UNIVERSITY OF CAPE COAST

THE INFLUENCE OF CONSTRUCTIONAL FACTORS ON THE SERVICEABILITY AND DISCARD OF CUSTOM-MADE CLOTHING AMONG FEMALE STUDENTS IN THE UNIVERSITY OF CAPE COAST

OLIVE ASIWOME TSYEWU

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BY

OLIVE ASIWOME TSYEWU

Thesis submitted to the Department of Vocational and Technical Education of the Faculty of Education, University of Cape Coast, in partial fulfilment of the requirements for award of Master of Philosophy Degree in Home Economics

DECEMBER 2013

DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original research and that no part of it has been presented for another degree or certification in this university or elsewhere.

Candidate's Signature: …… Date: ……..

Name: Olive Asiwome Tsyewu

Supervisors' Declaration

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Principal Supervisor's Signature: …….. Date:……..……...

Name: Ms. Modesta Gavor

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ABSTRACT

This study examined the influence that constructional factors have on the serviceability and discard on custom-made clothing. Specifically, the study investigated the relationship between seaming, fit, fastening, underlining factors and serviceability of custom-made clothing among female students in the University of Cape Coast. It also examined the association between clothing serviceability and discard of customized garments.

A quantitative descriptive survey design was employed and questionnaire was developed and administered among 233 randomly selected students of the University. The instrument attained a reliability coefficient of .838 during the pilot-testing. Statistical methods like percentages, frequencies, means, standard deviation, Pearson's correlation and Chi-square test were used.

It emerged that serviceability was significantly related to all the constructional factors. Also, there was no association found between serviceability and years of discard of customized garments. Slit and kaba, and skirt and blouse were the main custom-made garments that many of the respondents had discarded.

It is recommended that dressmakers should pay particular attention to the above important factors if they want to remain in business. Dressmakers should sensitized to the importance of constructional factors' relationship to serviceability which would in the long run affect their productivity. This is likely to reduce the high rate of discard of custom-made garments.

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DEDICATION

To my husband, Major Jerry Fiifi Johnson, and our children, Kukua Sakyiwa, and Maame Efua Aseye Johnson.

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CHAPTER ONE

INTRODUCTION

Background to the Study

It has been observed that, most countries considered as economic giants in the world largely depend on textiles and garment production for the sustainability and development of other sectors. These countries include China, the United State, India and Pakistan. It is however, known that clothing items used in most of these developed countries are predominantly designed and mass-produced using standardized measurements for a wide range of customers. The production and trade activities of the textiles and clothing industries have long been a catalyst of economic growth throughout the world (Amankwah & Howard 2013).

Ghana, like many other developing countries, is suffering economically partly due to lack of development of her local fashion industry (Amankwah, Howard, & Sarpong, 2012). Ghana has a relatively broad and diverse industrial base and the contribution of the manufacturing sector to GDP remains modest. Despite the poor performance of the Ghanaian fashion industry, garment manufacture still plays a major role in country's development. Boateng (1996) estimated that the clothing industry constituted about 60% of the informal sector employment in the urban centres. Also, National Industrial Census, conducted in 2003-2005, reported that 40% of the manufacturing sector was made up of the clothing industry, which held a greater share in the industrial sector with 24,133 clothing companies and 55,301 workers, which accounts for 22% of the country's

total workforce (Abu-Boakye, 2012). The garment industry therefore would become an economic force to reckon with if well resourced and managed.

The country in the past had a booming local fashion industry but its activities have declined due to poor finishing and non-conformance to standards (Quartey, 2006). Non-conformance to standards in the garment industry could be attributed to the kind of training received by artisans during apprenticeship. Imirhe (2004) observed that, in Ghana, garment production is a popular small-scale occupation for both men and women and there has been a long and sustained condition of apprenticeship in garment making. However, he further indicated that in the training of these apprentices, no formal curriculum is used. Rather apprentices turn to have on-the-job training, thus the job at hand, the problems arising and the faults at the material moment determine the content of training given. Therefore, the teaching of theoretical principles which should prepare and give them opportunities to judge situations based on the available theoretical principles is non-existent (Biney-Aidoo, Antiaye & Oppong 2013). For this reason, many Ghanaian dressmakers and seamstresses are unable to sew to meet the international market thereby limiting them only to the local market.

When quality is compromised, issues of serviceability come into play. Garment serviceability basically describes the product's ability to meet the consumers' needs, thus the product should meet the intended purpose for which it was constructed (Kadolph, 2007). A garment is therefore considered to be serviceable when it is fit for its particular end use. Generally, after a garment has been used for a certain length of time, the garment ceases to be serviceable when it can no longer fulfil its intended purpose in the way that it did when it was new. Consumer's search for apparels of top quality, well tailored with best versatility

and long-lasting fashion life, dated back to the last three decades (Wolfe, 1989). In Ghana, customers achieve this mainly through customised clothing made by manufacturers in the micro and small-scale enterprises (MSSE) of the informal sector (Fianu & Zentey, 2000). Generally, Ghanaians are known to take pride in the wearing of customised clothing made from fine-quality African prints. The call by the government of Ghana for its citizens to patronise made-in-Ghana goods to boost the economy has also enhanced the wearing of customised clothing by Ghanaians. Sustainability in the industry, especially for small garment producers therefore requires creativity, skills and techniques in well tailored clothes with innovations to match that of the couture industry (Dzramedo, Amissah & Awuyah, 2014).

Garment quality, according to Pavlinic and Gersak, (2009) is not determined by the quality of manufacture only, but by a number of other influential factors as well. The most important of these factors they indicated as construction and the quality of the fabrics incorporated in the garments. Construction is the foundation of clothing and fashion design; it is vital that fashion designers know and understand the techniques involved in creating a three dimensional garment from a two dimensional design or pattern in order to create a beautiful shape and fit on the moving human body. The construction aspect of clothes is a major part of preparing garments for the market. All forms of new ideas and styles come to life by means of construction.

Fischer (2009), indicated that garment construction involves both technical and design issues. The technical aspect here looks at where the designer chooses to construct lines, pockets, collars, how to finish edges and how to produce volume and structure in order to create unique look and experience for the wearer brings

about the design aspect. A good design concept must reflect in the manufacturing of the garment, otherwise the style will not see the light of day or will not be accepted by the populist (Carr & Pomeroy, 2006). Thus poorly constructed garments are often not patronised and if patronised at all would be left hanging in the wardrobe or finally discarded.

It is evident now that the outcome or quality of apparel apart from the quality of fashion fabric used greatly depends on the constructional techniques and designs employed by the manufacturer in its assembly. Some of these techniques which include the choice of stitches and seams in constructing lines, darts, pockets, collars, sleeves and other design details to derive the desired fit needed are within the domain of the manufacturer (Fischer, 2009).

For a garment to be shaped and manufactured to fit the three dimensional shape of the human body, it should meet the criteria of appearance and comfort in wearing. Attributes of clothing that are often associated with positive feeling include appearance, comfort, freedom of movement and fashion. One of the basic qualities underlying all these attributes is fit (Farmer & Gotwals, 1982). It is believed that one of the most important consumer needs regarding clothing or apparel is that of well-fitting garments. Consumers often use garment fit as a means of evaluating the quality of the garment (Salusso-Deonier in Sieben & Chen-Yu, 1992). Therefore issues relating to garment fit must be of prime importance to garment manufacturers.

Ill-fitting clothing will have negative consequences for clothing manufacturers because the only true competitive advantage that the clothing industry has is to keep its existing customers satisfied, since it is much more cost-effective for both manufacturers and retailers to retain loyal customers instead of

seeking new customers all the time (Brown and Rice, 1998). A study by McVey, mentioned in Workman (1991) revealed that 70% of garments on markdown racks end up as markdowns because of problems with construction and/or fit. Fit must therefore be given the necessary attention by designers. According to Reynolds (2014), underlining is what gives couture garments their superior overall appearance and elevates any homemade article of clothing to a designer-grade product. Furthermore, underlining factors are so important to the final quality since the fit of the shape of a garment is generally enhanced and preserved by underlying fabrics.

Also the choice of sewing suppliers among which are fasteners and underlying fabrics are all within the jurisdiction of the manufacturer. Manufacturers need to choose fasteners that are durable enough and match the strength of the garment to which they are applied. If not the fasteners may come off whilst the garment is still in good condition.

A garment must therefore be shaped and manufactured to fit the three dimensional shape of the human body and should meet the criteria of appearance, quality and comfort in wearing (Fischer, 2009). In this regard, continuous improvement of quality is needed in the garment industry. It is for this reason that the Ghanaian garment industry must take key interest in satisfying their consumers with regards to quality. Well constructed garment that meet its intended purpose – serviceability, give the consumer his/her money's worth. Demand increases on the side of the producers, bringing in more profit. This goes a long way to contribute to the Gross Domestic Product of the country.

Quality is of prime importance to every industry or business that aims at increasing sales and being the leading name amongst consumers and fellow

companies (Parmer, Garg & Pattanaik, 2010). The competition for customers as well as against other clothing companies alone spells the fact that a lot of attention must be paid to the finished product.

A business enterprise irrespective of the sector it belongs to, that is whether manufacturing or service sector has to have regular order to keep its wheels running. Mukherjee (2008) agrees with this statement as he maintains that an organisation survives because of its customers. A study into the performance of customised clothing in relation to the constructional factors employed by local garment manufacturers in garment assembly is therefore important.

Statement of the Problem

In the mass production industry, the setting of standards controls quality. In the Ghanaian custom-made industry however, there seem not to be any standardized specifications for production. One can argue that Ghanaian artisans do not have control over the quality of material inputs like threads, zippers and other sewing notions. However, there are several other constructional factors within their control. For instance, the line or shape of a garment depends largely on the way the sections are joined. Stitches and their resulting seams are part of the crucial elements in garments construction that should not be overlooked. Seam strength according to Goyal (2006), depends on stitch types, thread strength, stitches per inch, thread tension, seam type, and seam efficiency of the material and all these parameters fall within the manufacturers' or designers' control.

Again, when a garment is ill-fitting, the consumer is dissatisfied, irrespective of the quality of material or quality of workmanship or the fashionability of the garment (Winks, 1997). Hence, matters on fit and underlining

factors are so important to the final quality since the fit and shape of a garment is generally enhanced and preserved by underlying fabrics.

Unfortunately, it does not look as if factors of quality in terms of construction are given much attention when apprentices are undergoing apprenticeship. Therefore, these apprentices become master artisans and the problem recurs. It is therefore a commonplace to see people discard clothes even though the fabric is new. Custom-made clothes that people take for alteration and repair are also a usual practice in Ghana. With the amount of people in the industry, it will be in their interest to identify problems that consumers have with custom-made clothes so that quality issues can be addressed.

A number of researchers (Ibrahim, 2012; Tarafdar, Roy & Sarkar, 2005) have investigated quality of clothing items in relation to fibre and yarn content, fabric construction techniques (i.e., different ways of making fabrics) and colour fastness but little work has been done in the area of constructional factors' effect on clothing most especially on custom-made clothing. Meanwhile, Mehta and Bhardwaj (1998) stated that quality apparel must perform satisfactorily in normal use, meaning that a garment must be able to withstand normal wear and care without seams coming apart, buttons, zippers and other fasteners falling off as well as silhouette maintained. A garment which does not possess these qualities in normal use is regarded as not being serviceable and therefore must be discarded.

It is in this regard that I decided to conduct a study that would unearth the influences that constructional techniques and designs have on the performance of custom-made clothing thereby leading to their discard. Therefore this study sought to find out the effect of constructional factors on the serviceability and discard of custom-made clothing among female students in the University of Cape Coast.

Purpose of the Study

The study sought to find the influences that constructional factors employed in the assembly of custom-made clothing have on the performance and discard of the clothing item.

Research Questions

The study was guided by the following research questions:

1. How do stitching factors affect serviceability of custom-made clothing?
2. What is the relationship between fit factors and serviceability of custom-made clothing?
3. How do fastening factors affect serviceability of custom-made clothing?
4. What is the relationship between underlining factors and serviceability of custom-made clothing?
5. What is the association between clothing serviceability and discard?

Significance of the Study

Knowledge of the influences that constructional factors have on the serviceability of custom-made clothing leading to their discard among the female students of the University of Cape Coast would contribute to a better understanding of the existing situation and inform stakeholders on what should be considered to enhance the performance of custom-made clothing.

Again, it is anticipated that the identification of the influences that constructional factors have on the serviceability and discard of custom-made clothing among the female students in the University of Cape Coast would inform producers about the performance of their products on the market and more importantly bring out production operations that need special attention, in order to prevent the occurrence of similar defects in future productions. The research would

therefore help in developing a body of knowledge that would assist artisanal dressmakers and other stakeholders in the apparel industry to meet the demands of their clients.

The findings of this study would add on to the limited literature on the influences that constructional factors have on custom-made product acceptability and would become a reference point for further research.

Delimitation of the Study

The inability of custom-made clothing to be serviceable (i.e., to meet the intended purposes for which they were created) leading to their discard is engineered basically by quality issues. A number of factors have been outlined to affect garment quality but the most important of these factors indicated by Pavlinic and Gersak, (2009) are construction and the quality of the fabrics incorporated in the garments. However, these constructional factors and quality of fabrics incorporated have not been extensively studied by researchers.

This study was therefore delimited to constructional factors because these factors have been less studied. The constructional factors in this context refer to stitch or seam factors (the basic structural element of most garments), fit factors (the fact that consumers usually judge garment quality by its fit), underlining (a common underlying technique employed by dressmakers in Ghana), and fastening factors (notions ease the wear and removal of garments; very vital to garment fit).

Though the study could have covered both males and females, it was delimited to only females because literature has it that females mostly have problems of garment fit. Again, the influence of constructional factors on the serviceability and discard of custom-made clothing is not only peculiar to the female students of the University of Cape Coast; female students in other

universities in Ghana may experience similar problems but for the personal experience had with female students of the University of Cape Coast bringing their customised garments for repairs and alterations, the study was delimited to female students in the University of Cape Coast.

Finally, custom-made clothing according to Koskennurmi-Sivonen and Pietarila (2009), refers to all clothing items that are individually designed and made to measure. However, this study would only look at customised garment. All other clothing items such as foot wear, bags, hats and other dressing accessories would not be of interest in the study.

Limitation of the Study

The student population of the University of Cape Coast is very huge and it is impracticable to study all of the whole target population for respondents of the present study. Thus, the study focused on just a representative number of the target population, as it is thoroughly discussed in the chapter three of this work. This invariably could affect the reliability of the result.

Again, it was identified that some respondents still had challenges in understanding some technical terminologies in relation to the focus of the study, though a pilot study was conducted to check the validity of the instrument and necessary modifications were made.

Organisation of the Rest of the Study

The study is organised into five main chapters. Chapter one serves as the introductory section in providing the background to the study. Chapter Two reviews the theoretical framework as well as the studies that are related to the present study. The literature is sub-divided into the empirical review and the conceptual framework. The empirical review deals with quality control in the

apparel industry, processes in clothing production, garment quality cues, and consumer expectation.

Chapter Three presents the methodology that was used in the study. Specifically, it presents the research design, population, sample and sampling procedure, research instruments, pilot-testing of the instrument and data collection procedure. It also presents the statistical procedures adopted to analyse the data

Chapter Four presents the results and discusses the findings of the study. It looks at the background information of the respondents, and the descriptive and inferential analyses of the data. Chapter five provides a summary of the study draws conclusions and makes recommendations.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

The study investigated the influence that stitching, fit, fastening and underlining factors have on the serviceability and discard of custom-made clothing. This chapter reviews related literature on the problem and the conceptual framework upon which the study is based. The review has two main sections; the theoretical and the conceptual framework.

The theoretical review has been organised under the following themes:

1. Quality control in the apparel industry;
2. Garment quality cues;
    a. Garment serviceability;
    b. Seam performance;
    c. Garment fit;
    d. Fasteners on garments;
    e. The use of underlining in garments;
3. Processes in clothing production;
4. Customised clothing industry in Ghana
5. The conceptual framework for the study;

Quality Control in the Garment Industry

In the garment industry, quality control is practiced right from the early stage of sourcing raw materials to the stage of final finished garment. Product quality in the textile and apparel industry is calculated in terms of quality and

standards of fibres, yarns, fabric construction, colour fastness, surface designs and the final finished garment product.

Doshi, (2006) in a study of quality control in the garment industry, mentioned that quality fitness of garment industry is based on a number of factors such as performance, reliability, durability, visual and perceived quality of the garment. He believes quality needs to be defined in terms of a particular framework of cost. This is in accordance with the national regulatory quality certification and international quality programmes like ISO 9000 series which lay down a broad spectrum of quality parameters on which companies maintain the export quality in the garment and apparel industry.

Chowdhary and Poynor (2006) while researching the "Impact of Stitch Density on Seam Strength, Seam Elongation and Seam Efficiency" mentioned that quality control is an important aspect of the apparel manufacturing process because it affects manufacturers, retailers as well as consumers. Merkel (1991) sees quality as a synonym of excellence whereas Glock and Kunz (1990) view quality as a means to develop product differentiation that has a perceived value.

Garvin (1984, 1987) identified eight common themes of product quality. These include aesthetics, conformance, durability, features, performance, perceived quality, reliability, and serviceability. Aesthetics according to him refers to the subjective experience of a product, thus how it looks, feels, tastes, smells, or sounds. Although it is true that how a product looks, feels or sounds is clearly a matter of personal judgment and a reflection of individual preference, aesthetics is not always, and sometimes not even primarily, a matter of the user. A dressmaker may be highly ambitious regarding aesthetics, and a client may seek her way to a certain dressmaker just because of his/her trustworthy aesthetic judgment.

Conformance is the degree to which a product's characteristics meet established standards. Durability is a measure of product life, or the amount of use the product offers before it breaks down. Features, the author explained are known as the "bells and whistles" of products and services as characteristics that supplement basic functions. Thus customised clothes may include almost any number of features either hidden or visible, according to a user's preference, and features might even be a primary reason for having clothes made. These features if properly constructed would market the garment.

Performance refers to the product's primary operating characteristics that can be measured and ranked. In clothing this approximates functionality and fluency in services. Reliability is the probability that a product would not fail or malfunction within a certain period. In the case of clothing, reliability is important for short and long term use. Whenever clothes are made for one use only, it is all the more probable that the occasion is extremely important, such as a wedding; hence, these clothing items must be reliable. Finally, Garvin (1987) defined serviceability as speed, courtesy, competence, and ease of repair. Thus consumers are concerned not only about product failure but also about service appointments, timeliness, dealing with service personnel, and so. But in the case of a clothing item, serviceability generally describes the measure of a textile product's ability to meet consumers' needs.

