that affect efficiency and the economy of the situation being viewed in order to effect improvement (Singh and Yadav, 2016). It is therefore, a technique of management involving the analytical study of a job and operation. Work study is the investigation by means of consistent system of the work done in an organization in order to attain the best utilization of resources that is materials, machines, men and money (Minakshi, 2017).This means that when work study is utilized in clothing production, resources may be used to yield maximum benefits.

Shah, Deshpande and Ramchandra (2015) noted that stop watch time study, work sampling method and predetermined time standards (PTS) are techniques used in time study which is a component of work study. Time study reduces in process time, labor costs as well as production costs. Less production time and high efficiency is what is required for an effective production, which might not be the case among clothing manufacturing companies in Zimbabwe. Increased employees' efficiency and enhanced production capacity are the results of measuring inevitable times in production and taking necessary precautions against them (Singh & Yadav, 2016). Akansel, Yagmahan and Emel (2017), in their study of determining standard times for process improvement, revealed that workloads cannot be balanced among workers if there is no reliable database for standard times. This means there should be time limits set up for a particular line to be completed. Determination of standard times provides important input for process improvement and activities within a manufacturing company. It provides helpful insights for improvement reducing quality problems and unexpected stoppages in the production line. Therefore, it is important to determine the average time a person takes to complete a task in the clothing industry (Chisosa & Chipambwa, 2018).

Motion study is also another component of work study which is a designed way to determine the best way to complete a job that is repetitive (Chisosa and Chipambwa, 2018). It improves production method since it measures distance one moves when carrying out a task and how much time is needed to get a task done (Chisosa & Chipambwa, 2018). Garments are made by different machine operators as such time variations in the clothing manufacturing industry are important. Time and motion studies are incorporated so that rational and reasonable results are achieved (Chisosa & Chipambwa, 2018). Therefore, the need to conduct this study to establish the production systems employed by clothing manufacturing companies in Zimbabwe and make suggestions for improvements.

Mpofu (2013) in his study, points out that due to lack of work study knowledge, most manufacturing companies are operating below capacity and some manufacturers are closing down. Regardless of the benefits of work study, it has rarely been used by manufacturers trying to address competition in the increasingly globalized economy (Chisosa & Chipambwa, 2018). In their study, Chisosa and Chipambwa (2018) found out that not everyone in the clothing manufacturing sector in Zimbabwe knows about work study and how it can be implemented. The following section looks at lean production.

Lean production

In order for a company to achieve an increase in competitiveness, a company can opt for different strategies that are innovative (Magana, Olyguin-Tiznado, Garcia-Alcaraz, Camago-Wilson, Lopez-Barreras and Perez-Lopez, 2018). Manufacturers are facing intensive global competition and this has made them become more aware of the significance of modern management philosophy that provides them with a competitive advantage. Continuous improvement on both quality and productivity is the key to be competitive on the domestic as well as on the global market (Shalin, Geetharani& Ramakrishnan. 2019).

One of these strategies is lean manufacturing and the tools that makes it up. Shalin et. al., (2019) define lean manufacturing as a systematic approach for achieving the shortest possible cycle time by eliminating waste through continuous improvement. It involves production of what is needed, when it is needed and in the quantities it is needed by reducing waste, inventory, transport costs, idle time as well as bottlenecks in the manufacturing process (Daal, 2018).

Lean manufacturing is a philosophy that has been used by companies to improve competitiveness and organizational performance (Delago, Macdado & de Brito, 2016). It emerges as a powerful approach used by developing countries like Brazil, Indonesia and Thailand by apparel manufacturers to improve operations and reduce manufacturing costs so that their products remain highly competitive (Daal, 2018). Lean manufacturing uses less of everything as compared to the traditional manufacturing methods (Chiromo, Nel & Sebele, 2015). This means lean manufacturing uses less human effort in the factory, manufacturing space, investment in tools and engineering hours to produce a variety of new products with fewer defects.

Lean production reduces operational costs by eliminating waste and identifies its causes, empowering people with greater understanding pertaining utilization of time and resources such as raw materials at the same time increasing productivity (Chisosa & Chipambwa, 2018), as well as finding a better way to deliver value to customers (Shalini et al., 2019). There is a relationship between lean manufacturing and waste reduction in the production activities of a company and the links are rapidly growing. Magana et. al., (2018) notes that lean manufacturing is achieved based on tools that help with identification and elimination of waste. Daal (2018) also asserts that lean production has five fundamental principles that revolve around it. These are adding value to the produced products and services offered, enhancing the value stream from end to end, improving work flow, reducing overall time to the market and achieving perfection throughout the whole process.

