© IJCIRAS | ISSN (O) - 2581-5334
July 2021 | Vol. 4 Issue. 1

AN INVESTIGATION INTO DIGITAL TECHNOLOGY AS A MEANS FOR MASS PRODUCTION OF PRINTED FABRICS

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Abstract

This study investigated the digital technology as a means for mass production of printed fabrics. In an effort to achieve this, A- 15 items questionnaire titled Digital Technology in Printing (r = 0.73) was administered on a sample of 150 professional in cottage and printing industries in Ogun State. The analysis of the data was subjected Chi-Square at α = 0.05 level of significance. The findings revealed that most of the fabric professionals have significant requisite knowledge of digital technology in printing, digital technology has influence on the printing processes and digital technology has usefulness in mass production of printed fabrics.

Keyword: Digital, Technology and Mass-production

1.INTRODUCTION

Digital fabrics printing technology is existed since last decade, it emerged after 1994. It is a skill that prints the designs on fabric, immediately from your computer, without extra efforts just like printing and designing a paper. Digital textile printing is a flexible tool and a key acceptable to the vision of mass customization. It permits the user to evade the screen making process, offering the chance for quick changes to color or design elements prior to printing.

Computer graphics is an art of drawing pictures on computer screen with the help of programming. It is a discipline that involves the skilful generation of images through the creation, manipulation, and computation of data (Tutorials Point, 2015). Williams & Agbo (2013). Computing design has been widely developed and improved on so that, design firms and textile mills are now utilizing these for their production.Textile printing have enabled manufacturers to produce a digital sampling and strike off designs prior to old method. It is apparent that technology has influenced the style of the design that is been produced by textile artists , but computer technology has been utilized to accelerate their design processess.

Meanhile, majority of the printed fabric for sampling and strike off are based on process colour systems to imitate the effects of spot colour based conventional printing. technology that has saves time for design processes including; design alternation,colourways andsensibly, printed textile design is much more quickly and efficiently produced for the market needs than conventional printing processes.

Consequently, stylists can maintain a higher level of a design quality and aesthetics by continually refining the design in the printing process. For this reason, a new look of digitally printed fabrics is emerging in the high-end fashion design field, cottage industries and textile mills. Experimental looks of textile design are emerging in the cottage market, workshops, Seminars and alsoby individual designers and students. The creative approaches of computer aided design has lead to successful experimentation by creating new trends and design movements through the use of principles and elements of design. This allows designers to create successful designs, which are commercially viable.

This paper describes the application and appreciation of computer aided design to textile and printed fabrics. The application to textile printing differs from applications to other forms of textile design because the printed textile design is applied after the textile is fabricated. However, it will also show large class format of designs, the colour-separated images which printed textile designs require can be more efficiently produced using computer aided design.

2. LITERATURE REVIEW

This section reviews related literature on the theories supporting this study. The review was
Grouped into three major sections which include: the Origin of Digital printing, Printing Techniques, and the Influence of Digital Technology on the practice printing processes.
The relationship betwwen the arts and technology has always been dynamic. Technology makes new forms of expression possible. Artists drive technology to new level of sophistication. Some of the most adventurous developments in the arts are taking place at the boundaries of the new technologies: in multimedia and cyber technology. The new technologies are providing for new language of methods and modes of creativity in the arts. For example the interaction of design and technology has been inter-woven in the industry. Throughout the world industrial designers and technologists work together; they create new product systems and services.
Therefore,Technology is a complex phenomenon too broad to be confined too a specific definition. To me technology like culture is a way of life. It is an assemblage of methods, procedures, tools, knowledge, resources and man. In other words, it consists of those techniques deployed by man for survival. The word technology according to George (2006) is of Greek origin "tekhnologia," meaning a systematic treatment of an art or craft (tekhne–, skill + -logia, -logy). For Misa (2003) "technology" refers to a body of knowledge about the useful arts. Meaningfully, the existence of technology in the human world goes back to the antiquity of its incubation stage which was rather crude. At this time in Misa's view technology, as a set of devices, a complex of industries, or as an abstract force in itself, had yet to appear.
Heidegger (1977) posed two answers, (1) Technology is a means to an end; (2) Technology is a human activity. He analysed the definitions stating that, the manufacture and utilization of equipment, tools, and machines, the manufactured and used things themselves, and the needs and ends that they serve, all belong to what technology is. Invariably it is a means to an end, otherwise known as entities created by the application of mental and physical effort in order to achieve some value (Lewis, 2000). It is important to note that all technologies are created by a manufacturing process resulting from human intention and design, and technology cannot be in any functional sense without a relational human engagement (Keirl, 2006).