It is worth noting that all these quality dimensions are self-contained and distinct so that a product or service can be ranked high on one and low on another, yet they are also interrelated. An improvement in one may be achieved at the expense of another, or may work in the same direction on another.

Scheller and Kunz (1998) also developed constructs for a grounded theory of apparel product quality. Their research revealed three principal constructs of apparel product quality: structural integrity, aesthetic presence, and the power of appeal. Structural integrity includes integrity of fibre and fabric, as well as other elements (sewing supplies) that constitute a garment. Structural integrity requires construction techniques that are consistent with norms of tailoring tradition and production specifications. They believe structural integrity emerges from proper construction techniques and the use of appropriate materials that have integrity themselves. Aesthetic presence evolves from structural integrity, consequently garments that were improperly constructed failed aesthetically. They also mentioned that power of appeal was built from verbal evidence of a garment's ability to transcend the usual. Thus to move from being concrete with distinct characteristics to being an abstraction of beauty or attraction.

Parmer et al. (2010) posited that product's quality in the textile and apparel industry is calculated in terms of quality and standards of fibres, yarns, fabric construction, colour fastness, surface designs and the final finished garments products. With reference to the ongoing discussion, it can be inferred that garment quality is not only determined by the quality of manufacture, but by a number of other influential factors. The most important of these factors are construction and the quality of the fabrics incorporated in the garments as suggested by Pavlinic and Gersak (2009).

Garment Quality Cues

Quality, as a concept, is multidimensional and relative, and thus, difficult to perceive (Koskennurmi-Sivonen & Pietarila, 2009). However, Lillrank (1998) noted that there is nothing fundamentally unclear or mystic about quality if we

keep in mind that quality can be seen from different viewpoints and if we understand its relativity. This encouragement from Lillrank suggests that it is not worth aspiring to a universal truth about quality, but it is both valuable and possible to define conceptual tools for discussing and assessing quality in a particular context and from certain viewpoints.

According to Rogers and Lutz (1990), although quality level has been cited as one of the major sources of customer dissatisfaction with apparel, it is a difficult factor to isolate and define when examining apparel. Claxton and Ritchie (1979) mentioned that when consumers find the product performance to be poor, it is often the result of the manufacturer using lower-quality materials or a lack of quality workmanship. Rogers and Lutz postulated that there are several factors that determine the overall quality of apparel, among which are fabric selection and the manufacturer's methods of construction thus seams and seam finishes, buttonhole construction, use of interfacing, and matching of seams. The garment industry perspective of quality focuses on physical properties that can be measured objectively (Brown & Rice 1998).

Two dimensions of apparel quality have been identified: physical features, or what a garment is; and performance features, or what a garment does (Brown & Rice, 2001; Fowler & Clodfelter, 2000; Solinger, 1988). According to these authors, a garment's physical features provide its tangible form and composition. Physical features include the garment's design, materials, construction, and finish. Design provides the plan for the garment's style. For example, is the skirt slim or full? Materials include the fabrics and other components used to produce the garment. Construction refers to the methods used to assemble the garment. For instance, what types of stitches are used? Thus Finish involves any garment wet

processing. A garment's physical features are intrinsic attributes; they cannot be altered without changing the product itself.

A garment's performance features however, determine the standards it meets and how it benefits the consumer. Performance features include the garment's aesthetic performance and functional performance. Aesthetic performance refers to attractiveness. Functional performance on the other hand includes performance features other than appearance, namely the garment's utility and durability. Utility refers to usefulness. For example, does the garment fit? Is it comfortable? Is it easy to care for? Does it function appropriately for the intended use? Durability or serviceability refers to how well the garment retains its structure and appearance after wear and care. Does it resist shrinking? Do the seams remain intact? Does the zipper continue to zip? Aesthetic and functional performances occasionally overlap. For example, fit may be an aesthetic feature (attractive fit versus unattractive fit) or a functional feature (comfortable fit versus uncomfortable fit).

A garment's design must achieve aesthetic objective as well as overcome the problem of fit. Customised garments are cut to fit an individual whose measurements and figure characteristics are known before manufacturing begins. Ready-to-wear on the other hand, are cut to fit categories of people whose measurements and figure characteristics are not known individually. The degree of fit, which results, is often therefore in most sense approximate, but it must be close enough, with or without alteration, to satisfy the customers' requirements. The concept of fit might imply different ideas from one garment to another: loose enough with a nightdress, tight enough with jeans, or improvement of the figure by camouflaging or enhancing bust size. A satisfactory design of a garment demands

decisions concerning the method of assembly. The designer will therefore have to choose the seam type and stitch type that gives the best combination of aesthetics, strength, elasticity, durability and so on (Carr & Pomeroy, 2006).

Garment Serviceability

"Serviceability describes the measure of a textile product's ability to meet the consumers' needs" (Kadolph, 2007, p. 11). The serviceability concepts that are used to organise the textile information are aesthetics, durability, comfort and safety, appearance retention, care, environmental impact, and cost. Consumers determine their satisfaction with products based on these concepts.

Table 1: Descriptions and Sub Properties of Serviceability Properties

Serviceability category	Descriptions
Aesthetic properties	Attractiveness or appearance of a textile product. Does the item look pleasing and appropriate for its end use? Does it make the right statement for the target market? The manner in which the product withstands use. That is, the length of times the product is considered suitable for the use for which it was purchased. Will the consumer be satisfied with how well it wears, how strong it is, and how long it remains attractive?
Comfort and safety properties	The way textiles affect heat, air, and moisture

Table 1continued

	transfer, and the way the body interacts with a textile product. Its ability to protect the body from harm. Is this item comfortable for its end use in terms of absorbency, temperature regulation, hand, etc? Will its comfort change with use or age? How does it feel? Is it safe to use or wear?
Appearance-retention properties	How the product maintains its original appearance during use and care. Will the item retain its new look with use and aftercare? Will it resist wrinkling, shrinkage, abrasion, soiling, stretching, pilling, sagging, or other changes with use?

Source: Kadolph (2007, p. 12).

A garment is considered to be serviceable when it is functional for its particular end use. After being used for a certain length of time the garment ceases to be serviceable when it can no longer fulfil its intended purpose in the way that it did when it was new (Kiron, 2013). Today, to most consumers, the term serviceability means durability for as long as the consumer "wants" clothes to last. Though other consumable products have expected life span which manufacturers indicate as expiry date, clothing items are expected to function for as long as the textile fabric is still in good condition. It is for this reason that artisanal dressmakers must employ constructional techniques that would help keep the

patterns pieces of garments in place for as long as the fashion fabrics are in good shape.

Comfort

One of the most important aspects of any apparel product is comfort. Comfort as a fundamental need for human beings is very difficult to define because of its complex nature (Tsang, 2013). As a result, there are many different ways of conceptualising, defining and analysing the perception of comfort, which has resulted in different approaches to material development, fabrication technology and clothing design to the achievement of comfort in the textile and clothing industries. Social historians like Cowley suggested that comfort was as much a cultural phenomenon as a technical innovation (Cowley, 2001). Meanwhile, Roberts (1997) represents comfort as the end point of a technological quest, driven by advances in engineering. Again, Potter (1999) described comfort as an experience in the following four contexts:

1. Physical-pertaining to bodily sensations;
2. Social-pertaining to interpersonal, family, and societal relationships;
3. Psycho-spiritual- pertaining to internal awareness of self and meaning in life;
4. Environmental-pertaining to the external background of human experience.

Clothing comfort is a very complex subjective perception, which is related to interactions between fabrics, climate, physiological and psychological variables, which varies from person to person (Hu, 2006). During wear, clothing comes into contacts the skin at most parts of the body. Li (2001) pointed out that contact has three features:

1. Large contacting areas with varying sensitivity;

2. Changing physiological parameters of the body (such as skin temperature, sweating rate, and humidity at the skin surface); and
3. A moving body induces new mechanical stimuli from the contact between the body parts and clothing.

Fris (1997) stated that apparel comfort results from a balanced process of heat exchange between the wearer, the environment and apparel, specifically the ability of apparel to convey heat and moisture from the skin to the environment. However, Slater (1985) defined clothing comfort as a pleasant state arising out of physiological, psychological and physical harmony between a human being and the environment. Generally, clothing comfort is classified into three broad categories; aesthetic comfort; thermo-physiological comfort and tactile comfort (Yoon, 1984). Aesthetic appeal or psychological comfort is mainly based on subjective feelings and fashion trends that influence customer preferences. On the other hand, Thermo physiological comfort relates to the ability of the fabric to maintain thermal equilibrium between the human body and the environment. Thermal, moisture and air resistance properties of the clothing material collectively contribute to the state of thermo-physiological comfort of the wearer. The tactile comfort is related to mechanical interaction between the clothing material and the human body and is an intrinsic and essential performance requirement in clothing (Yoon).

In all these definitions, there are a number of essential components:

1. Comfort is related to subjective perception of various sensations;
2. Comfort involves many aspects of human senses such as visual (aesthetic comfort), thermal (cold and warm), pain (prickle and itch), and touch (smooth, rough, soft and stiff) sensations;

3. The subjective perceptions involve psychological processes in which all relevant sensory perceptions are formulated, weighed, combined and evaluated against past experiences and present desires to form an overall assessment of comfort status;
4. The body-clothing interactions (both thermal-moisture and mechanical) play important roles in determining the comfort state of a wearer;

Obviously, it is indisputable at this point that many factors come into play when we talk of clothing comfort. The fibre content of the fabric and its suitability for the environment in which the garment would be used as well as the constructional techniques employed in the assembly of the garment. Nonetheless, though the designer does not have much control over the fibre content as well as the choice of fabric by the consumer, the choice of appropriate constructional techniques in ensuring good clothing comfort is within the domain of the designer.

In related studies, Wong and Li (2002) found that comfort and garment fit were the two most important attributes of sportswear among 10 different attributes examined. According to a consumer survey report conducted by the International Research Institute on Social Change (RISC), Silverman (1999) reported that 80% of women and 83% of men in USA selected comfort as the top attribute they seek in apparel products. Again, Fujiwara, Park and Tokoro (1994) examined consumer perception of apparel quality and found that the intrinsic attributes of an apparel product like workmanship in sewing, physiological comfort, usefulness, physical and chemical properties play an important role in the quality assessment process for a garment. Therefore, properties of clothing comfort are playing more and more important roles in the modern market, and significantly influence the competitiveness of individual garment manufacture (Hu, 2006). Persons involved

with textile and garment making have to perceive and to link innovations into craftsmanship in designing. The requirements for the fit of apparels may mean the balance of different properties of stretch, drape, smoothness, etc. for different end uses and then get desired comfort as well as aesthetic appeal in the garments (Raval, 2013).

Seams

Seam is the basic structural element of a garment or household textile item. It is the process by which two pieces of fabric are joined (Heaton, 2003). Schaeffer (2001) views seams as the joint where two or more layers of fabric, leather, or other materials are held with stitches. Seams may be created with thread by hand or machine or with fusion through chemical bonding (Heaton, 2003). Seaming, according to LaPere (2006), is the most common of fabric joining done today. In his view, seams are constructed when two or more pieces of fabrics are sewn together. The row of stitching joining the two or more pieces of fabric is termed as the seam line. He further mentioned that the stitching comprising the seam line is usually parallel to the raw edge of the fabric. The seam line is also a specific distance from the raw edge. This distance he stated, must be adequate for the durability of the home furnishing or apparel product. However, Heaton (2003) pointed out that unless otherwise stated, a seam is stitched 5/8 inches from the cut edge and the fabric from the stitching line to the cut edge is called the seam allowance.

A look at the definition of seam brings to the fore the role of stitching. Stamper et al. (1998) acknowledged the role of stitches by stating that the appearance and durability of seam depends on the stitching. A stitch is defined as one unit of conformation resulting from one or more strands or loops of thread

intralooping, interlooping or passing into or through material (Carr & Latham, 1994).

A stitch therefore forms an integral part of a seam and in fact all sewing; therefore, they are mostly discussed together. If a stitch is improperly constructed, the resultant seam will also fail, thus reducing the quality of the garment since seams are a fundamental part of garment construction. The good appearance of seams is determined by the straightness of seam lines, thread tension, stitch density, and particularly by the stability of stitch length at certain intervals of the seam (Vobolis, Jucienė, Vaitkevičius & Punys, 2003).

Seam Quality

The type of thread used and the selection of seams also play a major role in garment durability. According to AMANN Inc. (2009), product quality in the sewing industry is always said to mean seam quality. This is to say that there is no product quality without seam quality, and this assertion is said to apply to all applications and areas of the sewing industry. The primary function of a seam is to provide uniform stress transfer from one piece of fabric to another, thus preserving the overall integrity of the fabric assembly (Choudhary & Goel, 2013). Therefore, in order for garments or apparel products to have proper appearances, seams used in their construction should not contain any defect.

Generally, the overall seam quality in the apparel industry is defined through various functional and aesthetic performances desired for the apparel product during their end use. Functional performances mainly refer to the strength, tenacity, efficiency, elasticity, elongation, flexibility, bending stiffness, abrasion resistance, washing resistance and dry cleaning resistance of the seam under conditions of mechanical stress for a reasonable period of time (Carr & Latham,

1995; Glock & Kunz; Mehta, 1985; Solinger, 1989 cited in Mandal, 2008). Mandal, in the same study on seam quality with sewing threads size, stitch density and fabric properties noted that properties like seam strength, tenacity and efficiency are required for determining the serviceability of apparel. While elasticity, elongation, flexibility and bending stiffness of seams are needed to easily bend, shift and fold without damage to the seam or change to the silhouette of the garment. Mandal further mentioned that seams also come under abrasion with body parts at wear or at the time of washing therefore it is expected that seams have good abrasion and or washing resistance.

On the other hand, Carr and Latham (1995), Choudhry (1995), Glock and Kunz (1995) and Solinger (1989) (as cited in Mandal, 2008) observed that the aesthetic performance of a seam is the requirements of a seam to the consumers' body sensory mechanism (hand and eye). These authors basically mentioned that for proper appearances of apparel products in order to achieve good aesthetic value of seams, defects such as skipped stitches, unbalanced stitches, looseness, seam grin, distortion or unevenness or puckering, unsteadiness, improper drapeability, uneven seam density, and yarn severance or damage must be avoided. The requirements of a seam are more clearly illustrated in Figure 2.

The apparel industry uses different dimensions for the evaluation of seam quality based on the requirements of a seam from the consumers' point of views (Kadolph, Langfoid, Hollen & Saddler cited in Murugesan, Gowda & Rajashree, 2012). In order to understand various seam performances, knowledge of various factors affecting the seam quality is necessary. Several other researchers (Gribaa, Amar & Dogui, 2006; Ito, 1997; Krasteva & Petrov, 2008; Salhotra & Sundaresan, 1994) asserted that seam quality is governed by a broad spectrum of factors. The

two broad categories, according to Ghani (2011), are fabric mechanical properties and sewing parameters. The latter which comprises sewing thread type and size, sewing machine speed, needle kind and size, stitch type and density and operator skills are parameters that the designer can easily control. Hence, this category is under consideration in the present study.

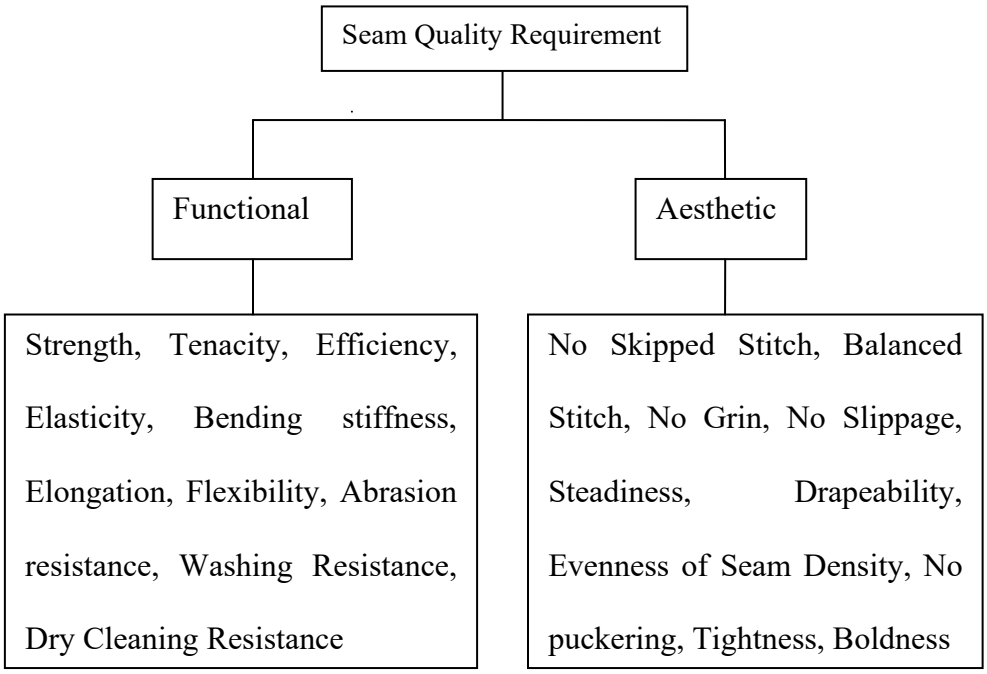

Figure 1. Seam quality requirements

Also Mandal (2008) in his study on seam quality with sewing thread size, stitch density and fabric properties elucidated that for better seam quality, it is important to consider the complete harmony of the key fabric properties, sewing thread properties and sewing condition parameters used. However, as earlier mentioned, more light would be thrown on the sewing parameters rather than the fabric properties because the sewing parameters are of interest to this study.

Seam strength

Seam strength refers to the load required to break a seam when it is stressed transversely or pulled apart (Mandal, 2008). Although garments are often subjected

to much lower loads than necessary for actual rupture, a seam will be said to have failed commercially if the threads lying parallel to the seam are displaced. Seams are meant to hold garment pieces in place for the lifetime of the garment.

The seam strength can be affected by the changes of seam and stitch type because it affects the interlacing of sewing thread with yarns in the fabric (Gribaa et al., 2006). An estimated seam strength formula was developed years ago for woven seams where one piece of fabric is placed on top of another with a specific seam margin and stitched with either a 301 lockstitch or 401 chain stitches (America & Efird, Inc. 2002). They further mentioned that the seam strength is dependent on a number of factors including:

1. Type and Weight of the Fabric;
2. Thread Type and Size;
3. Stitch and Seam Construction;
4. Stitches per Inch; and
5. Stitch Balance (Thread Tensioning).