Just-In-Time production

University of Cambridge (2016) refers Just-in-Time (J.I.T) production to the production of goods to meet customer demand in time, quality and quantity. Banton (2019) indicates that JIT implies producing the right product in the right quantity at the right time. JIT is making what the market wants, when it wants them, by using minimum facilities, equipment, materials and human resources (International Labour Organization, 2017). JIT was created to meet demand, not to create surplus or in advance of need, reducing manufacturing waste and inventory costs. This is because raw materials are delivered to the production line just in time to be used in the right quantities and just to the production processes that need them (Banton, 2019). Therefore, JIT is employed to enhance efficiency and reduce waste by receiving goods only as they are

needed for the production process. As such, producer holds sufficient inventories to have enough products to absorb maximum market demand. Thus, JIT focuses more on quantity. It cuts inventory costs because manufacturer does not have to pay for storage costs since there are no inventories, minimizing warehouse needs (Banton, 2019, Jadhav, Mautha and Rane, 2015). It is therefore, a philosophy of supply chain excellence due to its ability to reduce lead times and decrease inventory within the manufacturing company.

Production time is short meaning manufacturers can quickly move from one product to the other to achieve on time delivery and minimizes unnecessary costs (Jadhav et. al., 2015). JIT however have several barriers to its implementation as identified by Jadhav et. al., (2015) that need to be recognized, analyzed and discussed by the manufacturing companies. Barriers of JIT implementation includes lack of training and education facilities, lack of resources to invest or financial constraints, employee resistance and poor sales forecasting, to name a few. It is therefore important for the organization to focus on critical barriers for successful implementation of JIT production to achieve operational excellence.

Chisosa and Chipambwa (2018) reiterated that since the global clothing industry is faced by the era of fast fashion, implementation of JIT can be the best solution that a manufacturing company takes in its efforts to remain competitive since JIT enables the internal processes of a company to adapt to the changes that are sudden in the demand patterns. However, applying JIT in the Zimbabwe clothing industries can be problematic because the country is facing other micro-economic problems that can negatively affect JIT. High cost of transport and fuel shortages hinder delivery of materials in time. Chuma, Chipambwa and Komichi (2018) assert that the lack of advanced technology makes it difficult for the clothing manufacturers to meet lead times required by buyers. The importation of fabrics from Asia to Zimbabwe takes time resulting in longer lead times thus the need to manage lead times so that products are delivered on time. Success of JIT relies on steady production, high quality workmanship, no breakdowns of machines and reliable suppliers (Banton, 2019). The other production method to be discussed is Kan ban production.

Kan ban production

Anderson and Carmichael (2016) explains Kan ban production as a method of organizing and managing professional service work. It uses lean concepts such as limiting work in progress to improve results. It also plays an important role in JIT as it is the tool that is used to communicate the need for each work station (Magana et al., 2018) The method avoids overcapacity of work in process (Banton, 2019). It is a visual information system established to maintain the discipline of JIT system on the shop floor (International Labour Organization, 2017). Anderson and Carmichael (2016) also notes that Kan ban is a means of balancing the demand for work to be done with the available capacity to start new work and an effective tool to support the operations of a production system (Dimitrescu, Babis, Niculae, Chivu & Dascalu, 2019).

Kan ban is a pull system that contains information on the production characteristics of a product and the transport route within the organization (Magana et. al., 2018). It is used to monitor the effective pull process. Pull process is when each work station pulls the output from the preceding stations it is needed (International Labour Organization, 2017). It was developed by Taichi Ohno who is considered to be the father of Kan ban to improve manufacturing efficiency. Ohno as stated by Dimitrescu et al. (2019) asserts that Kan ban must comply with

some rules that include stopping products with defects before they reach further production processes, give the exact production of the quantity withdrawn from the subsequent process and understand the process so as to be effective. Thus improving product competitiveness when errors are noted during production and corrected.

