THE USE OF A STRAIGHT SEWING MACHINE

FOR ILLUSTRATION ON GARMENT

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CERTIFICATION

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Abstract

Nonetheless, embroidery, done either mechanically or by hand, remains one of the most relevant means of improving and beautifying garments, which directly increases their appeal to those viewing them. However, there are various challenges that arise regarding the use and application of industrial zigzag embroidery machines to make garments, especially to those in the fashion sector and to tailors and fashion students at various universities. These challenges include cost, technical know-how, and power supply.

Consequently, the focus of this study is on the use of straight sewing machine in the illustration of clothing as an alternative method to embroidery. Some of the various and complex stitching that can be executed on a straight sewing machine have been researched in an attempt to achieve aesthetically appealing and fashionable clothing that is affordable. In the study, an exploratory approach is used to show that despite the fact that the straight sewing machine was not originally made for embroidery work, through skill, precision, and observance of great attention to work done, appropriate results are acquired. This is done through the use of illustrations and concepts that are sketched and drawn onto the gum stays placed on the garments.

Furthermore, the suitability of straight sewing machines in creating basic straight stitches in different stitch length options, as well as the tension and versatility of the machines in seam illustration techniques, has been identified. These machines have been found to be appropriate tools for the project. Moreover, the observations made in the course of the study revealed the suitability of straight sewing machines in using seam illustrations in areas such as seams, top stitching, edge stitching, decorative stitches, thread painting, among other areas in the creation of the desired look in the final products.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Attire or clothing is considered to be one of the primary human needs that serves to cover and protect our body while, at the same time, displaying critical social, aesthetic, and cultural attributes and roles. However, unlike other needs such as protection against internal body elements like pathogens and body parasites, and protection against external body elements like weather and climatic forces, clothing has become more than just an attribute for protecting human beings, but rather a means of self-expression and conveying social and cultural attributes. Today, with the dynamics of modern fashion, clothes symbolize social, innovative, and creative attributes. One of the most valuable forms of techniques in beauty and difference has been embroidery. It has been defined as a decorative art in which thread and other ornamental materials are applied to the surface of a textile material to create specific forms of distinctive designs, motifs, and patterns (Wilson, 2018). The historical origins of embroidery date back to ancient civilizations in which it was applied to garments and other textiles (Barber, 1991). Throughout history, it has continued to be important through various adaptations in technologies and production methods (Wilson, 2018).

Clothing is made from a vast array of fabrics, which are created from different natural fibres such as wool, cotton, and silk, as well as synthetic ones like rayon, polyester, and nylon (Kadolph, 2010). All of these fabrics have distinct features regarding their texture, drape, and durability that make a big difference in choosing the right method of embroidery and materials that shall be used on them (Kadolph, 2010). Typically, threads are used to execute embroidery,

and this is further decorated by the use of additional embellishments, which may include sequins, beads, stones, feathers, and pearls among others to add dimension and beauty to it (Wilson, 2018)

There are three major categories of embroidery widely recognized in fashion and textile production, including the following:

1. **Cross-Stitch Embroidery:** Typically done by a zigzag machine, cross-stitch embroidery involves creating the small X-shaped stitches to produce pictures or designs.

2. **Crewel Embroidery:** A traditional and ancient sewing technique that utilizes wool yarn on cotton or linen fabric to create textured, raised pieces.

3. **Surface Embroidery:** Usually executed by a straight sewing machine, it involves the single stitch directly upon the fabric surface to achieve the desired pattern.

Even though the industrial zigzag embroidery machine is versatile and can produce a wide range of stitches (lockstitch, zigzag, and ornamental embroidery), it is not without limitations. Not only is it very expensive to purchase, rendering it inaccessible to many potential designers, but also requires special training for effective operation. Moreover, in countries like Nigeria where power supply is erratic, the reason that these machines require continuous electric power means they are less convenient to operate in real production daily. On the other hand, the straight sewing machine offers a viable and affordable solution. It is relatively inexpensive, everywhere to be found, and easy to maintain. Significantly, it is hand-operated, meaning no power is required, thus making it an ideal machine for professional and amateur designers who design in poorly equipped premises. For embroidery, a design is first drawn or outlined onto the material. The straight sewing machine is then utilized to sew along the marked design with silk

thread, which is wound on the shuttle under the sewing machine. An ordinary sewing thread top secures the stitches and supports the silk thread, forming a decorative pattern, typically visible on the fabric's back. The process is repeated until the complete design is completed.

The ability of the straight sewing machine to be employed not only as a garment construction machine but also as an embroidery machine confers upon it a multi-dimensional value within the fashion value chain, especially in the developing world.

1.2 Statement of the Problem

Embroidery remains to be among the most in-demand and well-respected decoration methods in the fashion world. The process has, however, over time, taken various styles, techniques, and machinery to create a variety of visual effects. From the traditional hand embroidery to quite mechanized industrial embroidery, and each technique has its merits and demerits.

In today's fashion production, the industrial zigzag embroidery machine, or U20 machine as referred to locally, has been a prevalent machine for the production of quality ornaments. The machine offers speed, accuracy, and versatility, allowing designers to produce complex designs in quantities. However, despite the benefits, the industrial zigzag embroidery machine has real issues that limit its accessibility and use, more so among small-scale or new designers. The biggest and first major limitation is finance. Industrial zigzag embroidery equipment is too expensive for most new entrants to the fashion industry, especially in emerging economies where money to start is normally limited. Such a limitation makes it impossible for many talented

designers to access equipment that they need in order to realize their imagination fully through embroidery.

Second, operating industrial embroidery machines requires specialized care. The operator or designer must be properly trained to operate the settings, thread tensions, stitch patterns, and maintenance required in producing high-quality embroidery. Without such training, mistakes and machine breakdown are imminent, which discourages investment in these machines.

Thirdly, in countries like Nigeria, unreliable electricity supply poses a serious operational problem. Industrial embroidery machines are powered by electricity, and frequent power outages disrupt workflow, delay production schedules, and increase production costs due to the need for alternative power sources such as generators. All these difficulties, high cost, need for special training, and reliance on electricity, all go into the making of the industrial zigzag embroidery machine seams impractical for most designers. In comparison, however, the straight sewing machine offers a superior choice. It is cheap, easy to use, and is operable without electricity, thereby making it especially suitable in infrastructurally disadvantaged settings. Besides, it can be easily altered using ordinary sewing skill to accommodate embroidery use, and amateurs as well as professionals can create ornamental clothing designs without the learning load of using industrial machines Therefore, the need for developing and advancing single-needle straight sewing machine embroidery as a cost-effective, environmentally friendly, and globally available garment ornament technology that can serve functional and aesthetic purposes in fashion design cannot be overemphazised. This research seeks to examine and record the feasibility of straight sewing machine embroidery as a sound, cost-effective, and easily accessible alternative for garment decoration against industrial zigzag embroidery machines.

1.3 Research Questions

The following Research Questions have been raised to guide the study:

1. What are the possibilities of using a straight sewing machine for embroidery?
2. How can the researcher achieve embroidery designs with the use of a sewing machine?
3. What aesthetic features will the combination of silk and peal threads provide on garments?
4. How possibly can detailed images be made from a simple design made by a straight sewing machine?
5. How possible can it be to customize Agada, Boubou, Kaftan which are traditional African dress styles into contemporary wears?

1.4 Aim and Objectives of the study

i. The aim of this study is to explore the use of a straight sewing machine for embroidery on garments. The objectives of the study include the followings:

ii. Exploration of the various ways in which embroidery can be achieved through the use of a straight sewing machine for garment production.

iii. Provide an alternative sewing machine for embroidery production which is a simple and cheap method of embroidery as against the high cost of purchasing industrial zigzag embroidery machine.

iv. Showcase the aesthetic use of silk and pearl cotton threads for embroidery designs.

v. Exploring the possibilities of creating complex images on a garment as embroidery

vi. Embroidering with the straight sewing machine will help to eliminate the problem of unstable electricity and its inconveniences especially, while using the industrial zig zag sewing machine for embroidery.

1.5 Significance of the Study

This study is significant because it heralds and promotes the use of the straight sewing machine as an alternative means for embroidery in garment production, particularly in the making of African free dress designs and other fashion products motivated by culture. During a period where high production levels, fluctuating supply of power, and expensive equipment dissuade many designers, especially in the developing world, this work gives an affordable and tangible solution that ensures stability in the embroidering art.

In the same vein, though documenting straight sewing machine embroidery methods and procedures, the research will serve as a valuable resource for enhancing embroidery diversity within the fashion sector. This not only boosts creativity potential, but also facilitates small-scale designers and rural artisans who might not have industrial-level access,

Similarly, the research is significant because it will contribute to the skill set and knowledge base of the fashion designer and encourage them to appreciate and utilize contemporary embroidery techniques that do not undermine artistic standards despite the utilization of less advanced tools. Such awareness has the potential to facilitate innovation in the sense that designers can create unique, high-standard embellishments which are economically as well as technologically feasible.

The findings will also be useful as a reference material for a wide audience, including:

- **Fashion Students**: to learn practical embroidery skills that can be applied even in low-resource settings.
- **Fashion Institutions**: to integrate affordable and accessible embroidery methods into training curricula.
- **Fashion and Art Historians**: to document and study the adaptation of traditional techniques in contemporary fashion production.
- **Researchers**: to explore further improvements, innovatons, and cultural implications of using straight sewing machines for embroidery.

In essence, this study bridges the gap between traditional craftsmanship and modern **production** challenges, offering a sustainable approach to garment decoration that can benefit the fashion industry, educational institutions, and cultural heritage preservation.

1.6 Scope of the Study

The scope of the study was delimited to sourcing for various materials, tools and equipment that would be used for straight sewing machine embroidery on garment production especially the African free styles wear. The embroidered piece would be ironed, placed and stitched on garments for aesthetic purposes. However, references will be made to contemporary embroideries where necessary.

1.7 Operational Definition of Terms

For the sake of clarity and to ensure mutual understanding of key concepts employed in this study, the following definitions are offered as the terms are applied in the research:

1. Straight Sewing Machine: This is a sewing machine that can perform straight stitch only. It is hand or electrically powered and has large usage in garment construction. In this project, it is adapted for embroidery and decorative stitch on garments.
2. Illustration on Garment: The process of drawing or creating decorative patterns, motifs, or designs directly on a fabric surface, typically for decoration. Here it is used to refer to embroidery designs stitched using a straight sewing machine.
3. Embroidery: A decorative process of needle and thread work to add artistic designs on fabric. It may be done by hand or machine and may also utilize other materials aside from, such as beads, sequins, or pearls.
4. Apparel: Any article of clothing designed to cover, shield, or adorn the human body. Some examples are dresses, shirts, skirts, and traditional attire.

CHAPTER TWO

LITERATURE REVIEW

This chapter will be discussed or reviewed in related literature on embroidery design as it relates to modernity as well as the straight sewing machine method. The review was carried out under these subheadings:

1. Conceptual Framework
2. Fashion and Its Roles
3. Historical Development of Embroidery Design in Nigeria
4. Concept of Embroidery
5. Straight Sewing Machine and its Evolution in Fashion Industry.
6. Basic of Embroidery
7. Four Basics of Embroidery
8. Garment History
9. Recommendation
10. Summary

2.1 Conceptual Framework

The theoretical foundation of this study comes from universal modern embroidery practice and tradition, an artwork that, after hundreds of years, has evolved to become both a craft and an industry. Contemporary embroidery is all about using congruent, man-civic materials such as fabrics, yarns, and threads to create visually attractive artwork that serves as decorations, symbols, and practically useful items. Embroidery, over the ages, has been used to

represent significant events, indicate social status, and chronicle culture, often both a work of art and a historical record in fashion.

Everywhere across the globe, the production of embroidery has been diversified to encompass a wide range of material and techniques. Accordingly, designers nowadays play around with both natural and synthetic fibers. While natural fibers consist of silk, wool, and cotton, synthetic fibers are also developed from rayon, polyester, and nylon (Kadolph, 2014). These are then blended with other embellished materials such as beads, stones, pearls, sequins, feathers, and metal threads to produce multi-dimensional, textured, and lustrous effects (Wilcox, 2008). however, the adaptability of embroidery has ensured that it is a living participant in the fashion world, ready to merge traditional hand methods with contemporary machine techniques to meet requirements for bespoke and mass production.