Fabric type and weight

Fabric type and weight can affect seam performance depending on the fibre content and fabric construction. The fibre content here looks at whether the fabric is 100% cotton, cotton/polyester blend, or nylon. Every fibre has its peculiar characteristics and these characteristics determine the performance qualities of the fabric. In addition, the method employed to transform the fibres into fabric equally affects the seam performance because the fabric construction method used determines the type of weave used (plain, twill, jersey, tricot), fill count as well as the yarn type and size. All these are determining factors in seam performance. Again, the placement of patterns in the fabric and direction in which the seam goes

affect the seam quality. Finally, the propensity of the yarns in the seam to shift or pull out of the seam is another factor that cannot be overlooked. When engineering seams, it is recommended to do tensile tests on the fabric to determine its strength. You cannot specify seam strength requirements that are stronger than the fabric itself.

Thread

'Sewing threads are special kinds of yarn. They are engineered and designed to pass through a sewing machine rapidly, to form a stitch efficiently, and to function while in a sewn product without breaking or becoming distorted for at least the useful life of the product' (Pizzuto, 2005). The use of a suitable sewing thread is fundamental to ensure the desired properties for the assembly of garments (Gribaa et al., 2006). According to American and Efird Inc. (2009), thread only makes up a small percent of the cost of the finished product but shares 50% of the seam responsibility. Stamper et al. (1986) added that thread selection is a very important aspect of seam formation and can affect durability, appearance and even comfort. They indicated that one very important aspect of thread/fabric coordination is that the thread should be weaker than the fabric it joins but did not state how weak it should be.

The mechanical properties of sewing thread play an important role in determining the quality of sewn fabric where the selection of sewing thread is based on the performance during sewing and also during wear and cleaning of the garments (Mori & Niwa, 1994). There are varieties of sewing threads available, varying by fibre type, construction and finishes, which influence the appearance and performance of the thread. A high quality sewing thread has a uniform

diameter and can be sewn on variable types of fabrics and sewing machines (Glock & Kunz, 1995).

Fibre type. Matching thread fibre to fabric fibre seems logical, however, choosing the appropriate thread by characteristics such as strength, colourfastness, or chemical resistance is more practical (Ahles, 2004). Generally, natural fibre threads such as cotton, linen, silk, and rayon (a manufactured fibre made from natural cellulose) sew beautifully. Nevertheless, synthetic fibres like polyester, nylon, or acrylic are stronger. America and Efird, Inc. (2003) also indicated that some fibres are stronger than others are and have greater loop strength contributing to greater seam strength. For instance, a 100% spun polyester thread will give greater seam strength than a 100% cotton thread of the same size. Synthetic fibres like polyester and nylon are much more resistant to abrasion and chemical degradation (such as bleach) than cellulosic fibres. Cellulosic fibres on the other hand have superior heat resistance. For instance, Kevlar® and Nomex® threads were designed to resist high temperatures in protective clothing (America & Efird, Inc, 2003).

Thread Construction. According to Ahles (2004), thread is a thin, continuous cord made by either spinning staple fibres into single strands or yarns and then twisting two or more of them into a plied sewing thread, or by an extrusion process that forms one or more long, continuous filaments. However, the constructional method employed for the preparation of the thread can have an important effect on the quality, strength, and performance of the thread produced. As a general rule of thumb, the longer the staple length of the fibres, the better the quality of thread produced.

Core threads, made with a continuous filament polyester core, generally will provide higher seam strength than spun and textured threads (American & Efrid Inc., 2003). They also indicated that continuous filament polyester or nylon thread constructions would provide greater resistance to abrasion and seam degradation. Some thread constructions are less subject to shearing or cutting each other when interlooped together in the seam. Air entangled, textured, and monocord thread constructions exhibit the best loop strength characteristics (American & Efrid Inc., 2003).

Thread Finish. After construction, the thread is finished or given an invisible helpmate to enhance its suitability for various sewing uses. For instance, serger threads get a finish that enhances high-speed sewing; machine-quilting threads are treated to flow smoothly through the tension guides (Ahles, 2004). According to Ahles, all threads are lubricated with chemicals to some degree, but some (especially cotton varieties) have other finishes applied. Threads made from man-made fibres are usually coated with a special lubricant to reduce the effect of fusing due to the needle heating during sewing (Taylor, 2004). However, Taylor further mentioned that if the thread is stored for a long time without correct conditions, the lubricant will lose its effect and this causes the thread coefficient of friction to increase and affects the sewability and the seam quality.

Thread Size. The size of sewing thread is usually denoted using the ticket number. A few different systems are available for producing the ticket number but the systems are mostly based on the weight and thickness of the sewing thread (Ghani, 2011). According to him, the two most common systems are Tex and Metric. Thicker and heavier sewing threads have a higher value of Tex and smaller value of Metric number. However, Ukponmwan et al. (2000) indicated that the

selection of thread size depends on a few factors which include fabric weight and thickness, stitch and seam types, and needle size. Given a specific fibre type and thread construction, the larger the thread size, the greater the seam strength (American & Efird Inc., 2003). As previously mentioned, different fibre types and thread constructions have different loop-strength characteristics. In many cases, a smaller thread size will imbed itself in the seam making it less prone to surface abrasion.

Ghani (2011) concluded that thread with a good strength and elongation and good recovery behaviour combined with a correct thread size and sewing machine setting sewn to appropriate fabric can produce a good seam quality. Thus to get a good seam quality, the designer must be in the position to select and utilise all these factors appropriately.

Table 2 shows some examples of end product with suggestions of suitable ticket number of thread to be used during production (Carr & Latham 2000).

Table 2: End Products with Suggested Suitable Ticket Numbers

Metric Ticket Number (Nm)	End products
180 and 150	Lingerie, shirts, blouses
20 and 70	Underwear, knitwear, shirts, blouses, dresses, jeans, work wear
60	Jeans, work wear, decorative stitching
15	button sewing, buttonholing

Source: Carr and Latham (2000)

Stitch and Seam Construction

Stitch types. Generally, the more thread consumed in a stitch, the greater the seam strength. This holds true when comparing 301 lockstitch seams to 401

chainstitch seams. Threads used in 301 lockstitch seams are more susceptible to shearing each other than 401 chainstitch and 504 overedge seams because of the way the threads are interlocked together rather than interlooped together (American & Efird Inc., 2003).

Seam Types. Many seam constructions are more resistant to both stress and abrasion than other constructions. For example, a Fed. Spec 751a 'LSc' or ISO 4916 2.04.06 felled seam is the strongest of all seams because the stress is shared by the fabric and the thread.

Stitches per Inch

Generally, the greater the number of stitch per inch in a seam, the greater the seam strength. This refers us back to the point that the more thread you put in the seam, the stronger the seam. However, on some fabrics, too many stitches can cause damage to the fabric by cutting the yarns enough to weaken it (Ahles, 2004). Excessive stitches per inch can also contribute to seam puckering and reduce the speed through the machine resulting in loss of production.

Table 3 presents a list of woven garments and the typical number of Stitches Per Inch recommended for each of them by America and Efird, Inc. (2002).

Table 3: Typical Stitch Lengths Recommended for Woven Garments

Garment	SPI	Comments
Denim Jeans, Jackets, Skirts	7-8	Fewer stitches per inch generally will give a more contrast stitch appearance.
Twill Pants or Shorts	8 – 10	More stitches per inch will help minimize seam grinning.
Trousers, Dress Pants, Slacks	10 – 12	On some operations like serge panels, it may be desirable to use a longer stitch length.
Dress Shirt or Blouse	14 – 20	Using more SPI allows the use of smaller diameter threads that will minimize seam puckering.
Casual Shirts, Blouses, Tops	10 – 14	Using more SPI will give more of a tailored stitch appearance and better seam coverage when serging.
Children swear	8 – 10	Usually 8 to 10 SPI is adequate to provide adequate seam strength and at the same time allow for quicker cycle times.
Dresses, Skirts	10 – 12	Due to many of the operations being lockstitch, usually 10 – 12 SPI is required to provide adequate seam strength.
Blind stitch Operations on Slacks,	3 – 5	A long stitch length is desirable to minimize the dimple or appearance of the

Table 3 continued

Dresses, Skirts, etc.		needle penetration on the outside of the garment.
Buttonsew (4 hole button)	16	Buttonsew machines are cycle machines with a predetermined number of stitches per cycle.
Buttonhole (1/2" purl or whip stitch)	85 – 90	Generally sewn vertically – approximately 85 - 90 stitches with a lockstitch buttonhole machine

Source: America and Efird, Inc. (2002)

Stitch Balance (Thread Tensioning)

American and Efird, Inc. (2003) stated that as a rule, the more needle thread that can be put into a seam, the greater the seam strength. This can be accomplished by adjusting the sewing machine thread tensions, thread control guides, and eyelets, etc. However, care should be taken not to put too much needle thread in the seam to cause the seam to "grin" or open up when stress is applied to it. Excessive sewing machine thread tension will cause reduced seam strength as well as create other sewing problems.

The overall quality of a seam according to Cheng and Poon (2002) depends on its strength, elasticity, durability, stability, and appearance. However, ASTM D6193-09 (2009) added that these properties must be balanced with the material to be joined to form the optimum sewn seam. Again, Abdelkarim and Seif (2001) observed the interaction of seam strength and seam elongation as seam quality properties while Chowdhary and Poynor (2006) identified the interaction of seam efficiency, strength and elongation. The seam characteristics parameters are seam

strength, seam pucker, seam stiffness, seam appearance, and seam efficiency (Dobilaite & Juciene, 2006).

AMANN Inc. (2009) added that the importance of a seam's quality for the quality of the finished product is undisputed Mandal, Abraham and Academy (2010) in their paper provides an overview on the impact of sewing thread on seam quality and its significance on seam serviceability and seam appearance found out that sewing threads properties impart significant influence on the area of seam quality for high consumer satisfaction. It is therefore an undisputable fact that sewing threads selection can affect the final quality of any garment constructed.

Garment Fit

Apparel fit has long been of interest in clothing research because it is considered a crucial element of clothing quality and customer satisfaction (Song & Ashdown, 2010). Due to the various characteristics of apparel, many researchers have defined apparel fit in multiple dimensions (Brand, 1964; Brown & Rice, 2001; Eckman, Damhorst & Kaldoph, 1990; LaBat, 1987; Laing & Sleivert, 2002; Outling, 2007). LaBat (1987) broadly defined clothing fit as the relationship of clothing to the body, combining the visual analysis of fit and the physical evaluation of comfort. Workman and Lentz (2000) see fit as the way clothing item conforms to the body or the relationship between the clothing item and the body (Ashdown & DeLong, 1995). Frost (1988) noted that apparel fit contains "visual as well as physical satisfaction of the garments and its function on the body" (p. 2). While Brown and Rice (2001) defined fit as "how well the garment conforms to the three-dimensional human body" (p. 153). A few studies have defined two dimensions of apparel fit: aesthetic fit, which relates to the appearance of the garment in relation to the body, and functional fit, which relates to the comfort and

performance of the garment due to the fit (Brand, 1964; Eckman et al., 1990; Outling, 2007).

"Good fit" has also been defined diversely, depending on fashion trends, standardized sizes in the fashion industry and individuals' perceptions of fit (Fan, Yu & Hunter, 2004). This, according to Efrat (1982), is because clothing fit is a complex property affected by fashion, style, and many other factors. Stamper, Sharp and Connel (as cited by Klerk & Tselepis, 2007) defined a well-fitting garment as one that is comfortable to wear, with sufficient room to allow for easy movement, no unnecessary wrinkles and bunching of the fabric or a display of bagginess, and that it should be aesthetically acceptable as well as fashionable. While McRoberts (2005) defines a properly fit garment as one that hangs well, has no wrinkles, lies smoothly over the body' curves and feels comfortable. It is undoubtedly clear from all these discussions that for apparel fit to be evaluated, the clothing item must be worn on the body. Therefore, a well constructed garment can be aesthetically appealing to the eye but until this garment is worn on the body for the consumer to experience comfort in wear, it cannot be regarded to have provided good fit. A clothing item with a good fit ought to conceal the wearer's figure faults, compliment the body and provide well-balanced proportions. One of the reasons for getting clothes made is to adorn the human body however, for this to be achieved; a garment should be of the correct size, in combination with the correct body measurements in order to result in a notable fit (Tate, 2004).

According to Liechty, Pottberg and Rasband (2000) a good fit can be determined by the following three factors: balance, room for movement and appearance. Balance, the authors explained means that the garment has to be put on to evaluate the hang of the constituent parts making up the garment and judging

whether the whole garment is hanging on the body as it was intended to hang. At the same time, all the seams have to be in their appointed places. Room for movement involves that aspect of sufficient space for easy movement when walking, ascending and descending stairs, sitting and kneeling down.

Well-fitting garments do not necessarily imply a close fit; it rather refers to the fit being fashionable at a given time (Farmer & Gotwals, 1982). Good fit, according to Klerk and Ashdown (2008), can be determined by four main factors, namely appearance, comfort, design and fabric. Appearance the authors believe refers to the visual appeal of garment when the consumer is wearing it. Attractive garments will however not be worn if they are not comfortable. It is thus important to be able to sit, bend, walk and stretch in any garment without feeling restricted or straining the seams. They further mentioned that design would determine the features of the garment. This creates a certain look, for example close fitting or loose fitting. Ease of movement and / or design ease are added to the body measurements when the pattern is created. This ensures that the desired look is created, a certain level of comfort is achieved, and in this way, the appearance of the garment is enhanced. Finally, the authors mentioned that fabric is crucial to good fit. The same style will look and fit differently according to the fabric type-used soft or crisp fabric, for example. The clinging tendency, drape and grainline (for example, a basis cut) can lead to even a loose fitting garment defining the shape of the body (Reader's Digest cited in Klerk & Ashdown, 2008). For this reason, certain fabrics should be avoided when manufacturing for certain figure types.

Proper fit has the appearance of comfort and is naturally proportionate to the figure, with appropriate amounts of ease for the achievement of a given fashion

or garment style (Amaden- Crawford, 1996). “Fit is worse both when the garment is too big and when the garment is too small along a particular dimension” (Ashdown, 1998, p. 4). The amount of ease needed in a garment will vary by personal preference, the type of fabric used, and the design of the garment. However, less ease is required for knitted fabrics than for woven fabrics (Brackelsberg & Marshall, 1994).

Certain elements of a garment are crucial to determining the fit of clothing (Song & Ashdown, 2010). Erwin and Kinchen (as cited in Shin, 2013) identified five criteria for determining the fit of clothing; ease, line, grain, balance, and set. Ease they defined as the amount of space between the garment and the body thus a tight-fitting garment has less ease, while a loose-fitting garment has more ease (Branson & Nam, 2007). Erwin and Kinchen (as cited in Shin, 2013) also noted two different types of ease. These are functional ease and design ease. Functional ease refers to the amount of fabric that allows for body movement, and design ease is described as the amount of fabric needed to demonstrate the design of the garment. This is to say that functional ease can be described as a basic requirement during construction whereas design ease may be employed or not depending on the garment design. The authors wrote that the amount of ease needed for a particular garment depends on the end use of the garment. Ashdown (1991) gave an example that clothing for sporting activities requires more ease. Some body parts such as the hip and shoulder also require more ease compared to others because they typically have a wide range of motions. Therefore, the first consideration of fit is ease. Ease may be checked for correctness, excess, or lack of ease. Correct amounts of ease allow for the following: “½ inch pick up ease at the side seam/armhole intersection; 1/8 to ¼ inch ease across the front chest area without pulling the front armhole; 1/8

to ¼ inch ease across the back shoulder blade level without pulling the back armhole; ¼ inch ease at each quarter of the waist; draped side seams align with the dress form side seam; and side seams drape together without pulling, twisting, or distorting," (Amaden- Crawford, 1996, p. 47). Amaden-Crawford further explained that incorrect amounts of ease may be evaluated by visually checking for excess ease or lack of ease. Excess ease results in long shoulder seams, folds or gapping across the chest, into the neckline, or at the armhole. On the contrary, lack of ease results in pulling or tightness across the bust, shoulder blade level or waistline, as well as, pulling or twisting of the side seams.

It is undoubtedly clear at this point that there is a relationship between fit and comfort. Frost cited by Shin (2013) noted that the relationship that exists between comfort and fit means that they influence one another in the apparel evaluation process. Alexander (2005) also noted that fit contributes to the confidence and comfort of the wearer. This implies that the wearer is likely to feel comfortable and confident when wearing well-fitted clothing. Fuzek (as cited in Keeble, Prevatt & Mellian, 1992) also indicated that fit is the most important factor in the subjective evaluation of comfort.

Line, which is the second criteria mentioned by Erwin and Kinchen (as cited in Shin, 2013) as a determining factor of fit, is associated with the seams of a garment. The authors believed that vertical seams should be vertical to the floor and parallel to the centre of the body. Grain refers to the relationship between fabric, pattern, and wearer; the grain of the fabric when the garment is worn should be either parallel to or perpendicular to the floor, or at a 45-degree angle if cut on the bias (Erwin & Kinchen, 1974). Balance, for a symmetrical garment, means having the same distance from the right and left sides of the body to the centre. Set

indicates the smoothness of the fabric on the body, with an absence of wrinkling and pulling of the garment. They however, stated clearly that wrinkles due to motion are not indicators of poor fit.

Apparel fit problems are costly and frustrating for manufacturers and retailers as well as for consumers. When a garment is ill-fitting, the consumer is dissatisfied, irrespective of the quality of the material of the workmanship or the garment fashion (Winks, 1997). Consumers will also benefit from a better fit by having to make fewer alterations on their clothing items. (Tamburrino, 1992). It is, therefore, necessary to investigate problems relating to garment fit experienced by consumers.

Underlining

The shape of a garment is generally enhanced and preserved by underlying fabrics including interfacing, lining, underlining and interlining (Brown & Rice, 2013). These fabrics are used on the inside of a garment to fulfil one of several purposes. Brown and Rice noted that most garments made from woven fabrics contain one or more underlying fabrics. Although not visible from the outside of the garment, these materials help maintain the garment's shape and/or lend it other qualities such as durability and warmth. However, the four terms outlined earlier as the different underlying fabrics in the apparel industry are used loosely and sometimes interchangeably. For example, the terms interlining and lining are commonly used to refer to what is (technically) interfacing. And underlining (technically) is commonly called lining (Brown & Rice, 2013). It is for this reason that the study resorted to the use of underlining instead of lining in the instrument development. Lining and underlining a garment are two different procedures, and depending on their purpose, one or both can be used in a single piece of clothing.