Kan ban takes its name from the cards that track down production at every point of production within a factory. Iannuzzi (2019) mentioned that Kan ban is a method that is card based used to convey instructions that are supported by the reasoning that nothing will be produced until it is needed to avoid inventory pileup. It reduces waste and improves the production system efficiency by the use of cards that are employed to authorize the production, release material into each production stage and also plan the efficient and effective flow (Triana & Beatrix, 2019). As stated by Dai and Tayur (2017), Kan ban makes a company gain profitability because it insists on customer demand drive production. The pull approach minimizes human made interruptions and delays and it enables a smooth production process in which material flow through the entire sequence smoothly follow.

Triana and Beatrix (2019) highlights that problem areas are highlighted by measuring lead time and cycle time of full process and process steps. Operators know steps to take as soon as trouble arises and they also know where to report when problems occur. Kan ban method gives better visualization of any problem that might occur in the production cycle and teams can communicate more efficiently due to the highly visual nature of the system (Ramachandran, 2019). Kan ban gives the organization the ability to change in demand and production more quickly, and it also design work sites according to human dignity, mutual support and trust, allowing workers to reach their maximum potential (International Labour Organization, 2017).

It is also noted that the key to having an effective Kan ban system has to begin by understanding the needs of the organizational environment and then designing and implementing the appropriate Kan ban system to meet the needs of the company.

Progressive bundle system

Progressive bundle system is a traditional method of garment production that has been used for decades and still today (Sobuj, 2018). Dimple (2019) notes that 80% of clothing manufacturers use the progressive bundle system. The PBS includes allowances for worker fatigue and rest. This targeted time is achieved by the application of time study, where time and rates of working a specified job is carried out under specified conditions as also noted by Shah et al. (2015). This production method enable workers to refresh and proceed with their work whole heartedly. Less production time and high efficiency is what is needed in the clothing manufacturing companies (Esmaeel et. al., 2017). Bundles are assembled and sorted in the cutting room according to style, colour and sizes written on a card attached to it (Sobuj, 2018).The bundles are then send to the production lines where they are moved from one operator to the other where operation is done, retie bundle and send it to the next operation (Sobuj, 2018).

According to Arora (2021), this production method has some advantages and these are that it allows labour of all levels (unskilled, semiskilled and skilled), quality is good due to the quality checking done on each and every operation and there is less mixing up of garment parts due to the bundling system. Effective production control system and quality control system is achieved through this method (Dimple, 2019). However, this method also comes with

challenges when implementing it. It is difficult to run different styles at once with this production method because it's not flexible. P.B.S is time consuming, requires more labour and proper planning for each style and batch (Sobuj, 2018).

Small batch system

Knowledgebase Team (2017) defines batch production as the manufacturing of a product in small or large batches or lots at intervals by a series of operations. Work on any product is divided into few operations and each operation is completed for the whole lot before proceeding to the next operation. Identical or similar items are produced and machines are arranged to the sequence of the operations (Gemma, 2019). It is recommended for small quantities for it reduces waste, decreases lead times in production (Gemma, 2019) and work in progress is reduced therefore inventory is also reduced (Dimple, 2019).

In small batch production, general purpose equipment and methods are used to produce small quantities of output with specifications that vary greatly from one batch to the other (Tanenbaum, 2019). This production method is flexible, for example, changes in material or detail can be done in between batches since different batches are made and, it is good for quality control because of small batches, a mistake in the process can be fixed without much loss compared to mass production (Tanenbaum, 2019). Materials can be bought in bulk so that they are cheap and thus inventory cost is high (Knowledgebase Team, 2017). Nevertheless, small batch production has downtime between batches in which there is more idle time between operations (Gemma, 2019). It requires more planning, scheduling and control over the process (Tanenbaum, 2019).The methodology of this study is discussed below.

Chisosa and Chipambwa (2018) recommended clothing manufacturing industry upgrade through training programs of work study for the growth of the industry. The skill development strategies should then be used to draw investors, create conducive environment for production thus, promoting competitiveness of clothing products. Maware and Adetunji (2019) in their study demonstrated through a model that lean manufacturing tools increased operational performance, which is in, speed, flexibility as well as dependability. It also showed that quality is maintained at all stages, thus lean manufacturing can be used successfully in unstable economic environments like Zimbabwe. Chuma, Chipambwa and Komichi (2018) in their study advised the clothing manufacturing companies that needed practical solutions to move to brand manufacturing of fast fashion. Clothing manufacturing companies were encouraged to invest in technologies so as to improve quality and performance of the clothing products. This could result in local produce to be more competitive. This study revealed the production processes used by the clothing manufacturing companies in Zimbabwe and the problems they experience that negatively affect production. The improvement of the production processes and solving the problems through competitive strategies might result in improved productivity.