In the context of this world, African embroidery arts are found to be singular in their dramatic colour, lavish geometric and floral motifs, and deep cultural symbolism. African embroidery even serves to define community affiliation, marriage status, wealth, and individual fashion, making it not only ornament but also social signification. Most prominent, West African embroidery arts have been most influential in terms of fashioning garments, with lavishly decorated robes, agbadas, and kaftans serving as badges of tradition and status. (Douny, 2011) noted that African embroidery functions beyond ornamentation; it marks wealth, hierarchy, community belonging, and prestige, especially through garments such as agbadas and robes. It is within such an artistic and cultural environment that the work of Mohammed Surakatu and Tijani Mohammed opens themselves. They are the epitome of the fusion of traditional artistry with

modern fashion perception, leading to their work being the inspiration behind this study's empirical investigation.

One such eminent figure is Tijani Mohammed whose own real-world experience forms a tangible thought basis for this research. personal communication with Tijani reviewed that he learned the art of embroidery in Ghana, which also has its own wide-ranging history of embroidery, before relocating to Benin City, Edo State, Nigeria in 1977. Tijani was born in 1965 in Kumasi Zongo, Ghana and he is married with four children. He has been earning a living from the Tinko embroidery art, renowned for its eye-catching bold colourful stitching and remarkable captivating designs. His works are filled with the greatest compositional skill, colour schemes, and precision, all of which have provided him with an exalted status as an artist of this nature. Tijani is widely recognized for producing large, elaborate *agbadas*, which have become his artistic signature. These garments, often worn for ceremonial and social events, are not only fashion items but also cultural statements. His embroidery work is inspired by a variety of sources like, the beauty of nature, his personal dreams and imagination, patterns derived from Ankara fabrics, and custom designs requested by clients. This diversity of inspiration ensures that his designs are both culturally rooted and creatively innovative.

The approach that Tijani adopts is laborious and it is craftsmanship-based. He uses tools such as gum-stays, biro, lining, ruler, pencil, chalk, and most importantly, the Tinko embroidery machine. The combination of these tools allows him to sketch out initial design concepts and produce finished embroideries that are both firm in structure and pleasing in appearance. His store, No. 10, Bamawu Street, Akpakpava Road, Benin City, Edo State, is not just a venue where

he creates his work but also where new embroiderers come to acquire the art, so that the art will be sustained.

This study draws on the conceptual principles demonstrated by Tijani Mohammed's work, particularly his commitment to quality, cultural authenticity, and creativity, while exploring the feasibility of producing similar results using a straight sewing machine. The straight stitch machine, although simpler in construction and use than the Tinko or commercial zigzag embroidery machine, possesses the firm advantages of being cheaper, available, and portable. This qualifies it as a good prospect for the democratization of embroidery and allowing larger numbers of designers, especially in resource-scarce environments, to engage in garment illustration and decoration.

The theoretical base of this project, therefore, is in the linking of traditional embroidery skill with modern, low-cost production technology. With analysis and inspiration from master embroiderers' pieces like Tijani Mohammed, the research is set to prove that fine, context-specific embroidery can be achieved without the aid of expensive, electricity-powered equipment. This aligns with global sustainable fashion values that prioritize efficient use of resources for production, preservation of skills, and accessibility to design tools and techniques for everyone

Figures: 1 & 2

Mohammed Surakatu

(Zig-zag Industrial Machine)

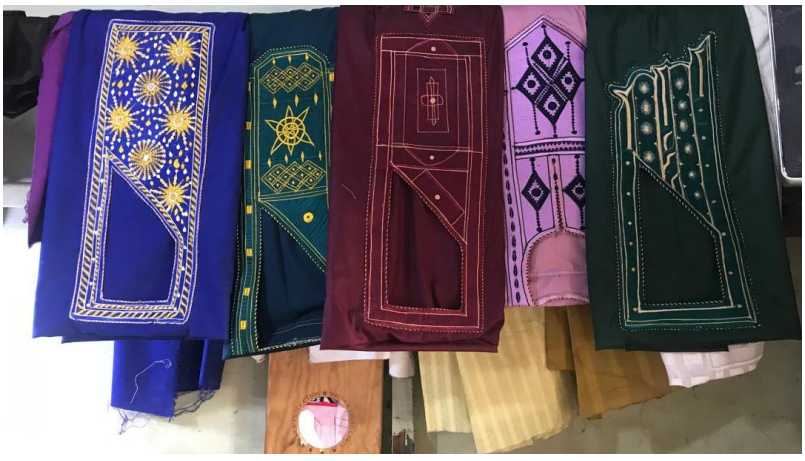
Photograph: Caroline Enegide

Tijani Mohammed

(Tinko Industrial Machine)

Photograph: Caroline Enegide

Figures: 3 & 4



Embroidered Garment by Surakatu Mohammed

(Zig-zag Industrial Machine)

Photograph: Caroline Enegide

Embroidered Garment by Tijani Mohammed

(Tinko Industrial Machine)

Photograph: Caroline Enegide

Mohammed Surakatu was born on 7th December 1980 and he has a wife and 4 children. He learned the art of embroidery design in Ghana and brought it to Benin city, Edo State on the 14th of February 2005, he was a motor mobile electrician before he became a fashion designer and specialized in the work and design of embroidery with zigzag industrial embroidery machine which he has been doing for about 21years as source of his livelihood. He gets inspirations for his embroidery works from things in nature, designs from Ankara fabrics, patterns that customers design or brings to him as well as the combination of 2 to 3 designs to create another design with beautiful colours for agbada, kaftan and bubu productions. His workshop is located at No.8 Eweka off Sakponba off Ogbelaka road Benin city. His works are achieved by using materials such as gum stay, lining, threads, industrial zigzag machine, iron and ironing table.

2.2 Fashion and its Roles

From the commencement of development, people have long clothed themselves, not only for fundamental protection but as a means of identity, culture, and creativity expression. Clothing has grown with human civilizations, reflecting cultural exchange, technical change and shifting aesthetic values. It is evident from available literature that patterns of garments have long been affected by both experienced and aspiring designers globally, Nigeria inclusive. Hence, fashion in clothing has evolved through ages and societies to provide to the needs and ambitions of their wearers according to social norms, environmental conditions, and artistic expression. (Orukpe & Faruq, 2025) confirmed that clothing evolves alongside societies through technological advancement, cultural exchange, and changing aesthetics. In Nigeria, for instance, dress has been determined by social contract, nature, and artistic imagination for a long time, as can be seen in Yoruba fashion tradition and adire's evolving tradition.

Over the years, human beings have utilized clothing of different materials, such as wool, silk, cotton, and synthetic fibers, before the monopoly of African print cloth. Clothing has been utilized for different functions, typically in social, economic, cultural, religious, and political domains. Humans have used materials like wool, cotton, silk, and later synthetic fibres in garments for millennia, and clothing has served many functions—not just protection but signaling social, cultural, religious, and economic identity (Deaja, Grunden, & Dunn, 2021) In the majority of African cultures, to name but a few, some garments or patterns are donned to denote marital status, status or hierarchy, or religiosity. Similarly, in Western history, dress such as robes, gowns, or uniformity has been used to signify professional roles, social status, or ceremonial use.

According to Workman & Freeburg (2009), fashion garments are usually worn to manage and maintain the body. In the view of Storm (2007), the main universal function of garments is adornment, the enhancement of appearance through clothing and accessories. Adornment is a public expression of self, taste, and imagination, and also a public declaration of social status or group membership. The dress, colour, design, and style one chooses to wear can convey messages beyond personal taste since visual language that can be read by the community at large.

Fashion is more than merely dressing up, though. It is very possibly the most dynamic and fluid aspect of cultural expression that encompasses not only dress, but behavior, performance, written fashions, and design fashions too. Fashion is possibly best described as a collective idea of what is stylish, appealing, or “in fashion” at a particular time and place. Because fashion is rooted in an ever-changing dynamic system, today’s fashionable can be tomorrow’s unfashionable, making way for others driven by technology, culture, economics, or

even global events (Communicating Fashion: Trend Research and Forecasting, Chapter three – Developing a Collective Perspective; Shifting Paradigms for Fashion: From Total to Global to Smart Consumer Experience, 2014).

Certainly, the most obvious and practical role of clothing is protection. Clothing guards the body against nature's threats such as blistering heat, icy cold, wind, and rain, and also against dangerous UV radiation causing sunburn. Clothing has also been altered in the past for protection in work, for example, armor for warriors, overalls for factory workers, and fireproof gear for firemen. While protection remains the primary function, dress has increasingly served symbolic and ornamentation functions, coming to operate as a vehicle for self-expression and cultural story.

Fashion also helps in the construction of status and identity. Though the word status is applied with regard to celebrities or public figures but everyday fashion decisions also become engaged with social positioning. A uniform, for instance, automatically announces the profession of the individual wearing it, whereas traditional clothing can situate the wearer by his or her ethnicity. Furthermore, in casual settings, fashion choices can encourage membership in subculture, way of life communities, or social movements. Fashion choices are heavily correlated with social positioning: uniforms will at once proclaim professional identity, ethnic dress binds individuals to their heritage, and even casual wear can identify membership in subcultures or social causes (Kaiser, 2012).

Fashion in contemporary society is increasingly pervasive with technology, sustainability, and globalization. Even with the tempo at which digital media now determines trends virtually instantaneously across borders, and sustainability initiatives advocating eco-friendly fabric

sourcing and ethical production methods, the very core functions of protection, adornment, identity, modification, and social communication of fashion continue to unite the personal and the collective, the functional and the beautiful. Fashion choices even, the ordinary ones are part of social positioning; for example, dress codes for Nigerian universities demonstrate how dress codes work as public displays of social status, identity, and belonging (Ubelejit-Nte, 2024).

Garment decoration techniques, such as appliqué, beadwork, textile printing and, embroidery illustrate the decorative function of fashion. it embellishes basic fabric with an artistic presentation, adding cultural significance and beauty to garments. However, in contexts like Nigerian fashion, such embellishment is more than design, it is heritage made visible. This link between functional clothing and decorative craft directly relates to this study's focus on garment illustration using a straight sewing machine.

2.3 Historical Development of Embroidery Designs in Nigeria

Embroidery as art and art of adornment is a highly significant part of the cultural heritage of Nigeria. The craft involves the use of needle and thread to adorn cloth with design, usually with very intricate design, symbolic patterns, and occasionally sequins or beads. Nigerian embroidery is practiced among Hausa of the North and Yoruba of South-Western Nigeria most traditionally. These groups of people, over generations, have developed distinctive embroidery practices that are not merely for looks but for the purpose of communicating social, political, and cultural significance. Nigerian embroidery cultures of the Hausa and Yoruba include intricate symbolic motifs, figured design, and functional and ritual use other than beauty to depict social, political, and cultural meaning (Silk-embroidered Garments … Hausa Material Identities, (Douny, 2011, The Documentation of Embroidery Types in South Western Nigeria, Ogunduyile,

2013). In addition, Ogunduyile (1985), observed that prestige and authority have over time been associated with embroidered fabric adorned by traditional authorities such as the Emirs in the North and the Obas in the South-West. The elaborate dressing styles normally symbolize authority, prestige, and high social standing. The designs and motifs used on such garments in certain instances are peculiar to royal classes as symbols of authority and tradition open to everyone's view.

Beyond its symbolic value, embroidery has historically been an important source of livelihood for many Nigerians. The embroidery production chain involves multiple stages, including yarn preparation and dyeing, sketching or tracing patterns, hand-stitching designs, and eventually merchandising the finished garments. This artisanal economy sustains numerous families and communities, with skills passed down from generation to generation through apprenticeships and informal training. Regional differences are notable in embroidery styles. In the Northern part of Nigeria, Hausa embroidery, known locally as *dinkin kaya*, often features bold, symmetrical geometric patterns stitched with contrasting thread colours, typically adorning male garments such as the *sokoto* (trousers), *babanriga* (large flowing gown), and caps (*huluna*). These designs are frequently executed in chain stitch, couching, or satin stitch, resulting in textured and highly durable decorations. On the other hand, South-West Yoruba embroidery is considered to be more curved and flower motifs, typically accomplished in metallic threads for greater fineness and visibility. Initially the Yoruba embroidery was most used on male attire such as the agbada (loose gown), *buba* (blouse), and *sokoto* (trousers). This was because, traditional gender roles, driven by socio-cultural attitudes towards embellishment, ensured that women's clothing was generally plain or decorated through other textile means rather than embroidery. Adiji, Makinde, & Ogunduyile, (2016) noted that in South-Western Nigeria, Yoruba hand

embroidery has traditionally been most visible on male attire such as the agbada, *buba*, and *sokoto*, rather than on female attire. Embroidery motifs consist of designs named and used in local tradition.

