Arts and Design Studies
ISSN 2224-6061 (Paper) ISSN 2225-059X (Online)
Vol.17, 2014

Appraising the Use of Computer Technology in Garment Production Firms in Accra/Tema Metropolis

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Abstract
The main objective of the study is to investigate the activities of garment production in relation to computer technology, expose garment producers to some useful computer applications and also to sensitize them to take advantage of the advancement in Computer Technology. The findings of the study revealed the plight and burden of the garment producers. Most of the garment producers had the basic equipments that are just necessary to stay in business but not sophisticated machinery that can be used to produce to meet international standards. Three major problems confronting the garment producers were (a) inability to produce on a large scale (b) inability to produce at competitive prices and (c) inability to satisfy quality standards. Garment producers found in the Accra-Tema metropolis did not have much knowledge of computer technology, but they were delighted about the information that would relieve them of their problem of speed and productivity. Although they listed some disadvantages that may be related to CAD, the advantages outweighed the disadvantages. The study makes recommendation to incorporate computer technology in the fashion curriculum to equip students with the skills ready for the world of work.
Keywords: African Growth and Opportunity Act, Computer Aided Design,

1.0 INTRODUCTION

A life without computers would seem almost unimaginable for many; it has become a part of almost every industry. The importance of computers is evident today and having the competence of computers can only enhance one's career in the right direction. This research seeks to appraise computer technology by garment production firms in the Accra-Tema metropolis. Computer is one of the wonders of modern technology, it has transformed the way people conduct business transaction and perform their daily tasks. Computers have become indispensable in today's world as millions of people use them. The link between globalization and modern practices has brought about the need of computer revolution across all industries. Computers are no longer specialized tools be used by specially trained people. Garment producers spend hours excruciating over sketches, measurements and small details that ultimately make an entire garment come together. With computer technology, this process can become streamlined and efficient, leaving the designer more time to develop and create designs. Fashion today is a global industry and most major countries have fashion industries that are booming and are major manufacturing centers, notably China, South Korea, Spain, Germany, Brazil, and India. Five countries have established an international reputation in fashion design; these are France, Italy, the United Kingdom, the United States of America, and Japan. Most of these companies benefitted from computer companies that offer automated systems that include pattern design, grading and marking, single ply cutter, spreading and cutting unit production system.

Computer use reduces the need for pencils, erasers, and other drafting tools because they are all built into the software. Joseph-Armstrong (2006) indicates that, garment producers survived for years by doing everything by hand from design to finish but it has become inefficient for those who wanted to compete in the global economy. She further went on to express that, large apparel companies faced the reality and reverted their production ways to computer systems which tend out to be more efficient, more accurate and less time to complete an idea from concept to consumer. However, she did not leave out the fact that to smaller companies the cost factor is a disadvantage. Most developed countries like France, Italy, China, England, Germany and America, developed their economies through the fashion design industry when they developed the computer systems of operation. To be able compete in the global fashion computer technology is extremely important to the garment production firms as well as to the fashion designer.

It is very surprising that as the developed countries are moving forward and advancing with their garment production methods their Ghanaian counterparts are rather folding up because their industries are collapsing. The garment industry has a potential of helping to reduce the rising unemployment rate in Ghana especially with the introduction of African Growth and Opportunity Act (AGOA) but unfortunately in Ghana most garment producers have distanced themselves from the computer which will rather boost their production activities. This is an indication that, most fashion institutions in the Greater Accra metropolis offering fashion design programs are computer illiterates. This paper reviews recent articles and texts which deal with computer technology in fashion industries, in order to reveal the wastefulness surrounding the use of manual designing and drafting as well as production methods in garment making in Ghana. It also looks at how garment producers are coping with the advent of the computer technology and how they can be empowered to take advantage of it. However, providing solutions to the problems is beyond the scope of this paper but insights

will be provided into ways through which studies can be effectively directed using some basic computer application and systems available on the Ghanaian market.

2.0 REVIEW OF RELATED LITERATURE

This deals with literature sources that help to bring to lime light background of the garment industry as well as their link with computer applications and their relevance to the industries and the gaps created without them.