RESEARCH METHODOLOGY

This study adopted a constructive paradigm in which the researchers were trying to examine production methods used in the clothing manufacturing companies for the production of competitive clothing products.The study utilized a qualitative research approach and the explanatory case study design.The approach enabled the researchers to understand the clothing manufacturing personnel from their own frames of reference and experienced reality as they experienced it in their day- to- day work in the manufacturing companies. Purposive sampling

was utilised to select the study participants, who consisted of operations managers, production managers, marketing managers, line supervisors, merchandisers and designers. The target population was limited to five Clothing manufacturing companies in Harare, Zimbabwe regardless of their line of production, size and the acceptance to be involved in the study randomly.The participants were five production managers, five marketing managers, five operation managers, five line supervisors, five designers and five merchandisers of each company selected to give a total of thirty participants. Due to the Corona virus (Covid-19) pandemic and restrictions, the researchers were unable to travel and be at the manufacturing companies to collect data. Social distancing was observed and the researchers applied the unstructured telephone interviews that lasted for at least forty- five minutes with each participant. Confidentiality was practised, where information was considered secret, sudo names were used such as D1 for designer 1 to 5, PM1 for production manager 1 to 5, OM1 for operations manager 1 to 5, LS1 for line supervisor 1 to 5, MKM1 for marketing manager 1 to 5 and MC1 for merchandiser 1 to 5.The data collected in this study is presented in the form of narrations. Thematic analysis was utilized in this study. Data trustworthiness through credibility, transferability, dependability and confirmability were considered. Ethical considerations were followed in conducting this study such as institutional approval, informed consent, active consent, deception, coercion and freedom to decline participation and confidentiality, anonymity, and the concept of privacy. The section below presents the findings of the study.

FINDINGS

Demographic characteristics of participants.

Gender

A total of twenty –one out of thirty intended interviews were conducted with five companies' management personnel in Harare, Zimbabwe. Out of twenty -one participants, nine of them were males and twelve were females. This implies that the females were the majority gender that occupied most management positions since the study participants were drawn from company managers, designers and line supervisors. This agreed with a survey by UNWOMEN (2017) that large companies in production were headed by women and most women were primarily in textile and ginning and clothing and footwear sectors.

Age

Out of twenty-one participants there was no one under twenty-nine years, there were seven participants aged between thirty to thirty-nine years where the majority were ten participants between the age ranges of forty to forty-nine years. Four participants were aged fifty years and above which was the least number. Since most of the management posts in the sampled clothing manufacturing companies were filled with young personnel thirty to forty- nine years, such age group is considered energetic to accomplish high demanding managerial duties for smooth running of production (Dewitt, 2016).

Academic qualifications of participants

The findings reflect that out of the twenty –one participants, seven had reached grade seven. A non-significant number had reached form two while the majority of the participants had Ordinary level qualifications.

Professional qualifications

The findings revealed that out of twenty- one participants, ten did not possess any professional qualification, two had Certificates, Seven had Diploma and two had Degrees in their areas of specialisation related to clothing manufacturing. This however, indicated that almost half of the management posts in the sampled clothing manufacturing companies were filled up by employees who did not possess any professional qualification in their areas of specialisation but had vast experience in working on the management positions they occupied. Employing unskilled workers is an inexpensive way for the clothing manufacturing companies to accomplish their production without raising consumer costs (Vitez, 2017). Unskilled workers may earn low wages, cutting labour costs thus contributing to competitive pricing of goods produced.

Production systems used in clothing manufacturing companies

The findings revealed that the production systems that were being used by the sampled clothing manufacturing companies in Harare were progressive bundle and batch production systems. These methods are discussed in the sections below.