Despite such gendered restrictions in the earlier times, embroidery as a form of art had both men and women performing different kinds of roles. Men were primarily the chief stitchers, particularly in ceremonies and formal garments, while women participated in preparatory stages like finishing and dyeing of cloth. Over time, though, the use of embroidery on women's apparel has increased, in line with broader social alterations in gender roles and fashion styles. Today, as noted by (Fashion Dynamics of Aso-Eb, 2023) embroidered *iro* (wrappers), *gele* (head ties), and *buba* are the order of the day among Yoruba women, especially for weddings, festivals, and cultural ceremonies. Over time, *iro* and *buba* have been modified to shorter sleeves, varied cuts, wrapper lengths in line with changing fashion sensibilities among Yoruba women. The continuousness of embroidery in South-Western Nigeria, in these periods of modernization and introduction of Western fashion, reflects a deep cultural determination to retain tradition. Thus, embroidered clothing remains an obvious expression of cultural pride, with contemporary Nigerian fashion designers combining both North and Southern approaches to embroidery into innovative designs. The union of tradition and innovation offers assurance that embroidery will remain significant in Nigeria's evolving fashion landscape.

2.3. Comparison Table of Hausa and Yoruba Embroidery Designs in Nigeria

Feature	Hausa Embroidery (North)	Yoruba Embroidery (South-West)
Common Garments	*Babanriga* (flowing gown), *sokoto* (trousers), *huluna* (caps)	*Agbada* (flowing gown), *buba* (blouse), *sokoto* (trousers), *iro* (wrapper), *gele* (head tie)
Design Motifs	Bold, symmetrical geometric patterns	Curvilinear, floral, and abstract motifs
Colour Use	Often contrasting colours (e.g., white thread on dark fabric)	Metallic threads (gold, silver) and vibrant coloured threads
Stitch Types	Chain stitch, couching, satin stitch	Satin stitch, stem stitch, couching
Cultural Significance	Symbol of dignity, prestige, and authority; associated with Emirs and Islamic heritage	Sign of status, wealth, and cultural pride; associated with Obas and Yoruba festivals
Historical Gender Use	Predominantly male garments; women's clothes less commonly embroidered	Traditionally on male attire; now increasingly used on women's garments
Materials Used	Cotton, silk threads; durable, tightly woven fabrics	Cotton, silk, and metallic threads on *aso-oke*, damask, or brocade fabrics
Function	Formal, ceremonial, and religious wear	Ceremonial, festive, and cultural identity wear

2.4 Basic Concepts of Embroidery

Embroidery can thus be defined as an art and craft that involves decorating or ornamenting a fabric or material with a needle to embroider a yarn or thread that may be further decorated with various materials such as metallic yarns, beads, pearls, sequins, and fine wires. This refers to a decorative process

that involves various stitches and decorative techniques to beautify and enhance the aesthetic and symbolic significance of fabrics (Watts, 2013; Gillow & Sentance, 1999). Embroidery is one of the oldest and most universal decorative techniques for fabrics that has been developed over thousands of years. The basic techniques used in embroidery include crewel work, needle point, cross stitch, quilting, quill work, and feather work. These techniques have different textural and visual characteristics and are used for different purposes. Crewel work, which uses wool yarn, has historically been associated with raised surfaces and stylized floral forms, while needle point stitching uses stiff open-weave canvas and is counted thread work, and cross stitch is known for its distinctive "X" stitches and ease of use. Quilting involves embroidery and fabric padding, and quill work and feather work involve natural materials for ornamentation (Christie, 2015; Parker, 2010).

Embroidery has played a great role in the history of the world, both in terms of aesthetics and functionality. Egyptian tomb paintings show the use of embroidery in clothing, hangings, couch covers, and tents. This shows the early use of embroidery for functional, ritualistic, and aesthetic uses (Gillow & Sentance, 1999; Scott, 1998). The craft of Persian quilting was highly developed, and the use of quilted garments as armour in the Battle of Marathon in 490 BCE is recorded in history. The use of embroidery on quilted garments is also shown in the paintings on Greek vases of the classical period. Embroidery art has reached a high level of perfection in Asia, particularly in China. Chinese embroidery has made significant progress during the Qing Dynasty (1644–1911), and the “Four Famous Embroideries” from Suzhou, Hunan, Guangdong, and Sichuan are recognized. Chinese embroidery styles differ according to their subject matter, colours used in embroidery, intricacy and symbolic content of the subjects of nature, mythology, and culture. The Suzhou Chinese embroidery is famous for the quality of the silk yarns used and the realistic subjects of the embroidery, the Hunan Chinese embroidery for contrast and layering, the Guangdong Chinese embroidery for the colours and symbols of culture, and the Sichuan Chinese embroidery for the quality of stitches and symmetry (Garrett, 2007; Zhao, 2015).

In Africa, embroidery is used as a symbol of cultural, social, and spiritual identity. In Nigeria, for instance, the use of embroidery is very important in the designs of the agbada, sokoto, buba, and danshiki, which are worn by the Hausa and Yoruba tribes. These symbols have traditionally represented various forms of meaning, including status and heritage, with some representing religious affiliations (Eicher & Ross, 2010). Over time, traditional hand-embroidery has been incorporated with contemporary technologies, including the application of a straight sewing machine to produce free-hand embroidery while maintaining the look. Therefore, it can be concluded that embroidery is not only a decorative skill, but it is a language of images and fabric that reflects culture, history, art, and identity. Embroidery has a rich background, yet it is a dynamic art form that uses modern technology without losing its significance.

Figures: 5 & 6

Ancient Chinese Embroidered Wall Hanging

Source: en.m.wikipedia.org

Robe of the Qing Dynasty

Source: www.uy.edu.mm

Greek designs were depicted on vases from the 7th and 6th centuries BCE and later are dressed in embroidered garment.

There are 6 basic embroidery stitches as shown below:

Figures: 7, 8, 9, 10, 11& 12

a. Running stitches

b. Back stitches

c. Split stitches

d. Stem stitches

e. Satin stitches

f. French knots.

2.5 Straight Sewing Machine and its Evolution in Fashion Industry.

Sewing machines were invented during the first industrial revolution to decrease the quantum of manual sewing done in clothing industries (Workman et. al 2009). According to Feisner (2014), John Greenough patterned the first sewing machine in United States in 1842. Elias Howe created a sewing machine in the 1845 (Zieman, 2001). The sewing machine's recognition quickly spread like wildfire, initially selling to clothing manufacturers so that they could construct standardized clothing sizes on a larger scale. In 1860s, there was a quick popularity of these machines in the middle-class section (Stone, 2005). Later in 1889, the machines run by electricity were design with motors fixed in them. Later innovations include the ability to make more sophisticated stitching patterns (Salm & Falola, 2002) in the twenty first century. Sewing machine companies have manufactured several types of machines used

for different sewing techniques and there are also computerized machines, embroidery machines and special purpose machines manufactured (Lau,2012). The latest machines have LCD screen, microprocessors and pre-programmed fonts (L.C.D 2014). Since its invention, sewing machines have greatly improved the efficiency and productivity of fashion garments. Though there are different sewing machines out there in the market, it is the objective of this paper to focus on the use of straight sewing machines for illustration on garment.

A straight sewing machine is a sewing machine that has only one stitch, a straight-line stitch and it is used to stitch the component of fabric and other embroidery pliable material together with threads. Straight sewing machines can do basic straight stitches with varying length, tension and versatility. However, with little changes, these sewing machines can perform a variety of stitch types. The straight stiches offered by straight sewing machines are tightly knitted creating a stringent series of threads that are unbreakable. With straight sewing machine, one can get multiple layers of silk thread on top of the other, thereby forming an embroidery on garment which is enough to keep stitches secure and firm on the garment (Wright, 2012). With straight sewing machine, one can stitch forward straight as well as a reverse to anchor a stitch. A straight stitch is the most basic stitch that a fashion designer will likely use when sewing garment. It is formed by the interlocking thread and bobbing thread. The straight stitches made from straight sewing machine are stretch resistant efficient (that is, it uses les thread in comparison to zigzag stitches) and less visible than zigzag stitches.

The invention of the sewing machine during the Industrial Revolution was one of the most revolutionary advances in the history of clothing production. Before its discovery, it was all sewn by hand and was extremely time-consuming and labor-intensive. Mechanical sewing technology that evolved decreased the amount of labor required in household and industrial

applications, not just transforming the apparel industry but also the lives of ordinary people (Workman et al., 2009). Although several inventors attempted to make a functional sewing machine in initial attempts, John Greenough created the first United States-patented sewing machine in 1842 (Feisner, 2014). His invention was a precursor to subsequent developments that would eventually lead to a textile manufacturing revolution. Elias Howe improved upon the design in 1845 with a machine employing a needle with an eye close to the point to make a secure lockstitch that became the building block of modern machine sewing (Zieman, 2001). This innovation was instrumental because it created a much closer and more uniform stitch than earlier versions, and it rendered the machine economically viable for large-scale garment production. The commercial success of sewing machines followed shortly. Clothing manufacturers were the earliest adopters, as the machines enabled mass production of standardized sizes of apparel, which was not feasible earlier with hand stitching. As stitching got mechanized, garments could be produced quicker and cheaper, bringing apparel to more and more consumers. By the 1860s, sewing machines were no longer limited to factories; they had entered the homes of middle-class families, where they were a top choice for home clothing production and household repair (Stone, 2005). The democratization of sewing had a far-reaching effect on fashion consumption patterns, in that individuals were now able to produce, alter, and repair clothing more efficiently than they had been able to previously.

Innovation in the sewing machine did not stop at simple mechanical advances. Electric sewing machines that were equipped with small motors and did not need foot treadles or hand cranks were created by 1889 (Salm & Falola, 2002). Not only were these machines faster, but they were also less unwieldy to operate, allowing for smoother and more precise stitching. In the early twentieth century, there were further developments like zigzag stitching devices, adjustable

tension and hemming and buttonholing attachments, all of which further extended the design potential for the creation of garments. In the late twentieth and early twenty-first centuries, sewing machines became computerized, with digital controls, embroidery function, and automatic pattern selection. Some came with microprocessors, pre-programmed fonts, and even LCD screens that provided users a preview of stitch patterns before execution (Lau, 2012; LCD, 2014). Such features erased the boundary between traditional craft and electronic technology, bringing sewing in line with the technological revolutions of the modern era. Despite all this wide range of innovations, the straight sewing machine remains one of the most fundamental and necessary tools of the fashion industry. A straight sewing machine is designed to sew just one type of stitch that the straight stitch is produced from the point where an upper and bobbin thread cross. In its simplicity, the stitch is extraordinarily strong and practical and is thus the basis of garment construction. The straight stitch can be adjusted in tension and length, and therefore the tailor and designer are able to use it for different types of materials, constructions, and designs. Despite offering only a single form of stitch, simplicity of the machine does not limit its use; straight sewing machines are able to achieve a very wide range of effects of the stitch that provide the foundation for both functional sewing and for ornamental use with minimal adjustment (Wright, 2012).

The straight stitch has several attributes that make it very useful to fashion design and garment construction. It is very durable, creating a dense line of thread that does not break easily. Because of this, it is ideal for seams subject to stress and heavy wear. Straight stitches are also economical in the sense that they use less thread than embellishing or zigzag stitches, reducing expenses without sacrificing strength. They are also less visible, allowing clothing to maintain a neat and business-like finish. Straight sewing machines also carry the added advantage of being

capable of sewing in both forward and reverse directions, allowing them to anchor at the beginning as well as the end of a seam. Anchoring plays an extremely crucial role in preventing seams from de-laminating, which further adds to garment longevity.