2.1 Background of Garment Production

Frings (1999) and Cooklin (1991) pointed out that, the garment production department deals with the actual production of garments which includes designing, pattern drafting, marker making, cutting, sewing, pressing, finishing, final inspection and packaging. Vanderhoff (1981) indicated that quantity garment production requires a variety of workers who have specialized skills. In such a set-up there is division of labour and specialization which effects efficiency, speed and quality that result in increase productivity. Cooklin (1990) said after the fig tree, animal skins were sewn roughly together and tied around the body, he went on to say that the first garment cut to fit the body and limbs appeared during the Minoen Civilization (3000-1400BC). Initially, needles were made of bones and horns while threads were crafted from animal sinew. Cooklin (1997) stated that needles were discovered about 1800 BC., he said until then only individual garments were made with very primitive tools. He emphasized that the earliest garment patterns were from the12th century, he said that according to Guild history by the 16th century tailors knew a great deal about proportion of the body and how to draft pattern for different types of garments. He concluded that women clothing construction developed rather late, most of their patterns were prepared by draping toile and adjusted style and fit with pins and tack stitches. Now man has developed sophisticated tools and machines for production of garments. The researchers believe that the power operated sewing machines coupled with varieties of automated cutting and spreading machines has increased the pace of production to meet the consumer demand. It has increased productivity and made ready-to-wear garments accessible in departmental stores which have resulted in price decrease.

2.2 Modern Garment Production Industry

Fashion leadership originated with and was maintained by the French, except during the World War II and in the 1960s and 1970s (Frings, 1999). The major fashion capitals are Paris, New York and Milan but the researchers believe that there is no longer a fashion route because it has become more difficult to discuss fashion by an individual city or country. As the Industrial Revolution started in the 19th century garment industries too began to evolve in weaving, cutting, sewing and complicated machines. By the end of the war many conventions regarding women's clothing had broken down and saw the start an increasing demand of ready-to-wear clothing (Cooklin, 1990). Fashion use to reflect the life style and values of the elite but not the whole of society, Rouse (1989) and Frings (1999) pointed out that it is only recently that, members of all classes and different income levels, social standing and age can afford and access fashionable clothes. The researchers agree with Rouse (1989) that fashion today depends on individual choice and personal circumstance rather than status and wealth or the prerogative of the rich in society, as departmental shops now provide various ranges of items for all classes of people.

The garment industry has now developed to a point where industries specialize in particular line of clothing. Kunz and Garner (2006) states that style analysis of prototypes may now take place through computer transmission of digital photographs of prototypes on models. They emphasize that product development now is dependent on sophisticated computerization: determining the consumer's size, making patterns, cutting the fabric, assembling the garment and delivering to the customer. They concluded that because of application of technology time is reduced in every aspect of merchandising, design, production, and distribution to simultaneously improve profitability and consumer satisfaction. The researchers' comment that it is rather unfortunate that the garment industry in Ghana has not being able to grow from small scale to large ones over the years as expected. Most garment production firms in the Accra –Tema metropolis still operate their business with all the manual methods of working.

2.3 General Overview of the Computer and CAD

According to Adu-Gyamfi and Agyedu (2007) a computer is an electronic device that stores and processes data, according to a list of instructions. It allows a user to manipulate data easily. The speed of performance of a computer is incomparable. Fuori and Giola (1994) state the two areas where personal computers are being used to improve productivity are computer-aided design (CAD) and computer-aided manufacturing (CAM). According to Burn and Bryant (2007), by 1970s CAD was in use but specifically developed CAD software for

the garment industry hit the fashion scene in early 1980s. They further stressed that since then software upgrades have improved garment CAD software, it is now useful for drawing, textile design and garment production. Diamond and Diamond (2008) and Beekman and Quinn (2008) stated that CAD has revolutionized the garment industry as they are available in a broad range of programs, from simplest to the more sophisticated. Fuori and Giola (1994) further stated that CAD permits architects, engineers and designer to prepare complex drawing quickly and easily. Leach (2002) reiterated that CAD is a tool that can be used for design and drafting activity, it is used to make rough idea drawing although it is more suited to create accurate finished drawing. With the researchers experience in the use of AutoCAD, CorelDraw, Illustrator and Photoshop over the past four years, they was quick to support the views of the various writers as the use of these CAD software has aided and made drawing and sketching very easy and convenient as compared to manual drawing of any form.

