

**AKENTEN APPIAH- MENKAH UNIVERSITY OF SKILLS TRAINING AND
ENTREPRENEURIAL DEVELOPMENT**

IMPROVEMENT TECHNIQUES IN THE GHANAIAN GARMENT INDUSTRY

DORKEY MELODY

AUGUST, 2023

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in partial fulfillment of the requirements for award of the Master of Technology
(Fashion Design and Textiles) degree.

AUGUST, 2023

DECLARATION

I, **MELODY DORKEY**, hereby declare that this dissertation, with the exception of quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my own original work, and it has not been submitted, either in part or whole for another degree elsewhere.

SIGNATURE

DATE:.....

SUPERVISOR’S DECLARATION

I hereby declare that the preparation and presentation of this work was supervised by me in accordance with the guidelines for the supervision of the thesis laid down by the Akenten Appiah-Menkah University of Skills Training and Entrepreneurial Development.

SIGNATURE DATE:.....

SUPERVISOR: DR. JOSEPHINE ABOAGYEWAA NTIRI

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DEDICATION

Dedication to my family; especially my spouse and children. My siblings were also my source of encouragement

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ABSTRACT

This study examines improvement techniques in the Ghanaian garment industry using two fashion houses in the Ho municipality as a case study. The study adopts a descriptive research design to comprehensively understand the improvement techniques adopted by garment manufacturers in the Ho municipality. The target population for the study was all workers of the two fashion houses in the Ho municipality, and a census sampling method was used. Interviews and observations were used as the data collection methods, and the collected data were analysed using quantitative approaches. The purposive sampling technique was used to select a total of 78 participants; the two fashion houses were selected to participate in the study. Questionnaires and Interviews were used as the primary data collection instruments. The findings indicate that the most commonly used techniques for cutting and sewing were patternmaking and the round method of sewing, respectively. The study highlights the need for training and development programme for workers in the industry to enhance their skills in various improvement techniques and the use of technology, sustainable materials, and clear communication with clients to improve the industry's competitiveness. It was thus recommended that fashion houses should use high-quality materials is particularly relevant to the context of Fashion Houses in Ghana, as it can help them to produce better quality garments that are more durable and attractive to customers.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Making things more efficient is a really important way to be great at making things, and it also helps with making more money and being effective (Moktadir et al. , 2020; Kaur et al. , 2013) Making things go faster and better makes customers happier and saves time and money for making and delivering products and services. (Seifzadeh & Rowe, 2019) Being more productive helps measure how well you're doing in using resources, making products, controlling costs, managing inventory, and delivering things on time. According to Salunkhe and Shinge (2018), making things more efficient can involve getting rid of unnecessary steps, fixing things that aren't working well, making the process simpler, making the system work better, reducing differences, getting the most out of resources, spending less money, making things better or faster, and taking less time to prepare. To reach business goals, using a production philosophy improves productivity because it can be applied in many different areas (Rehman et al. , 2019) Because of this, many companies are trying hard to improve their manufacturing methods, which can be difficult. Making garment production more efficient and productive is not only the responsibility of specialists, but it involves everyone who works in the business. Yıldız and Pamuk (2021) say that the clothing industry is in a time where the most important things are making high-quality products, keeping costs low, and following production rules. Currently, there is a decrease in the number of orders, but more people are wanting their purchases to be delivered quickly and expect better quality. In order for this business to be successful, it is important to have better quality and cheaper prices no matter where it is located. Garment manufacture means turning flat fabric into clothes by putting together different pattern pieces. This change is mostly done by sewing, and it is an important step in making clothes better and getting higher quality. Therefore, it is

important to understand the stitch and seam of any clothing item, as it is the basic part of the garment. As Subhashini and Varghese (2021) highlighted, to make clothes faster and better, we need to use all our resources wisely. This includes our people, machines, finances, and the way we do things. When a business is more productive, it can make more money. Being more productive also means that it costs less to make clothes. So, a fashion company can earn more money by becoming more efficient. In the clothing industry, there has been a greater emphasis on making the garment better in terms of its quality, comfort, and fit. The most important things we want from clothing are that it works well, lasts a long time, is easy to care for, looks attractive, and meets our expectations. The way clothes look and their design are really important to people who buy them. Aakko and Niinimäki (2021) suggest that feeling comfortable is really important when it comes to clothing. Four basic things that make clothing comfortable are: 1. How it affects our body temperature and how it makes us feel physically 2. How it feels to touch or wear 3. How it affects our body's functions 4. How well it fits our body. Having the right fit is important for feeling comfortable when wearing something (Awais et al. , 2019) The comfort of wearing a piece of clothing depends mostly on how stretchy the stitches are. Akter and Khan (2015) found that the way a garment is stitched together, the type of seams used, the type of sewing thread used, and the density of the stitches can all affect how comfortable the garment feels when worn. Some clothing makers choose how to sew clothes without thinking about how it will feel when people wear them. Therefore, it is very important to choose the right kind of seams and stitches for comfortable fitting. This is because people want clothes that fit their bodies well. So, the way that seams and stitches are done is very important for putting together the different parts of a garment and giving it shape. The way seams and stitches are done can make a difference in how good, comfortable, and well-fitting a piece of clothing is. So, techniques to improve them must be used to make sure customers are happy.

Picking a stitch or seam that doesn't work well with a piece of clothing can negatively impact how good it looks, how comfortable it feels, and how well it fits. The quality of the stitches and seams depends on factors like the type of stitch and seam, how close together the stitches are, the settings on the sewing machine, and the quality of the thread used (Choudhary et al. , 2018) The way a piece of clothing works depends on the structure and strength of the fabric, as well as how stretchy it is and how well the seams hold it together. The seams also need to be durable and look good, while also being efficient in their design. This study aims to look at how the garment industry in Ghana can get better. We will focus on two fashion houses in the Ho municipality called Pearly Fashion and Garment Technology Center. Pearly fashion started in the Ho town in 2010. Pearly fashion home creates and sells new and unique fashion brands all across the country. They have used high-quality materials and skilled local artisans to make many products. This has helped them create popular brands that customers who appreciate attention to detail love. These brands are known for their wedding dresses and everyday clothing, among other things. The Garment Technology Center was created in the Ho municipality in 2006. The Garment Technology Center creates and sells new and unique clothing brands all around the country.

1.2 Statement of the Problem

The success of any clothing company depends on how good their clothes are. Studies show that when a business has poor quality, it can end up costing anywhere from 15% to 40% of their overall costs. This includes things like having to fix mistakes, dealing with returns or customer complaints, providing lower levels of service, and losing money. Having a really good quality seam on a piece of clothing is really important for how long it will last and how satisfied customers will be. This also affects how well it will sell. Problems with how a seam looks and holds together, like stitches vanishing, thread breaking, fabric getting ruined, seam

looking wrong, or needle getting damaged, can take a lot of time and be annoying. They can also make the final sewn item not as good (Chen & Cheng, 2019; Ghani, 2011). They can also ruin how a piece of clothing looks and lead to it being completely rejected, which lowers efficiency. Therefore, it is important to evaluate how the garment industry is trying to get better at making clothes in order to make sure the clothes they produce are good enough for customers. There are two main parts to the cost of quality: the cost of good quality or doing things correctly, and the cost of poor quality or doing things incorrectly. The cost of low-quality affects both the expenses within a company and the expenses outside the company due to not meeting the clothing industry's standards for a clothing item. Instead, the price of good quality affects how much it costs to prevent flaws and check if a garment meets the necessary standards. To make the customer happy and succeed in the competitive business world, the clothes we make need to have the right design, details, and quality. Many clothing makers in Ghana do not make clothes according to specific instructions or guidance. When making a good piece of clothing, the way it is cut, sewn, and pressed affects how it looks, how long it lasts, how it hangs, and how well it fits. Ghanaian clothing producers face difficulties in creating clothes that meet the customer's requirements and are of good quality. In order for a fashion business to stay successful in the modern world, it needs to listen and adapt to the people it wants to sell to. To stay ahead, keep customers and handle competition, it's important to get better at sewing to make good products quickly and affordably for customers. So, the main reason people like clothes made somewhere else is because those clothes are made better. Sengretsi (2018) found that local clothing producers are losing customers to foreign clothing imports because the imported garments are better quality than the ones made locally. This means local producers need to improve their techniques.

1.3 Purpose of the Study

The current study examines the improvement techniques in the Ghanaian garment industry, using two fashion houses, Pearly Fashion and Garment Technology Centre, in the Ho municipality, as a case study.

1.4 Objectives of the Study

1. To identify the various sewing techniques used by two fashion houses in the Ho municipality.
2. To examine the current techniques used by two fashion designers in the Ho municipality.
3. To organise a training workshop on the improvement techniques for fashion houses in Ho municipality, precisely Pearly Fashion and Garment Technology Centre.

1.5 Research Questions

1. What are the various sewing techniques used by two fashion houses in the Ho municipality?
2. What are the current techniques used by two fashion designers in the Ho municipality?
3. What form of training workshop can be organised on improvement techniques such as stitches, seams, and labels for two fashion designers in Ho the municipality?

1.6 Significance of the Study

A good understanding of how to improve the garment industry in Ho Municipality can give us useful insights on the quality of clothing made by fashion designers and what can be done next. Moreover, this study has the potential to help policymakers, education and training

institutions, small fashion designers, and fashion houses in Ghana. It can assist them in reviewing and improving techniques, principles, policies, and procedures. This will ultimately lead to better practices and give more credibility to garments made in Ghana. The findings could also help the Ghana National Tailors and Dressmakers Association (GNTDA) and the Ghana Association of Fashion Designers in creating educational programs to raise awareness about better ways to make clothes in the Ho Municipality of Ghana. We hope that other countries dealing with problems in improving garment production techniques will find this study helpful to review and make progress in that industry. In simple words: The study helps solve problems with productivity and quality, making businesses more competitive in both national and global markets. Companies in the same clothing industry are likely to use methods and tools to make their production processes better.

1.7 Limitations of the Study

This study will look at how two fashion houses in Ghana, Pearly Fashion and Garment Technology Centre, try to improve the garment industry. But like most studies, there may be some issues with this research. This study will primarily use numbers and measurements to gather data. However, there might be some concerns about how accurate and dependable the data is. So, it might be difficult to get similar results if the study is done again. Additionally, since the information was only gathered from one specific town, the results might not show what is occurring in other areas regarding ways to enhance the clothing industry. Readers need to be careful when interpreting the findings and conclusions. Finally, we will ask fashion designers who work in the fashion houses in the Ho municipality to fill out questionnaires. The ways to improve small fashion houses may be different in bigger organizations.

1.8 Delimitation of the Study

The scope of a study is about how and how much the research will be done. This means that when doing a study, we need to decide what exactly we want to study, who we want to study, where the study will take place, when it will happen, and what ideas or theories we will focus on. The purpose of this study was to look at ways to make the clothing industry in Ghana better. This study only focuses on two fashion houses in the Ho municipality. We will gather information from the managers and trainees of two fashion companies. The people who own and work for fashion houses in the Ho municipality were not included. The study was planned to be finished in one year and had five main parts.

1.9 Organization of the Study

The dissertation is divided into five parts. The first chapter starts by giving an overview of the dissertation. In chapter two, we review articles and research about ways to make the garment industry better. The third chapter explains how the study was conducted, including how data was gathered, analyzed, and presented. Chapter Four looks at the information that was gathered from people who participated and gives explanations and understandings of what the results mean. Chapter Five talks about what was found, gives a brief overview of those findings, and includes some opinions, ideas and advice for more research in the future.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter wants to learn about the current research and discussions about the topic we are studying. So, this review of literature is a research paper that helps show that the current study is valid. It does this by looking at what other experts have written and analyzing how it connects to the latest information in the field. This helps make sure that the existing materials are accurate and still relevant. In addition to explaining what we already know, this chapter also makes our study's findings more important by comparing them to what others have found before. This chapter talks about ways to make the Ghanaian garment industry better. It emphasizes the importance of making clothes well and meeting quality standards. It also discusses different sewing techniques, ways to improve as a fashion designer, and gives a review of some theories.

2.2 Theoretical Framework for the Study

The literature shows different theories that can be used to explain different parts of the clothing industry in Ghana. One important idea is called the Systems Theory of Management. It sees an organization as a complicated system with many parts that are connected and depend on each other. (Kast & Rosenzweig, 1972). The theory states that when looking at an organization, it is important to consider all of its different parts and how they are connected, rather than just looking at them separately. This theory has been used to study different industries, suggesting that when one part of a system changes, it can affect other parts, leading to widespread effects in the organization. When we apply this theory to the garment industry in Ghana, it emphasizes the need to think about the effects of changes on the whole system, rather than just individual parts. Another important idea talked about in the literature is the Human Capital Theory. It means that people and economies get better

at doing things and making money when they learn more and gain more skills. This theory suggests that if we invest in developing people's abilities and skills, it is similar to investing in physical things like machines. This will result in people being more productive, earning more money, and leading to the growth of the economy. This idea suggests that if workers in the Ghanaian garment industry improve their skills, they will be able to do their job better and help the economy grow. Becker (1964) said that people need to put time and effort, especially in education and training, which will help them become more productive in the long run. Schultz (1961) also said that not investing in people's skills and knowledge could lead to worse economic results. This theory emphasizes the significance of investing in developing skills within the clothing industry in Ghana.