Straight sewing machines also have uses in embroidery and decoration. By using constant layers of straight stitches, designers can create raised designs and textured patterns that add to the beauty of apparel. Even though specialized embroidery machines currently dominate this function within the fashion world, the straight sewing machine still has widespread use due to its ease, simplicity, and reliability. Moreover, it is the very first type of sewing machine that a majority of designers and tailors learn how to use, as one's competence in using the straight stitch is purported to be fundamental to other forms of sewing. The versatility presented by the straight sewing machine in its simplicity accommodates its durability in both industrial and domestic use.

More generally, the development of sewing technology had a profound impact on the fashion world. By enabling mass production, sewing machines enabled clothing to shift away from labor-intensive handicraft into industrial commodity form and established the conditions for an international ready-to-wear garment industry. Standardization of fit has moved to the forefront of this model: recent studies reflect how sizing and fit issues are now leading determinants of clothing sustainability (Wang & Zakaria, 2024), and how regionalized size systems are developing to serve more localized body forms (Okojie, Etsename, & Adiji, 2024). Alongside, process automation and efficiency in production keep redefining manufacturing: factory person-centered scheduling and technology incorporation demonstrate how emerging tools streamline production to become less wasteful, more efficient, and better suited for labor and machinery (Production Engineering, 2025).

2.6 Garment History

Extraction of fabrics and weaving of textiles first started in the Middle East during the late stone age. Weaving fabric clothes began from 100000 to 500000 years ago. Knitting was first introduced as a fabric creation technique dating 6500BC which is even popular in today's fabric. As time passed, clothing changed from covering of tress leaves. According to Anthropologist, there is no information about when humans started using clothes. However, some records say that human started wearing clothes about one million years ago. The idea of sewing clothes originated from Neanderthals, as they used to sew animal skin.

Though, as time passed clothing changed according to history, clothes changed along with culture, fashion and wealth. Extraction of fabrics and waving textiles were first started in middle East during the late stone age.

The first material used for clothing is the natural fibers obtained from both plant and animal sources. These include cotton, flax wool, leather silk among others. The evolution of clothing and textiles from the animal's skin and plant materials vast and colourful along with different types of fibers have their history. Cotton was cultivated in Pakistan about 3000BC, wool was being woven about 4000BC in Egypt. Nylon an artificial fiber was invented in the year 1936 and was used as a replacement for silk. This is a brief introduction to the history of garment and clothing material. The history of apparel is inextricably tied with the development of human society, as it has not only served as protection from the environment but also as a means of expression of culture and social identity. Apparel has never simply had a meaning greater than functional necessity, a symbol of technological prowess, creative innovation, and even political power. Academics assert that the history of attire is difficult to identify with certainty since material such as plant fibers, animal skins, and leather

disintegrate over time, leaving minimal archaeological records. Anthropologists, therefore, are certain that the tradition of wearing garments might have been as ancient as hundreds of thousands of years, with some studies claiming that early humans initially began wearing garments around a million years ago (Gamble, 2007). Early human beings likely wore leaves, grasses, and animal hides as coverings, while the Neanderthals are said to have developed sewing techniques, creating bone needles and sinew threads that were used to close animal hides together (Gilligan, 2010). This was a great milestone in garment development, turning clothing from a covering to a manufactured item. As civilizations developed, textile production and weaving as innovations occurred, particularly during the late Stone Age in the Middle East. This was a revolution, as people shifted away from exclusive reliance on animal hides to the creation of fibers from animals and plants. Cotton, wool, flax, silk, and leather were the initial materials to be transformed into clothing. Cotton was cultivated in the Indus Valley in 3000 BC and remains one of the major natural fibers due to its breathability and adaptability (Wild, 2006). Linen, which was produced from flax, was the quintessential fabric of Ancient Egypt, and items date as far as 4000 BC. Linen garments were lightweight and astringent, most suitable for warm climates, and used symbolically to represent wealth, spirituality, and purity. Wool, spun into fabric in Egypt and Mesopotamia at a similar period, was an everywhere cloth across Europe and Asia due to its durability and adaptability (Barber, 1991). Silk, first discovered in China around 2700 BC, was quickly one of the world's most indulgent materials. The story of how Chinese legend has Empress Leizu discover how to make silk is that a cocoon fell into her tea and pulled out into a hard, smooth thread. Silk was made a state secret hidden for centuries and was then an important commodity in world trade along the Silk Road (Good, 1995).

The development of weaving, knitting, and sewing techniques also raised production of apparel higher. Weaving, or the process of cross-overs of strands to form fabric, exists in early human societies and became one of the most used textile processes. Archaeological remains of looms confirm the existence of weaving during the Stone Age. Knitting, which originated around 6500 BC, afforded greater mobility of limb and permitted the manufacture of elastic cloth well adapted to close-fitting garments such as stockings and gloves (Rutt, 1987). Sewing also became much better, advancing from rugged bone needles to skillfully crafted metal ones, so allowing greater speed and precision in tailoring. These methods allowed for the production of clothing not just for use but also for fashion, identity, and beauty. There was cultural and social hierarchical impact on attire in ancient societies. In Egypt, linen was the choice material, and common style included tunics, kilts, and robes. Rich individuals and priests had fine linen with gems and elaborate designs. Attire was a class marker, and simple attire was worn by the masses and pharaohs and nobles had elaborately adorned attire (Stevenson, 2009). Wool was utilized massively in Mesopotamia, and garments were draped, with ornaments and fringes employed as signs of rank and status. Silk apparel in China was related to elegance, refinement, and hierarchy and was influenced by Confucian modesty and social hierarchy values. Ancient Greek and Roman clothing was also symbolic: the Greek himation and chiton were concerned with simplicity and beauty, and the Roman toga became a sign of virile citizenship and civic identity. In Africa, there were intricate traditions of textile creation, including the use of bark cloth, raffia-weaving, and later handwoven fabrics like kente in West Africa, all with cultural and symbolic meaning (Picton & Mack, 1989).

Inventions such as the spinning jenny, the cotton gin, and the power loom mechanized textile production, making textile production far more efficient and less expensive (Chapman,

1972). Mechanization of the textiles made clothing more widely available so that fashion changed from being a luxury for the wealthy to a normal staple produced by everyone. This democratization of fashion made new fashion trends available to the lower social classes, and this created a more richer and diverse fashion culture.The twentieth century brought the second giant revolution with the advent of synthetic fibers. The first synthetic fiber, nylon, found in 1936, was embraced universally immediately as an alternative to silk, especially during World War II when there were embargos on shipments of silk (Hounshell & Smith, 1988). Polyester, acrylic, and spandex joined subsequently, and each of these had benefits of strength, elasticity, and resistance to wrinkles. These fibers significantly transformed the fashion industry, expanding clothing's applications to encompass activewear, formal wear, and specialty wear. As new alternatives were presented by synthetic fibers, they also brought new problems, including environmental issues due to the utilization of non-biodegradable material.

Nowadays in the era of globalization, fashion continues to maintain tradition and modernity. While Western-fabricated clothing such as jeans, T-shirts, and suits dominate the globe, traditional clothing such as the sari in India, the kimono in Japan, and Now in the era of globalization, fashion continues to maintain tradition and modernity. While Western-made clothing such as jeans, T-shirts, and suits dominate the globe, traditional apparel such as the sari in India, the kimono in Japan, and the agbada in Nigeria continue to be granted special thrones on cultural heritage and identity. Fashion today is a global billion-dollar market that is shaping economies, cultures, and lifestyles around the globe. New technology such as smart wear, wearable technology, and green materials is headed towards a more advanced future for fashioning agbada in Nigeria and continue to be placed on special thrones in cultural heritage and identity. Fashion today is a global billion-dollar industry that is affecting economies, cultures,

and lifestyles worldwide. Emerging technologies such as smart wear, wearable technology, and green materials are headed to a more complex future for apparel. On the other hand, the development of sustainable fashion trends emphasizes sustainability, equitable labor, and green production methods (Fletcher & Tham, 2019). This is indicative of greater concern for the social and environmental consequences of the global fashion economy.

History of clothing is more than a record of technological developments but also one of the interfaces of culture, economy, and identity. From hominids' primitive coverings to today's highly advanced fabrics and designs, clothing has been developing continuously as a result of needs and values of societies. Clothes are much more than a protective garment; they are human innovation, cultural diversity, and social institutions across centuries. As humans evolve, fashion will remain at the core of human life, but capturing continuity and change in the fabric of human lives.

CHAPTER THREE

METHODOLOGY

This chapter presents the methodology adopted in carrying out the study. It discusses in detail the research design, sources of data, materials, tools, equipment, and the sequential steps followed in the production of embroidery using the straight sewing machine. Methodology is an integral component of every research project because it explains the strategies employed to obtain valid and reliable data for analysis and interpretation (Creswell, 2014). In this study, the methodology combined both historical and experimental approaches. Historical research provided the platform for studying past embroidery methods, whereas experimental research enabled the technical implementation of the embroidery methods on materials.

The reason behind the adoption of this methodological approach was that it was necessary to ensure that the study was not only theoretically grounded but also pragmatically tested through real-life demonstrations. This was because embroidery was both an historical craft activity and a present-day fashion activity. By combining library-based research with practical fieldwork, the study achieved balance between descriptive and experimental outcomes.

3.1 Research Instrument

The research design that was utilized was the historical method of research, which is a suitable one for studies that attempt to chart the course of the development of ideas, tools, and techniques over time.

Historical research provides an opportunity to interpret what happened before and set it in the context of the present (Merriam & Tisdell, 2016). It has been utilized here to examine how methods in embroidery evolved, what materials were utilized in the past, and how technological advancement such as the straight sewing machine have changed the practice. Aside from historical data, the study also employed an experimental method. Experimental research involves undertaking practical actions to experiment with hypotheses or establish procedures (Ary, Jacobs & Sorensen, 2010). Since the research involved producing embroidery using the straight sewing machine, the experimental method was most fitting. In this manner, the researcher was able to test how tools, materials, and stitching techniques interact to produce desired embroidery outcomes.

The research employed both primary and secondary sources of information:

- Library and Internet Sources: Libraries were utilized in the collection of academic books, journals, and previous theses on embroidery, garment construction, and the history of sewing machines. The internet was also a significant source of latest research studies, tutorials, and visual guides on embroidery techniques. Booth, Colomb, and Williams (2016) hold that libraries and online sources remain pivotal in formulating concrete theoretical foundations in research.
- Market Survey and Interviews: Site visits to markets were done as part of field research to observe kinds of embroidery threads, fabrics, and accessories used by local designers.

Direct interviews with fashion designers and tailors were conducted in order to receive firsthand information about embroidery traditions, issues, and trends in fashion decoration. Testimonial stories from experienced designers enriched the study since they offered practical insights that one cannot read from books. Interviews are of great use in design research since they yield context-specific insights (Kvale & Brinkmann, 2009).

This combination of historical research, experimental research, and field interview ensured triangulation of data, thereby increasing the validity and reliability of the study.

3.2 Materials and Tools for Embroidery Production

Production in this study entailed various materials and equipment. They were selected with care to ensure the embroidery pieces were strong, lovely, and technologically accurate. In terms of Chatterjee (2018), the quality of materials used in embroidery significantly determines the final product of the design. For the purpose of this study, materials were divided into two categories:

Materials

- Chenille: Fuzzy silk thread of many colours. Chenille, from the French word for caterpillar, is used for creating textured and fluffy embroidery effects. It is soft and flexible and is ideal for decorative embroidery (Schoeser, 2003).
- Pearl Cotton (Shining Thread): Pearl cotton is known for its shine and strength. It is normally used when brilliance and gloss are needed in patterns. It is available in different thicknesses, allowing the embroidery patterns to be adjusted depending on the texture needed (Taylor, 2011).
- Seam-stressing Thread: A basic but essential material, seam-stressing thread was applied in sewing of material as well as performing straight stitches. Taut sewing thread keeps the fabric intact while it is being embroidered and after repeated usage (Kadolph, 2010).