Carr and Pomeroy (2006) mentioned that the purposes of lining are to cover and protect the seams inside a garment, to provide an aesthetically appealing inside surface and to present a sheer surface to other garments so that the lined garment is easy to put on and take off. Also, Betzina (2009) indicated that lining, usually cut from a slippery fabric, is attached only at the garment's waistband or neck, and sometimes at its hem, otherwise it allowed to hang freely in the garment. Underlining, on the other hand, is cut from the same pattern pieces as the fashion fabric and is attached before construction begins. Then, as the garment is constructed, the underlining and fashion fabric are handled as a single unit (Betzina, 2009). Thus, underlining is a supportive or inner garment fabric which "backs," or is attached to, each major garment piece. Heaton (2001) elucidated that the underlining and fashion fabric function together as one piece throughout the construction process. However, the entire garment or only parts of the garment may be underlined depending on the garment design, fashion fabric and the chief function of the underlining. Some authors have agreed that underlinings provide greater support and body to garments than lining since each piece of the garment is individually supported (Brown & Rice 2013; Heaton, 2001).

Underlining serves many functions in a garment. This multipurpose technique allows more control with fabrics and more options for their use. Betzina (2009) outlined the following functions of underlining Underlining can:

1. stabilize loosely woven fabrics.
2. strengthen delicate fabrics.
3. eliminate seam allowance show-through.
4. hide hand stitching.

5. add warmth to garments.
6. add bulk to fabrics.
7. reduce wrinkling.

The presence of supporting fabrics in a garment is usually a sign of quality. Few consumers make a purchase decision based on the underlying fabrics of a garment simply because they do not have the technical know-how to do so. However, the ultimate satisfaction with the aesthetic and functional performance of any garment is affected by its supporting fabrics (Brown & Rice, 2013). Brown and Rice indicated that underlining a garment is less costly than lining it because underlining requires extra fabric but little additional labour (except in cutting) perhaps the more reason why Ghanaian dressmakers resort to the use of underlining.

Fasteners on garments

Fasteners are used to hold two pieces of a garment together; some pieces lap one over the other, while others meet (Baker, 2004). Fasteners add function and details to any garment. The most common fasteners, according to Heaton (2001) are snaps, hooks and eyes, self-gripping devices, buttons and buttonholes, and zippers. The fastener used will depend on the fabric you choose, the type of garment, the kind of opening (including its position and type), the amount of stress put on the fastener, and the effect the designer wants to create. Most of the garments in our wardrobes have one or more kinds of these fasteners for easy-on and easy-off dressing. According to Baker (2004), well constructed/applied fasteners should be:

1. neat in appearance with no loose or unsightly threads.
2. appropriate for the garment design and fabric being used.

3. applied to an area that has been reinforced with interfacing.
4. sewn in place with a double strand of all-purpose dual-duty sewing thread or single strand for heavy-duty thread.
5. secured so stitches do not show on the right side of the garment/fabric.
6. appropriately placed so the garment edges are held together smoothly and evenly.
7. applied with appropriate hand stitch (buttonhole or whip) to secure fastener to the garment.
8. secured tightly to the fabric surface.

Techniques and Processes in Garment Construction

The production of a garment according to Stamper, Sharp and Connel (1988), involves processes like fabric buying, marking and grading of patterns, marker making, cutting and then construction before finishing, and finally, quality control and dispatch to the consumer. Each of these production processes is essential and contributes to the quality of the final product. However, Cooklin (1991) noted that the joining of components through sewing and other techniques is considered a central focus in the garment manufacturing process. This is because until garment components are gathered into a finished garment, they are assembled through a sub-assembly process which is termed as the sewing process. This process is the most labour intensive part of garment manufacturing and makes the structure a complex one (Cooklin, 1991).

Industrial garment manufacturing processing depends on some sequential steps and techniques. These production processes comprise a set of workstations, where specific tasks are carried out in restricted sequence.

Noor (2010) outlined a stepwise garment manufacturing sequence on industrial basis depicted in Figure 2.

Generally, these sequential processes in manufacturing garments are followed in the garment industries where garments are produced on large scales. Inspections are carried out at various stages by the designated authorities all in the quest for the final garment to come out of good quality. This structure therefore makes it possible for quality related issues to be checked and addressed.

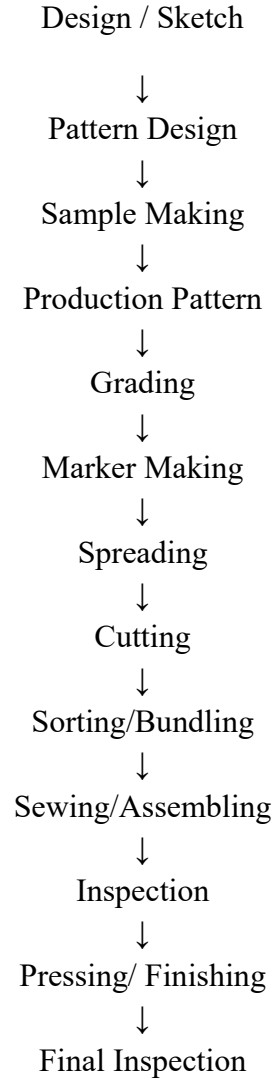

Figure 2. Stepwise garments manufacturing sequence on industrial basis

Source: Noor (2010)

Customised Clothing Industry in Ghana

The clothing industry in Ghana is made of private enterprise owners who employ one to thirty or more workers (Chimieloweic, 1995). According to Ampofo (2002) and Quartey (2006), the Ministry of Trade and Industry in 1979 registered 138 medium and large-scale as well as numerous small scale clothing enterprises but in 1995 this figure reduced to 72. The main types of clothing production done in the Ghanaian clothing industry include catalogue of items for children, women, men and other special items as well as uniforms for corporate bodies such as the banks, police army, other security services, schools, industries and governmental institutions and for export trade (Ampofo, 2002).

However, as acknowledged earlier, the production of clothing in Ghana until recently was mainly custom-made by clothing manufacturers in the MSSE of the informal sector (Fianu & Zentey, 2000). Chimieloweic (1995) describes the system of production used by Ghanaian clothing producers as non-industrial. Thus they do not follow the general sequential processes in manufacturing garments in the garment industry. According to Fianu and Zentey, majority of Ghanaian clothing companies do not operate under the division of labour system but one person makes the clothing from the beginning to the end thereby resulting in considerable variations in quality and also registering low productivity. Ampofo (2002) therefore concluded that the collapse of the large scale clothing industries in Ghana was due to lack of quality and conformity of standards.

Reasons for Clothing Discarding

One of the possible ways of increasing sustainability within the field of textiles and clothing industry is to prolong the use period of their products (Fletcher, 2008; Cooper, Fisher, Goworek & Woodward, 2010). Short life span of

products increases the need for the products to be replaced faster, thus increasing the environmental load from production and disposal phases (Laitala & Klepp, 2011). Therefore, consumers' decisions during use especially those related to performance quality are crucial and affect the life span of clothing. The need for clothing repair comes from various sources. Poor initial garment workmanship or construction can be a problem with ready-to-wear as well as custom-made items. Everyday wear and tear will also take its toll. Poor garment fit can cause a seam to split or a fastener to break. Still other repairs become part of preventive mending, permitting the garment to be worn longer without the need of major repair or recycling.

Gracey and Moon (2012) in their report on Valuing Our Clothes: the evidence base, stipulated that clothes are most commonly unworn because they no longer fit or are in disrepair. This they believed could be attributed to the fact that many people lack an ability to alter clothing or undertake repairs that are more complex.

Consumers dispose off clothing for a number of reasons such as poor fit, outdated style, boredom and/or wear-out (Koch & Domina, 1999). Results from some studies have shown that clothing discard by consumers is most often influenced by poor construction. Laitala and Klepp (2011) indicated in their study on Environmental Improvement by prolonging clothing use period that poor fit, technical quality and taste-related issues dominate reasons for clothing disposal, in addition to situational reasons such as having too many similar garments. These authors have separated poor fit from technical problems. It is not clear what they regard as technical quality problems since some authors have indicated that issues of fit affect the total quality of a garment. However, another study carried out by

the same authors in 2001 on Norwegian women, they indicated that 40-year-old Norwegian women disposed clothing mainly due to technical or quality related reasons (35%) and psychological reasons (31%), such as being tired of the product, not using that style anymore, or outdated clothing. Third most common reasons were situational (19%), such as the owner has changed body size, has other similar clothes, lacks closet space, or that the clothes have too narrow use area. In addition, 13% of clothing was never worn. An American study showed that one of the most common reasons for finding a new use area for clothing is "not to waste it." Fit problems were typical reasons for giving away clothing (Laitala & Klepp, 2001). Thus, consumers may discard clothing because of issues related to poor construction such as poor stitching, wrinkles and undesirable garment proportion in relation to the figure of the wearer. Aside this, a consumer may also discard clothing for reasons other than poor construction.

Most authors have agreed that fit related problems account for clothing discard. However, Laitala and Klepp (2001), categorise this fit related problems under a broad umbrella termed as technical or quality flaws. In effect, consumers' main reason for discarding clothing is based on constructional problems. Some other reasons given by the authors could be described as non-technical factors for clothing discard include outdated styles, change in body shape and lack of space for storage and all these could be termed as situational.

Conceptual Framework of the Study

The conceptual framework for this study is an adaptation of Koskennurmi-Sivonen and Pietarila's model for assessing the quality of customised clothing. Koskennurmi-Sivonen and Pietarila (2009) emphasized the process nature of the assessment of quality by constructing the model on a timeline (A–D). They

believed that the two parties involved in the process of customised garment are the maker and the client. These two parties have different opportunities to find out about or have effect on the quality depending on the point of time; before having the clothes made (A–B), while having the clothes made (B–C), and during the use and storage time of the clothes (C–D). This picture is depicted in the diagram in Figure 3.

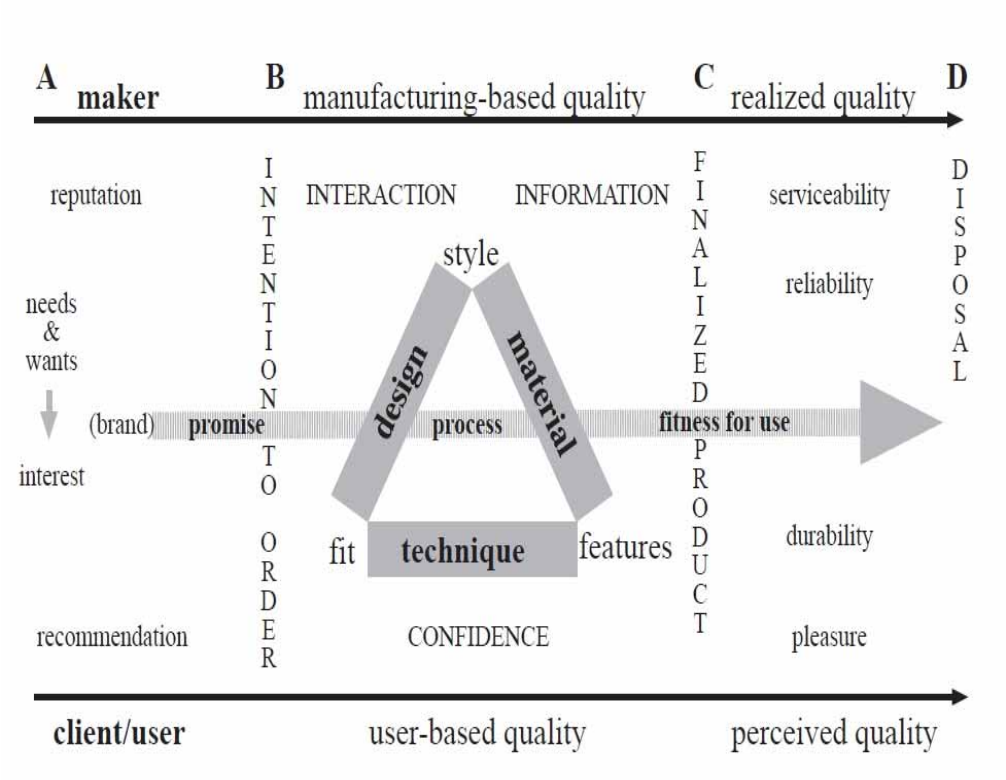

Figure 3. Model for assessing the quality of customised clothing

Source: Koskennurmi-Sivonen and Pietarila (2009)

Quality Assessment before Ordering (A –B)

According to Koskennurmi-Sivonen and Pietarila (2009), needs and wants whip up interest in customised clothing. When considering ordering individually designed and made clothes, a potential client knows that she represents a minority to whom information is not readily available. On the other hand, when the financial investment is considerable, then information about anticipated quality is all the

more important. They posit that makers of customised clothes have seldom, if ever, developed recognizable brands in the manner of the clothing industry, and none of them advertise broadly, a maker and a potential client are left with more informal and random information. Reputation then is the secondary medium of assessing a prospective product. However, to a potential client the ingredients of reputation are recommendations from others clients of a particular dressmaker. This serves as a form of promise of quality and encouragement for the potential client to contact the supposed dressmaker.

Quality Assessment during the Process (B–C)

Koskennurmi-Sivonen and Pietarila (2009) believed that an intention to order (B) commence the ordering and making process and this leads to an interaction; a central role in the process between the maker and client. Interaction is an essential and characteristic part of individually designed customised clothes. It distinguishes this form of production from all industrial clothing production, even from mass customised clothing. How much interaction and actual designing work is done before placing a final order may vary according to how clearly the client is able to articulate her needs, wants, and the purpose of use, the maker's work practices, and common experience in former orders. However, they noted here that a written agreement on price is an ideal seal of placing the order and become a matter of confidence for both parties.

Furthermore, Koskennurmi-Sivonen and Pietarila (2009) explained that the quality of a garment or an outfit may be assessed through the garment's style, fit and features and these are constructed in the process through design, technique, and material. They however added that this is just a rough distinction, as design and technique are closely linked. These six aspects therefore bind together a garment

(end-product) and the process of creating it, as they are intertwined in customised clothing. The process-product combination may be assessed from the maker's point of view, which is mainly the manufacturing based view, and from the client's user-based view. However, knowing the user's needs and wants, as well as the demands of possible use contexts, will result in an end-product even more pleasurable than the client could envision, and this happens in a fluent process.

Information is linked to interaction during the process (B-C) but should be available later, too, if needed. It refers to everything the client should know about the garment itself, its care and use. Information makes the price understandable. At its largest, information covers any cues for the overall appearance of the client, including accessories, underwear, hairstyle and make-up.

Confidence is based on the experiences of interaction and honesty in the exchange of information, but these must be completed in conjunction with two aspects of the workflow: punctuality and flexibility. The point of the finalized product (C) implies that the garment is ready.

Quality during Use and Storage (C–D)

The total of realized quality according to Koskennurmi-Sivonen and Pietarila (2009) may be assessed by the wearer only over the entire product lifetime until its disposal (D). Fitness for use, or performance, refers to the general functionality and usability of a garment, as developed in the process. When a garment performs well, its style, fit, features, material, and technical construction are in harmony, and it is fit for use thereby meeting the quality of being serviceable, reliable, durable and pleasurable. Perceived quality implies that quality is not universal. The client's perception depends on her needs, wants, and experience.

Adaptation of Model

The study focuses on the BC and CD part of the Koskennurmi-Sivonen and Pietarila's (2009) model. This is because the manufacturing-based quality determines the realised quality, thus this process affects the fitness of use. The conceptual framework for the study therefore utilizes specifically the relationships amongst style, fit and features through the process of design, technique, and material and the end product. However, in place of "material", this study would look at constructional factors since the focus is to look beyond the fashion fabrics and investigate how these equally important factors (constructional factors) influence the performance of custom-made clothing.

The framework for the study as shown in Figure 4 focuses on some constructional factors categorized under material and technique and how these factors can either make the final garment fit for the intended use or not. It is divided into six main components with arrows showing the interrelationships that exist amongst these components. The first component 'Design' provides the plan for the garment's style and this has an arrow linking to the constructional factors because the design is the determining factor in the choice of the constructional factors. The methods used to assemble garment also known as constructional factors which are of interest to the study are categorized under material (fastening and lining) and technique (stitching and fit factors).

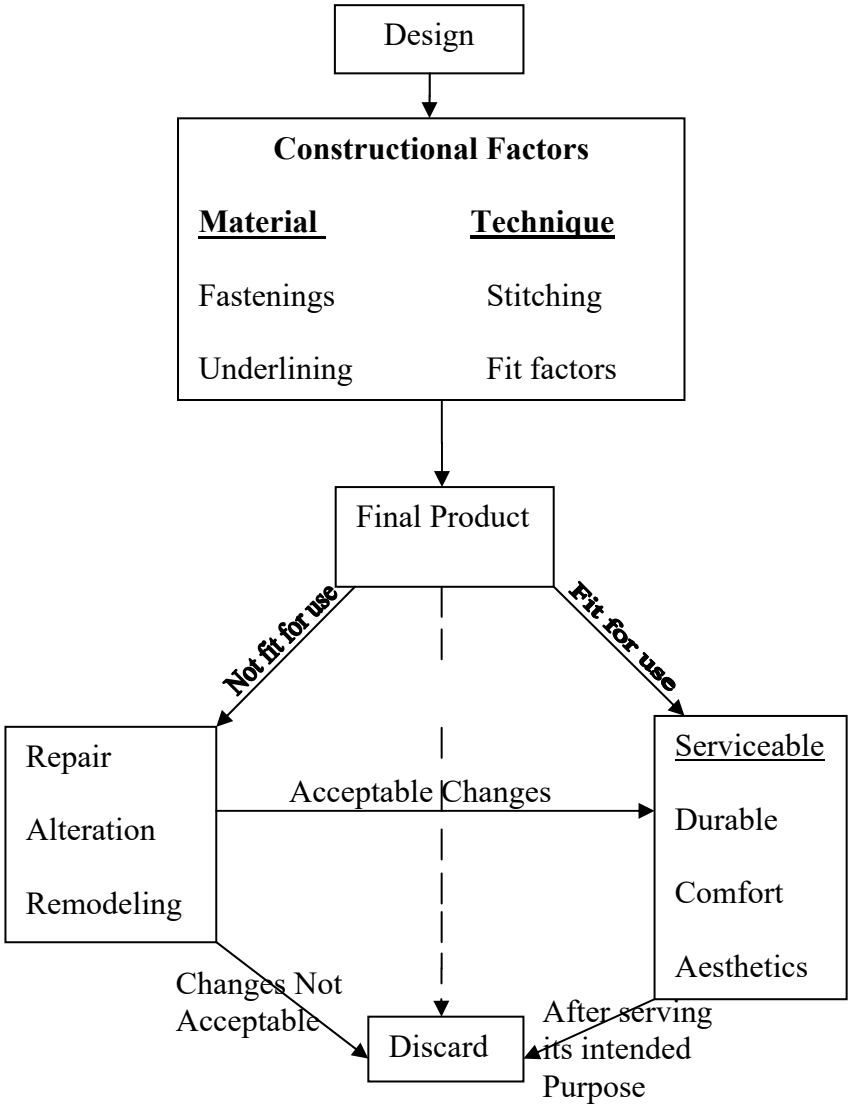

Figure 4. Conceptual framework for the study

Source: Adapted from Koskennurmi-Sivonen and Pietarila (2009)

The nature of the constructional factors determines the quality of the final product. When the quality is good, the product then becomes fit for use, which implies that the product will be serviceable, durable, provide comfort and give confidence to the wearer. On the other hand, when the product quality is not fit for use, the garment needs to be repaired, altered or remodelled to make it fit for use.