2.3 Concept of Productivity and Productivity Improvement Techniques

Continuous improvement processes and tools are very helpful in any manufacturing journey. Using the right thing can make a business better and more profitable. It can help the business produce more, make fewer mistakes, and earn more money. (Chopra et al. , 2022; Gidwani & Dangayach, 2017; Patel & Deshpande, 2015). There are several models that can help a business, like clothing production, achieve its goals of efficiency. However, as Nayak & Padhye (2018) mentioned, it is important to understand which one is best for a clothing company. Over time, people have created different ways to help make things better. These guidelines are made to help businesses by providing a basic structure, so they don't have to start from nothing. This means that businesses can learn from successful methods used by others and use them to their advantage. To improve productivity, you need to do the right things more effectively, and make it a ongoing practice. So, it's important to have a good way to make things more efficient if you want to be productive and grow personally and in business. Productivity means how much you get out of something compared to what you put

into it. This means that it is a measure of how much we make compared to how much we have spent to make it. Productivity means using resources wisely and not wasting things like people, materials, machines, time, space, or money. This is about people working hard to make more things using less stuff, so that everyone can get a fair share. Productivity means the connection between the things we make or do and the things we use to make or do them. Productivity means having a positive mindset. It means constantly making things better. It means being sure that you will improve from yesterday and keep improving over time. This means always using different ways of making things based on what's happening around. It takes constant work to use new techniques and methods. Productivity means finding the right balance to get the most output with the least effort. As a result, when productivity techniques are improved, it means that more things are made using the same amount of resources. In businesses where there isn't enough money and skilled workers, but there are a lot of unskilled workers who don't get paid much, you have to find a way to make more stuff in order to be more productive. Improving productivity means doing more work without needing more materials, machines, land, workers, or technology. For example, a fashion designer can make 12 pieces of clothing from a bundle of fabric, while an unskilled worker can only make 10. This means that the designer is 16.6% more productive than the unskilled worker. To make machines work better, one machine makes 90 pieces of clothes in a day of work (specifically, 8 hours). If better tools are used, then the number of pieces made by the machine will increase to 120. This means the machine's productivity will go up by 33.3%. Therefore, if you produce more, you can be more productive and get more for your resources. This means it costs less to make something and you make more money overall.

2.3.1 Importance of Higher Productivity

There are multiple ways to make things more productive. If you make more things, come out than you put in, you will get more work done. On the other hand, productivity will go up if you lower the amount you put in faster than what you get out. Likewise, a company can achieve higher productivity by making more products with the same number of resources. So, if you get more done using less effort, you will be more productive. Any of these situations can happen by using better ways of doing things, buying better machines and technology, and by trying to make things better and cheaper by using different ideas and methods like just-in-time, total quality management, and lean production. (Singh et al. , 2016; Kumar et al. , 2014), and other ideas. A company can take many important actions to make work more efficient. Stevenson (2012) gives instructions on how to increase productivity. The first thing to do in managing and controlling an organization is to create ways to measure how productive the operations are. Examine the system to determine which tasks are most important; it is crucial to maximize overall productivity.

1. Find ways to make workers more productive by asking them for ideas, looking at how other companies have increased productivity, and reviewing how work is being done.
2. Set achievable targets for getting better.
3. Make sure that the people in charge encourage and help with making things better and more efficient. Think about rewards for workers who have done a good job.
4. Track progress and promote it.
5. Don't mix up productivity with efficiency. Efficiency means using resources well. Productivity means using all resources well.
6. Therefore, it is important to recognize the significance of increased efficiency in manufacturing. So, the main point is that being productive is really important.

7. Being productive is important for being successful and wealthy. When productivity increases, more things are made, which helps to improve people's living conditions. It makes each item cheaper, and allows for a lower price when selling. It helps workers make more money and helps businesses make more profit. When there is a lot of demand for something, it means that more people are needed to do the work.

When people can get more work done, it helps the economy grow and improves society. Producing more efficiently lowers the cost of each item, making the product more affordable. Hence, it is good for customers. When the price is low, more people want to buy the product. This makes the business earn more money. When a company makes more money, they can give more money to their shareholders. It helps a country sell more goods to other countries and saves more money in foreign currency. To be more productive, you need to get rid of anything that is not necessary or useful. We need to reduce the amount of wasted materials, time, and space in order to make things more productive. Different methods, such as work study, statistical quality control, inventory control, operation research, value analysis, etc., are used to reduce the number of resources wasted. Improving productivity is really important for our country because it can help reduce poverty and unemployment.

2.3.2 Productivity Improvement Indices

There are different types of factor productivity or partial productivity indices. (Li & Liu, 2010; Xue et al. , 2008) Labour productivity is important in any production process, such as making clothes, because it means getting the desired amount of work done in a given timeframe. Labour productivity is determined by how effectively workers are used. The amount of work a person can do in a certain amount of time can vary. This depends on things like how much work is available, what materials and tools

are available to use, if there is enough energy, how well the person can do the work, how motivated they are, how much training they have, and how good the working conditions are. Labour productivity can be measured by calculating how much work is done in a certain amount of time or how much money is earned during that time.

$$\text{Labour productivity} = \frac{\text{Total output}}{\text{Labour input}}$$

$$\text{Labour productivity (in terms of hours)} = \frac{\text{Total quantity produced}}{\text{Actual person-hours required to produce that quantity}}$$

$$\text{Labour productivity (in terms of money)} = \frac{\text{Total cost (or sales value) of output produced}}{\text{Amount in terms of rupees spent on workers}}$$

Labour productivity can be increased by increasing efficiency and reducing labour time.

Material productivity: The production system changes raw materials into finished products like clothes using machines or chemicals. Material productivity is very important in determining how much it costs to make something. Material productivity is determined by how well the material is used to make a final product. Material productivity depends on how much of the material is rejected, goes to waste, spoils, becomes obsolete, or is unused. Material productivity is a measure that shows how efficiently materials are being used.

$$\text{Material productivity} = \frac{\text{Total output}}{\text{Material input}} \text{ or}$$

$$\text{Material productivity} = \frac{\text{Number of units produced}}{\text{Total material cost}}$$

We can increase material productivity by using workers who know what they are doing, having the right tools for the job, and designing products in a way that works well.

1. **Machine Productivity:** The production system changes raw materials into a final product using machines and equipment, through mechanical or chemical processes. The amount of work a machine can do depends on having enough materials, power, skilled workers, and a good machine setup.

$$\text{Material productivity} = \frac{\text{Total output}}{\text{Material input}} \text{ or}$$

$$\text{Material productivity} = \frac{\text{Number of units produced}}{\text{Total material cost}}$$

2.4 Quality Standards in Garment Production

Quality standards are rules that provide detailed instructions, suggestions, and characteristics that can always be used to make sure that materials, products, processes, and services are suitable for their intended use. Standards help businesses by giving them a common understanding, rules, and words they need to meet the expectations of the people who care about their success. Standards are important because they provide clear descriptions and terms. They help businesses and customers around the world communicate and do business in a fair and reliable way. Ocakci and his colleagues. In 2021, it was emphasized that having good quality standards is very important for the financial success of every business. Successful companies see standards as useful tools for their business. They

believe that standards should be managed together with other important aspects of the business, such as quality, safety, intellectual property, and environmental policies. Standardization saves money by eliminating repetitive tasks, preventing mistakes or product recalls, and speeding up the time it takes to bring a product to the market. Furthermore, businesses that follow quality standards help ensure that products, services, and personnel can be used in different countries. This guarantees that items made in one country can be sold and used in another country. Clothing companies create rules to make sure they meet what their customers want in terms of quality. The quality of clothing in the garment industry is determined by a few things like how well it performs, how reliable it is, how long it lasts, and how it looks and feels. The main goals of standards and standardization include the following: (Kawalkar et al., 2022; Moon & Lee, 2021; Lui et al., 2019; Monzón et al. , 2015)

2.5 The Garment Industry

The fashion industry is very important because it provides clothes to protect us from the environment. Peters and Lenzen (2021) suggest that clothing plays a significant role in how society changes, how people experience life, and how they express their emotions. Clothing can include a variety of things, such as work attire, artistic expressions, and personal demeanor. Stone (2018) says that clothing makes us feel excited and interested. Stone says that the clothing industry is always changing and evolving, and this constant change is what keeps it alive. "The company's annual report highlights its financial performance and business activities over the past year. " The clothing industry plays an important role in promoting sustainable development. It not only helps people find work but also helps the economy grow. It also has a big impact on society and the economy by its marketing, customer transactions, and global supply chains.

The way the clothing industry works now is very different from how it used to be. It now goes faster and reaches more individuals. To understand the changes that have happened and will happen in the future in the clothing industry, it is important to know how the industry works. Fashion and clothing are often used interchangeably, but they have different meanings. Fashion represents various social ideas, while clothing refers to the basic materials people wear. The word "fashion" is different from other words like clothes, garments, attire, costume, and apparel that are often used in fashion. Fashion enhances clothing, but the extra aspects are only in people's minds and beliefs. So, different people have defined clothing in different ways. Many experts and different fields have their own perspectives on what clothing is. (Diamond and Diamond, 2013; Edwards, 2010). According to Barnard (2020), clothing is important for understanding the true value of a garment. Without clothing, we might not fully appreciate its qualities and characteristics. As clothing changed over time, so did people's understanding of it.

2.6 Various Sewing Techniques Used by Garment Manufacturers

The clothing industry is very important in the history of the economy because people need clothes to protect themselves from the environment. Making clothes involves a lot of work and relies on a wide variety of designs and materials. The amount of clothes made can vary, and there is a lot of competition and a strong need for good quality. Sewing is a basic task that is important for many different types of art and crafts involving fabric, like quilting, embroidery, appliqué, and patchwork. In sewing, we use the finest fabrics to make top-quality products that meet our customers' expectations and desires. But making clothes has changed as an art and with new technology over time. (Nayak & Padhye, 2017; Burns et al. , 2016) The clothing industry has become more advanced with the help of computers and machines. These advancements include using computers to design clothes, make patterns,

and cut fabric. They also involve using 3D scanning technology to improve accuracy, using robots and automation to make the manufacturing process faster, and integrating wearable technology into clothes. There have also been improvements in how materials are transported within the industry (Khajavi, 2021; Nayak & Padhye, 2018; Sinclair, 2014). However, the making of clothes, particularly sewing, is not as automated as other industries that produce goods (Salahuddin & Lee, 2022; Nayak & Padhye, 2018). Nayak and Padhye (2015) say that there are many different kinds of clothes that manufacturers have to deal with. These can be split into two main categories: outer clothes and inner clothes. Outer clothing is the type of clothing that we wear on the outside of our bodies. This includes different types of clothing for different purposes such as work, leisure, and sports. Some examples of outer clothing are suits, dresses, shirts, jackets, skirts, and jeans. Underclothing or underwear consists of items like undershirts, underpants, and socks. Patnaik & Patnaik (2018) suggest that making clothing requires different steps. First, the person who creates clothes talks with the person who wants the clothes. They have a discussion about how the clothes will look and what they will be made of. Sometimes, the customer needs to bring their own fabric because the designer may not provide it. Afterwards, they will measure the body, create patterns, cut out the pieces of clothing, and put them together. The designer starts by creating a basic version of the clothing. The first try-on is needed to check if the clothes fit the customer's size. Then the designer makes changes to make sure the customer is happy with the product. Clothing and body language can show how a person is feeling and what kind of person they are. Peters and Lenzen (2021) believe that clothing is an important part of society. They think that clothing affects how people live and feel. Clothes can come from different areas, like work, creativity, and how we feel. According to Stone (2018), clothes make us feel excited and interested. Stone says that clothing industry is a very fast-changing business that relies on change to keep going. The clothing industry is

important in helping achieve sustainable development. It doesn't just make jobs and help the economy. This means that it has a big impact on society and the economy through its marketing, customer transactions, and complicated supply chains. The way the clothing industry works today is very different from how it used to be. It now goes faster and reaches more people. To understand the changes that have happened and will happen in the future in the fashion industry, it is important to know how the industry works. (Kawamura, 2018; Stone, 2018). People often use the words "fashion" and "clothing" interchangeably, but they have slightly different meanings. Fashion is more about the social aspect and what it represents, while clothing is simply the material that people wear. The word 'fashion' is different from other words that are used to talk about clothes and outfits. Fashion makes clothing more enjoyable and appealing, but the extra things that make it special are only in people's minds and opinions. So, different people have different opinions and ideas about clothing. Some experts and researchers have studied clothing from different perspectives and areas of study. According to Barnard (2020), clothing is the important quality in a garment that allows us to understand its true worth. Without clothing, we cannot fully appreciate its value. As clothing changed over time, so did people's understanding of it.