2.4 Fashion and Computer

Bogart (1990) indicated that the world of fashion and the world of computer have one thing in common, they both change with time. As fashion trends change, the world of computer do same with new software produced by the day. The researcher agrees totally with this as fashion has also had its fair share of evolution from the 18th century till today. Aldrich (1997) stated that the value of computer or CAD in fashion should be an inseparable part of the fashion designer. The researchers observed that, computer rewards those who think of improving their work and look for new and better ways of doing things, it improves the efficiency and quality of production.

Frings (1999) noted that modern technology makes fashion production more efficient. She further state that, computer aided yarn spinning, fabric design, weaving, knitting, dyeing and finishing allow our domestic textile industries to compete with imports. In garment manufacturing, she again stressed that computer technology has revolutionized manufacturing with computer aided design, patternmaking, grading, cutting, unit and modular production system, pressing and distribution system. Stone (2004), indicated that standalone computerized equipment is now common in most manufacturing plants. This is known as Computer- Aided Manufacturing (CAM), it includes programmable sewing machine, pattern making machine and cutting machines. The researcher believes that it is time fashion designer take advantage of the computer opportunities availed to them. Where ever they are, they should find out what benefits they can derive from computer. Kunz and Garner (2007) stated that in 2004, Tunisia in the bid to safeguard its apparel industry from Asian competition embraced newer technology such as computer-aided design (CAD), computer-aided manufacturing (CAM), and computer integrated manufacturing (CIM) to reduce costs per unit and develop quick response (QR).

2.5. Use of Computer Technology in Garment Construction

There are several different types of CAD. Each of these different types of CAD system requires the operator to think differently about how to use it to design. CAD has become an especially important technology within the scope of computer – aided technologies, with benefits such as lower product development costs and a greatly shortened design cycle. Wikimedia (2007) states that CAD enables designers to see designs draped on the figure, bringing designs to life and making them more professional option for use in all kinds of fashion design presentation. CAD enables designers to lay out and develop work on screen, print it out and save it for future use. Aldrich (1997) expressed that the main reason why companies invest in CADCAM is because of the advantages in control, organization, and cost reduction in garment production. She further states that this is very useful where a company's product includes basic garment ranges with very little style alterations. The researcher agrees that CAD software provides new approach to patternmaking, ensures creativity in patternmaking for unique design that will fit individual size and shape. It also enhances traditional design skills and assists with idea generation and the manipulation and production of pattern designs.

3.0 Methodology

This study sought to establish the knowledge of computer technology in garment producer in relation to their production activities and the challenges they face. The purposive sampling technique was used to select 100 garment producers out of a list of 200 in Accra and Tema. The descriptive or survey research design was used; it described and explained conditions of their activities and using personal contact to fully describe their operations. The Instruments used for the data collection were a structured interview, questionnaire and an observational guide.

4.0 COMPUTER IMPROVED METHODS IDENTIFIED

Using CAD to simplify Garment Production

Kunz and Garner (2007) states that, TUKATECH joined Gerber and Lectra in the CAD/CAM field by launching an integrated pattern design, product development, grading and marking solution. According to Joseph – Armstrong (2006) this innovation by the TUKATECH Computer Corporation by setting up TUKACENTERS in

America and other parts of the world answered the call to encourage small fashion businesses to expand. TUKATECH has the philosophy that all small scale fashion businesses and entrepreneurs should have access to computer at a very affordable cost in America and other parts of the world. Because of the relevance of the computer to the fashion designer, she stressed that the TUKATECH centers provide computer stations for designing, patternmaking, grading marker making and cutting at minimal cost.