However, some products may still not be fit for use after repair, remodelling or alteration and are therefore discarded. The garment may also be discarded after it has served its intended purpose. The broken line from product quality to discard

implies that products in rare cases may be discarded right after construction without use or an attempt to repair, remodel or alterate.

Summary

This chapter has presented the various angles from which quality is defined. It has explained various concepts that were used in this study and made it clear that quality can be defined in various ways depending on what the individual's idea of quality is focused on. However, Parmer et al. (2010) indicated that a product's quality in the textile and apparel industry is calculated in terms of quality and standards of fibres, yarns, fabric construction, colour fastness, surface designs and the final finished garments products.

This is to say that there are a number of influential factors that affect the quality of apparel. Nevertheless, Pavlinic and Gersak (2009) indicated that the most important of these factors are construction and the quality of the fabrics incorporated in the garments. All these are necessary for a finished product to be accepted as being of quality.

Assembling textile fabrics is a very keen operation that is governed by a broad spectrum of parameters. For a garment to perform well, its style, fit, features, material, and technical construction must be in harmony. The adjustment of all sewing parameters will be necessary to ensure quality. Nevertheless, the lack of understanding of the role of each of these factors and essentially of the interaction impact between these factors limits the designer's ability to optimise the right selection of construction technique.

It is clear that quite a number of studies have been carried out on product quality in the apparel and garment industry. However, most of the studies focused only on the influence that textile fibre characteristics have on the final garment

quality. Meanwhile, the construction processes and techniques employed to put these pieces of textile fabrics together and the quality of each of these processes contribute to the overall quality of the resulting garment. Therefore paying attention to details of the construction processes is a necessary requirement for product advancement and competitiveness of those designers in the industry. Making sure every aspect of the garment appeals to the standards set out internationally, by clothing companies as well as individual consumers is of major concern among clothing garment industries.

CHAPTER THREE

METHODOLOGY

This chapter presents the methods and techniques used to conduct the study. It discusses the research design, the population, sample and sampling technique, the research instrument used in collecting data, pilot testing of the instrument for reliability and validity purposes and how data was collected and analyzed.

Research Design

The research design employed in this study is the descriptive survey design. This design offered me the opportunity to seek opinion of the population concerning issues of interest and relevance to the study. In this regard, Bryman and Bell (2011) noted that the descriptive research design allows the researcher to get the opinion of the population regarding an issue of concern. Gay (1992) also described descriptive research as appropriate for determining and reporting the way things appear. It involves collecting data to answer research questions concerning the current status of the subjects of the study. Descombe (2003) also mentioned that the idea of survey presupposes that the researcher intends to get information "straight from the horse's own mouth" and is purposeful in this study.

The descriptive survey also assisted me to get appropriate responses from the many crop of respondents with varied but rich views since this type of survey is associated with large scale research covering many people. Macmillan (1996) asserted that descriptive study simply describes and provides an understanding of a

phenomenon usually with simple statistics valuable for an area of premiere investigation. This therefore enabled the study to provide simple descriptive statistics on constructional factors influence on custom-made clothes, which was reliable in this case as the area of study, is relatively new.

Furthermore, the fact that the study sought to examine the relationships among several variables put it in the domain of quantitative research. These variables include constructional factors, serviceability and discard. Quantitative research refers to the systematic empirical investigation of social phenomena via statistical, mathematical or numerical data or computational techniques. The objective of quantitative research is to develop and employ mathematical models, theories and hypotheses pertaining to phenomena. The process of measurement is central to quantitative research because it provides the fundamental connection between empirical observation and mathematical expression of quantitative relationships.

Population

The target population for the study was all female students of the University of Cape Coast. The accessible population however constituted only regular undergraduate female students of the University. Records from the basic statistics issued by the Student Records and Management Section (SRMIS) in 2012 indicated that the total undergraduate students' population as at the beginning of semester one of 2011/2012 academic year was 14,675. Out of this population, 4,922 were female hence became the total accessible population for the study with about 38% of them pursuing programmes in the Faculty of Education and only 1.2 % in the School of Agriculture as shown in Table 4.

Table 4: Faculty/School Distribution of Female Students in UCC

Faculty/School	Frequency	Percentage
Education	1,844	37.5
Social Sciences	703	14.3
Business	668	13.6
Biological Science	608	12.3
Arts	606	12.3
Physical Sciences	325	6.6
Medical Sciences	109	2.2
Agriculture	59	1.2
Total	**4,922**	**100.0**

Sample and Sampling Procedure

Sampling is the process of selecting a sufficient number of elements called sample from a given population in such a way that by studying the sample, and by understanding the properties or characteristics of the sample subjects, it would be possible to generalise the properties or characteristics of the population (Cavana, Delahaye & Sekaran, 2001). A sample is thus the segement of the population that is selected for investigation (Bryman & Bell, 2011).

In all 246 students were drawn from the various Faculties/Schools in the University of Cape Coast. This sample size was determined by using Nwana's (1995) criterion. According to Nwana, "if the population is few hundreds, a 40% sample size will do, and if several hundreds, a 20% sample size will do, if a few thousands, 5% or less of sample will do" (p. 46). Therefore, a sample size of 246

constituted 5% of 4,922. The sample allocation among the various schools according to their respective populations is presented in Table 5.

Table 5: Sample Distribution by Faculty/School

Faculty/School	Population	Sample	Percentage
Education	1,844	92	37.5
Social Sciences	703	35	14.3
Business	668	34	13.6
Biological Science	608	30	12.3
Arts	606	30	12.3
Physical Sciences	325	17	6.6
Medical Sciences	109	5	2.2
Agriculture	59	3	1.2
Total	**4,922**	**246**	**100.0**

Stratified, probability proportional to size (PPS) and simple random sampling techniques were used for the selection of the students.

Stratification was done by distributing the samples into the eight faculties and schools of the University. The sample size of 246 was then allocated to the various faculties and schools using PPS. This technique ensured that samples selected from each faculty and school fairly represented the total number of female students in that faculty and school. For example, a sample of only 3 was chosen from the School of Agriculture because 59 divided by 4,922 and multiplied by 246 is equal to 3. Thus, 59/4,922x246=3.

The simple random sampling (SRS) technique was adopted for the selection of the respondents. In this case, the 'Random Numbers Generator' function in the SPSS (version 20.0) was used. The registers of the various faculties and schools were obtained from the Faculty Officers and captured in the SPSS. The software was then instructed to randomly select a given number of respondents depending on the sample size for the faculty/school. For example, in the Faculty of Education, the software was instructed to choose 92 names. The names selected were then traced and administered the questionnaire. The same procedure was repeated for the remaining faculties and schools.

Instruments

Questionnaire was the sole instrument for data collection. Saunders, Lewis, & Thornhill (2004) use the term questionnaire in a generic form to include all techniques of data collection in which each person is asked to respond to the same set of questions in a pre-determined order. Also according to Amedahe (2002), a questionnaire is essentially, a list of organized and ordered questions or statements presented to respondents in a uniform manner to which they provide responses. Questionnaire was used for the data collection because it provided a much quicker means of gathering information from a fairly large population.

For this reason, since the research sought to elicit the views of students on the serviceability of their custom-made clothing with regards to the constructional factors employed in the assembly of these garments, questionnaires were therefore used to collect data for the study. The questionnaire was divided into six sections with section 'A' items eliciting views on respondents background information, 'B' assessing stitching factors, 'C'-fit factors, 'D'- fastening factors, 'E'- underlining

factors and finally ‘F’ - serviceability factors. The items in all the sections were close ended type and some sections had likert scale type items.

Pilot-Testing of Instrument

A pilot study is a small scale preliminary study conducted in order to evaluate feasibility, time, cost, adverse events, and statistical variability in an attempt to improve upon the study design prior to performance of a full-scale research project. Polit and Hungler (2003) regarded pilot-testing as a small-scale version or trial done in preparation for the actual study. The purpose of a pilot-testing is to ensure the level of validity and reliability of the data collection instrument.

One of the advantages of conducting a pilot-testing is that it might give advance warning about where the main research project could fail, where research protocols may not be followed or whether proposed methods or instrument are inappropriate or too complicated. According to De Vaus (1993), pilot-testing is important for the following reasons:

1. Developing and testing adequacy of research instruments,
2. Identifying logistical problems which might occur using proposed methods,
3. Determine what resources (finance and staff among others) are needed for a planned study, and
4. Estimating variability in outcomes to help in determining sample size.

The instrument was pilot-tested at the Cape Coast Polytechnic also in Cape Coast. A total sample size of 30 female students across the school was randomly selected for this exercise. Questionnaires were personally administered and collected for the Cronbach’s Alpha reliability test

Fraenkel and Wallen (2000) defined reliability as the consistency of scores obtained from one administration of an instrument to another. Internal consistency for each of the subscales was computed for all the sections except the Section A (background data of respondents). The Cronbach's Alpha reliability coefficients for the subsections B, C, D, E and F were .796, .942, .697, .811, .890, and 0.717, respectively. The overall reliability coefficient for the questionnaire was .838. These coefficients were examined against the acceptable range of .600 or above (Cohen as cited by Leech, Barrett & Morgan, 2005). This coefficient also suggested that the instruments were reliable (Kline, 1999). The results therefore indicated that the instrument had an "adequate" internal consistency. That is, the probability of the instrument's reliability was high and therefore could be used for the main study.

For validity, the instruments were vetted by experts. It was also necessary to find out if the instructions accompanying the items were clear enough and would therefore aid the respondents to complete the questionnaire for instance, as accurately as possible. The trial testing thus helped to sharpen the instruments. For instance, it enabled me to reduce the number of the open-ended questions because there was a high tendency of losing some vital information. Also, some sentences on the questionnaire item were restructured in relation to clarity of expression and overloaded questions to remove ambiguity. Generally, the number of items on the questionnaire was reduced.

Drawing on their knowledge in measurement and evaluation, and research methods, the experts critically examined the items contained in the instruments to arrive at an acceptable sample of the domain of content under which each of the sub-themes on the influence of constructional factors on the serviceability of

custom-made clothing. They also assessed the language construction and difficulty as well as the clarity of directions. In achieving construct validity, the experts further considered and determined whether the administration of the instruments to the targeted respondents would permit accurate inferences about the expectations.

Data Collection Procedure

A number of factors were put in place in the collection of data for the present study. An introductory letter was requested from the Head of Department (HOD) of the Department of Vocational and Technical Education (VOTEC), University of Cape Coast, to introduce the researcher to the Faculty Officers and students of the various faculties and schools. A discussion was held with them with respect to the appropriate time to come for the administration of the questionnaire. Dates were subsequently given to me for the administration of the questionnaires and data was collected over a two-week period from July 9 to 20, 2012.

The collection of the data depended on direct contact with respondents in and outside the lecture theatres. This gave me the opportunity to establish rapport with the respondents and explained items that were not clear to them. In order to encourage respondents to frankly respond to the items, confidentiality was assured them to enable them to willingly express their views. The establishment of good rapport with the respondents enabled me to administer and retrieve most questionnaires on the same day. To easily identify sets of questionnaire for administration and analysis purposes, each set of questionnaire for the various faculties and schools was labelled. For instance, ED for Education students, ART for Arts students and MD for students from the School of Medical Sciences.

The respondents responded to the questionnaires in their lecture halls and in the presence of their lecturers, who willingly assisted in the administration of the

instrument for at most thirty minutes. However, those who finished before the stipulated time were allowed to submit their questionnaires.

Although the study recorded 100% retrieval rate, after editing and cleansing, 13 questionnaires were found to be defective (thus some respondents gave multiple answers to questions and others skipped some vital information on the questionnaires) and were subsequently discarded. Therefore, the total number of respondents in the study was reduced to 233 representing 94.7%. This could be attributed to the intensive education, cooperation from both lecturers and students, and the length of time given me for the administration of the questionnaires.

Data Analysis

To Ary, Jacobs and Razavieh (1990), data analysis is the ordering and breaking down of data into constituent parts and performing of statistical calculations with the raw data to provide answers to the research questions which guided the research. First, the retrieved questionnaires were serially numbered, coded and scored. The Statistical Product and Service Solutions (SPSS version 20.0) was then used to run the analysis of the data collected. Basically, data gathered in this research were analysed both descriptively using tables, graphs, frequencies and percentages and inferentially including the Chi-square test, Pearson's Product Moment correlation. In analysing the Likert scale responses, the means and standard deviations were computed. Always was coded a 4, sometimes coded as 3, seldom coded as 2 and never coded as 1. Accordingly, the following numerical ranges were derived for the interpretation of the mean ratings: 1-1.4 implies Never; 1.5-2.4 means Seldom; 2.5-3.4 implies Sometimes; and 3.4-4.0 implies Always. Research questions 1, 2, 3 and 4 were analysed using the correlation analysis. This was because these research questions sought to examine

the relationship between two quantitative variables (thus constructional factors and serviceability). Finally, the fifth research question was analysed using the Chi-square test since it was the association that was being measured between categorical variables.

CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter provides the analysis of responses and discussion of the findings from the study. Presentation under this chapter covers analysis of background information of sampled University of Cape Coast's students and results from analysis based on the research questions posed. The analysis and discussion of research questions focused on the influence of constructional factors on the serviceability and discard of custom-made clothing. In assessing the influence of constructional factors on the serviceability of custom-made clothing, the study focused on relationship between stitching factors, fit factors, fastening factors, underlining factors and serviceability of custom-made clothing. The analysis of the research questions also focused on relationship between clothing serviceability, constructional factors and years of discard.

Background Characteristics of Respondents

The respondents were requested to indicate their age groups and Table 6 is the summary of their responses.

Table 6: Age Distribution of Respondents

Age (in years)	Frequency	Percentage
16 – 20	49	21.0
21 – 25	132	56.7
26 – 30	36	15.4
31 and above	16	6.9
Total	**233**	**100.0**

Among the respondents, majority (72%) of them were aged between 21–30 years, while 49 (21%) were between 16–20 years. Sixteen representing 7% were 31 years and above. The results confirm the general assertion that students in the tertiary institutions currently, particularly in the University of Cape Coast are young with an average age of 25.2 years for females as against 27.0 for males. It can be inferred from the results that the respondents were young and could have a flair for fashion and for that matter customised garments.

The study also sought to find out whether respondents have had any lessons in Clothing and Textiles as a course since this could presumably inform their sense of judgement. Out of the 233 respondents who responded to the questionnaire, majority 137 (59%) did not have any training or education in clothing and textiles as a course. The data further shows that among the 96 respondents who had obtained Clothing and Textiles education, majority representing 54% had it at the basic school level, secondary/vocational (32 representing 33%) and tertiary level (12 representing 13%). However, it is worth noting that though majority of the respondents did not study Clothing and Textiles at the tertiary level, this may not

deny them of the basic knowledge in this area. Similarly, a greater number of the respondents had no experience in clothing construction as depicted in Figure 5.

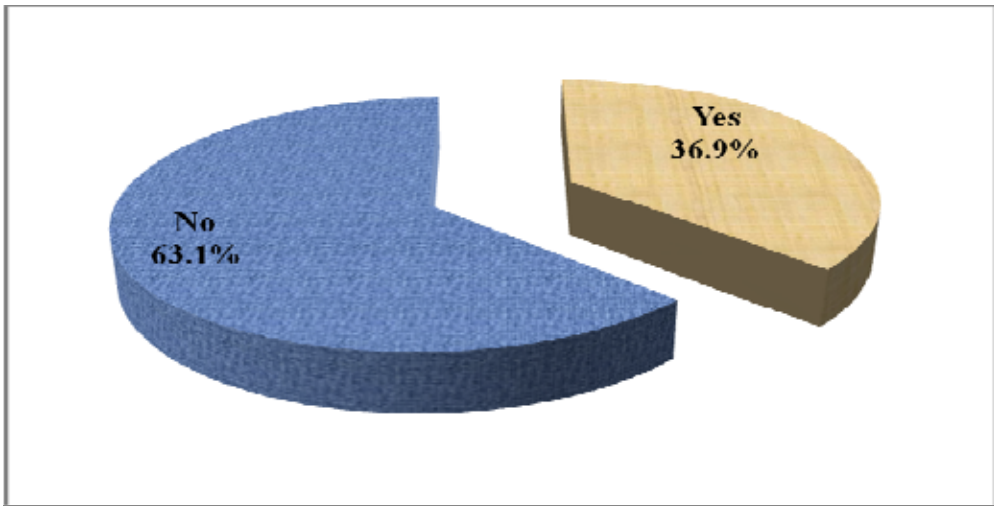

Figure 5. Experience in clothing construction

A striking issue of relevance to this study was the frequency at which respondents patronised customised garments. Item six on the questionnaire (See Appendix A) was used to elicit respondents' estimation of the average number of customised clothing they use in a year. Details of this are presented in Table 7.

Table 7: Average Number of Customised Garments Patronised Annually by Respondents

Number	Frequency	Percentage
None	5	2.2
1 – 2	66	28.3
3 – 4	80	34.3
5 – 6	41	17.6
More than 6	41	17.6
Total	**233**	**100.0**

Out of the 233 respondents who responded to the questionnaire, 162 representing 70% reported that they had patronised three to six garments in a year. Five representing 2% of respondents indicated they had not made any new customised clothes in a year.