2.7 Components of Garment Assemblage

Stitches are the important parts of a clothing item that is sewn together. A stitch is a unit formed by strands or loops of thread passing through fabric. Intra-looping means a thread going through a loop made by the same thread, while inter-looping means a thread going through a loop made by a different thread. Rengasamy and Wesley (2014) say that a stitch is a loop made by a needle when sewing with thread or yarn. Standards are very important in deciding the different types of stitches. The ASTM D 6193-16 standard gives six different ways to sew fabric together. Choudhary and colleagues In 2018, stitches were described as loops of thread or yarn that are used for sewing, knitting, embroidery, crochet, or lace-

making. They can be made by hand or using a machine. Any of the following three methods can be used to create stitches:

Interloping is when one thread is passed through another thread's loop in sewing. For example, stitch type 401.

Intra-looping means when a thread makes a loop and passes it through the same loop of the same thread. For example, Stitch type 101 is an example of Intra-looping.

Interlacing happens when one thread goes over another thread, like in stitch type 301.

Table 2.1: Stitch types

<i>Stitch class</i>	<i>Stitch type</i>	<i>Subgroup numbers of seam types</i>	<i>Subgroups of stitch types</i>
100	Chain stitch with one needle thread	5	101–105
200	Hand stitch	5	201–205
300	Lockstitch	16	301–316
400	Multi Thread chain stitch	11	401–411
500	Overlock stitch	22	501–522
600	Covering chain stitch	10	601–610

Source: Gurarda (2019)

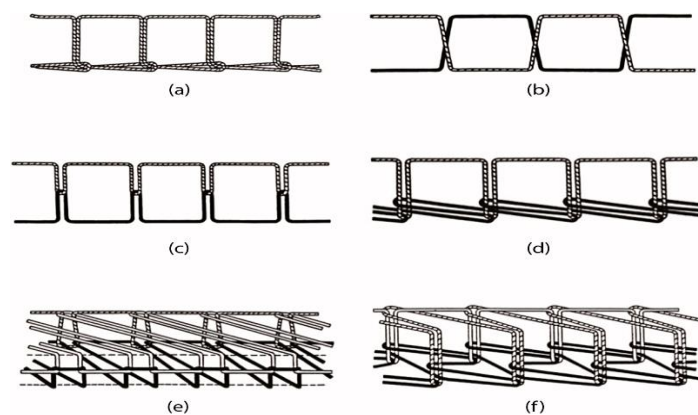


Fig. 2.1: Stitch types: (a) stitch type 101; (b) stitch type 201; (c) stitch type 301; (d) stitch type 401; (e) stitch type 504; and (f) stitch type 601. Source: ASTM D 6193-16

Stitch type 301 is made by using two threads, one from the needle and one from the bobbin. The needle thread loops go through the material and are tangled with the bobbin thread. The needle and thread are pulled back to make sure they are in the middle of the materials that are being sewn together. Stitch type 300 is divided into 16 smaller groups according to the ASTM D 6193-16 standard, released in 2016. Stitch type 401 is made with two threads: one thread from the needle and one thread from the looper. A needle and thread go through the fabric and tie together with another thread from a bobbin. Interlooping was done under the bottom layer of the material. Stitch type 400 can be divided into 11 separate groups. Stitch type 504 is made with three threads: a needle thread, a looper thread, and a cover thread. The stitch type 500 has 22 smaller groups. Stitch type 601 has three threads. There are two threads that go through the needle, and one thread that goes through the looper. The needle threads go through the material, and are connected to the looper thread on the bottom side. Stitch type 600 is divided into ten groups.

So, there are over 70 different stitches, but only about 18-20 are used often. To make it easier to recognize them, they are grouped into six classes based on the needle, direction, shape, purpose, etc. The mentions six different types of stitches.

1. ***Class 100: Single Thread Chainstitch:*** The stitches are made with one or more needles using the intralooping method. So, a needle with a thread makes loops in the fabric and connects the loops with the thread. This stitch type is not very strong because each loop needs the next loop to stay together. If just one thread breaks, the whole stitch can come apart. These stitches are similar to the regular stitches on the front, but with loops on the back. (Manoilenko, 2020) These loops have an extra

benefit because they make the stitch elastic. This is helpful when the fabric needs to be able to stretch a little, like in the back neck tape of t-shirts. Additionally, it is used in sewing operations for temporary stitches that can be easily removed, especially in custom-made clothing. This type of stitch is not commonly used for sewing, but it is frequently used in machines with multiple needles for temporary stitching and sewing that is not easily seen.

2. **Class 200: Hand Stitch:** These stitches are sewn by hand and are used to make things look pretty. One thin string is used to make these stitches. The stitch is made by threading the string through the fabric from one side to the other. This is mainly used for simple sewing at home, but it can also be found in expensive clothes for a nice finishing touch. This can also be done on sewing machines that sew slowly and are rarely used.
3. **Class 300: Lock Stitch:** The lock stitch is the most common type of stitch in clothes that are already made. It is made when the thread or threads go through the material and connect with other threads on the other side. The first thread is called the needle thread, and the second thread is called the bobbin thread. The way the threads are woven together in the stitch makes it strong and difficult to undo, which makes it a good choice for many different types of seams. In simpler words, the lockstitch is strong enough for most things if you use the right thread and fabric together. The lock stitch has a downside because the bobbin thread is limited, so you have to change it when it runs out. The most commonly used stitch for joining fabric parts together and adding decorative stitches on top is called stitch type 301. Also, the stitches called buttonholing, button attaching, and blind stitching belong to this group (McLoughlin, 2017; Colovic, 2015).

4. ***Class 400: Multi-thread Chain Stitch:*** This is a special kind of sewing stitch that uses multiple threads. The loops made by one set of threads are passed through the fabric and woven together with loops made by another set of threads called the looper threads. This looks like a regular stitch on the front of the fabric, but it has a unique double chain effect made by the looper thread on the back. A 2-thread chain stitch is stronger than a lockstitch and doesn't cause as much bunching in the fabric. One more benefit is that the thread for sewing goes from big cones on top of the machine, instead of the small thread inside the bobbin. Additionally, it operates much quicker than a lockstitch machine at a speed of 8000rpm. Stitch type 401 is very common and is used for sewing jeans and trousers. It is also used along with an overlock stitch to make the sewing more secure. Stitch types 406 and 407 are used to attach lace, braid, and elastics to clothes.
5. ***Class 500: Over-edge Chain Stitch:*** The stitch is called overlock and it is made by sewing threads. The threads go around the edge of the fabric. All the stitches in this class can stretch a lot and will not come undone if the thread breaks. In addition, the machines have a special knife to make the edge look nice and tidy before sewing. The size of the stitch can be different, ranging from 3 to 5mm. Overlock stitches are sorted depending on how many threads are used for sewing. Examples include stitches using 1, 2, 3, 4, or 5 threads.
6. ***Class 600: Covering Chain Stitch:*** This type of stitch is called Flatlock stitch. It is made using three threads: a needle, a looper, and a spreader. Besides the threads that go through the needle, there are two more sets that go over the top and under the bottom parts of the stitch. This type is the hardest one, with lots of threads. It has four needles and the rest are looper and spreader threads. These are mainly used to connect tape, lace, braid, elastic to the knitted fabric, and so on. This stitch can also

be used for decoration. Stitch type 602 is used for sewing and hemming t-shirts. (McLoughlin, 2017; Colovic, 2015)

2.7.2 Zigzags Stitch Applications

Seam Finishing: The zigzag stitch can be used to stop fabric edges from fraying. Choosing a medium stitch length and width is important. If the width is too wide, it can make the fabric edge go under the presser foot. This information is from McLoughlin in 2017 and Colovic in 2015.



Plate 1: Zigzag stitch used as a seam finish

Source: <https://www.singer.com/sewing-resources/stitch-reference/163>

Applique: The most common stitch for machine applique is called the satin stitch. It is made by sewing a zigzag stitch. The stitches go around the applique and are used to join it to the main fabric. When you move the needle to the right, it sews slightly beside the applique. When you move the needle to the left, it sews into the applique. You will need to try different settings on scrap fabric to find the right ones for sewing an applique. It is important to begin by selecting a medium width and then making any necessary adjustments. Make sure to set the stitch length to be short enough so you can see the fabric between the stitches. However, don't set it too short or else the stitches won't move properly under the sewing machine foot. It is important to use a Satin Stitch Foot, which is an optional accessory for

some sewing machines. This foot has a groove on the bottom that allows dense stitching to go through easily.



Plate 2: Zigzag stitch used as an applique

Source: <https://www.singer.com/sewing-resources/stitch-reference/163>

Elastic Insertion: You can use zigzag stitch to put elastic in something. If the elastic is between a quarter inch and three-eighths of an inch wide, the designer can put it through the opening in the All-Purpose Foot. This will prevent the elastic from moving from side to side while it is being sewn.



Plate 3: Zigzag stitch used to attach Insert elastic

Source: <https://www.singer.com/sewing-resources/stitch-reference/163>

Gathering: Some fabrics are difficult to gather. The designer can use a sewing machine's zigzag stitch to make a cover over a cord. If your machine has options to change the width

of the stitches, make sure to choose a setting that will be big enough to go over the cord but not sew it (McLoughlin, 2017; Colovic, 2015). Choose a longer stitch length if the sewing machine allows you to adjust the length of the stitches. Using a Cording Foot can be useful. It's an extra part for certain machines that helps guide the cord efficiently.



Plate 4: Zigzag stitch used to gather

Source: <https://www.singer.com/sewing-resources/stitch-reference/163>

2.7.3 Topstitching

Some materials are difficult to gather. The person making clothes can use a machine's zigzag stitch to make a cover for a cord. For machines that can change the width of the stitches, choose a setting that is wide enough to cover the cord, but avoid sewing the cord itself (McLoughlin, 2017; Colovic, 2015). If your machine can change the length of the stitch, choose a setting that makes the stitches fairly long. Topstitching is when you can see one or more rows of stitching on the outside of a garment. This stitch is both pretty and useful for many different things. It keeps fabric layers together, like the edges of a seam, by using straight stitches on both sides. This is also used for necklines, hems, collars, lapels, cuffs, and pockets (McLoughlin, 2017; Colovic, 2015). Topstitching creates texture and defines things, like quilting does. It also makes things look pretty by using different threads,

stitches, and where they are placed. Edge stitching is when you sew a top stitch very close to the edge, about 1/16 inch to 1/8 inch away from it.

But it is important to choose the fabric while considering the topstitching. Sturdy fabrics are simpler to sew precisely. However, you can use different materials with the right support and a simple stitch. You can use starch or stabilizer to make something thicker or more solid. If needed, use spray starch to make fabrics that are hard to sew much easier. You can use a stabilizer under difficult-to-sew areas.

Choosing the right needles is important when sewing different fabrics and using different types of thread. When doing topstitching, it is necessary to always use new needles to avoid stitches being skipped or pulled. The needles that are used the most can work for many things. Needles that have a very sharp point, like Microtex or Topstitching needles, make very precise stitches and should only be used on fabrics that are woven together. They are not suitable for knitted fabrics because they can create holes or catch on the fabric. Topstitching needles have a big hole to fit thicker threads. Twin or double needles make two lines of stitches side by side on the front of the fabric and a zigzag pattern on the back. This needle works really well for sewing knitted materials (McLoughlin, 2017; Colovic, 2015).

Picking the right thread color and thickness is very important for being able to see it well. To create a gentle appearance, designers need to use a thin thread that matches the fabric color or is slightly darker. However, for a more noticeable effect, they should use a thicker thread in a different color. You can use two normal-weight threads and put them through the small hole in the needle to make the stitching more noticeable. This might need a bigger needle with a big eye, like those used for embroidery or topstitching (Colovic, 2015).

Using a Cording Foot is useful because it has a groove that helps guide the cord quickly.