Burns and Bryant (2007) commented that currently many garment companies use Pattern Design Systems (PDS) for some or the entire pattern making functions. The computer stores all the base patterns and styles in the computer files. They listed some advantages of PDS as including the following:

- Speed – as basic blocks and patterns are stored in the computer systems and used to begin a pattern for a new style no time is spent, seams and hems allowances are added by just specifying amount needed. Markings and labels such as grain lines and notches are stored in a library and can be retrieved when needed. As in the manual where one has to slash and spread, in the PDS patterns modification can be done more quickly.
- Accuracy – PDS eliminates the incremental growth that occurs due to the thickness of pencil lead. Drawing straight lines and curves are so precise than handmade ones.
- Improved ergonomics – sitting and standing at a computer workstation can be easier on the body than bending over a table. Computer use has relieved producers from cutting soft or hard-paper patterns by hand with scissors.
- Integration with production – some computer software programs provide interface between the pattern making process and the garment specification sheet, the width and lengths of patterns being made can be requested for during the pattern making process.
- Product lifecycle management (PLM) – using computer design software, the pattern can be communicated electronically among all departments to integrate the business and manufacturing systems effortlessly. This speeds production and reduces the possibility or error.

They concluded by stating that cost of the system, visualization difficulty, and user friendliness are a few of the disadvantages. The researcher believes that although there are disadvantages to almost every system the advantages here outweigh the disadvantages.

4.1 Costing and Computer

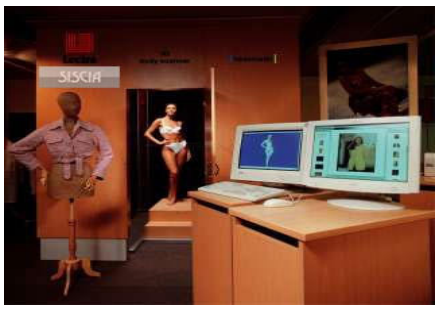
According to Hollen and Kundel (1987) final costing is the cost of each garment, which includes fabric, notion, trimming and labour as well as general expenses of operating the business. Computerized costing system using standard industry data can greatly speed this process. Burns and Bryant (2007) acknowledged that computer software programs can be used to help analyze cost in comparing various production sequence options. Weber (1990) stated that computer can be beneficial to the operations of the garment producers business. It can be used to track inventory, maintain accounting records, analyze sales, stores files and keep list of suppliers. Also the cash register can be linked to its computer system so that deductions can be made automatically from the store's inventory list. Once a garment is sketched, its cost can be projected by using programmed data that estimates the use of fabrics, notions, and assembling complexity, depending on stylistic features.

4.2 Measurement Taking and Computer

As stated by Beazley and Bond (2003), body measurement is a prerequisite to pattern construction but Burns and Bryant (2007) also alerts that in taking body measurements, if dimensional accuracy is not maintained within the tolerance range there will be a lot of discrepancy which will result in rejection of goods. The researchers believes that based on this note there should be a form of uniformity tolerance allowed in measurement, so that making and buying garments comes with less stress. Beazley and Bond (2003), Joseph – Armstrong (2006) and Burns and Bryant (2007) stated that manual measuring requires a high degree of skill and is time consuming and that it is now in the transition between traditional manual measuring by tape and computerized scanning or photographic systems which has been developed since the early 1980s. They describe the method of use as: The automatic systems operate by using scanning or photographic equipment linked to a computer. (LASS) an anthropometric shadow scanner developed in Britain by Loughborough University require a person minus their outerwear to stand stationary on a turntable as strips of light are projected vertically while been rotated 360^{o}. A

column of cameras record the image within three minutes two or three dimensionally, then project it on the screen and calculate the body measurement and as it is linked to a computer alteration system the computer finds the nearest size pattern to the individual. As the garment industries abroad are advancing from one level to the other in scanner systems, the Ghanaian garment producer is still stack with the manual tape measure. Most producers interviewed had not heard about the computer scanners. Researcher suggested to the producers that instead of keeping measurements in books stack up on selves they could even use the computer to create simple files and folders to keep the measurement of their clients to make their shops tidy and records intact for easy amendment. In Ghana most garment producers engage in small scale customized production which is different from mass production so the production methods and applications are different as well. The amount of garments made daily at a large-scale garment production industry in America is so huge that they cannot but look for

better and faster way of doing things to save cost and increase productivity. The scanning machine (fig 1) helps to take different measurements and may also help to prepare standard measurements.