The level of involvement of respondent in the choice of design, fashion fabric, sewing supplies like underlining, fastenings and other notions were of interest to this study. Therefore, respondents were requested to indicate their level of involvement in the construction process of their customised garments. Table 8 shows the responses.

Table 8: Respondents level of involvement in the construction of their Custom-made Clothes

Means	Frequency	Percentage
I buy fashion fabric, underlying and all necessary fasteners for the dressmaker.	109	47
I buy the fabric and underlining fabric for the dressmaker.	61	26
I buy only the fashion fabric for the dressmaker.	109	47
I only place order and make payment upon delivery of the garment.	19	8
Total	**233**	**100.0**

The results from Table 8 show that many of the respondents (47%) usually buy only the fashion fabric for their dressmakers for sewing. Also, 61 (26%) of them claimed that they bought fashion fabric and underlining fabric for sewing by their dressmakers, while 44 (19%) said that they bought the fashion fabric,

underlining fabric, and all necessary fasteners for the dressmaker. This result is indicating the fact that most respondents decide on the fashion fabrics that would be used for the construction of their garments and for that matter buy the fabrics for the designers.

Table 9: Respondents' reasons for not choosing designs for their Custom-made Clothing

Reason	Frequency	Percentage
I do not have knowledge in designing	187	86
I believe in the judgement of my dressmaker	30	14
Total	**217**	**100**

With regards to design selection as depicted in Figure 6, 217 respondents out of the 233 representing 93% indicated that they do not normally select designs for their customised garments. A probing question to find out why respondents left the selection of designs in the hands of their dressmakers revealed that 187 (86%) respondents out of the 188 who indicated they never selected designs for their dressmakers did so because they had no knowledge in clothing designing while 14% mentioned that they trusted in the judgement of their designers. It can therefore be concluded that despite the fact that respondents do not have select the designs for their customised garments, they tend to have control over the fashion fabric.

Figure 6 depicts the responses of the respondents on whether they chose design of their customised garments for their designers or dressmakers.

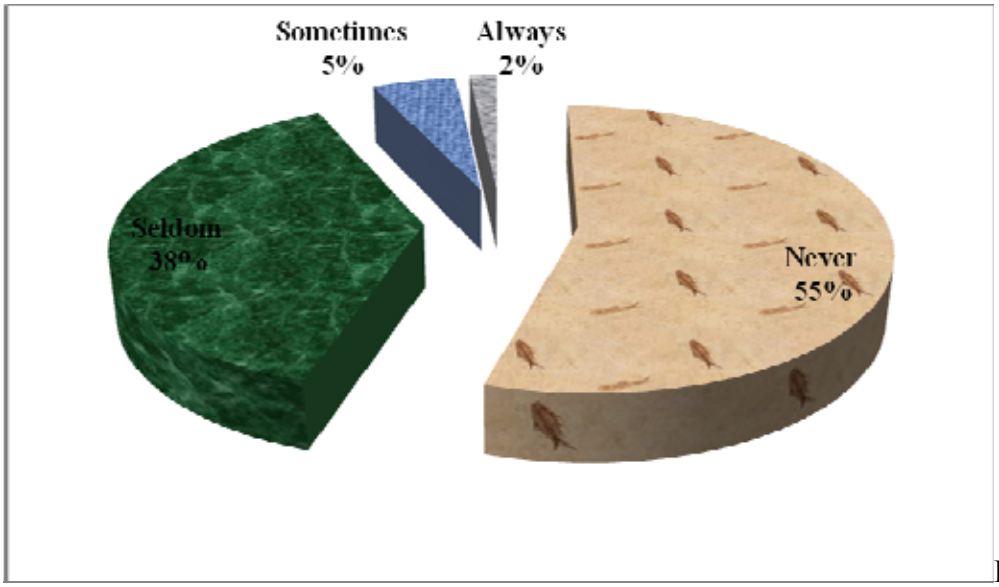

Figure 6. Choice of design for dressmakers

Research Question 1

How do seaming factors affect serviceability of custom-made clothing?

This research question sought to find out how seaming factors such as seam type, stitch and seam construction and thread type all affect the total serviceability of custom-made clothing leading to their discard. Using clothing quality standards developed by Klumpp (2000), respondents were requested to assess the quality of seams in their most recent discarded customised garments. Six questions were asked on seams and stitches to constitute stitching factors in custom-made clothing. Neat construction of seams and stitches, stitching thread colour matching fabric colour, flatness of seams in the garment, evenness, straightness and attractiveness of stitches on the side seams, stitching threads do not break easily and last through the garment's life were the components of stitching factors.

Table 10: Descriptive Statistics on Seam Factors

	Never		Seldom		Sometimes		Always			
Statements	No.	%	No.	%	No.	%	No.	%	Mean	S.D
Thread colour suits garment fabric colour.	13	5.6	27	11.6	70	30.0	123	52.8	3.30	0.781
Seams and stitches in garments are neatly constructed (securely stitched and finished).	10	4.3	29	12.4	126	54.1	68	29.2	3.08	0.502
Stitches that appear on right side of garment are even, straight and attractive.	21	9.0	35	15.0	95	40.8	82	35.2	3.02	0.244
Seams in the garment are flat.	18	7.7	39	16.8	112	47.2	66	28.3	2.96	0.830
Stitching threads do not break off easily.	11	4.7	52	22.3	120	51.5	50	21.5	2.90	0.547
Stitches and seams last throughout the garment's life.	23	9.9	63	27.1	99	42.5	48	42.5	2.74	0.663

Mean calculation is based on coding: Always (4); Sometimes (3); Seldom (2); and Never (1).

Table 11: Descriptive Statistics on Serviceability Factors

	Poor		Good		Very Good		Excellent			
Statements	No.	%	No.	%	No.	%	No.	%	Mean	S.D
Intended purpose.	6	2.6	51	21.9	120	51.5	56	24.0	2.97	0.542
Comfort.	7	3.0	71	30.5	92	39.5	63	27.0	2.91	0.759
Durability.	12	5.2	66	28.3	104	44.6	51	21.9	2.83	0.562
Personal satisfaction.	11	4.7	82	35.2	80	34.3	60	25.8	2.81	0.770

Mean calculation is based on coding: Excellent (4); Very good (3); Good (2); and Poor (1).

From Table 10, it can be seen that majority (53%) of the respondents said that their thread colour always matched the colour of their garment fabric, while (30%) and (12%) of the respondents said “sometimes” and “seldom”, respectively. A few of them indicated that thread colour never matched the colour of their garment. This means a greater number of the respondents were satisfied with thread and garment fabric colours in constructing their garments.

With a mean value of 3.08 and standard deviation of 0.502, 126 (54%) of the respondents reported that they sometimes had seams and stitches constructed neatly in their customised garments. Furthermore, (29%) of the respondents indicated that they always had seams and stitches neatly constructed in their garments. However, others pointed out that seams and stitches on their garments were not neatly constructed. In addition, many respondents indicated that the stitches constructed on the right side of their garments were even, straight and attractive. The grand mean for all six questions on seaming factors was 3.00; indicating that averagely customised garments constructed for the respondents, are sometimes without any seam and stitch related problems.

From Table 11, the results show that 56 (24.0%) and 120 (51.5%) respondents rated their customised garments to have served their intended purposes as “excellent” and “very good” respectively. While only six (2.6%) ranked theirs as poor. This result reiterates the fact that customised clothing adapted to the client’s style and include personalised details therefore suitability of their garment for intended purpose may be high as indicated by the result. With regards to comfort, only seven representing 3.0% rated their garments to be “poor.” This means that as much as 97.0% of the respondents

rated comfort level of their customised clothing to be high and this is an important factor in garment serviceability. Furthermore, concerning how durable customised garment were, majority (44.6%) of the respondents rated their customised clothing to be very good while (5.2%) rated theirs as poor. A grand average mean of 2.88 implies that most of the respondents rated the performance of their custom-made garment with regards to serviceability factors as very good.

The relationship between stitching factors and serviceability of custom-made clothing is presented in Table 12.

Table 12: Correlation between Stitching Factors and Serviceability

		Serviceability
Stitching factors	Correlation (*r*)	0.386**
	p (2-tailed)	0.000
	N	233

*** Correlation is significant at the 0.05 level.*

From Table 12, there is a significant positive correlation ($r = 0.386$, $p=0.000$) between stitching and serviceability of custom-made clothing. This means that stitches constructed on custom-made clothing have increasing effect on their total quality. This result is in accordance with Mukhopadhyay, Sikka and Karmaker (2004) assertion that seam quality is an important parameter in determining the performance of garment. Seams are meant to hold garment pieces in place for the lifetime of the garment so in order to achieve this purpose they must be constructed having in mind the fact that they have a positive relationship on the performance of the garment. The significance of seams in the garment industry cannot be disregarded because product quality

in the industry is always said to mean seam quality (AMANN Inc., 2009). The primary function of a seam is to provide uniform stress transfer from one piece of fabric to another, thus preserving the overall integrity of the fabric assembly (Choudhary & Goel, 2013). Therefore, in order for garments or apparel products to have proper appearances, seams used in their construction should not contain any defect.

Research Question 2

What is the relationship between fit factors and serviceability of custom-made clothing?

Research question two examined the relationship between fit factors and serviceability of custom-made clothing. Ten questions were asked and they constituted the fit factors. These included smoothness and absence of puckers on dart stitching line, securely finished dart ends, fitness of skirts and trousers at the waist, garment on the shoulder, sleeves, armpit, armhole, hip and breast area.

Table 13 shows the descriptive statistics on the fit factors, 193 (83%) of the respondents said they did not experience any fit related problems around their breast area. This means that out of every five customised garments constructed for them, at least three of them had good fit around the breast area (not too tight or loose). It can be inferred from the result that fit around this part of the body was considerably good. Again, with a mean value of 3.07, 72 (31%), respondents reported that their skirts and trousers were always well fitted at their waist. Furthermore, when asked whether their dart stitching lines were smooth and free from puckers, 189 (81%) of them responded indicated that they sometimes had smooth dart stitching lines and had no winkles on

Table 13: Descriptive Statistics on Fit Factors

	Never		Seldom		Sometimes		Always			
Statements	No.	%	No	%	No.	%	No	%	Mean	S.D
The fit of your garments around the breast area is good	13	5.5	27	11.6	122	52.4	71	30.5	3.08	0.211
Dart stitching line is smooth and free from puckers (small wrinkles).	15	6.4	29	12.5	114	48.9	75	32.2	3.07	0.854
Skirts and trousers fit well at the waist	15	6.4	43	18.5	112	48.1	72	30.8	3.07	0.560
Sleeves attached to garment fit your arm well	9	3.9	27	11.6	136	58.3	61	26.2	3.07	0.416
Garment fit at the armhole gives you room for easy movement.	7	3.0	41	17.6	114	48.9	71	30.5	3.07	0.355
Garments' fit at the hip is good so no folds are formed around the buttocks.	11	4.7	40	17.2	106	45.5	76	32.6	3.06	0.811
Dart ends are securely finished.	9	3.9	44	18.9	108	46.4	72	30.8	3.04	0.600
The area of garment under your armpit is not too high to restrict movement nor too low for exposure.	21	9.0	36	15.5	93	39.9	83	35.6	3.02	0.357
Garments do not drop off your shoulders	15	6.4	47	20.2	106	45.5	65	27.9	2.95	0.864
How often do you have general fit problems?	8	3.4	73	31.4	104	44.6	48	20.6	2.82	0.638

Mean calculation is based on coding: Always (4); Sometimes (3); Seldom (2); and Never (1)

their garments. Seventy-one representing 31% and 114 (49%) of the respondent "always" or "sometimes" had the garment give them room for easy movement at the armhole because the fit was good.

However, the amount of ease needed in a garment vary by personal preference, the type of fabric used, and the design of the garment. Nonetheless, less ease is required for knitted fabrics than for woven fabrics (Brackelsberg & Marshall, 1994) Ashdown & DeLong, 1995).

Table 14: Correlation between Fit Factors and Serviceability

		Serviceability
Fit factors	Correlation (*r*)	0.403**
	p (2-tailed)	0.000
	N	233

*** Correlation is significant at the 0.05 level.*

Table 14 shows a positive correlation (r = 0.403) between fit and serviceability of custom-made clothing. This implies that when customer's fit preference is met, it would increase their appreciation for the custom-made cloth. In determining whether it plays a major role in total serviceability of the custom-made cloth, a p-value of 0.000 was obtained. This implies that the fit is of high significance to the customer in determining the serviceability of the custom made cloth. However, individuals' preferences play a major role in how well customised clothing fit therefore when the garment is constructed according to the individual's preference it results in high serviceability to the wearer. The above finding is consistent with studies of Frost (as cited in Shin, 2013), Alexander et al. (2005) and Fuzek (as cited in Keeble, Prevatt & Mellian, 1992). According to Frost (as cited in Shin, 2013), the relationship

that exist between comfort (which is a component of serviceability) and fit means that they influence one another in the apparel evaluation process.

Alexander et al. (2005) also noted that fit contributes to the confidence and comfort (serviceability) of the wearer. This implies that the wearer is likely to feel comfortable and confident when wearing well-fitted clothing. Fuzek (as cited in Keeble et al., 1992) also indicated that fit is the most important factor in the subjective evaluation of comfort.

Research Question 3

How do fastening factors affect serviceability of custom-made clothing?

The study sought to examine the relationship between fastening factors and serviceability of custom-made clothing. In computing fastening factors, 14 items were posed. These included items such as buttons were neatly and securely fastened, buttons were reinforced with interfacing, button type was suitable for fabric and garment type, buttons remained on garments throughout its life span, buttonholes were uniform in appearance, buttonholes had appropriate length, buttons and buttonholes are placed at area of most strain, hooks and eyes if used are well attached, zipper material is not visible when attached to garments, zipper when closed does not show, zipper lies flat when closed, zipper opens and closes easily, and zipper colour is compatible with garment fabric.

In Table 15, results indicate that 100 (43%) and 114 (45%) of the respondents “always” or “sometimes” have buttons on their customised clothing to be neatly and securely fastened. This factor had the highest mean score of 3.27 with a standard deviation of 0.695. A majority of 78% respondents rarely had an issue with compatibility of zipper colour to garment.

Table 15: Descriptive Statistics on Fastening Factors

	Never		Seldom		Sometimes		Always			
Statements	No.	%	No.	%	No.	%	No.	%	Mean	S.D
Buttons are neatly and securely fastened.	8	3.4	21	9.1	104	44.6	100	42.9	3.27	0.695
Zipper colour is compatible with garment fabric	10	4.3	41	17.6	68	29.2	114	48.9	3.23	0.544
Buttons are properly aligned with buttonholes	4	1.7	37	15.9	99	42.5	93	39.9	3.21	0.264
Button type is suitable for fabric and garment type	10	4.3	33	14.2	96	41.2	94	40.3	3.18	0.782
Zipper lies flat when closed.	9	3.9	43	18.4	98	42.1	83	35.6	3.05	0.449
Zipper when closed does not show, unless part of the design.	11	4.7	42	18.0	102	43.8	78	33.5	3.06	0.948
Buttonholes have appropriate length	7	3.0	44	18.9	114	48.9	68	29.2	3.04	0.587
Hooks and eyes appropriately fixed on garment	14	6.0	33	14.2	115	49.3	71	30.5	3.04	0.264
Zipper material is visible garments.	14	6.0	31	13.3	126	54.1	62	26.6	3.01	0.748

Table 15 continued

Zipper opens and closes easily.	12	5.2	45	19.3	104	44.6	72	30.9	3.01	0.323
Buttons and buttonholes are placed appropriately to prevent gapping.	6	2.6	45	19.3	124	53.2	58	24.9	3.00	0.244
Buttons remain on garments throughout their life span.	22	9.5	59	25.3	125	53.6	27	11.6	2.67	0.891

Mean calculation is based on coding: Always (4); Sometimes (3); Seldom (2); and Never (1).

Again, a further examination revealed that with issues of buttons properly aligned with buttonholes so that buttoned garment was completely flat and smooth, 93 (30%) and 99 (42.%) reported “always” and “sometimes”, respectively. However, only few (2%) indicated that they never had their buttons properly aligned with buttonholes hence their garments when fastened were not completely flat and smooth. The respondents rated this situation with a mean value of 3.21 and a variation of 0.264. Similarly, when asked whether button type used on their customised clothing was suitable for fabric and garment type, a relatively high rating of (40%) and (41%) of them indicated always and sometimes respectively.

Finally, the general assessment of respondents on whether buttons remain on garments throughout their life span was rated as follows. Though majority 125 (54%) indicated that their buttons sometimes remained throughout the life span of their garments. Twenty two (10%) also indicated that they never had their buttons remain on their garments throughout the life span of the garments. However, a grand mean of 3.06 was obtained on the assessment of fastening factors. This implies that the respondents sometimes experienced fastening related problems in the use of their custom-made clothing. The relationship between fastening factors and serviceability of customised clothing is presented in Table 16.

Table 16: Correlation between Fastening Factors and Serviceability

		Serviceability
Fastener factors	Correlation (*r*)	0.441**
	p (2-tailed)	0.000
	N	233

*** Correlation is significant at the 0.05 level.*

From Table 16, there is a positive correlation (r = 0.441) between fastener and serviceability of custom-made clothing. This indicates that if the buttons, zippers, hooks and eyes and press are well attached to custom made clothes it would have an increasing effect in determining whether it plays a major role in total serviceability of the custom-made cloth, a p-value of 0.000 was achieved. This implies that the fasteners used on customised clothing are of high significance to the customer in determining the serviceability of the custom-made clothes. According to Mack (2010), fasteners add function and details to any garment; thus they serve two purposes on garments: functional and aesthetic purposes. In order for fastenings used on customised garments to achieve these two principles, they must be constructed or attached to appear neat with no loose or unsightly threads. In addition, the choice of fasteners should be appropriate for the garment design as well as the fabric being used. Finally, stitches should be secured so they do not show on the right side of the garment/fabric in order to secure fastenings tightly to the garment fabric surface.

Research Question 4

What is the relationship between underlining factors and serviceability of custom-made clothing?

This research question sought to examine the relationship between underlining factors and serviceability of custom-made clothing. Underlining factors composed of items such as underlining makes the garment opaque, colour and weight of underlining matches garment fabric, underlining fits smoothly, underlining is neat in the inside of the garment, underlining does not show when the garment is worn, and fit of underlining allows for body movement.