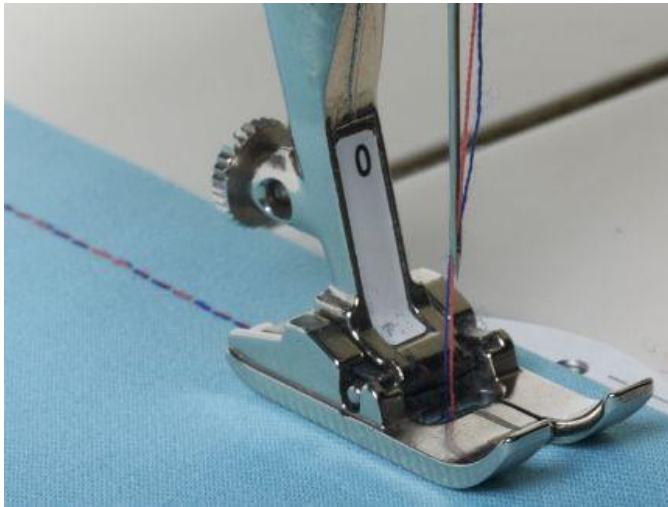


Plate 5: Two regular-weight threads threaded for more obvious topstitching

Source: <https://www.threadsmagazine.com/2012/07/10/tips-for-better-topstitching>.

The way stitches are done can greatly affect how the topstitching looks. For example, when using thicker fabric or thread, it is possible to use longer stitches instead of regular sewing stitches. Bigger stitches will look smoother and easier to see. A triple stitch makes something look heavier without using a heavier thread. You can also make this with a feather stitch that is very thin. Fancy stitches can create pretty sewing details, but don't use too many stitches with a thick thread.

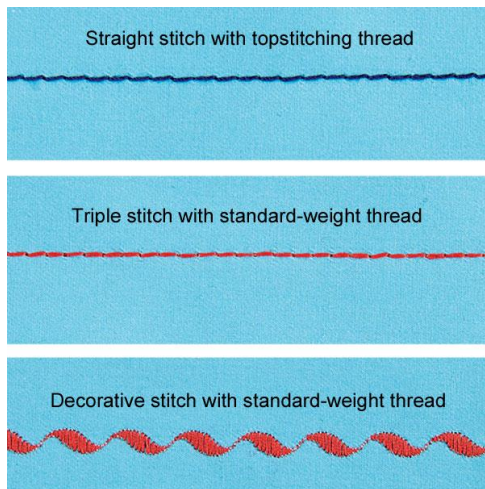


Plate 6: Different stitches used for topstitching

Source: <https://www.threadsmagazine.com/2012/07/10/tips-for-better-topstitching>.

For the collars and cuffs, cut the extra fabric next to the seams to be 1/8 inch. On the right side, the topstitch is slightly further out than the seam allowance. This makes things smaller and helps the fabric to be flat.



Plate 7: topstitch to reduce bulk and allow the seam to lie smoothly

Source: <https://www.threadsmagazine.com/2012/07/10/tips-for-better-topstitching>.

Sew with the pretty side facing up so you can see the thread. This allows you to see exactly what will be seen when it is sewn together. When you can, sew several lines in a row going the same way. This keeps the fabric smooth and flat between the lines of stitching. Fix any

problem areas, like the corners at the beginning and end, especially if the whole area isn't stable (McLoughlin & Mitchell, 2015).



Plate 8: Spot-stabilize during topstitch

Source: <https://www.threadsmagazine.com/2012/07/10/tips-for-better-topstitching>.

2.8 Seams

Seams are important in making clothes. Typically, how well the seams are done greatly affects how good the clothes turn out. The way seams and stitches are done can change how good and pretty clothes look. In the clothing industry, people are starting to care more about how good the clothes are, how comfortable they are, and how well they fit. When we buy clothes, we want them to work well, last a long time, be easy to take care of, look good, and meet our expectations. The way something looks is really important to customers.

Picking the wrong stitch or seam for a piece of clothing makes it less good, comfortable, and fitting. The way the seams look and how well they hold up depends on the different types of stitches and seams used, how close together the stitches are, how the sewing machine is set up, and the quality of the thread used for sewing. The quality of a piece of clothing depends on the fabric's structure and strength, as well as how well the seams are made. The seams need to be secure, durable, and look good, while also allowing the fabric to stretch and move comfortably.

2.8.2 Seam strength

According to Van Amber (2017), an important factor in determining the quality of sewn products is how strong the seams are. The strength of seams depends on various factors like the type of fabric, thread, needle, stitch type, density, and seam type. Seam strength means how strong a seam is and how much force is needed to break it. (Ruston et al. , 2021; Van Amber, 2017). This measures how strong and resilient a seam is. The stitched seam needs to be strong enough to resist tearing when the clothing is under normal stress. It also should not stretch or change the shape of the fabric. The force can tell us how strong a seam is and how much it can handle when being used (Choudhary et al. , 2018; Van Amber, 2017).

Every line that holds pieces of fabric together has two parts: the material itself and the string used to sew it. The way stitches are used to put clothes together affects how they look and how well they work. The strength and toughness of a seam are influenced by strong stitches. The suit's durability also depends on the type and size of the seam. The place and kind of stitch need to be right for how the garment is put together. Seam strength is a way to measure how well the seam performs.

2.8.3 Seam durability

Yildiz & Pamuk (2021) suggest that the strength of the seam is an important part of how well it holds together. Seam durability is about how long a seam in clothing lasts and how well it can handle the way the garment is used in the end. How long a sewn seam lasts depends mostly on how strong the seam is compared to how stretchy it is and how stretchy the material is. Ali and his co-authors, the 2016 study shows that in materials that are not very flexible, are tightly woven, or are dense, the layers have a tendency to move or slip against each other.

To make sure the sewn seam is strong in these fabrics, it is important to pick the correct size of thread. (Chen & Cheng, 2019; Barbulov-Popov et al., 2012) We need to choose the right number of stitches for the material so it doesn't pull too tight and mess up the way it stretches and puckers. When denim jeans go through the stone washing process, they can face a problem where the seams become less durable and more prone to scratching. In this process, they are rubbed very harshly to make them look old and faded.

2.8.4 Seam appearance

The seams need to look smooth and even both on the inside and outside. To achieve this, make sure to set the machine tension, stitch length, pressure foot, and other settings correctly to match the fabric and thread. Seams should be the same width all the way and made to be open or closed depending on the type of seam and how it is used in making something. When you sew the seam with thread, make sure to use the right type of thread for the fabric and material. The thread color should be the same or slightly darker. Generally, seams should look clean and smooth without any extra thickness.

2.8.5 French seam

A French seam is a way to hide the rough edges of the fabric within a stitch. The French seam is called that because it was first used in France. This kind of stitch is often used on

soft, light fabrics or when a designer wants to make a garment look clean and tidy. It also helps stop the fabric from looking messy or falling apart (Ghani, 2011; Pavlinić et al., 2006) A French seam is a common technique used to finish seams on clothes, especially for light or see-through fabrics. This sewing technique makes the edges of a garment look neat and professional. It also makes the garment strong and long-lasting.

A French seam is when you fold the edges of the fabric towards the inside and sew, so that the edges are hidden inside the seam. This makes a piece of clothing look cleaner and more organized. A French seam is often used to tidy up the rough edges of fabrics like cotton, linen, or silk. It can also be used on delicate fabrics like chiffon or organza. However, this type of seam might make thick and noticeable seams on thick fabrics. (Gurarda, 2019)



Plate 9: Samples of the French seam

Source : <https://www.balodana.com/blog/coming-apart-at-the-seams/>.

A French seam can be used for different types of clothing like skirts, blouses, and dresses. However, it can only be used for straight seams and not for curved ones. There are several benefits to using a French seam.

1. A cleaner and more polished appearance for clothing.
2. You can use this method on light and medium fabrics, as well as thin fabrics like chiffon or organza.

3. The rough edges of the fabric are completely covered, which stops it from coming apart or getting messy.
4. This is a good choice for people who are just starting to sew, because it is a fairly easy method.
5. The main drawbacks of using a French seam are:
6. The rule is that you can only use it on straight lines, not bendy lines.
7. It takes more time compared to other ways of finishing rough edges.
8. This is not good for thick fabrics because it can make the fabric too big and create extra bulk at the seam.

So, French Seams make the garment look good both on the inside and outside. A seam is a place where two parts of fabric are joined together by sewing. The inner sides of the fabric edges are sewn together and then folded between the outer sides. This is done to hide the rough edges and make the seam look neat. This makes both the correct and incorrect sides of the seam appear neat and complete. French seams are commonly used with delicate fabrics. However, they can also be used when making items like bags or shirts that won't have a lining. (Islam et al., 2019; Gurarda, 2019).

2.8.6 Slot seam

According to Chen & Cheng (2019), the slot seam is useful and also looks nice, just like the lapped seam. The only difference is that an extra piece of fabric is inserted between the edges of the folded fabric. Putting a piece of fabric behind the overlapping pieces makes the seam stronger and adds a nice difference to it. The material used to make the slot can have a different color or feel compared to the clothing, or it can be the same. The slot makes a pretty cut in the sewing line. You can easily make the seam look better by sewing it with a different colored thread that contrasts with the cotton. (Shamsuzzaman, 2021; Chen & Cheng, 2019; Barbulov-Popov et al., 2012)

This hole can be located on the leg or on the side of a piece of clothing. The fabric is folded at the edges and connected to the slot fabric. The distance from each edge of the seam varies and is based on how the clothing looks overall. Slot seams in sporting tracksuits sometimes display a burst of color, so that the team colors can be easily seen. Slot seams are stitches that give a clothing item a more custom and fitted appearance. This is used to make pockets, jackets, coats, dresses, and blouses look nice. The slot seam does not make the seam wider.

(Maanvizhi et al., 2020)



Plate 10: Samples of slot seam

Source: <https://blog.treasurie.com/slot-seams/>

The slot seam is a special type of seam that adds a pretty pop of color and also makes the seam stronger. It is a great stitch for the side of durable outdoor clothes. The colorful display of the garment makes it stand out and look more sophisticated (Ghani, 2011; Pavlinić et al., 2006). The slot seam is useful in various situations to provide a small amount of contrast or detail.

2.9 Garment Labeling

A clothing label is an important part of clothing. A label is not just a piece of fabric that talks to the customer. This makes the customer notice the product and talks about how good it is. The customer decides if they want to buy the clothes or not based on the label. Therefore, having a label is really important when selling clothes. A clothing label is like a messenger that helps the buyer and the product talk to each other.

According to Heim (2021), a garment label has different types of information about the garment. This includes the name of the company that made it, where it was made, what it's made of, the size, and any special care instructions. A piece of clothing must have a label if it is going to be sold in a different country. So, a garment label is not just a piece of cloth (Morris et al., 2021; Nayak & Padhye, 2015). According to Perez & Lonsdale (2018), labels talk to the customer. It is something that catches the customer's eye and makes them interested in the clothing. This explains what the product is. In modern times, labels help sell clothes. Customers make a decision about buying clothes based on the label.

Label content provides information that can help consumers make decisions, such as details about the price and material of a product (Evans & Peirson-Smith, 2018). Let's keep it simple, instead of using complex words. In 2020, it was discovered that labels are helpful in reducing the risk of buying something that may not be suitable, which in turn decreases any uncertainty or confusion. According to Ritch (2021), garment labels tell us what materials were used to make the clothes. They tell you how to take care of the clothes and any other important information about it, such as the size, the name of the company that made it, and the brand name.

Different companies have their own special labels to make themselves stand out. A company can create a special label to make their product stand out. Pretty, personalized labels make the clothes look even more beautiful and stylish. The manufacturer usually

makes each brand different by using a special symbol, color, or word. This can be seen on the label. The customer checks the tag on a piece of clothing to see the brand and decide how good the product is. Garment labels can be created using various types of materials and styles, and they can be attached to the clothing in different ways. These choices are made by the company that makes the product.

2.9.1 Types of Labels Used in Garments

There are mainly two types of labels: main labels and sub-labels (Heim, 2021; Parkvithee & Miranda, 2012).

2.9.1.1 Main Labels

The main label refers to the name or logo that represents the retailer's brand. The name of a product is very important. Customers focus on a specific brand when buying a product. A brand name makes customers feel good about a product. The main label is approved to ensure the brand's good quality.





Plate 11: Main labels

Source: <https://garmentsmerchandising.com/different-types-of-label-used-in-garments/>

2.9.1.2 Sub Labels

Sub Labels are not their own label, but rather consist of various types of labels. These things are called care labels, size labels, price labels, composition labels, special labels, and flag labels.

Care Labels: Sub Labels are not their own label, but they are made up of different kinds of labels. The care instructions are tips to solve big problems. Care labels give instructions to people on how to take care of their clothes and the best way to clean them based on the type of fabric, decorations, and how the clothing is made. To make sure your clothes stay looking nice and fitting well even after you wash them a lot, just follow the care instructions on the labels.

From a manufacturer's perspective, if clothes are cleaned incorrectly, it can cause problems like customer complaints, expensive returns, and a negative reputation. Using clear and detailed care labels can avoid customers feeling unhappy (Wakes et al., 2020) Care instructions that are written clearly and correctly help consumers know how to clean a

product and can also affect their choices when buying it. People usually prefer clothes that are easy to take care of rather than clothes that have complicated or hard-to-understand care instructions.

