Comparative Analysis of Computer Aided Devices Designs and Traditionally Made Designs on Fabric

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Abstract

In textile, aesthetic values no doubt had been the general notion of any designs made on fabric not minding the fact that they play other vital roles ranging from communication to expression of ideas, perceptions and thoughts about the world or peoples nature and more. They also serve as the transformative process that turns a simple drawing into astonishing outcome which may also serve as springboard for studies. The work argues that irrespective of peoples reliability on mass product design making, most people still prefer the traditional method of designs making on fabric: the study posits that more unique and viable outcome has been achieved through the traditional method not minding its time consumption. The work explains that computer aided devices designs on fabrics are produced in repetition over time which makes it monotonous. Therefore, this paper; through comparative study examined the dynamics and prospect of computer aided device in optimizing an effective production of designs on fabric. Comparisons were carried out between the computer aided devices designs and the traditionally made designs

for fabric production. The participant observation capacity was utilized for methodology. The work was premised on the framework of social comparison. The sources of information are from the library prints, internet, and electronic media. The study conclude that, the tendencies to welcome the computer aided devices for design making in textile industries are beautiful particularly its sufficiency for uniqueness and mass production.

Keywords: Computer, Comparative, Traditionally, Analysis, Design.

Introduction

Globalization, technological advancement, and awareness among today's consumers are crucial indicators that dictates the needs of different industries to update and replace manual, labour-intensive operations with latest technology whether for material sourcing and procurement, import, export, maintaining pay rolls, employee records, inter connecting different departments, marketing and endorsing for end products, and generation of dispatch and delivery reports (Yamini, 2018). Textile, apparel, and fashion industries are no exception that has witnessed tremendous growth with the incorporation of automation and computerization at each stage. In textile industries, the computer aided devices have no doubt contributed significantly on the improvement of fashions **particularly**, its modicum on mass product demand within a limited time. As a matter of fact, it has improved efficiency, highly cheaper and enhances clarity. It is on this note that this study through its comparative analysis examined the dynamics and prospect of computer aided designs in optimizing a very sharp effective production of beautiful designs on fabric, since the study deals with fabric design, it is therefore relevant to look at the meaning of Textile and the history of Traditional Textile Designs in Nigeria.

Theoretical Framework

The theoretical framework for this study is the social comparison theory which allows the use of positive decree comparison as the essential aspects of the CADDFFP (Computer Aided Devices Designs for Fabric Production) which is obviously the opposite of the traditional method of making designs for fabric production.

Social comparison theory originated from Festinger's 1954 idea. He postulated that there exists, in the human organism, a drive to evaluate mans opinions and his abilities to the extent that if objective and non social means are not available, people evaluate their opinions and abilities by comparing, respectively, with the opinions and abilities of others. Such comparison orientations provide a mechanism for enhancing or devaluating the psychological state.

Festinger's hypothesis and social comparison's definition provide a compelling answer. In essence, social comparison theory states that people compare themselves to one another because of an innate human desire to improve, (study.com, 2025). Interestingly, the need for the comparison between the CADDFFP and traditional means of making designs on fabric is in alliance with the comparison theory. This is because both the traditional and the CADDFFP involve human operation or control. As such, this study after pointing out facts that underlies the strength of computer aided devices over the traditional means of design making, those who still believe or depend on the traditional means of design making will be inspired to evaluate themselves and the activities involved in the process of making designs traditionally for fabric production to carefully ascertain the best in their innate desire to improve. Scholars acknowledged the above by adding that Self-evaluation is the key to improving, and further stated that this process reveals their strengths and weaknesses.

It is also important to note that social comparison only works when those that are being compared are similar enough that a comparison makes sense. For example a pianist will compare themselves to another guitarist or pianist.