From Table 17, majority (197 representing 85%) said underlining made their garments opaque. Other respondents, however, either never or seldom had this experience. With a mean value of 3.20 and a variation of 0.981, majority of the respondents indicated that the colour and weight of underlining matched their garment fabrics. Sixty-seven representing 29% and 114 (49%) said that they “always” and “sometimes” had situations whereby underlining did not pull when garment was worn out. However, further investigation revealed that issues relating to smooth fitness of underlining raised a little concern. Though majority 88 (38%) indicated that their underlining always or sometimes fits smoothly a relative number of the respondents, 44 (19%), also indicated that they never experienced underlining of their customised clothing fitting smoothly.

Table 17: Descriptive Statistics on Underlining Factors

	Never		Seldom		Sometimes		Always			
Statements	No.	%	No.	%	No.	%	No.	%	Mean	S.D
Underlining makes the garment opaque.	18	7.7	18	7.7	82	35.2	115	49.4	3.26	0.400
Colour and weight of underlining matches garment fabric.	14	6.0	26	11.2	92	39.5	101	43.3	3.20	0.981
Underlining is neat in the inside of the garment.	13	5.6	31	13.3	86	36.9	103	44.2	3.20	0.658
Underlining does not show when the garment is worn.	13	5.6	32	13.7	95	40.8	93	39.9	3.15	0.201
Fit of underlining allows for body movement	15	6.4	29	12.5	100	42.9	89	38.2	3.13	0.357
Underlining fits smoothly.	13	5.5	44	18.9	88	37.8	88	37.8	3.08	0.848
Underlining does not pull when garment is worn.	18	7.7	34	14.6	114	48.9	67	28.8	2.99	0.257

Mean calculation is based on coding: Always (4); Sometimes (3); Seldom (2); and Never (1)

A Pearson correlation coefficient was computed between underlining factors and serviceability factors, and the results are presented in Table 18.

Table 18: Correlation between Underlining Factors and Serviceability

		Serviceability
Underlining factors	Correlation (*r*)	0.462**
	p (2-tailed)	0.000
	N	233

*** Correlation is significant at the 0.05 level.*

It can be seen from Table 18 that there is a significant positive relationship (r = 0.462, p=0.000) between underlining and serviceability factors of custom-made clothing. This indicates that the colour and weight, fitness, neatness, and the flexibility of underlining play a major role in determining the serviceability of the custom-made clothes. Although the nature of underlining materials is paramount in determining its suitability, the skills employed by the dressmaker too are undisputable. Underlinings are very important parts of garments because they are responsible for enhancing and maintaining the flow, the drape and the form of the outer fabrics. Underlining also facilitates comfortable and smooth garment donning and doffing. During warm seasons, underlining helps in preventing hot and moist interior discomfort common with unlined garments. They provide a cooler, but damp fabric adhesion to the skin to keep the wearer comfortable even during very hot seasons.

Research Question 5

Is there any association between clothing serviceability and discard?

The objective here was to assess the association, if any, between clothing serviceability and clothing discard. However, the discussion covers the following thematic areas; respondents' disposal habits of customised clothing, reasons associated with the discard, duration of use before discard, what respondents do to customised garments before discarding and finally the association between clothing serviceability and discard. In Table 19, the disposal habits of students are presented.

Table 19: Most Recent Customised Garments Discarded by Respondents

Customised garments	Frequency	Percentage
Slit and *kaba*	87	37.3
Skirt and blouse	49	21.0
Trouser	38	16.3
Blouse	21	9.0
Shirt	21	9.0
Dress	12	5.2
Others	5	2.2
Total	**233**	**100.0**

Five common customised dress types were outlined and respondents were asked to indicate the most recent type they had discarded and the reason for the discard. Table 19 shows that many 87 respondents had done away with their

customised *slit* and *kaba,* whiles 49 said that they had disposed off their skirt and blouse garments. A substantial number of them 38 also claimed to have recently discarded customised trousers made for them.

However, of the 87 (37%) respondents who indicated that *slit* and *kaba* was the most recent customised garment type they had discarded, 49 (56%) attributed their reasons for discard to constructional factors while the rest 38 (44%) attributed their discard to non-constructional factors. Specifically, 19 (22%) respondents discarded their *slit* and *kaba* because they did not like the fit of the garments just after construction. Again, 14(16%) respondents discarded their *slit* and *kaba* because stitches used in constructing the garments came off. The remaining nine (10%) and seven (8%) respondents attributed their discard to poor conditions of notions used on garments and uncomfortable lining conditions respectively (Refer to Table 20).

With regards to customised skirts and blouses, out of the 49 (21%) respondents who reported to have discarded these, 39 (80%) associated their reasons to constructional factors while the rest 10 (20%) respondents associated their discard to non-constructional factors. The specific distributions of these constructional factors are 15 respondents out of the 49 who discarded the skirts and blouses did as a result of poor conditions of notions used on these customised garment type. Ten, seven and two respondents ascribed their discard to bad stitches used for garment construction, uncomfortable lining conditions and bad fit just after construction respectively.

Again, from Table 20, of the 233 respondents, 38 (16%) recently discarded their customised trousers. Both constructional and non-constructional factors were reasons enumerated by respondents to have engineered their discard. Here again, of the 38 respondents, 29 representing 76% of the respondents indicated constructional factors while the nine (27%) were the non-constructional factors. The implication of these results is that though constructional factors (technical problems) and non-constructional factors (non-technical problems) influence the decision of customised clothing discard, constructional factors form a higher percentage of the reasons given by respondents to have led to the discard of their customised clothing.

This is a confirmation of results in a similar work carried out by Laitala and Klepp (2011) where results indicated that technical problems (constructional factors) which results in quality related issues were the most common reasons given for clothing disposal even though a large amount of clothing was also discarded because of situational reasons (new fashion trends, change in body size, wear and tear).

Table 20: Crosstabulation between Customised Garments Discarded and Reasons for their Discard

Types of dress	Reasons for discard of customised garment									
	CBS	CAW	GWO	BS	PCN	UL	BF	OV	TU	**TOTAL**
Slit & Kaba	20	4	4	14	9	7	19	3	7	**87**
	(23.0)	(4.6)	(4.6)	(16.1)	(10.3)	(8.0)	(21.8)	(3.4)	(8.0)	**(100.0)**
Skirt & blouse	7	2	1	10	15	7	2	0	2	**49**
	(14.3)	(4.1)	(2.0)	(20.4)	(30.6)	(14.3)	(4.1)	(0.0)	(4.1)	**(100.0)**
Blouse only	3	2	1	5	6	0	4	0	0	**21**
	(14.3)	(9.5)	(4.8)	(23.8)	(28.6)	(0.0)	(19.0)	(0.0)	(0.0)	**(100.0)**
Shirt only	3	1	3	6	4	0	3	0	1	**21**
	(14.3)	(4.8)	(14.3)	(28.6)	(19.0)	(0.0)	(14.3)	(0.0)	(4.8)	**(100.0)**

Table 20 (Continued)

Types of dress	Reasons for discard of customised garment									
	CBS	CAW	GWO	BS	PCN	UL	BF	OV	TU	**TOTAL**
Trousers	4	3	1	6	9	3	11	0	1	**38**
	(10.5)	(7.9)	(2.6)	(15.8)	(23.7)	(7.9)	(28.9)	(0.0)	(2.6)	**(100.0)**
Dress	1	1	1	2	1	1	4	0	1	**12**
	(8.3)	(8.3)	(8.3)	(16.7)	(8.3)	(8.3)	(33.3)	(0.0)	(8.3)	**(100.0)**
Other designs	1	0	0	2	1	0	0	0	1	**5**
	(20.0)	(0.0)	(0.0)	(40.0)	(20.0)	(0.0)	(0.0)	(0.0)	(20.0)	**(100.0)**

Key: CBS- Change in Body Size; CAW- Change after Washing; GWO- Garment was Worn out; BS- Bad Stitches; PCN - Poor Condition of Notions; UL-Uncomfortable Underlining; BF- Bad Fit; OV- Out of Vogue; and TU-Tired of Garments.

The duration within which customised clothing are used before discarded was also investigated. Respondents were asked to indicate the number of years they used their customised clothing before discarding them.

Table 21 is a summary of the duration of use of custom-made garments by the respondents.

Table 21: Duration of Use of Customised Garments before Discarding

	Did not wear		1 – 2 years		3 – 4 years		5 years or more	
Garment	No.	%	No.	%	No.	%	No.	%
Slit and *kaba*	48	20.6	92	39.4	57	24.5	36	15.5
Skirt and blouse	40	17.2	107	45.9	70	30.0	16	6.9
Blouse only	51	21.9	92	39.5	73	31.3	17	7.3
Shirt only	48	20.6	105	45.1	69	29.6	11	4.7
Trousers	55	23.6	88	37.8	65	27.9	25	10.7
Dress	55	23.6	89	38.2	51	21.9	38	16.3

Multiple responses

The results from Table 21 show that 40% of *slit* and *kaba* users had used the garment for at least three years. Also, about 37% of the respondents who used skirt and blouse said that they discarded the garment after three years, whiles 39% of blouse users did so within the same period. With respect to shirts, 34% of the respondents discarded them after three years. As much as 38% each of trousers and dress users discarded them between 1-2 years. Interestingly none of the

respondents indicated that they had discarded customised clothing within a year of usage.

To find out whether respondents tried to put customised garments back to use after they became unserviceable, respondents were requested to indicate what they do to their garments before discarding the garments. The results show that, of the total number of respondents, about 41% said they discarded their customised clothing outright when they realized they were not in good condition. Twenty five percent changed their styles, 19.3% repaired/mended their clothing and 16% renovated their customised clothing.

The study employed the Chi-square test to determine the nature of association, and the results are presented in Tables 22 and 23.

Table 22: Crosstabulation between Years of Discard and Serviceability

	Range of Serviceability				
Years of Discard	1 – 5	6 – 10	11 – 15	16 and above	Total
1 – 5	0	0	0	0	0
6 – 10	2	13	21	3	39
11 – 15	4	49	76	5	134
16 and above	0	17	41	2	60
Total	**6**	**79**	**138**	**10**	**233**

Table 23: Chi-square Test Results

		Years of Discard
Serviceability	Chi-square value	5.904
	p (2-tailed)	0.434
	df	6

The results in Tables 22 and 23 indicate that there was no significant association between serviceability of a customised garment and the year of discard. This is because the *p*-value of 0.434 is greater than the significance level of 0.05. The implication is that other reasons other than duration of use of cloths might be responsible for the respondents not to care much about a custom-made garment's serviceability like its intended purpose, durability, comfort, and personal satisfaction before discarding it, and vice versa. When the quality is good, the product then becomes fit for use, which implies that the product will be serviceable, durable, provide comfort and give confidence to the wearer. On the other hand, when the product quality is not fit for use, the garment needs to be repaired, altered or remodelled to make it fit for use. However, some products may still not be fit for use after repair, remodelling or alteration and are therefore discarded. The garment may also be discarded after it has served its intended purpose. On the other hand, some products may be discarded right after construction without use or an attempt to repair, remodel or alter.

While Birtwistle and Moore (2007) said that textile disposal behaviour of consumers is minimally understood, Koch and Domina (1999) indicated that

consumers dispose off clothing for a number of reasons such as poor fit, outdated style, boredom and/or wear-out. According to Laitala and Klepp (2011), poor fit, technical quality and taste-related issues dominate reasons for clothing disposal, in addition to situational reasons such as having too many similar garments. These authors have separated poor fit from technical problems. It is not clear what they regard as technical quality problems since some authors have indicated that issues of fit affect the total quality of a garment. Laitala and Klepp (2011) identified technical or quality related reasons as the main reasons for the discard of custom-made garments (35%) and psychological reasons (31%), such as being tired of the product, not using that style anymore, or outdated clothing. Third most common reasons were situational (19%), such as that the owner has changed body size, has other similar clothes, lacks closet space, or that the clothes have too narrow use area.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter concludes the present study. It contains a summary of the work, the conclusions drawn from the study and recommendations made based on findings and conclusions. Also, the topics suggested for further studies are included in the chapter.

Summary

Overview of the Study

The study investigated the relationship between each of the following factors and serviceability of custom-made clothing; seaming, fit, fastening and underlining as well as the relationship between clothing serviceability and discard. Relevant literature was reviewed on the conceptual framework for the study, quality control in the apparel industry, garment quality from dressmakers' view, garment quality from customers' point of view, processes in clothing production, garment quality cues, and consumer expectation.

A quantitative descriptive survey design was employed and a structured questionnaire was developed and administered among female students of the University of Cape Coast. Out of a female population of 4922, 246 were randomly selected across the various faculties and schools of the University.

However, 233 representing 94.7% of the sampled population participated in the study.

Prior to the main study, I obtained an introductory letter from the Head of Department of the Vocational and Technical Education (VOTEC) at the University of Cape Coast. This was presented to formally introduce me to the authorities of the Cape Coast Polytechnic. A pilot study was conducted in Cape Coast Polytechnic among 30 female students and a Cronbach's alpha reliability coefficient of .823 was obtained. Data analysis was done in the SPSS and Microsoft Excel. Statistical tools such as frequencies, percentages, correlation and Chi-square test were employed.

Major Findings

The following findings emerged from the study:

1. There was a significant positive relationship between stitching factors and serviceability since r=.386 and p=.000.
2. A significant relationship existed between fit factors and serviceability because r=.403 and p=.000.
3. There was a significant positive relationship between fastening factors and serviceability since r=.441 and p=.000.
4. A significant relationship existed between underlining factors and serviceability because r=.462 and p=.000.
5. There was no association found between serviceability and years of discard of customised garments since χ^2 (6, N=233) = 5.904, $p > 0.05$.

6. Slit and kaba, and skirt and blouse were the main custom-made garments that many of the respondents had stopped to wear despite their durability.

Conclusions

The following conclusions were drawn from the study:

1. The existing relationship between seaming factors and serviceability is an indication of the complementary roles they both play regarding each other. The implication is that custom-made garment users might not derive adequate serviceability if their garments are poorly stitched. The relevance of stitching in the beauty of any garment, especially customised ones, cannot be underestimated. The rate of discard of poorly stitched garments is high.
2. Fit factors are crucial in the performance of customised clothing as the present study has demonstrated. Undeniably, custom-made garments constructed with a good fit will look splendid on users. Customers usually discard customised garments with bad fit.
3. Fastening factors are indispensable in any well-constructed customised garment hence the positive relationship. A custom-made garment is made stronger with firm fasteners, hence its durability. The rate of discard of such garments might be very low.
4. Underlining is an integral aspect of any customised garment that improves upon serviceability. A good underlining will always guarantee the long use of a garment.

5. The use of *slit* and *kaba*, and skirt and blouse are gradually fading away especially among female students. These customised garments despite their durability and serviceability are fast becoming outmoded in the sight of many ladies. Presently, the trend in fashion seems to be tilting towards simple and straight dresses to the neglect of *slit* and *kaba*. This could be attributed to the fact that simple dresses constructed from African prints are currently in vogue. Besides, it is generally assumed that *slit* and *kaba* is appreciated more by the elderly, not the young. And inasmuch as the respondents of the present study largely consist of young ones, it is no wonder *slit* and *kaba* are almost moribund among them.
6. Duration of use of garment does not necessarily determine its discard or otherwise. This suggests that other important factors are responsible for the discard of garments.

Recommendations

Recommendations for Practice

Based on the findings and conclusions, the following recommendations are made for possible implementation by stakeholders in the clothing and textile industry:

1. Since a significant correlation between stitching factors and serviceability exists, dressmakers should pay particular attention to stitching for a better serviceability, which might influence the longevity of garment use. The choice of a stitching design should, however, depend mainly on the nature of the fabric/textile.

2. The fit level of any customised garments should be critically assessed before being finally handed over to the customer. Fit level can be ascertained when the garment is ready so that any ill-fit can be corrected as early as possible. This is because customers will abruptly stop using a garment which has a poor fit.
3. Dressmakers should ensure that they select appropriate and durable fasteners to enhance serviceability of their garments. Firmness of buttons and zippers are very important to customers.
4. Underlining factors which include choosing colour and weight of underlining to match garment fabric, correct fit of lining to allow ease of movement, neatly construction of underlining in the inside of the garment, among others should be of much interest to dressmakers since they affect the serviceability of customised garments.
5. In decreasing the high rate of discard of custom-made garments (especially slit and kaba) among females, dressmakers should focus on other factors in addition to serviceability. They should as well consider the role of fashion in determination what to produce.

Suggestions for Further Studies

Due to both financial and time constraints, the study could not cover other related aspects of the topic understudy. Hence, the following topics are suggested for further investigation:

1. Expenditure pattern of students on customised garments.

2. Factors influencing the choice of garments among students of the University of Cape Coast.
3. The scope of this study could be expanded to obtain more representative responses.
4. Other constructional factors contribute to the performance of garments; only four were covered by this study. These other factors can be investigated to provide a holistic approach to the study.

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APPENDICES

APPENDIX A

UNIVERSITY OF CAPE COAST

DEPARTMENT OF VOTEC QUESTIONNAIRE

Dear Sir/Madam, The administration of this questionnaire is to aid the student of the above mentioned institution and department to carry out a study on the influence of constructional factors on the serviceability of customised clothing in partial fulfillment of the requirements for award of Master of Philosophy degree in Home Economics. You are humbly requested to read all items carefully and respond objectively and truthfully to them. You are being assured that every piece of information you provide will be treated as confidential and will solely be used for academic purposes. It should be noted that custom-made clothes are clothes designed and made specifically for you.

Instruction: Please tick [√] the box or circle the number that corresponds with your choice of response concerning each question, or write your response in the space provided.

SECTION A: BACKGROUND INFORMATION

1. Age [ ]

    a. 16 – 20 [ ]

    b. 21 – 25 [ ]

    c. 26 – 30 [ ]

    d. 31 and above [ ]

2. Which faculty or school within the university do you belong to?

    a. Faculty of Education [ ]

b. Faculty of Arts [ ]

c. Faculty of Social Science [ ]

d. School of Biological Sciences [ ]

e. School of Physical Sciences [ ]

f. School of Agriculture [ ]

g. School of Medical Sciences [ ]

h. School of Business [ ]

i. Office of International Programmes [ ]

3. Have you ever studied any course in clothing?

Yes [ ]

No [ ]

4. If your answer is yes to question 3, what is the highest level of study in clothing?

a. Basic Education [ ]

b. Secondary /Vocational [ ]

c. Tertiary [ ]

5. Do you have any experience in clothing construction?

Yes [ ]

No [ ]

6. On a scale of 1 – 5, rate your patronage of custom-made clothes in terms of quantity in a year?

a. 1 – 2 [ ]

b. 3 – 4 [ ]

c. 5 – 6 [ ]

d. More than 6 [ ]

7. How do you get your custom-made clothes? (multiple response)

a. I buy the fabric, lining, and all necessary notions for the dressmaker [ ]

b. I buy the fabric and lining for the dressmaker [ ]

c. I buy only the fashion fabric for the dressmaker [ ]

d. I only place order and make payment upon delivery of the garment [ ]

e. Other (specify…….)