- Fabric: Different fabrics formed the foundation for embroidery. Selection primarily relied on texture, weight, and color. Fabric choice plays a critical role in embroidery since delicate fabrics require stabilizers while thicker textiles may require stronger threads (Clive, 2011).
- Gum Stay: Gum stay is a fiber binding product that gives stability and stiffness to fabrics. It was utilized in this study to stabilize the fabric before embroidery to create a solid base for stitching.
- Lining Material: Lining material was used to stabilize the reverse side of the fabric to prevent fraying and provide a neat finish

Tools and Equipment

The tools and equipment included:

- Straight sewing machine
- Machine needle
- Shuttle and reeler
- Office pins and scissors
- Zipper
- Pressing iron and ironing table
- Ruler
- Tailor's chalk and pencil
- Hook and eye
- Sketch pad

Each tool played a unique role in the embroidery process. For example, the straight sewing machine was the central equipment, while accessories like pins and tailor's chalk assisted in precision and accuracy during cutting and tracing.

3.3 Procedures

The practical procedure followed in this study was systematic to ensure accuracy, neatness, and durability of the final embroidery design. The process involved the following steps:

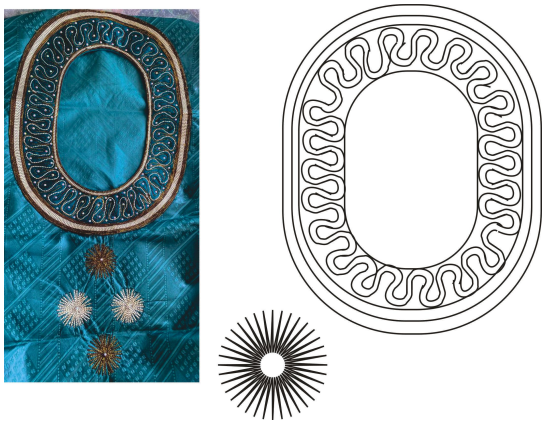
1. **Fabric Preparation**: The fabric was cut into appropriate sizes depending on the garment and design requirements. Care was taken to ensure precision in measurements to avoid wastage.
2. **Stiffening with Gum Stay**: Two layers of gum stay were ironed onto the fabric to give it thickness and stability. This step is crucial as embroidery stitches require a firm base to prevent puckering.

3. Design Tracing: The chosen motif or embroidery pattern was originally drawn on sketch paper and then raced or freehandedly transferred with precision onto the fabric using tailor's chalk This ensured accuracy of design placement.

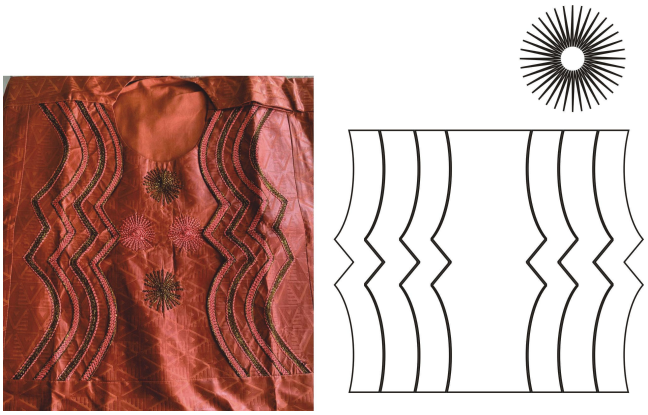
4. Threading the Machine: The desired thread colour was reeled onto a reeler and placed into the shuttle, which was inserted into the bobbin case beneath the machine. Simultaneously, the sewing thread was threaded from the top of the machine to synchronize with the shuttle thread. This set-up is essential in creating the interlocking mechanism that forms stitches (Wright, 2012).

5. Embroidery Execution: The first step was the illustration of concepts, this was initially done with pencil on paper, before being reproduced digitally for aesthetic purposes. The various drawings and the outcomes are presented below:

Figures: 13 & 14

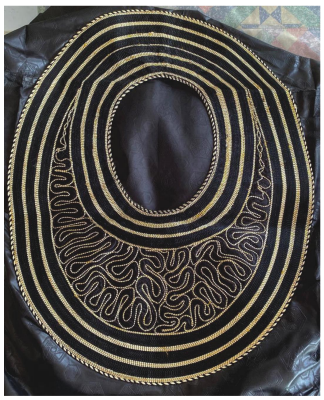


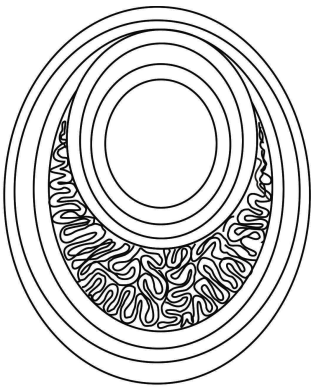
Twist

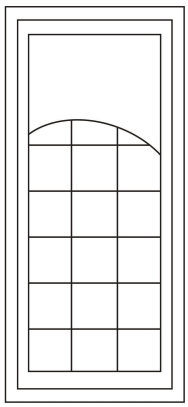


Ocean Wave

Figures: 15 & 16



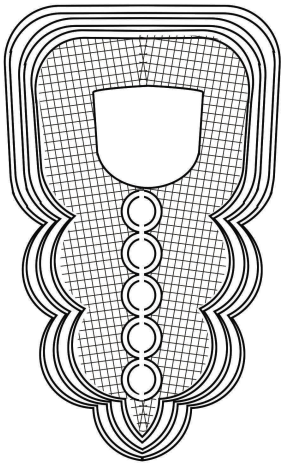


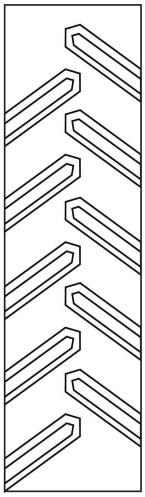


Unity

Chess

Figures: 17 & 18

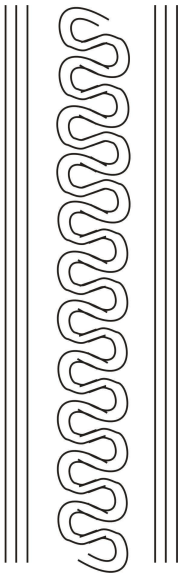




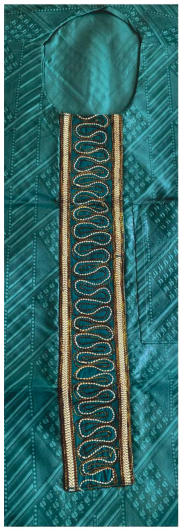
Fertility

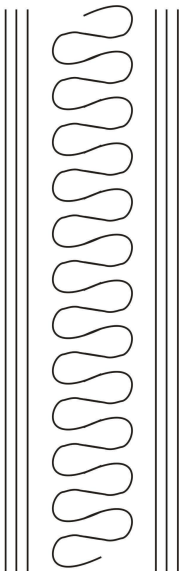
Shooting Arrow

Figures: 19 & 20



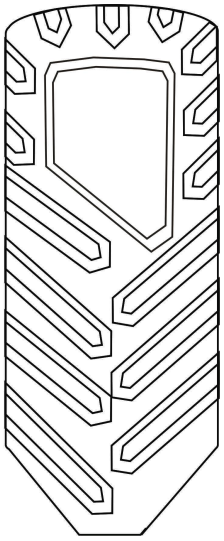
Unity



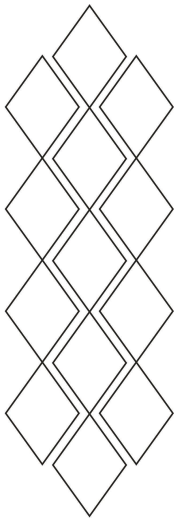


Twist

Figures: 21 & 22

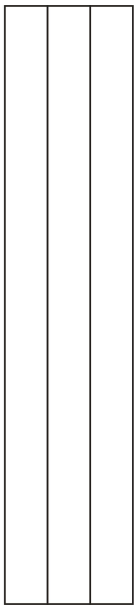


Shooting Arrow

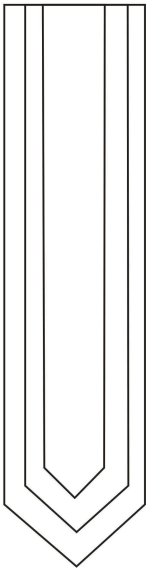


Triangular

Figures: 23 & 24



Chess



Shooting Arrow

The traced design on the fabric was carefully followed using the straight sewing machine. Stitches were performed side by side for an even coverage of the pattern. Design Tracing: The motif or the embroidery design was traced on sketch paper and meticulously transferred onto the fabric with the help of tailor's chalk. Forward and reverse stitches were created wherever necessary to hold the threads tightly in place.

6. Finishing: Next, the embroidered cloth was then ironed using a hot iron so that the stitches would flatten and improve the overall appearance. The embroidery design was then stitched onto the garment to complete the design. The procedure highlighted above reflects not only the technical stages of embroidery but also demonstrates how the straight sewing machine can be adapted beyond basic straight stitching to achieve decorative designs. The step-by-step approach follows embroidery best practices as described by Pullen (2002), ensuring durability and professional quality in the outcome**.**

3.4 Finished Products

The researcher produced a variety of garments using different types of fabrics, incorporating numerous embroidered designs for both male and female wearers. These creations were intended to expressively showcase the final outcomes achievable with a straight sewing machine, which is the central focus of this project

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION OF FINDINGS

Research Question One

4.1 Data From Historical and Lberary Research

What are the possibilities of using a straight sewing machine for embroidery?

The findings from the literature study, survey, and experimental practice revealed that it is possible to use a straight sewing machine for embroidery. Although it was originally used for making seams, it is capable of freehand use on fabrics to produce desired stitch patterns for embroidery. Most of the tailors and designers interviewed affirmed that they used the straight sewing machine for embroidery due to the high cost and unavailability of industrial embroidery machines.

Literature study revealed that most tailors and designers in developing countries use the straight sewing machine for embroidery, showing their ingenuity and resourcefulness in their work (Schoeser, 2003; Taylor, 2011). The experimental study proved that it is capable of producing durable and attractive embroidery designs if used and reinforced correctly.

4.2 Market Survey Findings

Research Question Two

How does the researcher achieve embroidery designs with the use of a sewing machine?

Based on the process of experimental embroidery, it was observed that embroidery designs are achieved by following a series of procedures, which include preparing the fabric with

gum stay, transferring the design onto the fabric, choosing the right threads, and manipulating the fabric under the needle of the machine instead of allowing it to move automatically.

It was also observed that it was very essential to keep the speed of the needle slow, especially while working with curves. It was noticed that keeping a steady hand while working with the fabric helped to achieve better results.

4.3 Interview Findings

Research Question Three

What kind of aesthetic qualities will be developed with the combination of silk and pearl threads in embroidery?

This proved that the combination of silk and pearl threads improved the beauty of the embroidered fabrics. The silk threads had a smooth and shiny effect, while the pearl threads had a rough look and a shining effect. The designers were satisfied with the choice of their clients regarding the use of embroidery with a combination of pearl cotton threads due to their decorative nature.

The experimental process proved that the garments embroidered with a combination of silk and pearl threads were more elegant, beautiful, and luxurious compared to garments embroidered using normal sewing threads.

4.4 Data from Experimental Embroidery Process

Research Question Four

How possibly can detailed images be made from a simple design using a straight sewing machine?

The findings showed that detailed images could be created from simple designs through the process of layering, repetition, and precision in varying the direction and density of the stitch. Through the gradual process of building up the image, the simple design could be transformed into more detailed visual representations.

The experimental stage of the research showed that detailed images required slow stitching, repetition of the stitch over the lines of the design, and control of the fabric. The designers interviewed also showed that patience and experience are important when working on detailed images with the straight sewing machine, as mistakes are hard to correct once the stitching is complete.

4.5 **Posible Modification of modify Agbada, Boubou, and Kaftan traditional African fashion designs into modern fashion designs**

Research Question Five

How feasible is it to modify Agbada, Boubou, and Kaftan traditional African fashion designs into modern fashion designs?

The data collected from the interviews and experiments showed that it is feasible to modify Agbada, Boubou, and Kaftan traditional African fashion designs into modern designs by using embroidery positioning, modern designs, and advanced finishing techniques. The tailors indicated that modern designs can be incorporated into the traditional African designs by using embroidery around the necklines, sleeves, and panels.

The experimental embroidery samples used on the traditional African designs showed that the application of straight sewing machine embroidery is feasible and allows designers to mix and match traditional designs with modern fashion designs. This makes it possible to create modern designs from the traditional African designs without losing their cultural significance.