Various systems for labeling care instructions have developed worldwide. Some rules are set by the government, and others are agreed upon by countries around the world. found that only a few factors significantly affect the outcome. In simple, some things are necessary for a certain result, but not all of them are. A study conducted by Morik and colleagues revealed that only a small number of factors have a significant impact on the final outcome. In 2019, it was pointed out. Care labels provide information to people who wear or take care of clothes on how to clean them properly. This information includes the type of fabric, thread, decorations, and construction techniques used in the clothing. By following the care labels, you can make sure that the clothes will still look good and fit well even after multiple rounds of cleaning.

For companies that make, import, or sell clothes, the value of their brand depends on how well-made the clothes are. Therefore, the instructions on how to take care of products need to be easy to understand for consumers and people who take care of clothing. These instructions should also meet the rules for trade within the country and internationally. (Remme et al. , 2022; Morik et al. , 2019) Some countries have rules that require clothing and home furnishing products to have care instructions on their labels. Therefore, the details on the care label are very important for most people. The care label is very important and can affect whether or not people buy something.

This includes labels that indicate how to care for it, what size it is, how much it costs, what it's made of, any special features it has, and any warning labels.



Plate 12: Care labels

Source: <https://garmentsmerchandising.com/different-types-of-label-used-in-garments/>

Size Labels: The size labels on clothes show how big or small they are. The size labels are shown as S, M, L, and XL. S means small, M means medium, L means large, and XL means extra-large. Before the ready-to-wear industry was created, clothes were custom-made to fit each person's specific measurements and body shape. The clothing industry today makes clothes in standard sizes that can fit most people. Size labelling is a way for companies and customers to talk to each other about how big or small something is. The system's goal is to make it easier to find clothes that fit well.

This assumes that the makers of clothes label the sizes correctly, that people who buy the clothes understand and believe the size labels, and that the clothes fit well on the people's

bodies. The systems used to label sizes can be seen as logical systems, but they still bring up emotional matters. The clothing is designed and labeled to fit different types of bodies. However, the standards for body sizes and figures can affect how the clothing is labeled. It is possible that the standards are shown in how consumers understand the size labels and the choices that manufacturers make about the body types they produce clothes for and how they label them.



Plate 13: Size labels

Source: <https://www.dreamstime.com/royalty-free-stock-images-size-clothing-labels-set-images37219179>.

Composition Labels: The composition label shows what material a piece of clothing is made of and how much of each material is used. That means it shows the type of material (Cotton Sub denim, Cotton Regular denim, etc.) and the amount of each material used (95% Cotton, 5% Spandex, 100% Cotton, etc.) when it was made (Nayak & Padhye, 2015; Chun-Yoon & Jasper, 1994).



Plate 14: Composition label

Source: <https://garmentsmerchandising.com/different-types-of-label-used-in-garments/>

Flag Labels: The flag label is a small label that has the name or logo of the store on it. It's connected to the seam on the side of the pants or skirt. A flag label is a great way to tag products and tell them apart from one another. If a designer has many products that look similar, the flag label can help distinguish them more easily. Consumers can easily understand what a product is used for by looking at a flag label. The term "flag label" comes from the "flag element" that was made when the label was used. Flag labels are made on tough material and put on a specific product.

Plate 15: Flag labels



Source: <https://pin.it/V6fJMLX>.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter talks about how the study was done. This is about how data is collected and analyzed in Ghana. It also talks about the ethical things to think about when collecting data. Furthermore, the chapter explains how the different stages of the research should be carried out and under what circumstances.

3.2 Research Design

According to Leavy (2017) research design sets up the system for gathering, measuring, and studying data. This means that the research design decides on how to get the necessary data, the ways to gather and analyze this data, and how all of it will provide an answer to the research question. According to Robson (2011), there are three different types of research designs: exploratory, descriptive, and explanatory. He classifies research areas based on their purpose, because each design is used for a different purpose. Lawrence (2020) said that choosing a research plan depends on a few things, but the most important is the features of the things or people we're studying. Because of the way this study was done, we used a descriptive research design. The descriptive research design is a type of research that tries to give a clear picture of something specific. In this situation, the study wants to understand the ways the Ghanaian clothing industry has gotten better in a detailed and complete way. The descriptive research design is great for this purpose because it lets us collect a lot of detailed information that can be used to understand the research topic better. Moreover, the descriptive research design is useful for studying complicated things because it helps to gather a lot of information that can be used to better understand the topic in a detailed way.

One problem with descriptive research is that it cannot test whether one thing causes another thing. Instead, it focuses on talking about how things are related and finding patterns and

trends in the information. But this doesn't really matter for this study because the main objective is to explain and examine the methods used to improve the Ghanaian garment industry, instead of testing specific reasons or causes.

In summary, we decided to use descriptive research design for this study because it helps us fully understand the methods used to improve the Ghanaian garment industry. This design will let us gather lots of detailed information, which we can use to create a complete understanding of the topic. Besides, the descriptive research design is very helpful for studying complicated subjects, which is highly important for the garment industry in Ghana.

3.4 Population of the Study

Population refers to the whole group of things or people that can be studied. This study included all workers from two Fashion Houses in the Ho municipality of the Volta Region of Ghana. At the time of the study, Pearly Fashion House and Garment Technology Centre had a total of 4 experienced seamstresses and 88 beginner apprentices working there. Pearly Fashion House had 35 people learning, while Garment Technology Centre had 53 people learning.

The Fashion Houses in the Ho municipality have a population of approximately 92, according to the latest information from the Ho Branch of the Dressmakers and Tailors Association of Ghana. However, the study selected two fashion houses: Pearly Fashion House and Garment Technology Center. The sample was chosen because it was possible to do the study with the resources available. The two Fashion Houses are well-known and respected in the garment industry in Ho municipality. The things they looked at when picking were how long the company had been around, what people thought of it, how big it was, and what methods they used to get better.

This study included all the workers of two Fashion Houses in the Ho municipality of the Volta Region of Ghana. There were 4 senior seamstresses and 88 apprentices working in

these Fashion Houses. Pearly Fashion House had 35 beginner workers while Garment Technology Centre had 53 beginner workers. It's important to mention that the number of samples used in the study was decided based on what was possible and the resources that were available.

3.4 Sampling Technique and Sample Size

Sharma (2017) says that in research, sampling is necessary because it's not possible to ask everyone in the group we want to study. This is because of limitations with money and time. So instead, we take a small group of people who represent the bigger group. A population is a group of things or people that can be studied. According to Rahi (2017), a sample is a small group of things that we use to make conclusions about a larger group. The main goal is to give correct guesses of something we don't know. It consists of individual members or units. According to Wilson (2016), the process includes choosing a small group from a larger list of options. People cannot always find an exact list, so they use a similar list instead. For certain research questions, it is feasible to gather data from everyone in a population because it is easy to handle. However, it is not safe to think that getting information from a complete population would give better results than gathering data from a smaller group that represents the entire population.

For this research, we used the census sampling method. In census sampling, everyone in the group being studied is involved. The reason for picking this plan was because there weren't many people.

3.5 Instrument for Data Collection

This study used numbers and measurements to collect information. They gathered data by asking questions, talking to people, and watching what happened.

3.5.1 Questionnaire

The main way we collected information for this study was by giving people questionnaires to fill out themselves. Researchers have found that this is a good way to gather information for ergonomic research. The questionnaire was divided into parts that were designed to collect information about different parts of the study. The survey was made to be done in a good amount of time so that more people will answer it without feeling too tired. The survey had mostly questions that could be answered with a choice, but there were also some questions that allowed people to write their own answers for more information. The surveys were given out to the people at their jobs to make it easier for them.

3.5.1 Interview

Interviews are an important way of getting detailed information. In the study by Lawrence and others, it is found that. In a quantitative interview that took place in 2013, the person asking the questions and the person answering them talk openly. The person asking the questions has a list of specific questions they need to ask in a certain order. Archibald and his colleagues The main goal of interviews is to learn about the thoughts and beliefs of the people being interviewed, not what the person asking the questions is interested in.

Berg (2012) suggests that interviews are conversations where we try to understand how other people think and feel about their experiences. So, for this study, interviews were used to collect information. Mostly, the people who own the shop, run the shop, and are learning how to work in the shop were asked questions. The main goal of the interview was to find out and clearly understand the ways the case in this study made things better.

3.5.2 Observations

Observation means watching something happening in its natural setting to collect information. The observation data collection method is classified as a participatory study because the researcher needs to be fully involved in the place where the respondents are,

while writing down and recording things. Observation as a method of collecting data can be done in a structured or unstructured way.

Unstructured observation involves studying any actions or occurrences that can help to answer research questions. This process is more flexible compared to most qualitative research. The researchers used observation as a tool to help understand how garment manufacturers in the Ho municipality improve their techniques. The information we collected by watching and looking at things helped us understand the information we got from talking to people. It focuses on what is happening right now. (Lawless & Pellegrino, 2007). This means that this thing has a way to check if what people say they do matches with what they actually do. This checking is done without any influence from personal biases or tendencies that may affect the observation. It helps the researcher watch how people act in real-life situations.

3.6 Validity and Reliability of Instruments

Research validity refers to what is considered correct and appropriate when carrying out a research study. It is an important aspect of any research. The problem of whether research is valid or not is very important when people are being studied, like in this study. Ethics in research means following moral principles and guidelines, as explained by Pietilä et al. This describes the different steps of a research process in 2020. It includes identifying the problem, explaining the theory behind it, setting the research context, choosing data collection tools and methods, selecting research participants, analyzing the data, and reporting the findings.

As Swain (2016) explains, when doing research, it is important to make sure that it is valid. To do this, the research question should be based on facts and be part of a theoretical framework. This helps ensure that the research is reliable. Additionally, it is important to honor and safeguard the rights and privacy of those involved in research. Once again, it is

important for the researcher to be aware and understanding of the different cultures and societies of the people they are studying. They need to accurately share their findings and explain in detail how they conducted their research and any limitations that might affect the results. (Fotrousi et al. , 2017)In this study, the researcher wants to find out how garment makers in the Ho municipality make better clothes. This makes the research valid and acceptable. So, it is important to treat the people being studied with respect and get their permission after giving them all the necessary information. The people who were asked questions were told in advance about the recording and were asked if it was okay to do so.

The people in the study were allowed to choose if they wanted to take part or not. To help people decide if they want to be in the study, they were told the reason for the study, what they would have to do, how the results would be shared and used, their rights in the study, and where to get more information about their rights. The researcher asked for permission from the participants after providing them with all the necessary information. You had the choice to participate or not.

3.7 Procedure for Data Collection

There isn't one right way or best method for analyzing qualitative data in research. Analysis means studying and examining something carefully. It also involves making a final decision. So, the information was looked at closely, using ways to understand it well, in order to make sense of the study. The recorded responses were listened to, written down, and organized in order for the researcher to find common themes and categories for more study.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSIONS

4.1 Introduction

There isn't one right way or best method for analyzing qualitative data in research. Analysis means studying and examining something carefully. It also involves making a final decision. So, the information was looked at closely, using ways to understand it well, in order to make sense of the study. The recorded responses were listened to, written down, and organized in order for the researcher to find common themes and categories for more study.

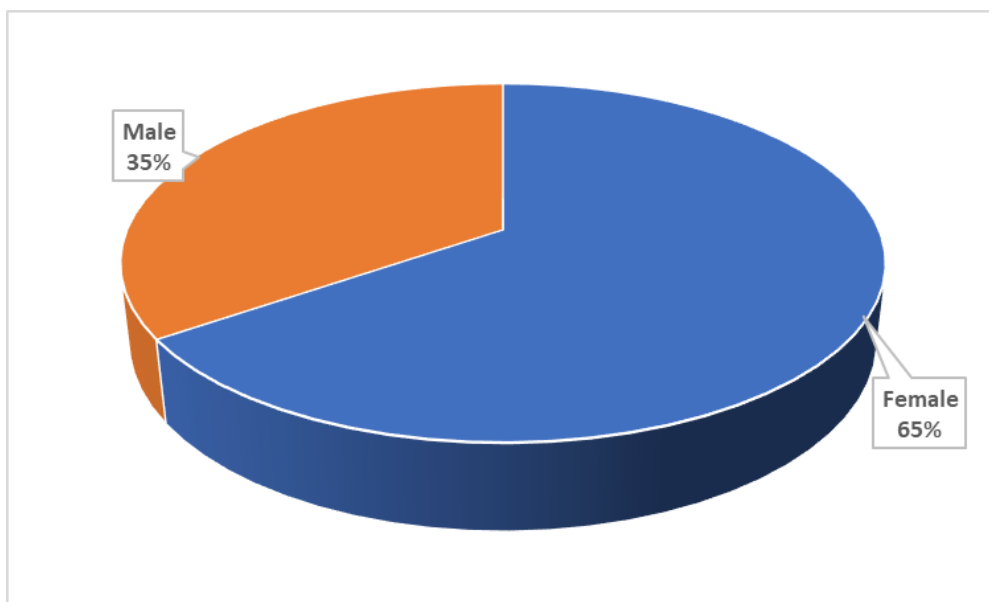


Figure 4.1: Gender distribution of the respondents

Source: Fieldwork (2022)

Table 4 shows how many males and females answered the survey. The findings indicate that 65.4% of the people surveyed were women, and 34.6% were men. This means that there are mostly women working in the garment manufacturing industry in Ghana.

