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RESEARCH ARTICLE

The Production of African Print Fabric Designs: A User-Centric Design Approach

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ABSTRACT

African print fabric is a major textile item in Africa because of its high economic value. This study focused on the production of African print fabrics that are user-centered. The textile industry in Nigeria is presently in a comatose state and there is a need to develop a design model for producing textile designs that will meet the specific needs of the target consumers. The practice-led and survey research designs were adopted for the study. The study population comprised the users of African print fabrics in Southwest Nigeria. Since the users of the fabrics are infinite, the Cochran formula was used to calculate the sample size for the study. 384 users were sampled using the open-ended questionnaires and opinion sampling for data collection. The data were analyzed using the simple descriptive statistical tools such as frequency and percentage. The study revealed that the African print fabrics. It was therefore recommended that the textile designers focus on producing the user-centered African print fabrics that meet the specific needs of consumers.

KEYWORDS: Textile industry, African print, fabric, fabric design

INTRODUCTION

African print is a term used to describe printed textiles industrially produced using the wax-resist dyeing method characterized by African signs, symbols and motifs used as a means of non-verbal communication. African print fabrics are one hundred percent cotton fabrics with communicative patterns; they are usually very colourful and easily identified with Africa because of the tribal influences in their designs. This printed fabric is used by men, women and children as casual wears and also ceremonial uniform (*aso-ebi*) at different occasions (Adeloye, 2021). Akinwumi (2008) established that African print design is a blend of Indian, Javanese, Chinese, European and Arab art cultures. In view of this, it proposed that the African print fabric should reflect more

aspects of African culture than foreign cultures. Isaac (2013), however, opined that the major characteristic of African print fabrics is the innovative use of colours, lines and motifs in an orderly manner that shows unique direction and texture. Uqalo (2015) highlighted the significance of colours and patterns used for African print fabric designs, stating that the patterns epitomize tales, proverbs, fables and poems while the colours denote social status, marital status, age and tribal affiliation. There are features peculiar to African print fabrics, such as bold motifs, crackle effect, line effect and overlapping backgrounds (Adeloye, 2022). Essel (2017) corroborated this by stating that African print fabrics are characterised by venial wax effect and patchy effects obtained through wax applications such as sprinkling and cracking during fabric printing.

The Nigerian textile industry was once very vibrant and globally recognized because of the quality and demand for African print fabrics it produced. Then, Nigerian African print fabric designs were imitated by neighboring countries and tagged 'made in Nigeria'. However, the case is different now. Textile designers in the Nigerian textile industry now imitate foreign African print fabric designs and brand them as Nigerian designs (Adebayo, 2015). It is a known fact that most of the textile mills in Nigeria are no longer functional due to internal factors such as inadequate staffing, managerial deficiencies and poor machine maintenance among others. Other external factors such as smuggling, poor funding and unfavorable government policies have been identified, but there are still a few functioning mills in Nigeria (Adeloye, 2016). These mills design and produce African print fabrics but most of these designs are not original and do not enjoy good patronage (Nina, 2016). The reason for the poor patronage of African print fabrics produced in Nigeria is the inability of the designs to meet the requirements of the users. That is, the designs are not user-centered (Hersey, 2019).

The Nigerian textile industry lacks effective design generation monitoring and appropriate design ownership policies (Adeloye, 2021). This gives room for unprofessional imitation of designs. Designs and brand names of other companies are usually copied and reproduced on cheaper printed textile pieces, which can be very profitable for the manufacturers but may be detrimental to the imitated brands. There is no evidence of proper understanding and documentation of the design processes employed in the textile industry in Nigeria. This is probably one of the factors responsible for Nigeria's poor state of the textile industry. This might also harm the global recognition and acceptability of products from the Nigerian textile industry. A user-centered design approach will reduce the unprofessional design practices in the Nigerian textile industry and enhance the production of designs that meet consumers' specific needs. This research provides a model for production of user-centered African print fabric designs where originality, creativity and consumer satisfaction are paramount in developing motifs and designs.

LITERATURE REVIEW African Print Fabrics

African prints are fabrics produced using the wax-resist dyeing process on machines and are typically identified by African signs, symbols and patterns that are utilized as a form of non-verbal communication throughout Africa. African print textiles, sometimes referred to as Ankara, are made entirely of cotton and feature brilliant patterns. Due to their tribal-inspired designs and themes, African print fabrics are most often linked with Africa. Women, men and kids all wear this fabric as aso-ebi and attire for various events (Adeloye, 2021).

African print fabric is a major fashion item for African and global fashion industries (Amankwah & Howard, 2013). Ogunduyile (2001) investigated African print

fabric patterns from a cultural perspective and identified them as a vital component of the culture and a potential option for the growth of a nation's economy. African print, according to Akinwumi (2008), is a collective name for fabrics that are machine-printed with wax resins and dyes to create the effects of batik. African print textiles are the colorful and eye-catching materials with a variety of designs and colors that are used throughout the continent of Africa. The colors used here stand for social class, age, tribe and marital status while the patterns reflect proverbs, poetry, and traditional stories (Uqalo, 2015). The term "African prints" also refers to imitations of resist-look materials that resemble waxed finishes (Akinwumi, 2008).

Essel (2017) brought up a terminological issue regarding the term "African prints," claiming that the majority of these fabrics are produced in European and Asian nations and not of African origin. Through the adoption of names and patterns from the local cultures, the designs of African print fabrics have been adapted to the African way of life. As a result, the usage of African print fabric is expanded beyond its use as a means of enhancing one's appearance to include its use as a potent tool for communication (Uqalo, 2015). The design process used for the production of African print fabrics in Nigeria does not put into consideration the specific needs of the consumers and this negatively affects the patronage of the product (Adeloye, 2021).