Meaning of Textile and the history of Traditional Textile Design in Nigeria

The term 'Textile' is a Latin word from the word 'Texere' which means 'to weave'. Textile refers to a flexible material comprising of a network of natural or artificial fibers, known as yarn. Textile is defined as cloth, woven or knitted fabric. it is a flexible material made by creating an interlocking network of yarns or threads, which are produced by spinning raw fibres from natural to synthetic sources into long and twisted lengths (study.com, 2024). Textiles produced from this process are often used to make clothing, fashion accessories, furniture, and art. Textile

Design is the art of applying design and aesthetic concepts to fabrics. Textile designers work with a variety of fabrics from natural and artificial fibres such as cotton, wool, silk, rayon, nylon and many more to create various aesthetic fashion designs, home decorative items and other industrial art pieces. Joe-Mgbakiri (2020) posits that, textile is an essential commodity which is as important as food is to man. She stressed further that the use of textile product is beyond the clothing man wears as it covers every of our daily dealings. The entire activities of man cannot be complete without textile, cloth or fashion. The house we live in is covered with doors and window blinds, beddings, sitting room chairs, cushions are all covered with fabrics, our offices, cars, wall hangings and others have touch of fabrics. In the entire world, it is glaring that textile and fashion is playing a major role in the life of man.

Textile in Nigeria existed before the coming of the European. Archaeological evidence of the earliest textile in Nigeria dated to the 9th century A.D is found in Thurston Shaw 1970 findings which revealed that best fibre was used for the woven structures excavated. The 13th century A.D archaeological excavation in Benin also revealed that cotton was used for the material found. These are to show that textile existed in Nigeria before the advent of European.

Chukueggu (1998) affirms that the ancestry of the contemporary textile tradition in Nigeria can be traced to various indigenous weaving and dyeing traditions. Chukueggu stressed further that in the most Pre-historic times, the earliest used fabrics were from tree bark. The tree bark were always beaten to fibers while the fibre were used to weave cloth, raffia fiber were also woven to cloths and bags. After this period woven textiles were produced and traded in West Africa before the spread of Islam in northern Nigeria which led to increase demand for textiles and contact with the Arab markets. In 15th century, the Yoruba people in western Nigeria began the production of *Aso-oke* fabrics. The Yoruba people are renowned for the production of two types of traditional fabrics, *Aso-oke* and *adire* fabrics, this practice has been in existence before the coming of the Christian missionaries and the Muslim merchants, though the Northern and the Eastern Nigeria weavers and dyers are not left. The fabric dyeing of the Yoruba people have different techniques. They are:

Onikan
This process involves tying raffia around hundreds of individual corn kernels or pebbles to produce small white circles on a blue background. The fabric can also be twisted and tied on itself or folded into stripes.

Alabere
This is done by stitching raffia onto the fabric in a pattern prior to dyeing, the raffia palm is stripped, and the spine sewn into the fabric. After dyeing the raffia is usually ripped out, although some choose to leave it in and let wear and tear on the garment slowly reveal the design.

Eleko
This is a process that resist dyeing with cassava paste painted onto the fabric. Traditionally done with different size chicken feathers, calabash carved into different designs is also used in a manner similar to block printing. Since the early twentieth century, metal stencils cut from the sheets of tin that lined tea chests have also been used.

The modern textile industries in Nigeria began in the late 1950s which was first established in Kaduna State. From this point textile industry in Nigeria grew rapidly till 1970 when textile industries became the country's largest employer of labour. Today, Nigeria textile industry is a weak sector, very few textile mills exist in Nigeria with few employed labour.

The Meaning of Computer Aided Design.
Before discussing the meaning of computer aided design, we have to know what design is. Design refers to the completed form of an object, often a sketch, model, or a set of instructions that is a preliminary stage in the process that leads to a finished product. In some cases artists and craftsmen execute their own designs (Philadelphia 2003). In other case, artists and craft men experiment with materials and processes in the creation of a prototype that are produced or modified for production. Computer-Aided Design (CAD) refers to **the use of computer systems for aid in the creation, modification, analysis, or optimization of a design**. Put simply, CAD is a type of software that allows

engineers and designers to create products, technical drawings, and models on a computer rather than a drawing board (Roman, 2023).

Historically, computer-aided design dates back to the 1960s when engineers used it as a drafting tool. Back then, the computer aided device systems were high-speed, standalone mainframes that were not user-friendly and were only used for very specific applications. Computer-Aided Design transformed from a basic drafting system into a more robust and intuitive design tool. In contemporary times, it's used for a wide range of applications, from conceptual design and layout of products to definition of manufacturing methods of components.