4.5 **Analysis of Finished Products**

Figure: 25

Title: Unity

Artist: Caroline Ekawhan Enegide

Medium: Embroidery on Agbada

Year: 2025

The Unity pattern is a novel embroidery design by the researcher. The arrangement of the motif is made up of three curvilinear lines fringed with a chain of spiral and irregular design changes, then three more curvilinear lines tied together by a single zigzag element at the edge. The pattern is arranged in an orderly manner over the neckline and descending to chest height, inducing the movement and flow that reinforces its thematic significance.

This embroidery, executed on traditional agbada fabric, was specifically created to signify unity and commonality. The curved lines are in the shape of a circle along the neckline, beginning from the back to converge at the front, thus symbolizing coming together of people or groups. At the center, a ring-shaped figure brings to mind the existence of a coaster, symbolically implying the existence of a shared place or common space. The ornament is thus not just an ornament but a symbolic representation of social togetherness and unity. The colours used in the embroidery also assist in contributing to the symbolic nature of the ornament.

The dress itself is black, a colour that has traditionally been associated with seriousness or bereavement. But black is reworked here in a contemporary African manner to represent strength, beauty, and survival. It is consistent with the visual code conventionally associated with the powerful, thereby asserting presence and dignity. Both the ferrous gold and black threads are employed in the embroidery, and while the black thread is used to enclose the entire area of design., The ferrous gold, in association with pear cotton having glossy finish, is employed to give shape and contrast to the design. This contrast is not arbitrary, for their intended purpose is

to shift the focus of attention towards the intricacy of the design, thus rendering it more visually appealing along with highlighting its conceptual feature.

The philosophical underpinning of this work exists in cultural heritage. Agbada is a Yoruba clothing that once signifies status, prestige, and cultural heritage. Once reserved for official or ceremonial occasions, agbada has been irrevocably identified as kingship, nobility, and prosperity for centuries. However, the use of agbada in this work is not stylistic, but means higher cultural significance, placing the embroidered motif within centuries-old symbols of social ranking and heritage.

Constructively as a garment, the agbada wear includes outer robe, inner tunic, and *shọ̀kòtọ̀* trousers. It requires approximately ten yards of cloth to produce it. The body measurment the study scholar used were 56 inches for the agbada robe, 35 inches for the inner shirt, and 46 inches for the shọ̀kòtọ̀ trousers. The measurements were chosen with ready-to-wear in mind. Specifically, the outfit was designed full length in order to be easily altered or fit to suit the wearer. From a manufacturing viewpoint, it is simpler to shorten clothes to fit specific users than to lengthen excessively short clothes. In short, Unity is not just an ornamented motif. It is both an artistic inspiration, a cultural sensibility, and a functional dress design. In this embroidered motif, the scholar is both using the traditional Yoruba beauty and current sensibilities in design, giving a contemplative analysis of identity, heritage, and unity in new African dress.

Figure: 26

Title: Triangular

Artist: Caroline Ekawhan Enegide

Medium: Embroidery on Boubou

Year: 2025

The Title Triangle design is a formal embroidery motif made up of a sequence of diminishing diamond shapes piled vertically from the neckline to a point just beneath the bust

line. The pattern has been theoretically and practically integrated into the traditional Bubu garment also called Boubou a long, flowing robe with loose-fitting, wide sleeves. Worn far and wide by diasporic Nigerians in West and North Africa, the Bubu is symbolic as well as practical in application.

The Bubu gown is sheer simplicity and flowing in style but with huge potential for artistic embellishment through embroidery and decoration. This design is highly suitable formal purposes, and the embroidery, in particular, is not merely decorative, but purposeful in adding aesthetics and cultural significance to the dress article. Thus, embroidery in this case is dealt with as a visual narrative and cultural dissemination method. The design choice, a triangle bears symbolic meaning, most commonly to femininity, stability, and change. Done in black silk thread on golden-brown silk and iridescent pearl cotton overlays. The design is also enhanced by the use of small stones to introduce shining highlights. Seams are stitched on a damask material with black and gold edging, chosen specifically to complement the colour of the thread and create visual continuity.

Black and gold have been chosen for material and thread with specific symbolic meaning. Gold is used most commonly to signify luxury, warmth, and light and to signify elite status and celebrations. Black signifies elegance, power, and depth. Though, in certain cultures in Africa, for example, among Nigeria's Igala people, black is similarly believed to symbolize the earth's fertility and mineral density of the land. Gold or yellow colour is also said to reflect hospitality and profound love for the land. The embroidered Bubu is thus a multidimensional garment, aesthetical, symbolic, and functional concurrently. It is both classy and wearable, its class enhanced by thoughtful design elements that address both individual identity and culture. As a

fashion garment, it highlights the flexibility and continuity of African dressing culture in contemporary settings.

Typically, two and a half to four yards of fabric are employed in the making of a Bubu gown. And from this seemingly modest quantity is derived a garment rich in meaning, artistry, and cultural significance. As this research demonstrates, in embroidery the Bubu transcends its utilitarian purpose to become an instrument of cultural exchange, visual discourse, and artistic imagination.

Figure: 27

Title: Hospitality

Artist: Caroline Ekawhan Enegide

Medium: Embroidery on Danshiki

Year: 2025

This garment titled Hospitality, is an integration of time-honored values and current aesthetics and employing textile as a tool for cultural approval. The design is a geometric composition of diamond forms in reduced scale, delicately bordered at the neckline by two horizontal lines. The motif has been adapted and used in the danshiki format to enhance its cultural value as well as visual beauty.

The damask fabric is embroidered in black and gold design; a choice made specifically for the richness of texture and visual depth. Triangular shape is the dominant motif, worked in black silk thread outlined in golden-brown silk and additionally decorated with pear cotton, a luminous thread that gives luster. Hand-set stones complement the embroidery with sophisticated, glinting effect. The choice of black and gold thread colour scheme maintains visual harmony and elevates aesthetic sophistication of the clothing item.

Philosophical, as part of its aesthetic purpose, the *danshiki* serves as a moveable affirmation of African heritage, dignity, and unity. The garment symbolizes cultural pride and is a symbol of ancestors' honour and unrootedness. It connects past and future, tradition and innovation, making its wearers feel rooted in the cultural memory and yet creating their contemporary identity.

The philosophical foundation of Hospitality relies on African communalism and the custom of liberality. The motif and colour selection are intended to incorporate more symbolism. Gold signifies radiance, richness, and warmth, characteristics shared with divine presence and regal bearing. Black, in particular, in the cultural context of the Igala people, signifies fertility of the earth and mineral wealth. Further, yellow, which is closely associated with gold, depicts

hospitality, amiability, and earth affinities. Therefore, the colour scheme functions not only ornamentally but semantically, each hue supporting the cultural narrative present in the garment.

The purpose of the researcher in selecting the embroidery motif and materials was to heighten both visual and mental wealth of the *danshiki*. The fusion of historical pieces with modernist aesthetic demonstrates how textile art can be at once preservation of culture and artistic creativity. With deliberate motif selection, quantifiable material choice, and deliberate colour symbolism usage, Hospitality is more than mere clothing; it is a display of identity, philosophy, and creativity. The garment provokes viewers and the wearer to debate heritage, pride, and the evolving narratives of African dress. With its syncretism of innovation and tradition, the garment represents the power of cloth art to retain tradition, stake identity, and convey collective values. Hence, this work posits that African clothing such as the danshiki is fashion, but yet more importantly it is a carrier of meaning, memory, and cultural empowerment.

Figure: 28

Title: Ocean Wave

Artist: Caroline Ekawhan Enegide

Medium: Embroidery on Couple kaftan

Year: 2025

The Ocean Wave design is an artistic and symbolic work of art embroidered onto the kaftan of a traditional African couple a harmonized outfit of clothing that couples adorn to signify togetherness, celebration, and cultural origin. The design comprises four long, curved lines laid symmetrically on either side of the outfit and reinforced by two circular motifs positioned in the middle and roughly 4 cm apart. This piece is dynamic as well as harmonious, a figurative representation of the fluidity of life and shared experience of partnership.

The couple's kaftan is typically a loose, relaxed garment that is worn by couples for most types of parties including weddings, religious occasions, and other celebrations. Following African and Islamic cultural tradition, the garment has aesthetic interests and communal values. The couple kaftan is an external demonstration of being together, communality, shared identity, culture, and personal taste.

In the Ocean Wave pattern, the flowing lines embody receding tide and flow of living, adjusting to the beat of emotional, spiritual, and social moments. The waves are placed intentionally on either side of the body to envelop the body with motion and equilibrium, chanting harmony in shared habitation. Two circular designs symbolize continuity and unity at the center timeless; since motifs in African visual vocabulary that talk of timelessness and wholeness.

The pattern is embroidered on brocade cloth in burnt orange colour, a selection made intentionally that is replete with symbolic meanings. Burnt orange, as a blend of bright orange and reddish-brown tones, initiates change, warmth, and earthly authority. Burnt orange says lots of things about courage, confidence, and subtle elegance, and hence it is an extremely appropriate colour for apparel worn during such significant occasions as weddings and memorials.

Ten yards of fabric was used for the entire production of the couple kaftan, both male and female figures conforming to a uniform language of design

Choosing Ocean Wave as a common theme of design has deep philosophical and cultural undertones. For most African and world cultures, the sea is a symbol of the unpredictability of life, adversity, and cycles of change. Waves, in particular, are a symbol of change and

introspection, representing the continuity of movement and interrelatedness of self to the universe as a whole. This work is a symbol of the faith in human nature as being boundless and in a perpetual state of flux, being shaped by both internal and external forces.

The inclusion of a firing-off-shoots-of-fireworks motif in the center adds more celebratory and triumphant character to the design. Fireworks, generally associated with national celebrations, coronations, and holiday gatherings, are visual representations of joy, achievement, and collective successes. For the couple kaftan, they symbolize not only the personal victory of love and being together but communal celebration and cultural merriment.

Side by side, fireworks and waves of the sea create a tale of pilgrimage and celebrating an artistic realization of life's trials, communal power, and ultimate victory of love and self.

Figure: 29

Title: Chess

Artist: Caroline Ekawhan Enegide

Medium: Embroidery on Agbada

Year: 2025

The Chess embroidery is a conceptual work based on interlocking geometric motifs. The dominating theme is a checkerboard pattern signifying structure, order, and unity, delineated by three bold lines to enclose the design and convey intentionality and strength. The design is

further supported by a repeated parallel line that begins at the back neck and moves in rhythmic motion around the body, linking the design elements together visually.

Threaded in white and grey, the embroidery itself is a pictorial allegory for harmony and connection each strand woven into the next to form a whole. This colour tension itself is symbolic of the dominance of multiple identities and the strength that lies in unification. The pattern, while orderly, allows for fluidity of movement, evoking the traditional African balance between individuality and community. The selected range of grey and white compliments the base material, a white brocade or damask which contributes to the sense of reality, purity, and cultural clarity.

The design is embroidered on the traditional Yoruba Agbada, a loose flowing robe which carries immense cultural, social, and ceremonial importance in Nigerian and West African cultures in general. The Agbada is made up of a grand outer robe, inner shirt, and loose-fitting trousers (*shokoto*), is worn by men during special occasions demanding the fervent expression of status and cultural identity. The Agbada is very pompous and extremely elaborate in design with embroidery. It is widespread among upper-class society, nobility, and high socio-economic status individuals. The Agbada is a representation of pride, wealth, and communal heritage. The complete Agbada outfit is made from 10 yards of cloth; five yards to make the flowing robe, three to make the undershirt, and two yards for the *shokoto* trousers.

The philosophical aspect of the Chess design is in its symbolic illustration of interdependence and unity. The interlocking design is indicative of community life how humans, though discrete, are interconnected in purpose and identity. This speaks to a general African worldview where self is understood from a place of ancestry and community.

The three dramatic borders that enclose the pattern speak to structure, strength, and order, and affirm that stability in society is realized through harmony and respect for each other.

White, being one of Agbada's fundamental colours, is most symbolic religiously and culturally. White in Islamic and Yoruba belief symbolizes spiritual illumination, serenity, and purity. White is donned on celebratory days such as wedding, celebration, coronation, and religious rites. White symbolizes moral purity, divinity, and cleanliness in Islamic belief, values spiritually and socially exalting the wearer.