The meaning of having a certain number of males and females is important to mention. Firstly, there are more women in the garment industry in Ghana because of the way society expects women to work in this field based on their gender. These rules can cause a separation

of jobs between men and women in the industry, where women usually have jobs that pay less and require fewer skills.

The respondents' gender distribution shows that the garment industry in Ghana is biased towards a specific gender and there is a need for policies and actions to address this bias and promote equality in the industry.

Table 4.1: Age of respondents

Age range (years)	Frequency (<i>n</i>)	Percent (%)
Below 20	19	20.7
21 – 25	25	27.2
26 – 30	18	19.6
31 – 35	19	20.6
36 – 40	11	11.9
Total	92	100.0

Source: Fieldwork (2022)

Table 4.1 displays the different ages of people who participated in the study 27.2% of the people surveyed were between the ages of 21 and 25, and 20.7% were younger than 20 years old. The group of people who were between 36 and 40 years old had the fewest number of participants, with a percentage of 11.9% There were a total of 92 people who participated.

According to the information, most of the people who participated in the survey were young adults. Almost half of them were younger than 25 years old. This is not unexpected because the clothing industry in Ghana is known to employ mostly young workers. The industry may not be able to keep many older workers since only a small group of people aged 36-40 responded.

Knowing the ages of workers in the industry can impact training and development programs because different age groups have different ways of learning and different needs. This means that younger workers are more open to accepting new ideas and technologies than older workers, which could affect how companies adopt and implement new technologies and practices.

Table 4.2: Educational Qualification

Educational Qualification	Frequency (<i>n</i>)	Percent (%)
SHS/Vocational	61	66.3
Other; specify	31	33.7
Total	92	100.0

Source: Fieldwork (2022)

Table 4.2 shows the education levels of the people who were asked questions, and there were a total of 92 participants. Most of the people surveyed had either finished Senior High School or vocational education. This was true for 61 of the respondents, which makes up about 66.3% of the total. 31 people (which is 33.7% of the total) had different educational qualifications that were not mentioned.

This means that many of the people surveyed have jobs in the garment industry in Ghana and they may not have a lot of formal education. This discovery has important consequences for how workers in the industry are trained and developed. In order to make the industry better and more competitive, it's important to invest in training and improving the skills of the people already working in it.

The study has a limitation because we don't have information about the educational qualifications of 33.7% of the people we surveyed. In the future, researchers should try to gather more detailed information about the education of workers in Ghana's clothing industry.

4.2 The Various Sewing Techniques Used by Two Fashion Houses

Table 4.3: Techniques used when cutting pattern pieces.

Statement	N	Min	Max	Mean	±SD
Patternmaking	78	1	5	4.27	1.065
Draping	78	1	5	3.92	1.246
Freehand cutting (Direct cutting)	78	1	5	3.81	1.152
Copying from an existing garment	78	1	5	3.27	1.234
Commercial patterns	78	1	5	3.88	1.348

Source: Fieldwork (2022)

Table 4.3 shows how people in the clothing industry cut pattern pieces. The table shows that patternmaking had the highest average score, which was 4.27 (with a standard deviation of ± 1.065). This research shows that patternmaking is the most common way to cut pattern pieces in the clothing industry in Ghana. Draping was the second most popular method, with an average score of 3.92 ($\pm SD=1.246$), closely followed by freehand cutting, which had an average score of 3.81 ($\pm SD=1.152$). Copying from an existing garment was not often used, with an average score of 3.27 (with a typical deviation of 1.234). On the other hand, commercial patterns had a higher average score of 3.88 (with a typical deviation of 1.348).

These findings are important for training and developing the people who work in the clothing industry in Ghana. The fact that patternmaking is the main way of cutting suggests that there might be a need to have training programs to teach this skill better. This suggests that people don't use commercial patterns or copy existing clothes much. This means there might be a need to give training and resources to help with these techniques.

Table 4.4: Techniques used when sewing

Statement	N	Min	Max	Mean	±SD
Round method (sew the shoulder, side, and underarm sleeve seams early in the construction process. This creates round openings for the armholes, neck finishings, bottom opening and sleeve seam)	78	1	5	4.27	1.065
Flat method (leave the seams open and construct everything flat, e.g., attach sleeves and finish hems before sewing the side and underarm seams)	78	1	5	3.92	1.246

Source: Fieldwork (2022)

Table 4.4 shows the methods people in Ghana's clothing industry use when sewing. The round method got the highest average score, with a score of 4.27 (±1.065). This discovery shows that most people in the clothing industry in Ghana prefer using the round method for sewing. The round method involves sewing certain seams early on, like the shoulder, side, and underarm sleeve seams. This creates circular openings for the armholes, neckline, bottom, and sleeve.

The flat method was the second most popular technique, with an average score of 3.92 (plus or minus a standard deviation of 1.246). This method means you keep the seams open and make everything flat. For example, you attach the sleeves and finish the hems before sewing the side and underarm seams. These findings are important for training and developing the workers in the clothing industry in Ghana. The fact that most people use the round sewing method suggests that we should have training programs to help people become better at this skill. Similarly, not many people are using the flat method, which means there may be a need

to give training and resources to help people use this technique.

Statement	N	Min	Max	Mean	±SD
Before sewing, I analyze the stitches in density, Stitch width, depth, consistency and tension, etc.)	78	1	5	3.38	1.425
Class 100: Single Thread Chainstitch (The stitches formed are from one or more needles by interloping. This type of stitch is very insecure as each loop is dependent on the next loop, and a single thread breakage can pull apart the entire stitch)	78	1	5	3.46	1.125
Class 300: Lock Stitch (formed when the thread or threads are introduced from one side of the fabric to interlace with the threads introduced from the other side. The interlacing of the threads makes the stitch secure and challenging to unravel	78	1	5	3.58	1.157
Before sewing a garment, I analyze the stitch length in terms of strength, thickness, size, elasticity, consistency etc.	78	1	4	2.58	1.013
Superimposed seam (the most common and mostly used seam for joining fabrics where 2 plies of fabric are placed on one another perfectly and sewn)	78	1	5	3.96	1.098
Bound Seams (made to finish an edge of a garment)	78	1	5	3.92	1.078
Flat seam (constructed by having two pieces of fabric meet precisely at their edges. This stitch has multiple needles and creates a stitch perpendicular to the seam line)	78	1	5	3.73	.863
French seam (used for delicate fabrics which fray easily)	78	1	5	3.50	.752
Flat Fell Seam (double line of stitching used.	78	1	5	3.27	1.028

Table 4.5: Stitches usually used when sewing

Source: Fieldwork (2022)

Table 4.5 shows the common stitches that are typically used for sewing. We found the average scores using a scale that goes from 1 (Strongly Disagree) to 5 (Strongly Agree). The people who were asked said that before they start sewing, they look closely at the stitches to see how close they are, how wide and deep they are, and how consistent and tight they are. On average, they rated these factors as 3.38 out of 5, with a standard deviation of 1.425. Class 100: Single Thread Chainstitch and Class 300: Lock Stitch were the most popular types of stitches. Before making clothes, the people involved in the study said they looked carefully at how long the stitches were. They thought about things like how strong they were, how thick they were, how big they were, how stretchy they were, and if they were all the same. The average is 2.58, and there is a range of 1.013 around that average.

According to the participants, the most common type of seam used to join fabrics is the superimposed seam. This is followed by bound seams and flat seams. The flat fell seam and French seam were used the least. The flat fell seam had an average score of 3.27 with a standard deviation of 1.028, while the French seam had an average score of 3.50 with a standard deviation of 0.752. The results show that the people who answered understood how to sew clothes using different stitches and seams. The results of this study can be useful in creating training programs and plans to help workers in the garment industry in Ghana improve their skills and knowledge.

This means that they care about the quality of the stitch. The two stitches that were used the most often were Class 100, which is a single thread chainstitch, and Class 300, which is a lock stitch. This means that the clothing makers in the Ho municipality focus on making sure that the stitches in their garments are secure and long-lasting.

Table 4.6: Poorly formed stitches (twists)

Statement	N	Min	Max	Mean	±SD
Tight stitches (Undulations)	78	2	5	3.92	1.078
Skipped stitches (Raw edges exposed or felled seams)	78	3	5	4.58	.635
Needle thread breakage	78	2	5	4.04	.860
Bobbin or looper thread breakage	78	2	5	3.96	.986
Thread fusing when the machine stops	78	1	5	3.58	1.123

Source: Fieldwork (2022)

The results in Table 4.6 show that the people surveyed experience problems with the stitches they make using the sewing machine. These problems include stitches that are too tight, stitches that are skipped, the thread breaking, and the thread fusing together when the machine stops. According to the data, the respondents faced two common problems the most: skipped stitches and needle thread breakage. These problems were rated with mean scores of 4.58 and 4.04 respectively. However, when the machine stops, thread fusing was the least common problem found. It had an average score of 3.58. These findings show that garment manufacturers in the Ho municipality should get better at sewing to make sure stitches are done well. Making the stitching better will make the clothes look nicer and also save money by reducing the number of clothes that get thrown out because of bad stitches.

Table 4.7: The current improvement techniques used

Statement	N	Min	Max	Mean	±SD
We always chose the right stitch and seam for the garment being sewn	78	1	5	3.55	.994
We constantly analyze the stitches in terms of density, width, depth, consistency, tension, etc.	78	3	5	4.04	.591
The seams we use are always smooth and even in appearance on the inside and outside	78	2	5	4.08	.834
The seams are always even in width of seam throughout	78	1	5	3.62	1.119
The seams are always pressed open or closed seam according to the type and how I used them in the construction process	78	1	5	3.65	1.174
The choice of thread is always appropriate to the fabric type and fibre content when sewing	78	1	5	3.46	1.125
Our seams are always neat and smooth in appearance without added bulk	78	1	5	3.35	1.308
Our seams are always free from ravelling, stretching, rolling and curling	78	2	5	3.69	1.036
Our seams are always not visible from the right side of the garment	78	1	5	3.73	.949
I always use the proper shaping techniques when sewing	78	2	5	3.88	.939

Source: Fieldwork (2022)

Table 4.7 shows the methods being used to make garments better in Ghana's clothing industry. The best technique for improvement had the highest average score of 4.04 (\pm SD=0.591) It involves constantly examining the stitches in terms of factors like density, width, depth, consistency, tension, etc. This discovery implies that examining stitches is a necessary way to make the clothing industry in Ghana better.

The other ways to make improvements that scored relatively high were "I always make my seams look smooth and even on the inside and outside" (average score of 4.08, with a standard deviation of 0.834) and "My seams are never visible from the front of the clothing" (average score of 3.73, with a standard deviation of 0.949) These findings show that it is important to make both sides of the garment look smooth and even, and to make the seams not visible from the front. People often use these techniques to make improvements.

However, the technique that had the lowest average score was "making sure my seams look nice and smooth without extra thickness" (average score of 3.35, with a standard deviation of 1.308) This means that the people in the survey might need more help and tools to get better at making neat and smooth seams without making things look bigger.

These discoveries have important consequences for the education and growth of the workers in the clothing industry in Ghana. They recommend that it might be necessary to spend money on training programs that focus on specific improvement techniques, like analyzing stitches, making seams look better, and reducing bulkiness. Rules and actions that help people learn new abilities and give them tools and support to get better at different techniques can make the industry better at getting things done and being successful.

Table 4.8: Labelling of Garment

Statement	N	Min	Max	Mean	±SD
In our shop, we label our garments with the brand name.	78	1	5	3.84	.994
We include care instructions on our labels.	78	3	5	3.69	.591
We include size information on our labels.	78	2	5	4.08	.834
We include the country of origin on our labels.	78	1	5	4.39	.812
We include a fabric composition on our labels.	78	1	5	4.33	.826
Labelling is important to us in terms of customer satisfaction and brand recognition.	78	1	5	3.93	1.051
We ensure the accuracy of the information on the labels.	78	1	5	4.18	.989
We have received customer complaints regarding the labelling of the garments.	78	2	5	4.02	1.095
We keep up-to-date with labelling regulations and standards in the industry.	78	1	5	3.73	.949
We label our garments with the brand name.	78	2	5	3.88	.939

Source: Fieldwork (2022)

Table 48 shows the findings of a survey done in the clothing business in Ghana. The survey aimed to understand how people label their garments and what they think about it. The table shows the number of people who answered (N), the lowest and highest scores, the average scores, and the standard deviation (\pm SD) for each statement. The scores were based on a scale of 1 to 5, where 5 means "Always" and 1 means "Never."

