



ISSN 2278 – 0211 (Online)

## The Significance of Support- Fabrics in Apparel Production in Ghana

**Charles Kuma Ntim**

Lecturer, Department of Textile Design and Technology, Takoradi Technical University, Ghana

**Richard Acquaye**

Senior Lecturer, Department of Textile Design and Technology, Takoradi Technical University, Ghana

### **Abstract:**

*Finishing is an area that needs attention if Ghanaian apparel is to meet standards and cut across cultural barriers in making its way into other markets (international). Over the years, clothes produced by some fashion designers in Sekondi-Takoradi have been made by paying little or no attention to details or finishing. One such area is the use of support fabrics to finish an item of clothing. This paper sought to identify and examine the availability or visibility of the support fabrics in the local Sekondi-Takoradi market and also investigate the awareness of support fabric used and its impact on the apparel produced. The study used qualitative research methodology employing the descriptive approach. Questionnaires were administered and interviews done. The population for the study was made up of practising fashion design teachers, fashion designers ("master"), fashion students and haberdashers, adding up a total of eleven. Findings revealed that virtually all the respondents were aware of support fabrics, but the challenge has to do with the various names given to them. It was identified that, with regard to the names, there was conflict with the generic names, trade names, as well as "localised" names. However, the paper recommends that there should be training for fashion designers, "masters", as well as haberdashers to enable them to be abreast with fashion terminologies.*

**Keywords:** Support fabrics, haberdashery, apparel; interfacing, underlining, lining

### **1. Introduction**

Apparel production is the process of converting fabrics into garments. The term apparel production is usually used when garments are manufactured in a factory. One of the basic necessities of human life, apart from food and shelter, is apparel (Winck, 2009). People wear clothing for a number of reasons: modesty, survival, fashion and identification. Clothing provides clues as to who we are and what we do and allows us to express our identity (Reeve, 2014). It has transcended from the initial dressing for modesty, protection and adornment (thus, dressing to decorate the body for appreciation) to immodesty, which has to do with dressing to seduce or look attractive (Tweneboaa, personal communication, October 14, 2017). One of the many things that ensure that apparel appeals to the wearer through some form of decoration or finishing technique is the use of support fabrics. Support fabrics take care of the shape and structure of either part of or the whole apparel as it prevents stretching and bagging in soft fabrics; adds body to a garment in such areas as the edge of the front opening, lapel and collar; and keeps rough-textured fabrics from rubbing against your skin (Mead and Siemen, 2011). Support fabrics help to enhance the structure of the fabric to look very appealing and attractive. According to Jennah McKinley, (2016) a garment's shape is enhanced through the application of certain finishing techniques that take many forms, from soft and drapery to crisp and firm, and the construction techniques used for shaping and reinforcing certain areas of the garment are selected to create that silhouette or shape. She adds that methods for creating a garment silhouette vary according to the fashion fabric, the type of garment, and the care procedures for the finished garment. The silhouette of a garment can be shaped and reinforced with support fabrics, such as interfacing, lining and underlining.

In essence, the role support fabrics play in the apparel industry in Ghana cannot be swept under the carpet due to the kinds of finish, enhancement or decoration it brings to the apparel. The finishing of apparel is an area that needs attention if Ghanaian apparel is to meet standards and cut across cultural barriers in making its way into other international markets. However, over the years, apparels produced by some fashion designers in the Sekondi-Takoradi have been made by paying little or no attention to details or finishing, as per the researcher's observation. One search area is the use of support fabrics to finish or decorate apparel. This study tries to identify and examine the availability or visibility of the support fabrics in the local Sekondi-Takoradi market and also investigate the awareness of support fabric used and its impact on the apparel produced.