In practice, technology involves the application of ideas to device techniques and to procreate. The compilation of these techniques including skills, resources and processes forms the foundation of indigenous technology. Simply put, it is the creative ability of a group of people to transform their environment using resources within. Such learned pattern of creativity was prevalent in pre-colonial Nigeria and passed from one generation to another.

3. OF DIGITAL PRINTING IN THE LAST TWO DECADES

Prints on clothes can be as diverse as imaginations can run. T-shirts can have floral prints or embroideries. It can also have funky slogans and faces. It is easy to print patterns on colored clothing, as well. Different types of machines make this possible. Advanced machineries can be availed that make printing designs and patterns onto clothes easy, fast, and convenient.
Digital textile printing machines have become widely popular in modern times. It involves directly printing on textiles and garments with the help of special inkjet technologies. This is a modern technology and is continuously expanding. Surveys indicate that the overall output by this technology increased by 300 percent during the period from 2000 to 2005. The future of textile printing lies in this automated device.
Before digital textile printing, man made use of various tactics in order to print his clothes in desired colors and patterns. Ancient Egyptians wore printed clothes as back as 5000 BC. They used looms to produce garments and printed designs and patterns on them with the help of paints. The paints were of varied colors and prepared from plants and minerals found on the surface of the Earth or its crust.
Printing on cotton clothes was carried out in India from very ancient times. Wooden blocks were used to print patterns on clothes with hands. It was also used in printing paper. This method of printing was exported to Europe in large parts by the French. French tradesmen through the medium of their colonies in India learnt the art of textile printing and passed it on to their counterparts in Europe.

Gutenberg's printing machine was also used by European textile mill owners in addition to book printing professionals. It was used to print varied patterns and designs on textiles and garments. Specialized inks were used in order to print fabrics. Calico printing, oil cloth printing, and others were some of the types made possible in this printing machinery. It was used in large numbers in the mills of England.

4. INFLUENCE OF DIGITAL TECHNOLOGY ON THE PRACTICE OF PRINTING FOR FABRIC DECORATION

In Nigeria, screen printing and other relevant design oriented crafts play a vital role in the social and economic life of the country. This technique which is a modern adaptation of western form of design is gaining grounds in the printing industries; creating vocational skills and at the same time reducing the unemployment rate in the country.

The standard of any product is determined by its quality (Nwachukwu, 2004). The quality of job and its durability gives the customer a great confidence in the printing industry. In the 80's to 90's the standard of printing was very shabby in Nigerian. There was no diversity in printing. The processing of colour jobs is usually by handicraft. Hand was used to separate the colours especially the half tone jobs. Using a case of almanac, planned and printed by this ugly system, the job cannot in any way be compared with that aided, designed and planned by the computer. The introduction of CAD may have brought a new era in how designers deal with their design tasks and generate creative ideas (Oladumiye, Tanimu, & Adelabu, 2018). Computer Aided Design is the use of computer technology for design of objects, real or virtual to achieve precise drawing (Adiji & Ibiwoye, 2017).

The computer programme written to achieve this feat is known as software. This software is used to create visuals which are transferred to the mesh for print. There is a maxim that visuals make very complex things and ideas simple, they also make it possible to absorb large amounts of data quickly, and thus they are economic and time saving (Safer, 2012). Recently, the acceptability of the new techniques is spreading faster than one would imagine. The new technique ensures good and improved quality. The former however is preferred to the later because of its quality improvements (Nwachukwu, 2004).

5. OBJECTIVES OF THE RESEARCH

The primary objective of this paper is to examine and determine the possessions of computer design and its effects on textile industries. The objectives are as follows;

- To identify the effective use of digital design for patterns making in fabric decoration.
- To examine usefulness of digital technology in mass production of printed fabrics
- To provide possible solution that wills benefits designer or technician in the printing industries.