Progressive bundle system (P.B.S)

Most line supervisors in the clothing manufacturing companies did not know the name of the production system they used but had a clear understanding of what the system was about. This was revealed by the statement by two of the line supervisors as one of them hinted that:

> *"It is mass production that is used in this company to meet demand and be time and cost effective". (***LS1).**

On the same issue another participant explained that:

> *"I don't know what the name of the production system is, but what we do is operator focuses on one operation and when done he/ she passes to the next operator"*(**LS2).**

Line supervisor 4 gave just an explanation on the system used. The participant echoed that:

> *"Our factory flow is arranged in a way that production moves in the following sequence from the cutting room to the production floor. The production floor has lines where operators are lined according to the way a particular garment is to be made" (***LS4*).**

It was then revealed that most production managers who were participants in the study knew the name of the production system they used in garment manufacturing. The production managers also gave reasons why they used the P.B.S. One participant was quoted saying:

> *"We use Progressive bundle system because it is the best possible mass production method. It has been used in this company for a long time. I joined this company when they were already using bundle system" (***PM2).**

Another participant hinted that:

> *"Progressive bundle system is being used in this company. We are used to it because it is effective in producing desired quantities and quality"* (**PM4).**

Another participant indicated that:

> *"In P.B.S, I also do work study to see how much time we take in finishing a product. This is done to increase performance and efficiency*" (**PM5).**

Another participant gave the challenges that hindered smooth running of the progressive bundle system. One Line Supervisor echoed that:

> *"Here we use progressive bundle system but it is still not effective due to continuous machine breakdowns".* (**LM4**)

Another line supervisor indicated that:

> *"The PBS is good but it is prohibited by some of us who are not skilled in operating these machines and some are continuously absenting themselves from work as a result we are not meeting customer needs timeously".***(S3).**

The above statements clearly indicates that P.B.S was one of the manufacturing system at the company used in the clothing manufacturing companies This method could have yielded the best results but it was also hindered by the malfunctioning of machinery. It means machines should be well maintained for progressive bundle system to work effectively. Another theme that emerged was that of the small batch system.

Small batch system

Line supervisors in the companies that used the batch production explained that they used the batch production due to the low production quantity levels but were struggling to meet customer demands. One line supervisors indicated that:

> *"We use batch production method since our production is small and that helps us reduce waste. Quality is also controlled at different stages of garment production".* (**LS3).**

Another interviewed line supervisor also hinted that:

> *"I think the batch system is working for us because we produce our products fast and in time to deliver to our clients before our client's complain".* (**LS1).**

The responses from the sampled production managers agreed to that of the line supervisors'. One production manager emphasised that:

> *"Products are done in small batches, for example, a maximum quantity per batch is 50 units and in some cases one or two operators can start and finish the whole garment".****(PM3).***

Another production manager commented on the use of small batch system as he explained that

> *"This Batch method is now letting us down since our clientele base has expanded, we are no longer supplying what they want in time and its embarrassing the whole company".****(PM2)***

On the same note, another production manager hinted that:

> *"We are a small company so we use small batch production system. Our production quantities are not more than 100 units".* (**PM1).**

Another Production manager also gave the reason why they used small batch production. The participant explained that:

"We adopted the small batch production system because it is fast and quality is produced". (**PM3).**

Another production manager indicated that:

"With this batch system, we are experiencing high inventory costs". **(PM1)**

The above explanations show that a few clothing manufacturing companies used the batch production and they had small quantities on their production lines. However, they are no longer meeting market demands. This means they were not able to meet the wide demand of their clients since they were producing in small quantities. The findings of this study are discussed below.

Discussion of findings

From the findings, it was noted that most of the clothing manufacturing companies under study used the Progressive Bundle system (PBS),as also noted by Dimple (2019) that most clothing manufacturers use the progressive bundle system and few clothing companies used the batch production method. The companies that used P.B.S were noted to be the big manufacturing companies and those that used the small batch were the small companies. Departments were arranged in a manner that there was a smooth flow of work in progress from the stores, cutting, sorting, production, finishing and packaging sections.

The PBS enabled allowances for worker fatigue and rest. This was achieved by the application of time study, where time and rates of working a specified job was carried out under specified conditions as also noted by Shah et. al., (2015).Though less production time and high efficiency is what is needed in the clothing manufacturing companies (Esmaeel et al., 2017) it was noted that it was not the case among the sampled clothing manufacturing companies in Harare. This was revealed by participant PM5 who stated that P.B.S had longer lead times, low flexibility in style change over, prone to product reworks and rejections. In order to improve production it was suggested that the companies make use of the Kan ban Production method. Banton (2019) explained that the method avoids overcapacity of work in processes. This means that garments will be moving fast from cutting to finishing section. Participants noted that the mass production method they were using was leading to low productivity, longer lead times, high level of product reworks and rejects that were costly to the manufacturing organisations. On this issue, the companies can employ the JUST- IN TIME (JIT) approach to production. Jadhav et. al. (2015) indicates that JIT is a fast manufacturing process that focuses to achieve on time delivery minimizing needless costs. When adopted correctly, it has the capacity to strengthen the company's competitiveness in the market place by improving product quality and efficiency of production. The companies can also make use of the work study to improve production. Chisosa and Chipambwa (2018) explained that motion study is designed to determine the superlative way to complete a work that is repetitive. Work study is a proposed way of doing work by developing and applying easier and more effective method resulting in reducing costs (Shivam, 2019).