### 1.1. Etymological Account of Apparel: The Ghanaian Perspective

Textiles have been used in various human endeavours for thousands of years and have the potential to be highly symbolic and culturally important (Bittner, 2004). Apparel production out of textiles can be traced from early man's quest to cover his nakedness due to the realisation of his nude nature and also protect himself from the harsh weather. In Ghana, formerly known as the Gold Coast, materials utilised as clothing were initially broad leaves, then animal leather and, finally, the bark of a tree known locally as "kyenkyen". What served as clothing were strips of "Kyenkyen" (bark of the tree) s tied around the waist to cover the genitals and buttocks, while most of the profile view was exposed (Sackey, 2002). According to Amankwah, Harward and Sarpong (2012), as well as in Owusu (1999), the elaborate nature of the Ghanaian clothing in the 1700s was bereft of styles and the mode was possibly devoid of western influence. They indicated that, during this era, clothing was more of a wraparound without stitches, so that it hung from the navel downwards, covering half of the legs and, at times, was wrapped around the neck and shoulders. The development of fashion (clothing) in Ghana is believed to have started during the colonial period with the introduction of wax prints and "dress" by the colonial masters (Turlings, 2002). Aside from the wax print introduced by the Ghanaian colonial masters, Ghanaians are known for their kente. The most famous kente, which was mainly used as wrap-around by the men, are today being sewn in the form of inimitable garments or apparel for special occasions.

### 1.2. Support Fabric: Concept, Types and Its Essence for the Apparel

Support fabrics is a term referring to the construction details that are usually hidden from view when a garment is worn but serve an important function in maintaining the shape and comfort of the apparel (Linda, 2013). McKinley (2016) explains that a garment's shape can take many forms, from soft and drapery to crisp and firm, and the construction techniques used for shaping and reinforcing certain areas of the garment are selected to create that silhouette. She continues that methods for creating a garment shape vary according to the fashion fabric, the type of garment and the care procedures for the finished garment.

The Canadian 4-H Council Resource Network (2012) are of the opinion that support fabrics such as interfacing, underlining or lining will be influenced by the pattern design, the transparency of the fashion fabric and personal preference. McKinley (2016) opines that interfacing and underlining the silhouette can be used in the reinforcement of a garment. Heaton (2001) concurs with McKinley (2016) but adds that support fabric such as lining eliminates the need for time-consuming seam finishes and reduces "wear and tear" on the inside garment construction; it will lengthen the life and durability of a garment. A lining provides some body and support to a garment, but it never takes the place of interfacing. She continues that it often makes the garment easier to wear over other clothing, such as in a jacket or coat; it can also eliminate the need for some undergarments, such as a slip, as in a dress or skirt. She outlines three major deciding factors that influence the use of support fabric, such as lining as: type of fashion fabric (weight, fibre content/method of care, hand or "feel," personal likes and dislikes), type and style of garment, type of lining (partial or complete); and how the lining will be attached. It is obvious that the mention of support fabrics connotes the use of interfacing, underlining or lining among others. The essence of support fabrics to apparel is regarded as hugely important. From the various authors, it can be deduced that support fabrics are very important as they help give proper finish, enhance and improve the apparel. Figure 1 is an illustration of diverse types of support fabrics