4.3 Pattern Grading and Computer

Cooklin (1990**)** traced the history of computerized pattern grading to Dr. H.J. Gerber who invented a computerized digitizer in 1964 which replaced the manual grading by automation; he added that it became commercially available in 1968 as a basic tool for garment industries throughout the world. According to Hollen and Kundel (1987) grading by hand is time consuming and requires much skill but added that students will appreciate the fast and accurate way of grading by the computer if they know manual grading. Burn and Bryant (2007) tried to compare the hand grading, pattern grading machine and computer grading. They stated that the hand grading is the simplest that require the ruler, pencil and paper as the minimum tool, while the pattern grading machine is used to speed the grading process with two dials – one for width increase and decrease and the other length increase and decrease, they concluded by indicating that the computer grading is much faster than all the methods mentioned above.

Cooklin (1991) described the Graphic Display Terminal as:

a) A cathode ray tube display screen on which the operator can view the pattern, many have the option of colour displays.
b) A keyboard which interfaces with the CPU through which the operator inputs commands for data processing and manipulation routines.
c) The terminal data tablet and pen used to position pattern pieces during the maker planning process.
d) Graphic Display Terminal can also be configured with an on-line printer to print commands and system responses.

The plotter

This generates system output in the form of pattern pieces and /or markers. The plotter uses the same information as that recorded by the digitizer.

The plotter (fig 3) has its own terminal that controls the plotting functions.

a) The plotter can be equipped with a knife for cutting out patterns or alternatively, a laser cutter can be used for that purpose.

Burn and Bryant (2007) also described the computer grading process as:

a. First input the pattern piece into the computer by tracing or scanning using a table called a digitizer. This digitizer is sensitized at very small increments in both vertical and horizontal directions.
b. The pattern piece is laid on the digitizer while the pieces appear on the monitor and traced using a hand-held cursor.
c. During the tracing process the pattern grader uses the keypad on the cursor to input the specific grade points and grade rules at the desired locations.

During the research, the researcher discovered three of this grading/marker making system in Accra/ Tema metropolis out of which only two was in operation. At a textile/garment training center located at A.T.T.C. the

researcher was privileged to experience at firsthand how the system operates, it was used to grade as well as make markers. Mr. Dzandu, manager of the Textile/Garment Training Center in Accra, in an interview indicated that the system could be used to drafting as well but they have not had enough training to utilize it fully (personal communication, 25/3/2011). He added that because of the cost involved in the training, only two of the personnel were given fourteen days training to use the system which is woefully inadequate. He however concluded that students and garment producers all over the country come to the center to see the system and how it functions but it is not used commercially.

4.4 Marker Making and Computer

Hollen and Kundel (1987) and Aldrich (1997) indicated that computer can be used to make efficient marker, it computes the percentage of fabric waste and help match fabric stripes and check fabric repeats, they indicated that after that the information is plotted or sent directly to computerized controlled cutters. Beazley and Bond (2003) added that the interactive method relies on the user to position the required patterns on an image that represents the cloth on screen.

Beazley and Bond (2003) stated marker making is a good practice to:

a) Combine small and large patter sizes evenly.
b) Combine different garment sizes.
c) Obtain the fabric in the most favourable width.

Burns and Bryant (2007) stated some manufacturers have estimated that the cost savings in better fabric utilization have paid for the computer equipment in less than two years. They also stated that, the marker software calculate the usage, or fabric utilization so that the marker maker can continue to arrange pattern pieces until utilization goal is reached. It concluded most marker making functions are tied to the pattern grading function and once the pattern pieces have been graded by computer and stored in the memory the marker maker can retrieve them in the needed sizes. The researcher sees the marker making process as very important because fabric saved is money saved in the garment industry as fabric cost is half the total cost of final garment. Fabrics should be laid economically to avoid waste in cutting to save the fabric.