The average score for the statement "We put the country of origin on our labels" was the highest at 4.39, which means that respondents really want to know where their clothes come from. This information is really important for following the rules and guidelines, and it also helps people to make smart choices.

The second-highest scoring statement was "We put fabric composition on our labels". This means that people think it's important to have information about what the clothes are made of on the labels. This follows the rules set by international labeling standards, which ask for information about the fibers used in the product to be disclosed.

The statement that received the lowest average score was "Customers have complained about the labels on the clothes" with a score of 4.02 (\pm standard deviation of 1.095) This means that not many respondents received complaints about the labels on their clothes. However, it is important to understand that even a small number of complaints can make customers unhappy and harm the reputation of a brand.

Therefore, the findings show that people working in the clothing industry in Ghana understand that labeling is important for making customers happy and boosting brand awareness. The average scores for most statements are quite high, meaning that people generally follow the rules and standards for labeling. However, there is a possibility to make garment labels better by providing more accurate and detailed information. It is also important to stay updated with the rules and guidelines for labeling garments.

Table 4.9: Training workshop required to enhance sewing techniques.

Statements	N	Min	Max	Mean	\pmSD
Training on the selection and utilization of proper equipment for each cutting and assembly step	78	1	5	4.10	.838

Training on inspection of work in process and finished garments to include adherence to size specifications and stitching-related defects such as needle cutting, open seam, broken seam, jump stitch, variable gathering.	78	1	5	3.39	.748
Training on accurate measurement taking, laying out and cutting of pattern pieces	78	1	5	3.99	1.046
Training on accuracy in joining, reinforcing, and decorating garments or parts of garments	78	1	5	4.28	.885
Training on choosing the right stitch and seam for the garment being sewn	78	1	5	4.09	1.078
Training on analyzing stitches in density, width, depth, consistency, tension, etc.	78	1	5	4.14	1.077
Training on analyzing seams in strength, thickness, size, elasticity, consistency etc.	78	1	5	4.21	1.042

Source: Fieldwork 2022

Table 4.9 shows the average scores and how much the scores vary for the sewing training workshops in the clothing industry in Ghana. The highest average score was found for "training on how to join, reinforce, and decorate clothes or parts of clothes," with an average score of 4.28 (plus or minus a standard deviation of 0.885) This research shows that people really like training that helps them get better at sewing, reinforcing, and decorating clothes.

The second highest average score was given for "learning about analyzing seams in terms of their strength, thickness, size, elasticity, consistency, etc. " The average score was 4.21 with a

standard deviation of 1.042 This discovery shows that people understand the need to examine seams to make sure the final product is good and lasts a long time.

Some other training workshops that got high scores were about learning how to analyze stitches in terms of density and width, how to choose the right equipment for cutting and putting things together, and how to pick the best stitch for the clothes being sewn.

On the other hand, the lowest average score was given for "training on checking work in progress and finished clothes to make sure they are the right size and to find problems like cut needles, loose seams, broken seams, skipped stitches, and uneven gathering. " The average score for this was 3.39 (with a standard deviation of 0.748) This discovery shows that the people answering the survey may not think there is a need for training in checking ongoing and completed clothing production.

This study's results can help create training programs and interventions that improve sewing skills in Ghana's garment industry. The study shows that it is important for training programs to have workshops that help people get better at joining, reinforcing, and decorating clothes. It is also important to learn how to analyze seams and stitches, and know which equipment to use for cutting and putting together clothes. The results also suggest that it might be necessary to focus more on training workshops that teach about checking the quality of work during the production of clothes and after they are finished.

4.3 Analysis of Interview Results

4.3.1 The Various Sewing Techniques Used by Two Fashion Houses

We talked to four experienced seamstresses and two fashion house owners. We discovered that both fashion houses use different sewing methods when making their clothes. The findings indicate that fashion houses often use various methods, such as rounding, flattening, draping, cutting by hand, and using pre-made patterns. Here are some parts of what the respondents said: "We use the round method to make most of our clothes because it helps us

create a closer and well-fitted appearance. However, for simpler designs that don't need much shaping or fitting, we use the flat method." Someone else said; We sometimes use freehand cutting for specific designs that need to look more natural and flowing. Doing it well requires a lot of skill and experience. We use ready-made patterns for easier designs that don't need as much creativity. Using it helps us save time and concentrate on other parts of the production process.

As a designer at Pearly Fashion, I always select the appropriate stitch and seam for the piece of clothing that I am sewing. I always look closely at how the stitches are made. I pay attention to things like how close together they are, how wide and deep they are, if they look the same across the whole piece, and how tight they are. I also study the lines in terms of how strong, thick, big, stretchy, and consistent they are. I make sure that my stitches always look smooth and even on both the inside and outside. Also, I make sure to use the right tools and equipment for each step of cutting and putting things together.

Based on the answers, we can say that the two fashion brands used a mix of old and new sewing methods to make their clothes. It depended on how the piece looked and how hard it was to make. They used different methods to make special and good clothes that matched what their customers wanted.



Plate 16: Checking the slot seam

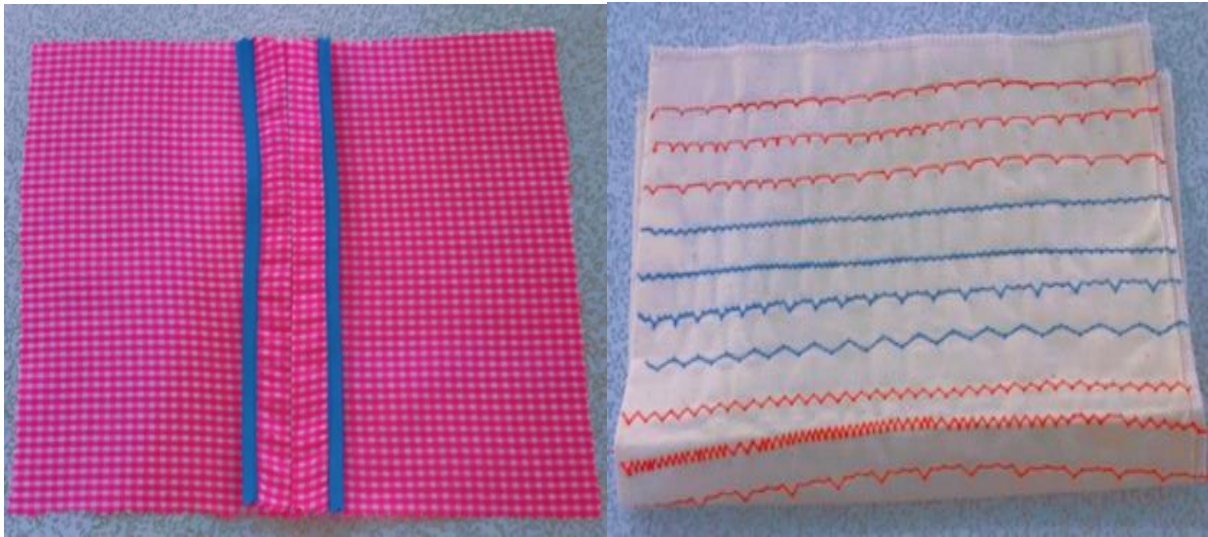


Plate 17: Bound Seam and Decorative Stitches



Plate 18: Checking the French sea

4.3.2 Problems usually encountered during production/sewing

The people who were surveyed were asked to share the issues they often face while making things. When fashion house owners work with new clients, they often have a problem with inconsistent sizes. This means that their clothes don't always fit customers correctly. This problem can be difficult to solve and can cause customers to have bad experiences.

Additionally, the experienced seamstresses mentioned that the quality of fabric may be different even in the same roll of fabric. They said that this can make it hard to make a garment look and feel the same all the time and can cause issues like unraveling or ripping. Problems with the machines breaking down were also mentioned during production. A senior trainee discovered that machines can sometimes have problems while making things, which can cause delays and more work. They emphasized the need for having a capable person on the team who can take care of fixing and maintaining machines.

Both fashion house owners find it difficult to manage their time, especially when they are working on custom designs. They stressed how important it is to be practical about time frames and to communicate clearly with clients about what is possible. The experienced seamstresses noticed that it takes a long time to become really good at sewing, and that some new learners may have difficulty with certain sewing methods or patterns. They said it was really important to spend time and money on training and development to make the things we make better. Here are some of the responses that were chosen to be shown:

Managing time can be difficult, especially when working on personalized designs. We need to be practical and clear when talking to clients about deadlines.

Sewing is a difficult skill that requires many years of practice to become an expert. We should spend money on training to make our production better overall.

We often have problems with clothes not being the right size, especially when we work with new customers. "It can be hard to handle and may make customers unhappy. "

The fashion industry in Ghana has many problems when it comes to making clothes. The main problems mentioned were different sizes, issues with the quality of the fabric, problems with the machines, difficulties managing time, and varying levels of skill. In order to solve these problems, it is important to invest in training and development, and also have skilled workers who can take care of and fix machines. It is also very important to communicate clearly with clients about when things will be done and whether they can actually be done. In summary, tackling these difficulties can enhance the standard and uniformity of clothing making in Ghana.

4.3.3 Current improvement techniques used by designers

The people who were asked about the methods that designers currently use to make things better. We have listed the answers below; One of the greatest advances seen was the use of technology in the design process. We can use special software called computer-aided design (CAD) to make designs on the computer. This software helps us make very precise and detailed designs, and it is also easy to make changes to the designs. This has made our design process simpler and allowed us to make more intricate designs. Another positive change we noticed was that they started using environmentally-friendly materials that are good for the planet. A lot of designers are now focusing on being eco-friendly and using materials like organic cotton, bamboo, and recycled fabrics. This helps the environment and also interests customers who care about how their actions affect the Earth. Fashion houses are now using lean manufacturing methods to make things more efficiently and have less waste. This means making production processes more efficient, using materials in the best way, and having less stock. It is a better and cheaper way that helps both the company and the environment. At Pearly Fashion, one person responded by saying, "Our goal is to reduce the waste we create by planning our process carefully. " Once, we had a lot of fabric pieces and didn't know where to store them. That made us start to think. Working together is increasingly valued in

the Fashion industry. Designers are now collaborating more closely with suppliers, manufacturers, and other involved parties to make sure that everyone is on the same page and that production goes smoothly. This has resulted in improved communication, less errors, and more successful working together.



Plate 19: Another fashion designer brought to teach apprentices different ways of production.



Plate 20: Organise Workshop for Some fashion Designers in Ho Municipality



Plate 21: Checking their measurement



Plate 22: The side of the garment



Plate 23: The final front garment and the back of the finishing garment



Plate 24: Wrong side of the garment, some of the seam and Front wrong side of the seam

4.3.4 Training

The people who were surveyed were asked to say what kind of training workshops would be useful for improving sewing techniques in the clothing industry in Ghana. A lot of people think that workshops focused on solving problems and maintaining machines would be beneficial for them. Plus, providing a training and development program that teaches them how to brand and market their businesses will greatly help them promote their ventures. Here are some important points that have been shared:

I believe workshops that teach more advanced sewing skills, help solve sewing problems, and show how to maintain sewing machines would be really useful. It would also help to have classes on sustainable and efficient methods to improve the productivity and competitiveness of the industry. Finally, fashion house owners can benefit from training programs that

concentrate on branding and marketing. These programs can help them effectively advertise their businesses and make more money.

I think that attending training sessions can really help us improve our sewing skills and do better work overall. No matter how much we learn while working, there is always space to get better and think of new things. I want to attend workshops that teach different things like how to sew advanced designs, how to fix common sewing issues, and how to sew in an eco-friendly and efficient way. It would also be helpful to have workshops that focus on specific things, like creating patterns or fixing machines. In general, I believe that these workshops can keep us informed about current trends in our industry and make our clothes better.

From the responses given, it seems that fashion designers know that continuous training and development are important to improve their sewing skills. They understand that the field is always changing and that they have to keep learning about new trends and methods to stay ahead in the competition. The people who answered also said there are certain topics they want to learn about in their training, like how to make patterns, choose fabrics, and finish their projects. They emphasized the importance of having practical and interactive training instead of just learning theories. This kind of training would allow them to actually use the knowledge and skills they acquired in their job. In general, the answers show that fashion designers in Ghana want to get better at what they do and are willing to learn more to improve their sewing skills.

CHAPTER FIVE

SUMMARY FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This study looks at how the garment industry in Ghana can get better. It focuses on two fashion companies, Pearly fashion and Garment Technology Centre, in the Ho municipality. This chapter gives a summary of what we found and the conclusions we came to in our study. Lastly, this section gives suggestions that can be helpful in solving the problems and making the clothing manufacturing industry in Ghana better.