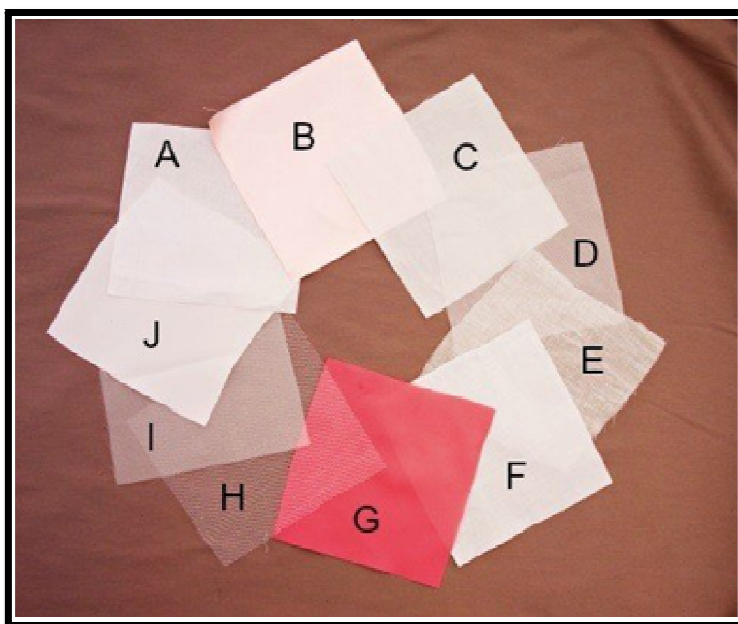


Figure 1: Support Fabrics

Source: <https://www.thesewingdirectory.co.uk/introduction-to-interlining/>

- Bleached calico: An ideal interlining to add a small amount of weight and control to a light, fly-away fabric.
- Satin lining: Used to add weight behind the surface fabric.
- Cotton sheeting: For medium-weight fabrics, sheeting is a useful interlining for adding depth and weight.
- Fusible interfacing: These are available in different weights and are used to support loosely woven fabrics that would otherwise unravel.
- Muslin: Used to add body and weight apparel.
- Silk charmeuse: Used to improve the draping qualities of the surface fabric.
- Lining: For a softer, fluid effect, use acetate lining. Its weight helps to make fabrics hang well.
- Net: Used when you want a stiff interlining to add structure.
- Silk organza: Its strength and crisp nature make it ideal for supporting fabric without adding any depth.
- Cotton lawn: Used for backing silk because the fibres adhere to each other and hold the silk and cotton together.

### 1.3. Interfacing, Underlining and Lining

According to the Canadian 4-H Council Resource Network (2012) the factors that influence the use of any of the three support fabrics, interfacing, underlining and lining, encompass the pattern design, the transparency of the fashion fabric and personal preference. The type of interface, underling or lining that will give the best results, and where best to use it are determined by the silhouette of the pattern design and by the texture and weight of the garment fabric (Mead and Siemen, 2011).

### 1.4. Interfacing

Interfacing is a piece of fabric sewn between the facing and the outer fabric to give a garment body and shape (Mead and Siemen, 2011). They can be a layer of knitted, woven, or non-woven fabric placed between the garment fabric and facing to reinforce, add body and guarantee crispness. Interfacing improves a garment's appearance and preserves its shape (McKinley, 2011). It is an inner construction material that lies between layers of fashion fabrics which adds shape, strength or inner stability and body. Interfacing supports the fashion fabric. In further explanation, interfacing reinforces areas that are subject to stress and helps a garment maintain its shape, wearing after wearing (Baker, 2006). Interfacing usually is used for the front opening edges, especially where there are buttons and buttonholes, collars, cuffs, waistbands and pocket flaps. Mead and Siemen (2011) opine that it strengthens edges where buttons, buttonholes and other fasteners are sewn; adds a smooth finish to necklines, collars, pocket flaps, cuffs and waistbands; helps fashion out a design into a smooth shape or flare; gives body to front facings, necklines and sheer facings; and increases garment life and keeps clothing looking new.

### 1.5. Types of Interfacing

Baker (2006) acknowledges the fact that there are a number of interfacing fabrics on the market but categorises them into three. These are woven, self-fabric and non-woven and she further elaborates on each as follows:

#### 1.5.1. Woven

Woven interfacings have lengthwise and crosswise grain. Woven interfacing is usually cut on the same grain as your fashion fabric. This enables the fashion fabric to maintain its natural drape and hang. If using woven interfacing in a knit fabric, cut the interfacing on the bias so the knit will maintain some of its basic "stretch" characteristics. Interfacings are mainly used on knits to stabilise and to prevent excessive stretching.

#### 1.5.2. Self-Fabric

Self-fabric or some firmly woven fabrics, such as organdy, tulle, net, or muslin, may be used as the interfacing if it meets the criteria listed under "Points to Consider in Selecting Interfacing." Self-fabrics should never add bulk to the area being interfaced.

#### 1.5.3. Non-Woven

Non-woven interfacings are fibre webs. They are made by bonding or felting fibres together. These fabrics are flexible and do not ravel, wrinkle, or lose their shape. There are several types of non-woven interfacings:

- Stable – has little "give" in any direction. They are excellent for shoulder pads and craft items.
- Stretch – has stretch crosswise but is stable lengthwise. They are used in fashion fabrics to maintain the natural stretch.
- All-bias – has stretch in all directions. Usually, there is more stretch in the crosswise.

Mead and Siemen (2011) agree to the fact that there are three major types of interfacing, which include woven and non-woven, but differs from the other category in terms of name. They indicate that the other interfacing material is called iron-on or self-adhesive fabrics, as explained below:

"Iron-on interfacings do not adhere equally well to all fabrics, so always test press on a scrap of fabric before using in garment construction. Determine how much heat is needed for firm adhesion and whether the outline of the interfacing will show through on the right side of the fabric. Because they have little or no give and are fairly heavy, iron-on interfacings should not be used in large areas but only for detail work in small areas. The outer

fabric will become heavier or stiffer where an iron-on is applied, so be careful that the additional weight is not too much for lightweight fabrics.”