4.5 Spreading / Cutting and Computer

Marker information can be fed directly to a computer-controlled cutting machine after spreading for cutting (Hollen and Kundel 1987). Burns and Bryant (2007) describe spreading as a process of unwinding large rolls of fabric on wide cutting tables. They emphasized that nothing is cut on fold as is frequently done in the home sewing industry. The length of each layer is determined by the specific styles maker length and to make counting easy a thin paper is laid between every 12 layers of fabric. Beazley and Bond (2003) stated that automated fabric spreading machine has solved the problem of manual spreading, fabrics rolls are loaded and threaded using carousel that holds ten or more fabrics. They however indicated that the factor that affects speed of spreading is fabric faults, defects, damages and width variety which tend to result in substandard garments and re-cutting of garment parts. The researchers believe that of all the processes in the garment production, it is the spreading computerized system that has a lot of challenges, because of the many problem imported from the fabric production units. Fabric brought to the cutting room cannot be checked until they are ready to be laid and cut. Fabric comes in different motifs, piles, arrangements and even direction which make it complicated to layout straight away.

On computer cutting, Beazley and Bond (2003) trace the development of computerized cutting to Gerber Technology 30 years ago. They concluded that Gerber Technology, Lectra and Bulmer have now developed new generation of cutters. Burns and Bryant (2007) also stated that computerized cutting is much faster and generally accurate than hand cutting because of the use of the rotary cutting blade or the laser. They pointed out that a large – scale computerized cutter can cut up to 300 dozen pieces per hour which makes it very efficient. Cooklin (1991) stated that computer controlled cutting operations' input comes from the marker generated on computerized marker planning systems which is transferred to the cutting unit by means of tapes, floppy discs or directly from the marker planning system. Cooklin (1991) added that although the computerized cutting system requires a substantial amount in investment it is considered the most effective investment for large scale production. From the study, the researcher became conscious that the computer-driven automated cutter utilizes vacuum technology to hold stacks of fabric in place while cutting. Cutting blades are sharpened automatically based upon the type of fabric being cut. Gerber Garment Technology manufactures one of the most commonly used cutting systems. This technology has the advantage of being highly accurate and fast, but costs considerably more than other cutting techniques. In Ghana, most garment firms still use the hand cutting shears to do their cutting however a few shops were spotted using the straight knife and the round knife cutting machine. These were those who produce on large scale, to supply to retail shops and export.

Of all the operations in the cutting room, cutting is the most decisive because once the fabric has been cut, very little can be done to correct serious blunders (Cooklin 1991). He further mentioned that cutting requires the use of different types of tools.

4.6 Garment Assembly and Computer

According to Hollen and Kundel (1987), technological advanced computerized sewing machine assist sewing operators rapidly and accurately assemble the garments. The cut pieces are tied together in bundles and each sewing machine operator completes the same task on a bundle before passing it to the next operator. Majority of garments are completed with variety of power sewing machines. Diamond and Diamond (2008) acknowledged that like every stage of production sewing is increasingly automated, they added that to produce inexpensive garments computer-driven machines are replacing the individuals who sewed garment by hand and machine. A garment industry (lucky 1888) located in the Free Zone garment village was the most resourced garment center in the Accra/ Tema metropolis, the researcher was amused at the computerized machines available and in use as well as their level of operation.

Cooklin (1991) stated that there is a great diversity of regular and special machines for sewing every type of garment in the clothing industry. It is this variety which enables clothing manufacturers to employ specialized equipment for particular requirements. Cooklin (1991) and Frings (1999) observed that while there is a vast range of equipment, some machines are basic items of equipment used in traditional factories. Cooklin (1991) again reported that apart from the basic general-purpose machines, there is also a huge range of high performance special machines that are built to perform one operation only at a consistently high level of quality. Programmable machine are extremely versatile and can sew multiple layers of fabric with ease. Widely used to sew military apparel, combat accessories, and a variety of custom sewing projects - a programmable machine will exponentially increase efficiency by automating multiple operations into one.