5.2 Summary of Findings

The research looked at ways to make the clothing industry in Ghana better. Pearly fashion house was used as an example to learn from. Most of the people who answered the survey were women, between 41 and 50 years old. Many of them had completed Senior High School or vocational education. The process of making patterns was often done by cutting out pieces of fabric in a specific way. Sewing them together was usually done in a circular motion. The stitches that were used the most often were Class 100: Single Thread Chainstitch and Class 300: Lock Stitch.

The research discovered that fashion companies examine the way clothes are sewn, particularly looking at the quality of the stitches and seams. They care about how well the stitching is done. Some examples of badly made stitches are when they are too tight, some are skipped, the thread on the needle breaks, the thread on the bobbin or looper breaks, and sometimes the thread gets stuck when the machine stops. These results have important consequences for how we train and help people in the Ghanaian clothing industry develop their skills.

The clothing industry is one of the biggest job providers in Ghana and has a major effect on the economy. In order to make the industry better and more competitive, we have to solve

some problems. These problems include clothes being made in different sizes, issues with fabric quality, machines not working properly, problems with managing time, and not having enough skill.

The research discovered that workers in the industry need training and development programs to improve their skills. These programs would focus on specific techniques like analyzing stitches and seams, choosing the right equipment, and getting better at measuring, cutting, sewing, reinforcing, and decorating garments.

It was found that using different sewing techniques, both traditional and modern, can help designers make special and good-quality clothes that match their clients' wants and choices. In addition, designers are using technology, materials that are good for the environment, and manufacturing methods that save resources and limit waste to make things better and produce less trash. It's really important for the industry to communicate well with clients about when things will be done and what's actually possible.

5.3 Conclusions

The study's results led to the following conclusions:

1. The study wanted to learn about how clothes are made in Ghana. They wanted to understand the sewing techniques, the issues that come up when making clothes, and how people make things better. The research used both surveys and interviews to gather information from people working in the industry. The results show that people experience problems with the way the stitches are made, like when they are too tight, skipped, or when the thread breaks.
2. The study also found that clothing makers use different ways of sewing, like round method, flat method, draping, and freehand cutting, to make special and good-quality clothes. The main problems mentioned were that the clothes were not the right size, the fabric quality was not good, the machines were not working properly, it was hard

to manage time, and some people were not skilled enough. The people surveyed said it was important to invest in training and development, and to have skilled workers who can fix and take care of machines. In simpler words, the study showed that using labels is really important for following rules, making customers happy, and getting recognized.

3. The study showed that it is important for companies to invest in training and development. It is also important to have skilled people who can fix and maintain machines. This will help solve the problems faced by the industry. The research also showed that labeling is important for following rules, making customers happy, and being known as a brand. This research gives helpful ideas to make the clothing industry in Ghana better. By using sustainable and efficient methods, the industry can become more productive and competitive.
4. The study's results have significant impact on improving the training and development of the workers in Ghana's garment industry. They also highlight the importance of adopting sustainable and efficient practices to make the industry more productive and competitive.

5.4 Recommendations

The study's findings led to these suggestions:

Small fashion businesses in Ghana should spend money on training programs to help their apprentices and employees get better at making clothes. This will help them learn new skills and improve their knowledge, especially in techniques to make better garments. This might mean offering regular training sessions, workshops, and mentorship programs to improve the sewing abilities and problem-solving skills of the workers.

It is suggested that using good materials is important for Fashion Houses in Ghana. This can help them make clothes that are better quality, last longer, and look more appealing to customers. In the research, people said that fabric quality issues are a big problem they face when making things. Using good materials can solve this problem and make sure that the final product is what the customer wants.

Moreover, fashion house owners may need to do some research to find trustworthy suppliers and negotiate good prices and conditions when looking for high-quality materials. This might involve making connections with suppliers and gaining their trust, which can take a lot of time and hard work. However, spending money on good materials is expected to be beneficial in the future because it improves the fashion house's reputation and brings in more customers. Trainees could also learn how to find and recognize good materials, so they can help the fashion house succeed.

Using labels correctly is an important way to make things better in the garment industry in Ghana. It can make customers happier and help the brand become more well-known. Fashion brands in Ghana can make use of this method by following labeling rules and providing important details on their clothes. This might include instructions for care, size information, and other details that assist customers in making smart choices about what they buy. By doing this, fashion brands can earn the trust of their customers, who are more likely to come back if they are happy with the product and service they get. Furthermore, if fashion houses clearly and correctly label their products, it can prevent them from facing legal problems associated with mislabeling. This can save them money and protect their reputation from harm. So basically, using good labels is an important thing that fashion companies and beginners can do to make their businesses better and improve the whole industry.

5.5 Suggestions for Further Studies

According to the study, upcoming researchers who want to study Ghana's garment manufacturing industry should focus on the following areas. They should think about studying how better training and development programs affect how well the garment industry in Ghana does its work and competes with others.

Moreover, other scientists can also study how well different methods, like tagging strategies, make the clothes made in Ghana better and more attractive.

Finally, they can also look at how technology can make the garment industry in Ghana better and more competitive. They can see if using new technology can help the industry produce more and be more successful.

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APPENDIX A

QUESTIONNAIRE FOR FASHION DESIGNERS

This questionnaire instrument is intended to collect applicable information on your views on **IMPROVEMENT TECHNIQUES IN THE GHANAIAN GARMENT INDUSTRY** to inform policies on quality garment production, which is significant for the garment producer as well as the customer congruent to the efforts to mitigate the effects associated with the demand for foreign garment products and its associated consequences that have aided in the collapse of the garment sector in Ghana. It is presumed that any data you offer could help improve production techniques. Your responses to the substances of this questionnaire will remain confidential. You can use a [√] mark to designate your responses for questions with alternative answers.

THANK YOU

SECTION A: DEMOGRAPHICS

Gender: Male [] Female []

Age: Below 16 - 20 [] 21 - 25 [] 26 – 30 [] 31 - 35 [] 36 - 40 []

Marital Status: Single [] Married [] Widow [] Others, please specify _____

Educational Qualification: None [] Basic [] Secondary [] Tertiary []

Others (specify) _____

What is your position/role in the business?

Owner/CEO [] Manager [] Worker [] Apprentice []

SECTION B: THE VARIOUS SEWING TECHNIQUES USED BY TWO FASHION HOUSES

5 = Always 4 = Most of the time 3 = Sometimes 2 = Rarely 1 = Never

	<i>Always</i>				<i>Never</i>
	<i>5</i>	<i>4</i>	<i>3</i>	<i>2</i>	<i>1</i>
<i>1. Techniques used when cutting pattern pieces</i>					
a. Patternmaking					
b. Draping					
c. Freehand cutting (Direct cutting)					
d. Copying from an existing garment					
e. Commercial patterns					
<i>2. Techniques used when sewing</i>					
<i>a. Round method</i> (sew the shoulder, side, and underarm sleeve seams early on in the construction process. This creates round openings for the armholes, neck finishings, bottom opening and sleeve seam)					
<i>b. Flat method</i> (leave the seams open and construct everything flat, e.g., attach sleeves and finish hems before sewing the side and underarm seams)					
<i>3. Stitches usually used when sewing</i>					
a. Before sewing a garment, I analyze the stitches in terms of density (the number of stitches per unit length in one row of stitching, Stitch width (the distance between the lines of the outermost parts of the Stitches), depth, consistency and tension, etc.)					

<p>b. Class 100: Single Thread Chainstitch (The stitches formed are from one or more needles by interloping. This type of stitch is very insecure as each loop is dependent on the next loop, and a single thread breakage can pull apart the entire stitch)</p>					
<p>c. Class 300: Lock Stitch (formed when the thread or threads are introduced from one side of the fabric to interlace with the threads introduced from the other side. The interlacing of the threads makes the stitch secure and difficult to unravel)</p>					
<p>4. Stitches usually used when sewing</p>					
<p>a. Before sewing a garment, I analyze the stitch length in terms of strength, thickness, size, elasticity, consistency etc.</p>					
<p>b. Superimposed seam (the most common and mostly used seam for joining fabrics where 2 plies of fabric are placed on one another perfectly and sewn)</p>					
<p>b. Bound Seams (made to finish an edge of a garment)</p>					
<p>c. Flat seam (constructed by having 2 pieces of fabric meet precisely at their edges. This stitch has multiple needles and creates a stitch perpendicular to the seam line)</p>					
<p>d. French seam (used for delicate fabrics which fray easily)</p>					
<p>e. Flat Fell Seam (double line of stitching used .</p>					
<p>5. Final Finishing</p>					
<p>a. Various methods are used to improve the garment's appearance and/or functionality, such as trimmings of thread , pressing, and packing</p>					

5 = Always 4 = Most of the times 3 = Sometimes 2 = Rarely 1 = Never

<i>Which ensuing problems do you usually encounter/experience during production/sewing?</i>	<i>Always</i>				<i>Never</i>
	<i>5</i>	<i>4</i>	<i>3</i>	<i>2</i>	<i>1</i>
a. Poorly formed stitches (twists)					
b. Tight stitchees (Undulations)					
c. Skipped stitches (Raw edges exposed or felled seams)					
d. Needle thread breakage					
e. Bobbin or looper thread breakage					
f. Thread fusing when the machine stops					

SECTION C: THE CURRENT IMPROVEMENT TECHNIQUES USED BY DESIGNERS

5 = Always 4 = Most of the times 3 = Sometimes 2 = Rarely 1 = Never

<i>6. The current improvement techniques used</i>	<i>Always</i>				<i>Never</i>
	<i>5</i>	<i>4</i>	<i>3</i>	<i>2</i>	<i>1</i>
a. I always chose the right stitch and seam for the garment being sewn					
b. I constantly analyze the stitches in terms of density, width, depth, consistency, tension, etc.					
c. My seams are always smooth and even in appearance on the inside and outside					
d. My seams are always even in width of seam throughout					

e. My seams are always pressed open or closed seam according to the type and how I used them in the construction process					
f. The choice of thread is always appropriate to the fabric type and fibre content when sewing					
g. My seams are always neat and smooth in appearance without added bulk					
h. My seams are always free from raveling, stretching, rolling and curling					
I. My seams are always not visible from the right side of the garment					
J. I always use the proper shaping techniques when sewing					
k. I use the appropriate tools and equipment for each cutting and assembly phase					

**SECTION D: TRAINING WORKSHOP REQUIRED TO ENHANCE SEWING
TECHNIQUES**

5 = Always 4 = Most of times 3 = Sometimes 2 = Rarely 1 = Never

<i>7. Training workshop required</i>	<i>Always</i>				<i>Never</i>
	<i>5</i>	<i>4</i>	<i>3</i>	<i>2</i>	<i>1</i>
a. Training on the selection and utilization of proper equipment for each cutting and assembly step					
b. Training on inspection of work in process and finished garments to include adherence to size specifications and stitching-related defects such as needle cutting, open seam, broken seam, jump stitch, variable gathering.					
c. Training on accurate measurement taking, laying out and cutting of pattern pieces					
d. Training on accuracy in joining, reinforcing and decorating garments or parts of garments					
Training on choosing the right stitch and seam for the garment being sewn					
e. Training on analyzing stitches in terms of density, width, depth, consistency, tension, etc.					
f. Training on analyzing seams in terms of strength, thickness, size, elasticity, consistency etc.					

THANK YOU

APPENDIX B

INTERVIEW PROTOCOL

Section A Demography

Interview No.: _____

Date/Time: _____

Interviewee: _____

Name of Fashion House: _____

Female [] Male []

Section B: The various sewing techniques used by your Fashion House:

1. What sewing techniques do you use to create unique and high-quality garments?
2. Could you describe the round method and how it is used in your garment construction process?
3. How does the flat method differ from the round method, and when do you use it?
4. What is draping, and how do you incorporate it into your designs?
5. How does freehand cutting differ from pattern cutting, and in what situations do you use it?

Section C: The current improvement techniques used by designers:

6. How do you ensure that your stitches and seams are of high quality?
7. What techniques do you use to analyze your stitches and seams, such as density, width, depth, consistency, tension, strength, thickness, size, and elasticity?
8. Could you describe your techniques for ensuring that your seams are smooth and even in appearance on both the inside and outside of the garment?
9. How do you choose the appropriate thread for the fabric type and fiber content when sewing?

10. What are some of the common sewing defects that you avoid, such as open seams, missing stitches, uneven stitches, skipped stitches, seam puckering, and improper creasing of the garment?

Section D: Training workshop required to enhance sewing techniques:

11. What specific sewing techniques would you like to improve upon in your workshop?
12. How would you prioritize which sewing techniques to focus on in your workshop?
13. What are some of the common challenges that you have encountered in your sewing, and how would you address them in the workshop?
14. How would you structure the workshop to provide a balance of hands-on experience and theoretical knowledge?
15. How would you evaluate the effectiveness of the workshop in enhancing sewing techniques?