Thus, the white Agbada is more than physical appearance, representing a symbolic view of nobility, religiosity, and ritual importance. It is a symbol of culture and fashion icon, and it represents tranquility, beauty, and distinction.

Contextually, throughout the centuries and to this day, Agbada is a marker of status, authority, and identity. Diplomatically gifted, worn on traditional weddings, or paraded on national ceremonies, the cloth is a vehicle for the transmission of cultural values and social standing. The richness of the embroidery, the ideal fabric, and design motif importance are integrated into the wearer's history and his or her standing in society.

In contemporary terminology in fashion, the Agbada has been reimagined, leaving researchers and designers space to provide new meaning to traditional clothing. The Chess pattern is in parallel with such fusion, maintaining the opulent history of Yoruba fashion and conveying the message of unity, transformation, and commonality. Hence, the richness of the embroidery, the ideal fabric, and design motif importance are integrated into the wearer's history and his or her standing in society.

Also, in contemporary terminology in fashion, the Agbada has been reimagined, leaving researchers and designers space to provide new meaning to traditional clothing. Garment and fashion statement, the Agbada remains a symbol of royalty, continuity, and survival as well as cultural pride.

Figure: 30

Title: Shooting Arrow

Artist: Caroline Ekawhan Enegide

Medium: Embroidery on Agbada

Year: 2025

The Shooting Arrow pattern is an emblematic embroidery design of two horizontal, opposing lines in a forceful zigzagging pattern that intersect each other. The relationship between two contrasting colours of threads entwined together to invent a dramatic visual cadence creates a complex and symbolic pattern. This design has been integrated on the Agbada, a large and flowing regalia historically worn by Yoruba men all over West Africa, and also taken up by Hausa societies, among others. The robe typically consists of three pieces: a full, flowing outer garment (proper agbada), an undershirt, and a pair of trousers (*shokoto*), typically completed by a supporting cap and sometimes lined with ceremonial beads for ceremonial embellishment.

The Agbada is a robe that is worn on almost formal occasions weddings, festivals, coronation, and religious ceremonies and distinguished by the luxurious fabrics, lavish embroidery, and monarchic fashion. Versions are created using Aṣọ-Oke, Adire, lace, cotton, Ankara, or other opulent fabric. It is a visual and cultural representation of masculinity, heritage, dignity, and social standing.

. The Shooting Arrow design is composed of two facing arrow forms that oppose each other and overlap in a stylized zigzag motif. The design communicates motion, tension, and balance. The pattern is embroidered in black silk thread with grey (Cray) thread and highlighted with shimmering pear cotton thread to add glitz and sophistication to the finished embroidery. These interwoven threads not only create a beautiful work of art to behold but also signify the philosophical narrative included in the design.

The stitching is on a navy-blue brocade cloth that was selected by the researcher due to its beauty and symbolism. Matching of cloth and thread colour produces greater visual order and

richness of the outfit. The embroidery, as complicated in manufacturing, is best suited for upper class social nobles, elites, and cultural aristocrats.

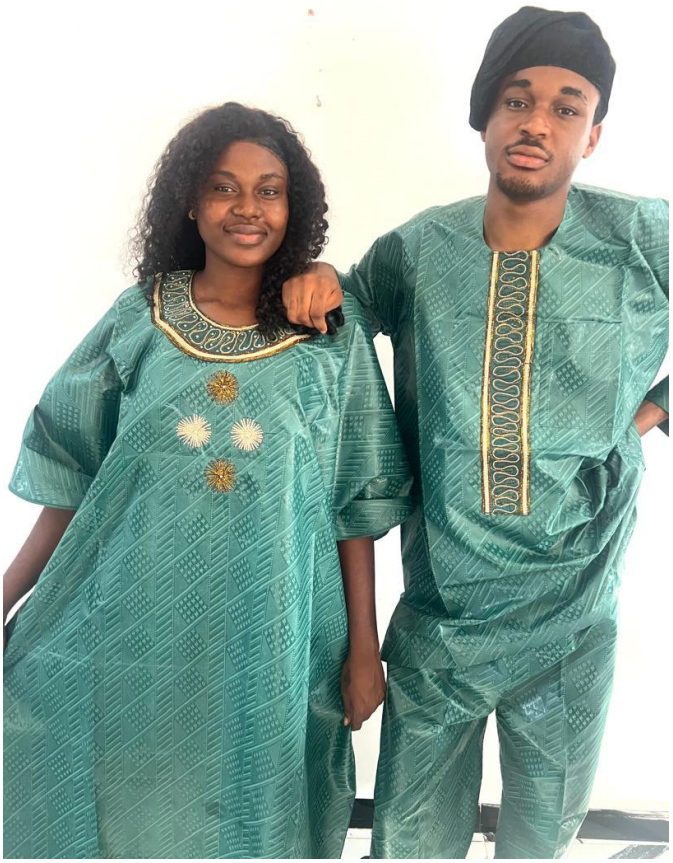
The whole Agbada component requires about 10 yards of fabric; 5 for the outer blouse, 3 for the inner shirt, and 2 for the shokoto (trousers).

Agbada in West African fashion wear is not a piece of clothing per se—it's a declaration. The flowy shape, expensive fabric, and intricate stitch work are indicators of wealth, seriousness, and gravitas. It is a visual representation of the social status, prestige, and nobility of the wearer. Fashion according to Yoruba cosmology is performative and declarative Agbada as a symbol of masculinity (okunrin l'aso), nobility lineage, and cultural gravitas.

Shooting Arrow philosophy is based on the ethical consideration premise and the law of mutuality. The two opposing arrows symbolize the roundness of effect and cause—echoing proverbial sentiments such as, "what goes around comes around" or "if you point at one, the other fingers point towards you." The arrows in their own picture are an allegory of responsibility, justice, and moral balance between-personal and inter-societal relationships.

This embroidery pattern is not only decorating the fabric; it embroiders an epistemological statement on the garment so that the very garment becomes a wearable statement of self-knowledge, responsibility, and moral balance.

Figure: 31



Title: Twist

Artist: Caroline Ekawhan Enegide

Medium: Embroidery on Couple kaftan

Year: 2025

The twist motif occurs as a sinuous run of corkscrew motifs, elegantly flanked by two side-by-side vertical lines of demarcation and order. The same ornamented motif is rendered on the male and female versions of the traditional kaftan, both as an identifying visual attribute independent of gendered distinction of attire.

In the male garment, twist motif is prominently and centrally presented, vertically suspended from the front neck opening to slightly below the level of the chest. This central placement gives the sense of balance and vertical association and signifies formality along with grounding.

Opposite to that is the female kaftan, which recycles the same motif using a circular layout that gracefully creates the neckline with a graceful buffer of some four inches on its rim. In the center of this circular design is a star-pattern arrangement of motifs, graciously spaced at approximately two inches, spiraling outward as if echoing the beauty of distant stars, like the night sky one sees from the savannah.

The kaftans are masterfully cut from ten yards of sumptuous turquoise-blue brocade, a fabric which breathes softly in hushed harmonies of loveliness, with the pride and opulence of heritage. Its shine-pooling texture evokes the grandeur of ancient celebrations, where grandeur is not merely worn but honored. The embroidery, in a radiant colour scheme of gold and black, involves a festive swirl of contrast and extravagance. In the star-like patterns, twin peach-coloured shapes are mirrored against each other, paired with equally positioned brown starbursts, starting an eye-to-eye dialogue between warmth and soil, symmetry and soul.

Thus, this design transcends ornamentation, it is a philosophical declaration of unity within duality, order amidst motion, and identity through artistry.

Figure 32

Title: Fertility

Artist: Caroline Ekawhan Enegide

Medium: Embroidery on Danshiki

Year: 2025

The Fertility design is a symbolic and philosophical piece embedded in the design of a traditional Danshiki robe. To the eye, in an integrated holistic perspective, from the back of the neckline, across the area of the chest, to the front, embroidery represents a stylized figure that is

something like a woman's Ovie. It is this visual metaphor created by an arrangement of semi-circular motifs in a perspectival scheme, surrounded and defined by flowing, curved lines. The design not only guides the vision but also evokes deeper significance through African perceptions of woman, fertility, and continuity.

The Danshiki itself is a casual, flashy traditional dress, quite a staple of everyday fashion among the Yoruba people across East and West Africa. Made complete with complementing trousers, it is versatile enough for use on numerous social, ceremonial, and official occasions. The dress, which fits either just above or below the knee, requires around five yards of fabric to prepare, giving evidence of its flowing and full-bodied appearance.

In addition to the fashion statement, the Danshiki is a rich display of African pride, heritage, and identity. It is a cultural marker of unity, ancestral honour, and location. Wearing the Danshiki is a declaration of reclaiming and taking back African heritage, self, and communal memory, transforming cloth into one of empowerment.

The researcher's use of embroidery pattern enriches the attire both visually and symbolically. In golden silk thread, embroidered with shining pearl cotton and delicately edged in black silk, the pattern allows itself to an air of elegance, hospitality, and poise. Against a black and gold lace fabric background, the coloring has been strategically selected to provide both aesthetic as well as cultural meaning.

Gold is traditionally associated with brilliance, dignity, and warmth—attractive and marking high status. Black, in the majority of African societies such as the Igala people, symbolizes mineral wealth, spiritual richness, and fertility of the land. Yellow, and hence one

that is visually complementary to gold, symbolizes earth and beneficence. Both put together create a visual lexicon of refinement, luxury, and earthy harmony with nature.

The pervasive motif of Fertility, as referred to herein, transcends the biological. Fertility within this text is a signifier for life energy, imagination, abundance, and the cycles of nature's rejuvenation. The sewing, summoned forth from the natural lines and curves of organic materials, is at once decoration and summoning of symbol. These patterns, typically borrowed from ancestral memory and cosmic pictures of the sacred, are used conventionally in both ritual clothing and ceremonial fabrics to anchor the wearer in rounds of life, earth, and divine womanhood.

By integrating these varied meanings into the Danshiki, the book goes beyond the garment as an object, it becomes an object of philosophy. It is a narrative worn on the body that testifies to growth, to continuity, to woman, and to the divine place of creation in African philosophy.

4.6 Analysis and Interpretation of Findings

The combination of historical, market, and experimental data provided the following outcomes:

• **Availability of Materials and Equipment**: Embroidery materials, threads, and gum are readily available in the local market and therefore the activity continues to be affordable for small-scale designers.

• **Innovation and Flexibility**: Local tailors have proven to be resourceful by using straight sewing machines at a slant to fit embroidery. This reflects resilience and resourcefulness in environments with limited resources (Malizia & Tissi, 2016).

• Execution Challenges: Execution challenges (thread breaking, time, laborious patterns) indicate that although the adaptation is helpful, it can't fully replace industrial embroidery machines. Training and practice are required for efficiency.

• Cultural and Aesthetic Value: Application of shiny threads and durable designs shows that embroidery remains culturally relevant as a means of creating value for clothing.

Finally, the analysis confirms that the straight sewing machine can be used to do embroidery technically and socially. The findings are in accordance with the history of embroidery being a developing art that adopts emerging technologies and equipment (Pullen, 2002).4.5 Summary of the Chapter

This chapter presented and analyzed data obtained from both documentary and field sources. Findings from the literature established the evolution of embroidery as both art and craft. Market surveys and interviews demonstrated the availability of materials, tools, and local practices in embroidery. Finally, the experimental process confirmed the practicality of producing embroidery using the straight sewing machine.

This chapter deduces that, in spite of the problems, the approach is a successful adaptation that addresses cultural, economic, and creative demands. The concluding chapter will discuss the findings further, with implications for fashion design practice and recommendations for possible further research.

4.7 Discussion of Findings

The study set out to investigate the adaptation of the straight sewing machine for embroidery and its relevance in the field of fashion design. Findings from historical, market, and experimental data provide a rich foundation for discussing the practice both in terms of technical feasibility and cultural significance. The discussion in this chapter is therefore centered on situating the results within broader scholarly perspectives on embroidery, technology, and creative practice.