8.Do you choose the design for your custom-made clothing?

Yes [ ]

No [ ]

9.If yes indicate the reason why you normally choose your designs?

a. I want my design to be unique

b. I have knowledge in designing

c. I do not believe in the judgement of my dressmaker

d. Other (specify…….)

10.If no indicate the reason for your decision

a. I do not have knowledge in designing

b. I believe in the judgement of my dressmaker

c. Other (specify…….)

11. How often do you choose the design of your custom-made clothes?

a. Always [ ]

b. Sometimes [ ]

c. Seldom [ ]

d. Never [ ]

12. Which of these customised garments have you recently stopped wearing? (Indicate just the most recent).

a. Slit and kaba [ ]

b. Skirt and blouse [ ]

c. Blouse [ ]

d. Shirt [ ]

e. Trouser [ ]

f. Dress [ ]

g. Other (specify…….....)

13. What was the main reason why you stopped wearing the garment?

a. Due to changes in body size [ ]

b. Because garment size changed after washing [ ]

c. Garment was worn out [ ]

d. The stitches came off. [ ]

e. Because either buttons, zippers, hooks and eyes and other notions were not in good conditions. [ ]

f. Because the garment lining made you feel uncomfortable [ ]

g. Because you did not like the fit of the garment just after construction. [ ]

h. Because their uniqueness in colour or style did not conform to the garments that other people wore [ ]

i. Because I was tired of them [ ]

j. Other (specify)……

14. How long had you worn this garment before discarding it? (Circle one number for each garment type)

	DID NOT WEAR	LESS THAN 1 YEAR	1 YEAR TO LESS THAN 2 YEARS	2 YEAR TO LESS THAN 3 YEARS	3 YEARS OR MORE
a. Slit and kaba	0	1	2	3	4
b. Skirt and blouse	0	1	2	3	4
c. Blouse	0	1	2	3	4
d. Shirt	0	1	2	3	4
e. Trouser	0	1	2	3	4
f. Dress	0	1	2	3	4
g. Other (Specify ……)	0	1	2	3	4

15. Before you discarded or stopped using the garment, what attempt did you make to put the garment back into use?

a. I tried to repair/mend it [ ]

b. I tried to renovate it [ ]

c. I tried to change the style (remodel) it [ ]

d. I discarded the garment outright [ ]

16. In general, how long do you usually wear your clothes before you discard them?

a. Less than a year [ ]

b. 1year – less than 2 years [ ]

c. 2years – less than 3 years [ ]

d. 3years or more [ ]

17. Which of these factors most often lead to the disposal/discard of your clothing items?

a. Stitch [ ]

b. Fit [ ]

c. Notion [ ]

d. Lining [ ]

(Stitch factors= broken or skipped stitches, Fit factors=poor fit of garment, Notion factors=buttons, zippers and hook and eyes not in good condition, Lining factors=lining pulling or showing under the garment or fading into the garment fabric).

SECTION B: SEAM PERFORMANCE IN CUSTOM-MADE CLOTHING

In general, how will you assess the performance of seams and stitches used in your custom- made clothing? Please indicate for each of the following statements listed below whether you always, sometimes, seldom or never experience these with your customised clothes. *Circle one number for each case.*

ALWAYS (4) = five garments out of five, SOME- TIMES (2) = between three to four garments out of five, SELDOM (3) = at most two garments out of five, NEVER (1) = zero/none out of five garments

18. Seams and stitches in garments are neatly constructed (securely stitched and finished).....1 2 3 4

19. Stitching threads do not break off easily….....1 2 3 4

20. Thread colour suits garment fabric colour.....1 2 3 4

21. Seams in the garment are flat…….....1 2 3 4

22. Stitches that appear on right side of garment are even, straight and attractive…….....1 2 3 4

23. Stitches and seams last throughout the garment‘s life…….....1 2 3 4

SECTION C: FIT FACTORS

Consumers often use garment fit as a means of evaluating the quality of garment. Please indicate for each of the following fitting standards listed below whether you always, sometimes, seldom or never have your customised clothing made to these standards. *Circle one number for each case.*

ALWAYS (4) = five garments out of five, SOME- TIMES (2) = between three to four garments out of five, SELDOM (3) = at most two garments out of five, NEVER (1) = zero/none out of five garments

24. Dart stitching line is smooth and free from puckers (small wrinkles)…….1 2 3 4

25. Dart ends are securely finished……1 2 3 4

26. Skirts and trousers fit well at the waist (i.e. not too tight nor loose)……..1 2 3 4

27. Garments do not drop off your shoulders unless they are designed as such…….1 2 3 4

28. Sleeves attached to garment fit your arm well (not too tight nor loose).…….1 2 3 4

29. The area of garment under your armpit is not too high to restrict movement nor too low for exposure……1 2 3 4

30. Garment fit at the armhole gives you room for easy movement.……..……1 2 3 4

31. Garments‘ fit at the hip is good so no folds are formed around the buttocks…….....1 2 3 4

32. How often do you have general fit problems…1 2 3 4

33. The fit of your garments around the breast area is good (not too tight nor loose)……..1 2 3 4

SECTION D: PERFORMANCE OF FASTENERS

Fasteners help to provide of wearing and removal but can hinder the performance of the garment if not of good quality or not attached correctly. Please indicate whether the following situations always, sometimes, seldom or never occur in the use of your customised clothing. (Circle one number for each case)

ALWAYS (4) = five garments out of five, SOME TIMES (2) = between three to four garments out of five, SELDOM (3) = at most two garments out of five, NEVER (1) = zero/none out of five garments.

34. Buttons are neatly and securely fastened…… 1 2 3 4

35. Buttons are properly aligned with button-holes so that when buttoned, garment is completely flat and smooth……..1 2 3 4

36. Button type is suitable for fabric and garment type (e.g. for dressy or sporty; light or heavy weight……..1 2 3 4

37.Buttons remain on garments throughout their life span…….1 2 3 4

38. Buttonholes have appropriate length (large enough to allow button to pass through easily, yet small enough to hold garment closed……...1 2 3 4

39. Buttons and buttonholes are placed at area of most strain in order to prevent gapping…….1 2 3 4

40. Hooks and eyes if used are attached such that stitches do not show on the right side of the garment……1 2 3 4

41. Zipper material is not visible when attached to garments……1 2 3 4

42. Zipper when closed does not show, unless part of the design……1 2 3 4

43. Zipper lies flat when closed……1 2 3 4

44. Zipper opens and closes easily…..…….1 2 3 4

45. Zipper colour is compatible with garment fabric unless for decorative purposes…….1 2 3 4

How often do you have to change the following notions during the lifetime of your custom-made garments? (multiple response)

ALWAYS (4) = five garments out of five, SOME- TIMES (2) = between three to four garments out of five, SELDOM (3) = at most two garments out of five, NEVER (1) = zero/none out of five garments

46. Buttons……..1 2 3 4

47. Zippers……..1 2 3 4

48. Hooks and eyes…….1 2 3 4

49. Press stud……..1 2 3 4

50. Other (specify…….. 1 2 3 4

Rank the following in terms of durability on your custom-made clothes

POOR GOOD VERY GOOD EXCELLENT

51. Buttons……..1 2 3 4

52. Zippers……..1 2 3 4

53. Hooks and eyes…….1 2 3 4

54. Press stud……..1 2 3 4

SECTION E: UNDERLINING FACTORS

Lining is a separate but attached supportive fabric which conceals the inside of garment construction. When properly selected and constructed should reduce the wear and tear on the inside construction thereby increasing durability. Please indicate whether the linings in your customised clothing meet the standards stated below.

ALWAYS (4) = five garments out of five, SOME- TIMES (2) = between three to four garments out of five, SELDOM (3) = at most two garments out of five, NEVER (1) = zero/none out of five garments

55. Lining makes the garment opaque……. 1 2 3 4

56. Colour and weight of lining matches garment fabric….. 1 2 3 4

57. Lining does not pull when garment is worn…….1 2 3 4

58. Lining fits smoothly…….....1 2 3 4

59 Lining is neat in the inside of the garment……...1 2 3 4

60. Lining does not show when the garment is worn…… 1 2 3 4

61. Fit of lining allows for body movement……. …… 1 2 3 4

SECTION F: SERVICEABILITY OF CUSTOMISED CLOTHING

In general, how would you rate the performance of your customised clothing in terms of the four factors listed below?

	POOR	GOOD	VERY GOOD	EXCELLENT
62. Intended purpose…….....1		2	3	4
63. Durability…….....1		2	3	4
64. Comfort…….1		2	3	4
65. Personal satisfaction….....1		2	3	4

How will you rank generally the constructional performance of your custom-made clothes?

	POOR	GOOD	VERY GOOD	EXCELLENT
66. Seams……1		2	3	4
67. Fit…… 1		2	3	4

68. Notions…….. 1 2 3 4

69. Lining…….....1 2 3 4

How often do you have to repair based on the following factors?

	NEVER	SELDOM	SOME-TIMES	ALWAYS
70. Seams ……	1	2	3	4
71. Fit……	1	2	3	4
72. Notions……	1	2	3	4
73. Lining……..	1	2	3	4

Thank You!!!

APPENDIX B

Clothing Quality Standards

This was adapted from ―Clothing Quality Standards, developed by Klumpp (2000), Master Clothing Volunteer Coordinator with the Cooperative Extension Service at the University of Arkansas.

Fit

A properly fitted garment should:

• Be fashionable and have an attractive fit. The amount of ease and fullness changes from year to year according to fashion trends.

• Fit smoothly over undergarments.

• Have the appropriate amount of ease for body movement.

• Have proper waistline length and fit.

• Have darts and design details that are properly placed.

• Have correct and properly placed shoulder length unless the design dictates otherwise.

• Have neckline and armholes that fit the body without gapping or straining.

• Have skirt or pant length appropriate for the style and individual.

• Have sleeve fullness and length appropriate for the style and individual.

• Hang straight and parallel.

Construction Standards

There are many sewing techniques that can be used. We each have techniques we prefer—and some that we don‘t. Some standards apply to almost all techniques.

For example, almost all construction techniques should result in a finish or detail that is inconspicuous, functional and durable.

Armholes and Neckline Facings

Well-constructed armholes and necklines should:

• Fit smoothly. Neither the neckline seam nor the facing should show from the outside of the

finished garment (unless it is designed to be stitched to the outside as a decorative, functional piece).

• Be the same shape and grain as the edge to be faced (usually 2½ to 3 inches wide and even in width throughout).

• Be flat, smooth and free from bulk.

• Have appropriately finished outside edges (according to fabric type/weight) to prevent raveling.

• Be securely held in place by understitching and tacking at seams or by top stitching. A professional looking facing will never be hand stitched all the way around the outside edge of the facing.

• Be interfaced to prevent stretching and sagging, to cushion the enclosed seam, to reinforce the area, to support the facing and garment, and to provide shape.

Buttons and Buttonholes

Well-constructed buttons should:

• Fit the purpose to which they are intended-functional or decorative.

• Be neat in appearance on the right and wrong sides of the garment.

• Be securely fastened with double thread and neat stitches.

• Have a shank (thread or part of the button) to accommodate the thickness of the fabric it will button through.

• Be reinforced, according to use and fabric type, with interfacing and/or another button.

• Be spaced in good proportion between top and bottom opening and in relation to the other buttons.

• Be placed in relation to the buttonhole on the center line or lap line. The placket should be smooth and flat so there is no gaping or pulling when buttons are secured in buttonholes.

• Be the appropriate size and style for the garment design and fabric.

• Have no rough edges.

• Be smooth when covered with fabric and have no ―shine or off-colour visible from the base.

Well-constructed buttonholes should be:

• Neat in appearance on the right and wrong sides of the garment.

• Flat and attractive.

• Made with the grain of the fabric unless a biascut garment or unusual design dictates otherwise.

• An equal distance apart, unless spaced for special design effects.

• An even distance from the garment edge and aligned with the center line or lap line.

• Sized in relation to the button size and thickness.

• Applied to an area that has been properly interfaced.

• The same length and width when the same size/shape button has been used.

• Spaced according to the size of the button and garment design/function. Buttons and buttonholes should hold a garment securely closed without strain or stress.

• Positioned so that the button can be secured and will ride slightly toward the garment edge in a horizontal buttonhole and toward the top in a vertical buttonhole.

• Neatly slashed and unsightly threads removed.

• Made with secure stitching and have uniform ―lips.

A well-constructed fitting dart should:

• Be directed toward the body curve.

• Usually end 1⁄2 to 1 inch from the fullest part of the body curve.

• Be tapered so it is smooth and free of puckers.

• Be even and smooth in appearance.

• Be pressed before being crossed by another line of stitching.

• Have threads secured at both ends by tying a knot, lock stitching or back-stitching (use only on medium to heavy fabric or in a seam line).

Fasteners (Hooks and Eyes, Snaps, Self-Gripping)

Well-constructed, well-applied fasteners should be:

• Appropriate for the garment design and fabric being used.

• Applied to an area that has been reinforced with interfacing.

• Secured so that stitches do not show on the right side of the garment/fabric.

• Appropriately placed so edges are held together smoothly and evenly.

• Used appropriately. Use a straight eye when edges lap, round eye when edges meet, hooks and eyes for strain openings, and snaps for areas with little stress. The ball side of a snap and the loop side of a self-gripping fastener are placed on the overlap side.

Hand Stitching

A well-made hand stitch will:

• Be composed of a thread type, weight/thickness and colour suitable to the situation for which it is used. Buttonhole twist is used for hand-worked buttonholes and can be used for sewing on buttons and for top stitching. Heavier and decorative threads, such as embroidery and metallic, can be used for decorative stitching. Use the same colour, or slightly darker, when permanently stitching.

• Have a uniform stitch formation that is appropriate to the fabric and garment for which it is used.

• Have thread ends appropriately secured at the beginning and ending of the stitching. If a knot is used in permanent stitching, it should be out of sight against an inside layer of fabric.

• Usually use a single thread for hand-worked hems and basting and a double thread to secure hook and eyes, snaps and buttons, and to tack seams.

• Be neat and well formed, appropriately spaced, and secured with no thread ends showing or unsightly thread ―mess‖ visible.

• Be invisible on the right side when hemming or tacking seams.

Hems

A well-made hem should:

• Be inconspicuous on the right side, except when it is a decorative part of the garment design.

• Be an appropriate distance from the floor.

• Be even in width and an appropriate depth for the fabric and garment design.

• Be free from bulk in seams that fall within the hem area.

• Have fullness eased in and evenly distributed for a smooth, flat appearance.

• Have an edge appropriately finished for the type and weight of fabric and hem stitch to be used.

• Be firmly secured with a hem stitch appropriate for the fabric and the hem edge finish.

• Be neat with evenly spaced hand stitches 1⁄2 inch apart and with about 1⁄8 inch give (or have even machine stitching).

• Be lightly pressed.

A well-made stitch will:

• Use a thread type and needle size appropriate to the fabric and situation for which it is used. Generally, the finer the fabric, the finer the needle and thread. (Thread expands to or takes up the entire area created by the needle.) There should be no excessive holes created by the needle.

• Be a controlled, consistent length appropriate to the fabric and situation for which it is used. As a general rule, the heavier the fabric, the longer the stitch; the

lighter weight the fabric, the shorter the stitch. Within this rule adjustments are made according to fabric texture and structure.

• Have equally balanced top and bottom threads that look the same on both sides of the fabric (appropriate thread tension).

• Be the type of stitching (regular sewing machine or overcast/serger) or stitch pattern (standard or decorative) appropriate to the fabric and situation for which it is used.

• Be appropriately secured at the beginning and end of the line of stitching.

• Be spaced an appropriate distance from the edge of the fabric according to the function of the stitching.

• Be neat, straight, and fit the purpose for which it was done (functional or decorative).

Pressing

A well-pressed garment should:

• Maintain the original texture of the fabric.

• Show no shine or press marks on the right side of the fabric.

• Have no wrinkles or crinkled areas.

• Have seams and darts pressed smoothly on the stitching line, so that the fabric does not fold over the stitching line or look bubbled. Edges of seam allowances and fold edges of darts do not form ridges on the right side of the garment.

• Have no water-spot or steam marks.

• Help create and maintain the proper shape and curve to the garment and the various garment segments (collar, sleeve, etc.).

Seams, Seam Finishes, Seam Treatments

A well-constructed seam should:

• Be smooth and even in appearance on the inside and outside of garment. Machine tension, stitch length and presser foot pressure are properly adjusted to suit the fabric and thread.

• Be even in width throughout.

• Be secured.

• Be pressed open (and with no puckers) or pressed properly according to the type of seam it is and the way it is used in garment construction.

• Be stitched with thread appropriate to the fabric type, fabric content and colour. (Thread colour should match or be slightly darker than the fabric.)

• Have consistent stitch length.

• Be flat and trimmed and/or graded, if needed, to reduce bulk.

• Match fabric designs such as plaids and stripes.

A well-applied seam finish:

• Is appropriate to the type and weight of fabric.

• Is smooth and neat in appearance inside and out.

• Does not create excess bulk.

• Is not visible from the right side of the garment.

• Is even in width throughout.

• Uses understitching to ―roll under‖ an enclosed seam and is not visible on the right side.

• Uses reinforcement stitches on areas of stress.

Zippers and Zipper Plackets

A well-constructed zipper placket and well-applied zipper should:

• Be flat when closed and neat in appearance. The zipper should lie smooth without stretching or puckering of the fabric.

• Have smooth, even stitches, evenly spaced from the placket edge.

• Have stitching across the bottom opening 1⁄8 inch beyond the zipper stop.

• Have thread ends secured and hidden in folds of fabric so that they will not be caught in the zipper teeth.

• Be a weight compatible with the fabric (light with light, heavy with heavy).

• Have seam lines matching, if the zipper crosses a seam.

• Have matching fabric design, if needed, such as stripes and plaids.

A zipper should be:

• Suited in terms of weight, size and length to the garment design, the fabric and the opening location on the garment. Its colour should match or coordinate with the fabric colour.

• Concealed beneath the edge of a placket overlap from top to bottom.

• Positioned to fit the placket opening. The placket should open to the end of the zipper teeth and close at the top of the zipper. (There should not be a ―hole above a skirt/pant or neckline zipper placement).