It is worth to note that interfacings are placed in-between facing and outer fabrics, as agreed by the author, as it serves as reinforcement for the apparel. Though the names given to the various categories of interfacing differ from author to author, a critical observation of their function as to the role they play in apparel manufacture is the same.

### 1.6. Underlining

Underlining is a fabric added to fashion fabric for more body and opacity. It is a separate layer attached to the corresponding garment fabric section wrong side, and then treated as one during construction. Pattern markings are often transferred to the underlining to avoid show-through on the garment fabric (Linda, 2010). Occasionally, underlining is used to build an unusual silhouette into a garment as it adds structure and support to a fabric. Underlining fabrics used are silk organza, cotton broadcloth or muslin, cotton flannel, rayon challis and hair canvas (cotton batiste and crepe de chine also work well at times.) Silk organza is used when a fabric needs just a little more stiffness (Geana, 2013).

### 1.7. Lining

Lining protects the fashion fabric from the body. Lining also prolongs the life of a garment as it absorbs most of the wear and tear and it helps the fashion fabric hang better on the body. Lining shows on the inside of a garment while interfacing, interlining and underlining are hidden between the fashion fabric and the lining (Linda, 2010). According to Tyler (2008), linings are selected to match the garment, so as to be unobstructed, but, in others, they are chosen to add to the design of the garment, even perhaps as a subtle, identifying a feature of the brand on an otherwise widely available style. Linings are available as warp knits, but predominantly they are woven and from polyester, polyamide, acetate and viscose for use where a slippery material is required, and from cotton, polyester/cotton and wool or wool mixtures in plain or brushed versions where decoration or warm handle is required.

The use of support fabrics, as in interface, underling and lining, cannot be done in so far as a project made of multiple layers in apparel manufacturing is concerned. Learning the rudiments of support fabric fixing is inadvertently adding finishing to the end product. It is, therefore, imperative to pay cognisance to the nitty-gritty of support fabric to improve upon the structure and appearance of the apparel produced. Table 1 shows Interfacing, Underlining and Lining

Garment Fabric	Interfacing	Underlining	Lining
Very light to lightweight cottons, silks, blends, synthetics, voile, lawn, pure silk, lace, sheer, crepe, challis	Lightweight interfacing with soft or crisp finish, permanent press; soft: batiste-type woven or regular, allbias or one-way, stretch, nonwoven; crisp: organdy, organza (for silk), lightweight nonwoven	Lightweight synthetic underlining with soft or crisp finish, permanent press; soft: cotton or synthetic sheath lining; crisp: organdy, organza (for silk), lightweight nonwoven	Silk-like rayon or polyester lining, china silk, acetate, sheath lining, lightweight crepe (antistatic)
Medium-weight cottons, synthetics, blends, silks, wools, linens, denim, homespun, poplin, silk linen, flannel	Medium-weight interfacing with soft or crisp finish, permanent press; soft: regular, allbias or one-way stretch. Nonwoven, medium-weight woven; crisp: medium-weight nonwoven, lightweight hair canvas, canvas interfacing, iron-on woven or nonwoven	Medium-weight synthetic underlining with soft or crisp finish, permanent press; soft: lightweight nonwoven; crisp: medium-weight taffeta or nonwoven	Acetate sheath lining, polyester lining, medium crepe, silk surah, polished cotton (for cottons and linens), taffeta (antistatic)
Heavyweight cottons, linens, wools, blends, corduroy, brocade, tweed	Medium- or heavyweight interfacing with soft or crisp finish, permanent press; soft: soft hair canvas; crisp: heavyweight nonwoven, medium- or heavyweight crisp hair canvas or canvas interfacing, wool/synthetic blends,	Medium- or heavyweight synthetic underlining with soft or crisp finish, permanent press; crisp: medium- or heavyweight nonwoven	Heavyweight taffeta, satin, crepe-back satin, medium crepe, silk shantung, rayon twill (antistatic)
Knits, jerseys	Used where stretch is not desired or where support is needed to maintain the shape. Use light or medium fusible knitted, woven, or nonwoven interfacing, permanent press, iron-on nonwoven in regular or stretch types	Knits are very seldom underlined because it limits their natural stretch	Linings listed above of the appropriate weight. Swimwear linings should have two-way stretch. The lighter weights have more stretch.
Leather, suede, synthetic leather	Woven or nonwoven interfacing, muslin, hair canvas, permanent press	Usually not needed	Satin, taffeta, vinyl, rayon twill. May place lining on wrong side of pants front in knee area to prevent stretching. Stitch in leg seams but leave free at top and bottom.