History has it that embroidery practice has always been in flux, diverging from manual-operated techniques to machine-assisted developments. The practice of embroidery never stood still; rather, it adjusted according to social needs, economic circumstances, and technological advancement. The embracing of the straight sewing machine depicted in this research is a continuation of this historical pattern. Scholarly authors such as Schoeser (2003) have pointed out that embroidery has ever been an indication of human ingenuity and adaptability. In this sense, Nigerian indigenous designers and tailors who employ the straight sewing machine to do embroidery are following a trend of inventiveness that has been in existence for a long time. Their ability to adapt a machine designed to sew seams to one used to do decorative embroidery is an instance of problem-solving where expert machines may not be accessible.

The interview and market survey results reflect the social and economic dimensions of embroidery practice. The ready availability of materials such as silk threads, pearl cotton, fabrics, gum stay, and lining underscores that embroidery is not a craft restricted by scarcity of inputs. Instead, the constraints identified by practitioners revolve around cost and accessibility of industrial embroidery machines. This confirms Taylor's (2011) observation that innovation in

textiles is often shaped not by abundance of resources but by their strategic adaptation. Designers use what they have access to, so as not to discourage creativity for lack of fancy equipment. The client preference for shiny threads such as pearl cotton also suggests the continued cultural valuing of embroidery as a marker of beauty, identity, and status.

The experimental process corroborated what practitioners described. It showed that embroidery with the straight sewing machine, while feasible, demands patience, skill, and consistent practice. Technical challenges such as thread breakage, difficulty with curves, and uneven tension are not trivial; however, they can be managed with improved handling techniques and selection of appropriate materials. The durability achieved when gum stay was applied beneath the fabric also affirms that local practices have practical merit. This aligns with Pullen's (2002) assertion that successful machine embroidery is not only a function of technology but also of preparatory techniques that stabilize the fabric and enhance stitch quality.

One of the most striking implications of the findings is the intersection of innovation and necessity. In resource-constrained settings, necessity drives creative experimentation. The adaptation of the straight sewing machine for embroidery is less about replacing industrial embroidery machines and more about democratizing access to decorative garment enhancement. For small-scale tailors and upcoming designers, the practice lowers entry barriers into embroidery, enabling them to compete with larger firms and meet client demands. Merriam and Tisdell (2016) have argued that innovation in vocational contexts often emerges organically from practitioners themselves rather than from external technological imposition. The present findings support this view, as it is the practitioners, not manufacturers, who discovered and perfected the use of straight sewing machines for embroidery.

Another important element is the cultural meaning of embroidery. The research results concur with what is generally known that in Nigerian culture, as in most of the world, embroidery serves a purpose beyond decoration. Embroidery conveys status, identity, and creativity. The employment of lustrous threads and durable embroidery designs is not so much a question of beauty as one of congruence between dress and social ideals of beauty and distinction. This confirms Schoeser's (2003) assertion that textiles are usually imbued with symbolic value that mirrors common values. The durability associated with gum stay also demonstrates that clients expect embroidered garments to combine beauty with functionality, reinforcing embroidery's role as both an artistic and practical craft.

The challenges identified, time consumption, thread breakage, and difficulty with complex patterns are also significant for discussion. They reveal that while the adaptation is effective, it is not without limitations. Complex patterns that require precision may not be easily executed with the straight sewing machine, and this restricts the range of designs that can be achieved. This limitation suggests that while the practice is innovative, it does not render industrial embroidery machines obsolete. Rather, the adaptation should be viewed as a complementary practice that serves the needs of small-scale designers and clients who cannot afford machine-embroidered garments produced on specialized equipment.

Another important element is the cultural meaning of embroidery. The research results concur with what is generally known that in Nigerian culture, as in most of the world, embroidery serves a purpose beyond decoration. Embroidery conveys status, identity, and creativity. The employment of lustrous threads and durable embroidery designs is not so much a question of beauty as one of congruence between dress and social ideals of beauty and

distinction. This confirms Schoeser's (2003) assertion that textiles are usually imbued with symbolic value that mirrors common values. These findings provide a foundation for the recommendations in the subsequent chapter, where attention will be given to how this practice can be improved, promoted, and integrated into contemporary fashion design training and practice.

CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 Summary

The use of a straight sewing machine for illustration on garment using different straight sewing machine techniques is an art that brings out the aesthetics of straight lines and it is noteworthy to say that this research had gone far in projecting the fashion industry and also promoting embroidery as a fascinating form of fashion production. Also, little or no documentation have been made on the use of straight sewing as a technique of embroidery.

The study delved into embroidery as a work of art and a cultural phenomenon with particular emphasis on the historical evolution, cultural significance, and methodological application in the production of apparel. Through the examination of the pertinent literature, it was established that art and culture are mutually intermixed, while art acts as a representation of culture and a vehicle of values, customs, and identities being preserved and transmitted. In the Nigerian context, one of the longest-lasting forms of art was embroidery, which was deeply entrenched in the social life of society, cutting across ethnic groups, social classes, and historical time.

Literature reviewed indicated that embroidery has had, historically, not only a decorative function but also as a system of communication, social differentiation, and identity formation. Nigerian embroidery, evident in Hausa babban riga, Yoruba aso-oke, and other indigenous textile societies, conveys aesthetic sensibilities and as well as utilitarian purposes. With the advent of globalization and technological changes, the practice has branched into incorporating machine-assisted techniques blending older motifs and contemporary fashion patterns.

The research framework of the study integrated historical study with experimental work. Historical inquiry facilitated the understanding of previous trends, happenings, and methods of embroidery work, whereas experimental processes showed the actual production of embroidery with the aid of equipment like sewing machines, gum stay, silk threads, and other allied materials. The procedures proposed gave a sequential idea for producing embroidery that is aesthetically pleasing as well as functionally strong.

Data were collected from primary and secondary sources. Fashion designers, tailors, and market surveys on threads and materials used for embroidery formed the primary data. Secondary data were collected from libraries, scholarly sources, and the internet. These sources offered extensive insight into embroidery, both theoretical and practical.

In summary, the study entrenched embroidery as a thriving form of art that continues to be relevant in cultural, social, and economic contexts. It highlighted the adaptability of embroidery in Nigeria, showing how the practice has continued to stay relevant over centuries of cultural transformation as it incorporated modern innovations in fashion and garment production.

5.2 Conclusion

Embroidery is a lasting art that captures Nigerians' culture, identity, and creativity. It has succeeded in lasting because of its solid roots in culture and ability to adapt to the demands of the present. The reciprocal relationship between culture and art is well exemplified in embroidery, which makes use of the past while creating fresh forms of culture. This ensures its continued relevance in Nigerian society. Embroidery creation is not only an issue of artistic expression but also one that requires technical precision, in which equipment, machinery, and materials play a basic role in advancing intended results. The experimental process outlined in

this study shows that embroidery can be effectively produced using traditional hand processes as well as modern machine applications. Thus, Nigerian embroidery is not only cultural expression but also economically rewarding.

It is one of the leading characters in world fashion, both at home and abroad, and a source of revenue for designers, artisans, and traders. Embroidery has not lost its relevance in the face of globalization pressures but expanded in scale, combining traditions of old with modern styles to compete in the fashion of today.

5.3 Recommendations

From the documentation of findings, the following are the recommendations:

1. Traditional embroidery techniques and designs must be systematically documented and preserved. This will keep cultural heritage from extinction and act as a resource base for future generations of artists and designers.
2. Embroidery, along with other textile arts, must be made a more significant component of art and vocational training at various levels. This would allow for practical skill acquisition and the development of creativity among students.
3. Workshops and training sessions, as well as apprenticeship, should be arranged for the young tailors, designers, and artisans. These sessions would not only provide technical skill but also witness the transmission of skill in traditional embroidery.
4. Policy frameworks need to be put in place to encourage local embroidery and textile businesses. Funding, grants, and avenues for global and local visibility of native embroidery need to be offered by government agencies and cultural organizations.

5. The artists and designers of the garments ought to continue integrating the traditional embroidery designs with contemporary designs. The innovation will render Nigerian embroidery competitive in the global fashion industry while it retains its cultural identity.
6. Further studies need to be conducted for examining the socio-economic impact of embroidery in Nigeria, especially with regards to employment generation, gender roles in textile production, and export potential of embroidered textiles.
7. Tertiary students and fashion designers in the fashion schools and fashion houses ought to be taught and motivated to use straight sewing machines for embroidery since the industrial ones are not easily available for use due to their expensiveness and not simple for fashion novices to manage.
8. All governments should make the production of embroidery design in fashion using straight sewing machine a priority so that they can help preserve the art since most fashion designers learn the act of clothes production through the use of the straight machines.
9. Motivate fashion designers and lovers to use straight sewing machine for designs on garment so as to reduce the cost of acquiring the industrial machine.

References

Adiji, B. E., Ogunduyile, S. R., & Ojo, E. B. (2016). The documentation of embroidery types in South Western Nigeria. *Global Journal of Interdisciplinary Social Sciences, 5*(5), 7–14.

Ary, D., Jacobs, L. C., & Sorensen, C. (2010). *Introduction to research in education* (8th ed.). Wadsworth.

Barber, E. J. W. (1991). *Prehistoric textiles: The development of cloth in the Neolithic and Bronze Ages*. Princeton University Press.

Barnard, M. (2014). *Fashion theory: An introduction* (2nd ed.). Routledge.

Clive, H. (2011). *Fabric and stitch*. London: Batsford.

Communicating Fashion: Trend Research and Forecasting. (n.d.). Chapter 3 – Developing a collective perspective. In *Communicating Fashion (Trend Research & Forecasting)*. University of Minnesota Open Textbook Library. https://open.lib.umn.edu/communicatingfashion/chapter/chapter-3-developing-a-collective-perspective/

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Sage.

Deaja, S., Grunden, A., & Dunn, R. R. (2021). A review of clothing microbiology: The history of clothing and the role of microbes in textiles. *Biology Letters, 17*(1), 1–3. https://doi.org/10.1098/rsbl.2020.0700

Douny, L. (2011). Silk-embroidered garments as transformative processes: Layering, inscribing and displaying Hausa material identities. *Journal of Material Culture, 16*(4), 401–415. https://doi.org/10.1177/1359183511425290

Evans, M., & Brat, G. (2014). Shifting paradigms for fashion: From total to global to smart consumer experience. *Fashion and Textiles, 1*(15). https://doi.org/10.1186/s40691-014-0015-4

Feisner, E. A. (2014). *Colour studies*. Bloomsbury Publishing.

Feisner, E. A. (2014). *Textiles and fashion: Materials, design and technology*. Bloomsbury Publishing.

Gamble, C. (2007). *Origins and revolutions: Human identity in earliest prehistory*. Cambridge University Press.

Garrett, V. (2007). *Chinese dress: From the Qing dynasty to the present*. Tuttle Publishing.

Kadolph, S. J. (2010). *Textiles* (11th ed.). Pearson.

Kaiser, S. B. (2012). *Fashion and cultural studies*. Bloomsbury Academic.

Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis: A methods sourcebook* (3rd ed.). Sage.

Okojie, E. E., Etsename, L. E., & Adiji, B. E. (2024, June). Developing a standard measurement to produce garments for pear-shaped Nigerian women. *International Journal of Research*

and Innovation in Social Science, 8(6), 1466–1479. https://doi.org/10.47772/IJRISS.2024.803103S

Tortora, P. G., & Marcketti, S. B. (2015). *Survey of historic costume: A history of Western dress* (6th ed.). Fairchild Books.

Ubelejit-Nte, A. A. (2024). Clothing norms in Nigerian universities: Negotiating fashion towards social hegemony. *Fashion Studies, 5*(1), 1–26. https://doi.org/10.38055/FS050109

Wilson, K. (2018). *Textile design*. Laurence King Publishing.

Wild, J. P. (2006). *Textiles in archaeology*. Shire Publications.

Workman, J. E., Beth, W., & Freeburg, B. W. (2009). *Dress and society*. Fairchild Publications.

Workman, J., Bennett, C., & Gill, M. (2009). *Industrial revolution and its impact on fashion*. Oxford University Press.

Wright, L. (2012). *Sewing fundamentals: A complete guide*. Prentice Hall.

Wright, N. (2012). *The sewing machine guide*. Hamlyn.

Zieman, N. (2001). *Let's sew! A beginner's sewing guide*. Nancy's Notions.

Zieman, N. (2001). *Sewing with Nancy: A guide to techniques and tools*. Krause Publications.