The clothing manufacturing companies can also make use of lean manufacturing (Maware & Adetunji, 2019). Lean manufacturing aids quite well in producing good quality fashion products. Barbrera (2017) holds the view that the production team can discuss and come up with strategies to improve the value of their fashion products. When utilizing lean

manufacturing method, workers will be responsible for the quality of their fashion products hence they will work to produce the best thereby being able to satisfy their customers.

The use of PBS was hindered greatly as the companies experienced stoppages in production due to continuous machine break down, absenteeism and lack of skill on some operations which negatively affected production times and efficiency . When there was machine break down, among the companies, they did not have a mechanic within the companies so they had to call in a mechanic. The production process had to stop until the mechanic comes in to fix the machines. To fix the issue of machine break downs clothing manufacturing companies should utilize total production maintenance to achieve zero machine breakdowns (Shah et. Al., 2015).

The organisation may save money by not having a machine mechanic post since they can hire one when need arises since machines may be repaired or serviced routinely. However, the organisation may run losses and fail to meet order due dates when the machines malfunction when orders are being processed. The organisation may also have challenges in getting quick response from the mechanics in the specified time since such persons may be busy somewhere and would need to complete whatever job they are doing before taking new jobs. As such the clothing manufacturing companies are supposed to have machine maintenance personnel and timetables that needs to be followed in order to avoid idle time during product manufacturing processes like what Shah et al.(2015) explained. Therefore, the organisations may need to consider having full time machine mechanic who is responsible for emergences in machine break down to guarantee smooth flow of garment processing.

In some cases, the production managers complained that absenteeism of one production worker affected the flow of production, just because these workers were specialised in one operation. They could not perform other operations and thus delaying production and delivery times. It was noted that there was need for developing skills transfer among the clothing manufacturing companies' personnel especially on the production floor so that when one operator was not available, someone equally capable would carry out the work. Chisosa and Chipambwa (2018) indicated that there is need to develop skill transfer within the clothing manufacturing companies so that when experienced employees leave there would be someone equally capable to replace them.

This P.B.S method is also good since these clothing manufacturing companies were surviving. It was noted by the production managers in sampled clothing manufacturing companies that used P.B.S, that the cutting room personnel cut garment pieces in sizes and colours and each size and colour was bundled using ties. A ticket number was then attached to each bundle to represent the style, size, number of pieces and shade of the garments. The line supervisors seemed to disagree by complaining that the untying and tying of the bundles was time consuming during production. However, this method could be improved by the use of Kanban method, a pull system with information on production characteristics (Magana et al., 2018). Kanban could help the operators with information required to be done at every stage of production (Dimitrescu et al., 2019), using lean concepts of limiting work in progress and communicate the need for each work station to improve results (Anderson & Carmichael, 2016). Kanban could however be a challenge to implement in these sampled clothing manufacturing companies because of its demand for a variety of stochastic, expensive calculations and iterations (Golchev et al., 2015). This was because most of the sampled

clothing manufacturing personnel were not highly qualified to carry out such calculations and iterations, and also the unavailability of finances and foreign currency could be a hindrance.

The findings reflected that few companies under study used the small batch system. These were relatively small companies that produced small quantities of the clothing products. In these clothing manufacturing companies, identical items were produced for different sized production runs. It was also noted that customers were offered variety and seasonal products since small productions were flexible to different styles in a short space of time. It was revealed that changes were sometimes made between different batches of styles or colours .This showed that variety and choice was wide because the short production runs enabled them to produce different styles in a short space of time. It is recommended for small quantities since it reduces waste, decreases lead times and work in progress during production (Gemma, 2019). Inventory is also reduced, Dimple (2019) gave the advantage of batch system by acknowledging that it reduces inventory accumulation since work is done and finished in time.