Table 1: Interfacing, Underlining, and Lining Options for Popular Garment Fabrics  
Options for Popular Garment Fabrics  
Source: Mckinley (2016)

It should be noted that there are other support fabrics that do not fall into any of the aforementioned support fabrics but are recognised as such. For instance, boning. Boning can give lightweight support to garments by giving them structure and keep their shape. It also keeps embellishment details, such as ruching, in place or adds structure to accessories, such as hats or bags (Thread Magazine, 2012). There are two types of available boning products, which are basically in 1/4-inch-wide plastic wrapped in fabric casing, sometimes called Featherlite, and also a nylon cord with available width of 1/4 inch to a 3/4 inch also called Rigilene boning.

## 2. Methodology

To ensure accurate, objective, valid and reliable findings, the study employed a descriptive approach based on qualitative research methodology and made use of purposive and convenient sampling techniques. Data gathering instruments used were questionnaire and unstructured interviews. The use of these two research instruments in the study enabled the researcher to make a comparative analysis of primary data collected from the selected respondents to draw conclusions and recommendations. Only information from those sources confirmed, analysed and evaluated by the researcher was accepted and used in the research. The study basically focused on respondents within Sekondi-Takoradi. The population was made up of teachers of fashion designs, fashion designers ("master"), students and haberdashers. Table 2 shows the population distribution for the study.

Respondents	Frequency	Percentages (%)
Teachers of fashion designs	3	23.07 %
Fashion designers ("master")	3	23.07%
Students	5	38.46
Haberdashers	2	15.38%

*Table 2: Population Distribution  
Source: Field Research (2018)*

## 3. Results and Discussion

The results of the study were assembled and discussed based on the objectives formulated to guide the study and research instruments used. Table 2 shows multiple responses derived from the questionnaire administered.

Question	Yes	Percentage	No	Percentage
Do you have any knowledge of support fabrics?	11	100%	0	0
Do you use any form of support fabrics	9	81.81%	2	18.18
Do you think it is necessary to use support fabric	8	72.72%	3	27.27
Do you think support fabric enhance or add any value to the apparel?	11	100%	0	0
Can you do without any support fabric in sewing of an apparel	3	27.27	8	72.72%

*Table 3: Multiple Responses on the Awareness of Support Fabrics  
Source: Field Research (2018)*

From Table 3, it is evident that all 11 respondents, representing 100%, have knowledge about support fabric. Nine of the respondents, representing 81.81%, indicated that they had used some form of support fabrics in their works while two of the respondents, representing 18.18%, have never applied support fabrics. Eight (72.72%) as against three (27.27%) responded in the affirmative that it is necessary to apply support fabrics. All eleven respondents, representing 100%, believe support fabrics enhance and add value to apparel. As to whether they can do without support fabrics, three (27.27%) assented to that assertion whereas eight respondents, which represent 72.72%, believed they could not do without support fabrics.

It is obvious that Table 2 gives a strong indication that almost all the respondents acknowledge being aware of what support fabric is. The term support fabric needed to be explained to many before respondents were able to respond well to the questionnaire. It was found that most of the respondents had knowledge of support fabric, but the difficulty was the generic nature of the nomenclature. Also, those who had foreknowledge of the term support fabrics were teachers of fashion. In terms of the usage, even though the majority affirms using support fabrics, it could be possible the two respondents could be students who have learnt about support fabrics but have not applied support fabrics practically.

### 3.1. The Availability or Visibility of Support Fabrics on the Market

Two haberdashery shops were visited to ascertain which of the support fabric were on the market. There were difficulties in terms of identification of some of the support fabrics due to how "localised" most of them have been named. For instance, Vilene to them was known as stiff, for Petersham it was a little closer, as to some it was termed waistband and for others it needed description. Aside from some the challenges of conflicting names that served as a hindrance, there was some availability of support fabric on the market. Some of the support fabrics available were hermit, bias, Vilene, fusible, shoulder pad, and Petersham, to mention a few. This means support fabrics are available on the market. Siemen

and Mead (2011) concede to the fact that there are many trade names for the same kind of fabric and that one kind of fabric may be used as either interfacing, underlining, or lining, depending upon the outer fabric and the effect desired.