Computer-Aided Design (CAD), also known as Computer Aided Design and Drafting (CADD) in its full form, is a specialized technology for design and technical documentation specifically during the design stages of the manufacturing process. It is a supplementary program that replaces manual drafting with an automated process for creating two-dimensional and three-dimensional concept visualizations, essentially as a blueprint for a design before the design is brought to life. CAD systems were originally developed in the early 1960s as a way to design precision machines for construction and other intricate tasks, but were adapted in the 1970s to suit the textile industry as well. Presently, CAD systems are used widely in both textile and fashion design amongst other industries.

Comparative Analysis of Computer Aided Device Designs for fabric production (CADDFFP) and Traditionally Made Designs on Fabrics

Here, one thing every individual should know is that; the advent of computer aided device does not completely condemn the traditional way of making designs on fabrics. It is important to note that the computer aided device wouldn't have trended, if not that People are losing sight of the difference between preferences, available tools and skills. Change although is constant, since other scholars of high reputes have researched and explored the dynamics of computer aided devices, and then realized that The development of CAD and CAM (computer aided machines) technology has completely changed the textile

industry, that by the use of software applications, textile manufacturers have been able to: (1) increase textile production's precision (2) greater speed (3) lowering waste and mistakes, among others. As a matter of fact, one of the greatest advantages of CAD software is its ability to ensure full, detailed accuracy in every design element. Even more remarkably, CAD can achieve incredibly high levels of accuracy with a speed that designers working with pencil and paper during pattern making can only dream of still on this fastness. Kathleen (2012) acknowledged that in the words of the industrial training organization and Innovation training, "CAD allows for quick and seamless modification of designs, facilitating efficient iteration and exploration of various concepts. This agility significantly speeds up the design process." Design and Visualization, Efficiency and Time Savings, Cost Reduction also, are incomparable qualities of computer aided device to traditionally made designed process**.**

Design and Visualization

CAD software enables textile designers to create intricate designs and patterns with precision and speed. It allows designers to experiment with colors, textures, and shapes digitally before moving on to the production phase. This has revolutionized the design process in the textile industry, leading to more creative and innovative designs.

Efficiency and Time Savings

CAD software allows for quick modifications and iterations of designs, reducing the time it takes to develop new products. Design changes can be made easily without the need to start from scratch, leading to faster product development cycles.

Cost Reduction

By streamlining the design process and reducing the need for physical prototypes, CAD helps in cutting down costs associated with traditional design methods. It also helps in minimizing material wastage by optimizing pattern layouts.

Colour Selection

CAD software allows designers to choose colours for their creations. Designers might experiment with various colour combinations to get the desired results.

Scaling:

CAD software provides for the scaling of designs to fit the demands of the client.

Application of CAD in Textile

The following are some examples of how CAD is used in textile industry:

i. **Fabric Cutting**
   CAD software may be used to control fabric cutting machine. The Software can be configured to cut fabric in a variety of shapes and sizes, reducing waste and improving productivity.
ii. **Weaving**
   CAD software may also be used to operate weaving machines. The software may be configured to generate complicated patterns with pinpoint accuracy.
iii. **Embroidery**
   CAD software may also be used to operate textile embroidery machines. The software is usually configured to generate complicated patterns with high precision.
iv. **Printing**
   CAD software can be used to operate textile printing equipment. The software will be programmed to produce high-quality printouts with pinpoint accuracy.

The Prospect of Computer Aided Devices in Optimizing a very sharp Effective Production of Alluring Designs on Fabric:

i. The CAD system provides room for mass production because of the speed of the machines.
ii. This method gives the designer's time to rest and not much brain work is required in the aspect of colour selection.
iii. The process brings large sales of product into market.
iv. In profit making, computer aided machines produces with its speed in production and makes more turnover.

Conclusion

The study concludes that; time, finance, and resource-saving benefits are associated with the integration of computer aided devices into design production process to enhance the efficacy, ecological sustainability, time factor of designs. All these are obviously not in the traditional processes. Therefore there is a lacuna between the computer aided devices and traditionally made designs. It is now obvious; the tendencies to welcome the advent of computer added designing devices in textile industries, sublime with its operations to curb the contemporary issues facing the textile industries.

Recommendation

The paper therefore recommends further studies on the development of African tradition symbols, motifs and other cultural contents which are most times used on fabric as designs; on the computer software programs to help communicate people's perceptions faster about their cultural heritages to the younger generations. Finally, the public and private academic institutions should accept computer aided machines and implement them in our schools.

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