5.0 TRAINING NEEDS

Aldrich (1994) stated that there is ignorance about the practical application of CAD and its future potential because knowledge of CAD in clothing and textiles was sparse. Wolfe (1989) indicated then that people trained in CAD are scare and there is a growing demand for designers in the technique. In some countries, Universities and trade schools put CAD into their apparel curriculum to train students to solve CAD literacy problems to advance the garment industries. Training in computer technology is very necessary in the garment industry in Ghana if we have to be able to compete in the global world. In Ghana now, a lot of computer training institutes are springing up to offer computer training but unfortunately garment producers have not taking the opportunity because they don't see its relevance to their activity. One of the researchers adds that during her two different training sessions in IPMC in a total class of thirty-eight (38) she was the only garment producer. Garment producers are not aware that they can use graphic design to create drawing and even make mood /story boards to aid in concept development. In the university the AutoCAD course that was offered for technology students was seen by most fashion students as a waste of time, instead of developing it to design garments and draft pattern pieces. Training in CAD is a need that the clothing industry must address. Kunz and Garner (2007) states that, TUKATECH joined Gerber and Lectra in the CAD/CAM field by launching an integrated pattern design, product development, grading and marking solution. According to Joseph – Armstrong (2006) this innovation by the TUKATECH Computer Corporation by setting up TUKACENTERS in America and other parts of the world answered the call to encourage small fashion businesses to expand. TUKATECH has the philosophy that all small scale fashion businesses and entrepreneurs should have access to computer at a very affordable cost in America and other parts of the world. Because of the relevance of the computer to the fashion designer, she stressed that the TUKATECH centers provide computer stations for designing, patternmaking, grading marker making and cutting at minimal cost. In Ghana the few instructor operating the CAD systems are foreigners or trained overseas.

5.1 Some Challenges Encountered by Garment Producers in Accra/Tema

It was identified that cost management is therefore critical to being competitive in the global market place for apparel manufacturing. Most of garment producers have folded up or were about to fold up due to high cost of production and inability to compete with imports from other countries especially, China. Also lack of the required raw material in terms of fabric type, colour, quantity, trimmings and notions is a very pressing problem. This further led to the problem of inability to meet buyer deadlines as producers sometimes spent about half of the period looking for the desired raw material, probably, from other countries. The machinery used by these producers was not efficient enough to help meet the standards required to produce quickly and satisfy the quality expected. Some also complained about the cost of power supply as well as its availability or frequent supply because of the frequent power outages. They could not match Cooklin (1991) and Frings' (1999) assertion that retailers expect consistent quality, on time deliveries, re-order performance and at competitive prices.

In addition, there was the lack of skilled and reliable workers. They explained that it was difficult to find workers with the requisite specialised skills and so they employed less skilled workers with the hope that such workers could learn on the job and improve their skills. However, after acquiring the skills, most of them used so many strategies to stay away from work and eventually quit working. They reiterated that after investing a lot of money in training workers to acquire skills in mass production, most of them leave to seek greener

pastures, leaving the company with limited labour to meet large orders. This led to their inability to purchase sophisticated and computerized machines to meet deadlines for volumes, quality and quick delivery

6.0 CONCLUSION

The challenges faced by the garment producers were the high cost of raw materials and lack of appropriate equipment for production as well as lack of access to finance for procuring inputs. Weak support services such as unreliable power supply, absenteeism and lack of commitment of workers, militated against the knowledge about computer technology. The garment producers are also not accustomed to working on large orders with time constraints and therefore had problems with meeting deadlines of orders requested. The respondents found in the Accra-Tema metropolis did not have a lot of knowledge of computer technology, but they were delighted about the information received from the discussion. They expressed that although there are disadvantages in CAD, the advantages far outweigh the disadvantages and so all efforts should be put in place to incorporate computer technology into the garment industry.

Through the survey it was discovered that although the instructors had fair idea about computer technology it was not detailed. It was detected that CAD can be used for grading, pattern drafting, marker making, fabric design, design illustration, drawing of figures and garment parts. They finally saw the need to incorporate computer technology in the fashion curriculum to enhance the profession. Based on the results, it can be concluded that the awareness of computer technology will give the respondents a free choice of using the technology together with their own personal work of creativity and innovation. CAD will not just improve the way they work, but also the way they think about themselves.

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