### 3.2. The Common and Mostly Applied Support Fabrics

Respondents were asked which support fabrics they mostly used for their apparel. They revealed the following as the support fabric used: lining, hermit, bias, Vilene, fusible and shoulder pad. It is revealing that the aforementioned support fabrics are well known on the market, as was revealed by the haberdashers. It could be said that perhaps the support fabrics demand by fashion designers made them available and popular on the market.

A follow-up question was asked on the impact of support fabric on the apparel. Respondents gave reasons as follows:

- To reinforce certain important parts of the apparel
- To give stability to the apparel
- To improve upon the comfortability in the case of lining
- To serve as an embellishment to the apparel
- To give weight to the apparel and give warmth
- To enhance the fit of the apparel
- To extend the lifespan of the fabric.

Heaton (2001) and McKinley (2016) stated the following as some of the reasons for support fabric: it serves as a layer of knitted, woven, or non-woven fabric placed between the garment fabric and facing to reinforce, add body and guarantee crispness; it improves a garment's appearance and preserves its shape. Support fabric such as lining eliminates the need for time-consuming seam finishes and reduces "wear and tear" on the inside garment construction; it will lengthen the life and durability of a garment. A lining provides some body and support to a garment, but it never takes the place of interfacing. McKinley (2016) continues that it often makes the garment easier to wear over other clothing - as in a jacket or coat; it can eliminate the need for some undergarments, such as a slip - as in a dress or skirt. It is, therefore, not out of place in terms of the reasons given as to its impact on the apparel. It also indicates that the respondents were aware of support fabrics.

## 4. Conclusion

Support fabrics are invisibly present in a breadth of clothing across all ages and gender. They come in different colours, density/thickness and structure. This first study is an exploratory one that has considered the various kinds of support fabrics and their application in the Ghanaian fashion and textile industry. There will be follow up studies that will consider the various structures of support fabrics, their material composition and implication on clothing performance. The study reveals that support fabrics are an everyday phenomenon in all fashion designing practices, however, the challenge as is pertaining in Ghana is that most players in the fashion and textile industry do not have adequate knowledge on them. Three main layers of challenges were identified by their nomenclature: the generic name, the trade names and the "local names or jargons". Even though during this study, industry players who were interviewed had the privilege to ask questions gained some insight, there must be more training in those aspects of clothing manufacture. In essence, fashion designers and haberdashers should learn most of these terminologies to do away with the conflicting jargons given to support fabric to ensure their appropriate application. Adequate knowledge about support fabrics could boost business for haberdashery owners as it will prevent them from turning away customers while they, in essence, have those accessories.

## 5. References

- i. Amankwah, A.M. Howard, E. K & Sarpong, G.D. (2012). Foreign Fashion Influence on The Ghanaian Youth and Its Impact on the Local Fashion Industry. *International Journal of Innovative Research and Development*. Vol 1 Issue 11. ISSN:2278 – 0211 [Online]. Available at <http://ir.knust.edu.gh/bitstream/123456789/7296/1/Amankwah.pdf> [Accessed on 23/1/18].
- ii. Baker, M. M. (2006). INTERFACING. University of Kentucky-College of Agriculture.[Online]. Available at <http://www2.ca.uky.edu/hes/fcs/FACTSHTS/CT-MMB183.pdf> [Accessed on 23/01/17].
- iii. Canadian 4-H Council Resource Network (2012). 4-H Sewing Project Fabric Care and Use Guide. [Online]. Available at [http://www.gov.pe.ca/photos/original/4h\\_NRNsewfabric.pdf](http://www.gov.pe.ca/photos/original/4h_NRNsewfabric.pdf) [Accessed on 23/01/18].
- iv. Christensen, J. (n.d.). Glossary of Sewing Terms. [Online]. Available at <https://www.clothingpatterns101.com/support-files/glossary-of-sewing-terms.pdf> [Accessed on 26/01/18].
- v. Doku, R. O. (2014). KENTE: The history of Ghanaian fashion, and why it's exploding worldwide. [Online]. Available at <http://www.africandynamo.com/2014/02/kentehistoryof-ghanaian-fashion-and.html> [Accessed on 23/1/18].
- vi. Gbagbo-Ocansah, R. E. (2016). Challenges of customer satisfaction in the fashion design industry: case study of fashion designers in the Ho municipality. University of Education, Winneba College of Technology Education, Kumasi. Unpublished thesis. [Online]. Available at <http://ir.uew.edu.gh:8080/xmlui/bitstream/handle/123456789/885/.pdf?sequence=1> [Accessed on 23/1/18].
- vii. Geana (2013). Interfacing, Interlining, Underlining, and Lining: Knowing the Difference. [Online]. Available at <https://www.britextfabrics.com/blog/2013/06/03/interfacing-interlining-underliningand-lining/> [Accessed on 23/01/18].
- viii. Heaton, L. (2001). Selecting & Using Supportive Fabrics Linings, Underlinings &
- ix. Interlinings. [Online]. Available at <https://fcs-hes.ca.uky.edu/sites/fcshes.ca.uky.edu/files/ct-lmh-001.pdf> [Accessed on 21/12/17].