However, these small batches also meant there was a lot of idle time when they switched to the next batch. More idle time resulted to longer production time, demotivation of operators and less efficiency, of which the opposite is what is required for an effective production. Making small batches was expensive because when production runs are short and different, there might be additional costs. Increased employees efficiency and enhanced production are the key results of measuring inevitable times in production and taking necessary precautions against them (Singh & Yadav, 2016).

The production managers recommended the small batch production method because they said it had proved to reduce waste and decrease lead times in production. This enabled quality to be controlled at various stages in the production process. The line supervisors indicated that quality was thoroughly checked during and after production. This revealed that waste in form of product defects, cloth defects and reworks were avoided through quality control. It was important for the clothing manufacturing companies to avoid waste at all costs because it consumes resources but did not add any value to the products as noted by Tahiduzzaman et. al. (2018). If the clothing manufacturing companies that used small batch production failed to control their quality, errors with the batch was considered wasted time and cost. Quality should be considered a dominant feature with regards to product competitiveness (Ocampo & Clark, 2015). Good quality products increases customer satisfaction resulting in high volume sales and higher profits for the clothing manufacturing companies (Tahiduzzaman et. al., 2018).

Though this system seems interesting, the sampled line supervisors and production managers in the companies that used batch method also revealed the down side of it. The most disadvantage was that they produced less for the demand on some particular styles. This reflected that clothing manufacturing companies that used batch production did not fully know their market, they lacked research and production skills. Research on production of products and market demand helps the clothing manufacturing companies to discern and meet customer needs and desires (Chuma et. al., 2018).

From the study findings, it was also noted that clothing manufacturing companies that used small batch production suffered high inventory costs because they ordered a lot of fabrics for their small productions because buying small quantities is more expensive than bulk orders. This also led to high transportation costs. To improve the situation the researchers suggested

that planning ahead could help the manufacturing companies that used batch production reduce costs. The manufacturing companies needed to plan ahead on the material to be used and the quantities needed so that they could order at once and stock in advance, this would help in the reduction of fabric and transport costs as well as better management of inventory (Banton, 2019). They also needed to plan and schedule ahead for the production floor change over times according to the availability and capacity of their machines during convenient hours. This would enable reduction of down time and setup time and not affecting output (Ocampo & Clark, 2015).The section below presents the conclusions from the study findings.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

From the findings of the study it was concluded that the main production methods used by the clothing manufacturing companies in Harare, Zimbabwe under study, were Progressive Bundle system (P.B.S) and the Small Batch Production. The progressive bundle system was used by big manufacturing companies that produced big volumes of products in their production lines. It was revealed that P.B.S had longer lead times, low flexibility in style change over, prone to product reworks and rejections. It was also found that the companies experienced stoppages in production due to machine break down, absenteeism and lack of skilled manpower. It was also found that the companies experienced stoppages on some operations which negatively affected production times and efficiency. It was suggested that the companies could make use of a combination of the following production methods to improve production and product competitiveness on the market, such as Just-In Time (JIT), Kanban Method, lean production and work study methods. It was also suggested that they can engage in skills development at the workplace to have well skilled manpower. The researchers suggested that the companies should have their machines serviced regularly by trained machine technicians to avoid stoppages during production. However, the production managers and line supervisors that used P.B.S were satisfied with this method. They said that it enabled high productivity and high quality products due to in line control.

It was also concluded that few companies under study used the small batch system. These were relatively small companies that produced small quantities of the clothing products. In these clothing manufacturing companies, identical items were produced for different sized production runs where customers were offered variety and seasonal products since small productions were flexible to different styles in a short space of time. Small batch system had proved to reduce waste and decrease lead times in production. It was however, revealed that those clothing manufacturing companies that used batch production did not fully know their market, they lacked research and production skills. Most companies that utilized batch production were not able to meet the demands of their customers.

Recommendation for Further Research

There are several opportunities for future research from this study. A similar investigation could be expanded to include all the clothing manufacturing companies in all cities and towns of Zimbabwe as this study was conducted using population in one town with fewer participants and the results cannot be generalised to the whole of Zimbabwe. Future studies could evaluate whether the proposed strategies are the best for clothing manufacturing companies in Harare,

Zimbabwe, to enable them to produce competitive products. Another study could be conducted using quantitative approach for comparison purposes.

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