6. RESEARCH QUESTIONS

I. Do fabric professionals have the requisite knowledge of digital technology in Printing?
II. How has digital technology influenced the printing processes?
III. Does digital technology useful for mass production of printed fabrics?

7. NULL HYPOTHESIS

Ho1: Fabric professionals do not have significant requisite knowledge of digital technology in Printing.
Ho2: Digital technology has no significant influence on the printing processes.
Ho3: Digital technology has no significant usefulness in mass production of printed fabrics.

8. RESEARCH METHODOLOGY

This study employed a survey research design. The study was carried out across the cottage and printing industries in Ogun State. A- 15 items questionnaire titled Digital Technology in Printing (DTP) was used for the study and it was scrutinized by experts in cottage and printing industries before administration. Thereafter, it was administered to 20 professional printers who did not form the sample and a Cronbach's Alpha reliability coefficient of 0.73 was obtained. It was administered to the sample of 150 of participants which include both male and female. The data collected was analyzed using Chi-square at 0.05 level of significant.

7. FINDINGS

Research Question 1: Do fabric professionals have the requisite knowledge of digital technology in Printing?
Ho1: Fabric professionals do not have significant requisite knowledge of digital technology in Printing.

Table 1: Digital Technology in printing

ITEMS	RESPONSES					D.F	L.S	X^2 CAL	X^2 TAB	DECISION
	SA	A	D	SD	T					
1.	68	54	15	13	150	12	0.05	164.3203	21.026	REJECTED
2.	62	59	18	11	150					
3.	69	52	09	20	150					
4.	71	60	06	13	150					
5.	20	28	41	61	150					

The analysis in table 1 clarified that the null hypothesis one was rejected and this shows that fabric professionals have significant requisite knowledge of digital technology in printing.
Research Question 2: How has digital technology influenced the printing processes?
Ho2: Digital technology has no significant influence on the printing processes.

Table 2: Table of digital Technology on printing processes

ITEMS	RESPONSES					D.F	L.S	X^2 CAL	X^2 TAB	DECISION
	SA	A	D	SD	T					
1.	59	46	28	17	150	12	0.05	151.1027	21.026	REJECTED
2.	22	34	46	48	150					
3.	64	53	21	12	150					
4.	30	21	46	53	150					
5.	81	44	16	09	150					

With reference to the analysis in table 2, the null hypothesis two was rejected and by implication digital technology has influence on the printing processes.

Research Question 3: Does digital technology useful for mass production of printed fabrics?

Ho3: Digital technology has no significant usefulness in mass production of printed fabrics.

Table 3: Digital Technology on printed fabrics

ITEMS	RESPONSES					D.F	L.S	X^2 CAL	X^2 TAB	DECISION
	SA	A	D	SD	T					
1.	65	41	34	10	150	12	0.05	128.7537	21.026	REJECTED
2.	38	46	52	14	150					
3.	24	36	41	49	150					
4.	43	28	42	37	150					
5.	69	62	12	07	150					

The result analysis in table 3 indicates that null hypothesis three was also rejected which mean that digital technology has significant usefulness in mass production of printed fabrics.

8. CONCLUSION

Digital textile production has been increasing at about 13% worldwide. The worldwide volume of digitally-printed textiles has been reaching about 44 million square meters by 2005. Duo to the high quality performance, in short time the availability of products, multidiscipline design, eco-friendly , cost- effective , etc advantages in digital textile printing technology, there exists a new market opportunities for this technology and it will be applicable to, backgrounds printing, scenes for theaters, film studios, photographers, music and sports events, road shows, parades, high profile catering, presidential campaigns, promotion organizers, advertising agencies, universities, churches, parties, for hanging signs, displays systems, packing, for sampling, for prototyping and new designs sampling, short run production, for interior designers to make curtains,

upholstery, table cloth, bed ware etc. Artists will utilize their speed and alternative selection capacities and will continue to encounter new digital concepts. Even as digital technologies become advanced and digital medium may become the subject of the artwork, the only true decision maker will remain designer.

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