- x. Ibrahim, I. (2017). Impact of Sino-Africa Economic Relations on the Ghanaian Economy: The Case of Textiles. *International Journal of Innovation and Economic Development*. Vol. 3
- xi. Issue 1 ISSN 1849-7020 (Print), ISSN 1849-7551 [Online]. Available at <https://researchleap.com/wp-content/uploads/2017/05/1.-Impact-of-Sino-AfricaEconomic-Relations-on-the-Ghanaian-Economy.pdf> [Accessed on 23/01/18].
- xii. McKinley, J. (2016). *Selecting Interfacings, Underlinings and Linings*. NM State University. College of Agricultural, Consumer and Environmental Sciences. [Online] Available at [http://aces.nmsu.edu/pubs/\\_c/C208.pdf](http://aces.nmsu.edu/pubs/_c/C208.pdf) [Accessed on 24/01/18].
- xiii. Mead, M. & Siemen, E. (2011). *Advanced Sewing Techniques*. University of Illinois at Urbana-Champaign. [Online] Available at <https://www.ideals.illinois.edu/bitstream/handle/2142/27773/advancedsewingte1055mead.pdf?sequence=1> [Accessed on 23/01/18].
- xiv. Reeve, J. (2014). *4-H Sewing Project reference Guide*. Canadian 4-H Council Resource Network, Ottawa. [Online] Available at [http://www.gov.pe.ca/photos/original/4h\\_NRNsewRef.pdf](http://www.gov.pe.ca/photos/original/4h_NRNsewRef.pdf) [Accessed on 23/01/18].
- xv. Ryder C. Winck (2009). *Fabric Control for Feeding into an Automated Sewing Machine*. Georgia Institute of Technology. [Online] Available at [https://smartech.gatech.edu/bitstream/handle/1853/.../winck\\_ryder\\_c\\_200905\\_mast.pdf](https://smartech.gatech.edu/bitstream/handle/1853/.../winck_ryder_c_200905_mast.pdf) [Accessed on 23/01/18].
- xvi. Thread Magazine (2012). *Three Ways to Attach Boning*. [Online] Available at <http://www.threadsmagazine.com/2012/02/20/three-ways-to-attach-boning> [Accessed on 29/01/18].
- xvii. Tweneboah, A. (2017). *History of Clothing (Evolution of clothing): The Four Theories of Evolution of clothing*. [Lecture Note]. Takoradi Technical University. MTech Textiles. Delivery date: 14<sup>th</sup> October, 2017.
- xviii. Tyler, D. J. (2008). *Carr and Latham's Technology of Clothing Management*. 4<sup>th</sup> Ed. Blackwell Publishing. Oxford-UK.
- xix. Wink. R. C. (2009). *Fabric Control for Feeding into an Automated Sewing Machine*. Georgia Institute of Technology. [Online]. Available at [https://smartech.gatech.edu/bitstream/handle/1853/.../winck\\_ryder\\_c\\_200905\\_mast.pdf](https://smartech.gatech.edu/bitstream/handle/1853/.../winck_ryder_c_200905_mast.pdf) [Accessed on 29/01/18]