User-Centered Design

Design is multidimensional and requires understanding the consumers' needs and a deliberate approach to address them. The user-centered design approach focuses on designing with the users rather than designing for the users (Naesgaard, 2017). Cowen et al. (2014) defined a user-centered design approach as a production process that prioritizes users' opinions and usability of products at all the design process phases. The design process focuses on fully understanding the preferences of the product's end-users. This process can also be referred to as user-driven design. Naesgaard (2017) also described the user-centered design as a participatory design approach in which the design process revolves around the needs of the target users. The user-centered design approach involves users all through the design process by conducting a series of research to produce designs and products useful and appreciated by the users. It can also be regarded as a multi-stage design process that does not only rely on designers' conceptualization but also the users' response to the product and validations of design assumptions through research and tests (Cowen et al., 2014).

Jan et al. (2003) stated that user-centered design approach differs from other design approaches. The user-centered design approach designs the product based on the users' preferences while other design approaches compel the users/consumers to adjust to the designers' conceptualizations and ideas. The users, therefore, are at the center of the design process. The goal of this design process is to make the products user-friendly, acceptable and useable. This includes the ergonomics, sustainability and how well the product is designed to suit the users' requirements. The user-centered design approach employs the perceptions and context of potential product users to decide the design outcomes. This approach is not only useful in the field of creative design but also in the business, health, administrative and academic fields. This approach makes the users inseparable and integral parts of the design process (Cowen et al., 2014). Jan et al. (2003) noted that the user-centered design is widely recognized as a model approach for general design development. According to Jan et al. (2003), the participatory design is a subset of user-centered design. Naesgaard (2017), however, opined that the user-centered design and participatory design could be used interchangeably.

Application of User-Centered Design in the Global Textile Industry

The intensive global competition, environmental changes, market trends, short product life cycles and unpredictable consumer demand necessitate the textile industry to use a user-centered design approach to withstand global competition and meet consumers' needs (Earley et al., 2016). Lottersberger (2012) observed that the textile industries in developing countries are facing difficult times due to the increasing competition in the global market and also proposed a user-centered design approach to enable textile industries in developing countries to compete favourably globally. The user-centered design approach has helped to establish new relationships, procedures and strategies to enhance the flow of communication and merchandise between the designers, marketers and users of textile products. Jan et al. noted that the application of usercentered design approach in the global textile industry has positively influenced creativity and production of novel designs that meet the specific needs of customers.

Powell and Cassill (2006) stated that the global textile market is competitive and requires a new approach to design conception, design and product development and design marketing. They further noted that the user-centered design is the new approach used for the textile design and product development by the textile companies with a variety of textile product ranges such as prints, weaves, nonwoven, apparel, transportation, home textiles, and carpets, nonwovens, carpets and smart textiles. Lottersberger (2012) noted that most global textile companies have shifted from a production ideology that focuses on production efficiencies and economies of scale to approaches that focuses more on the users. This focus has increased the production of textile designs and products through the user-centered design processes, with strict demands on producing novel designs and products for consumers and other supply chain members. Earley et al. (2016) suggested that with the recent increase in job loss in the global textile and apparel industry, the focus on the user-centered design for textile companies has become necessary for corporate survival.

METHODOLOGY

The practice-led and survey research designs were adopted for this research. The population of the study included users of African print fabrics in Southwest Nigeria. Since the users of African print fabrics in Southwest Nigeria are infinite, the Cochran formula and online sample size calculator at 95% confidence level and 5% margin error was used to calculate the sample size in order to get representative sample for the study. The result for this was 384. Therefore, 384 users of African print fabrics were sampled using the open-ended questions to collect data about the design preferences of African print fabric users while the opinion sampling was used to identify the users' preferred designs. The questions where administered online to ensure wide coverage across the research population using google form. The data collected was analyzed using the simple descriptive statistical tools such as percentage and frequency. This simple statistical approach sufficiently described the design needs of African print fabric users. The survey research was used as a precursor to collect data that guided the practice-led design process. CorelDraw graphic software was used for the production of the designs. Five samples of African print fabric designs were produced using a user-centric design approach.

RESULTS AND DISCUSSION

The processes followed to generate the user-centered African print fabric designs for this study are research, generation of design briefs, interpretation of design briefs, analysis of designs and selection of designs by the users and production of designs for mass production. The aim of this process is to involve the potential users in the design process so as to produce designs that are acceptable to the consumers.

Step1: Research

The user-centric design approach necessitates that the users are given an optimum consideration in the design process. In order to identify the specific needs of the potential users of the designs, the open ended questionnaire was administered randomly to the users of African print fabrics to collect data about what they look out for in African print fabric designs and a description of African print fabric designs they will like to have. The data collected in this phase as shown in Table 1 was used to generate design briefs for African print fabric designs.

Table 1	
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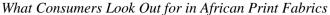
Open-	Generally, what attracts you to African print fabrics?			
ended				
Question:				
S/N	Responses	FREQUENCY	PERCENTAGE (%)	
1.	Design elements	253	61.86	
2.	Colour	76	18.58	
3.	Price	23	5.62	
4.	Quality of fabric	15	3.67	
5.	Brand	15	3.67	
6.	Cultural Symbolism	7	1.71	
7.	Uniqueness	7	1.71	
8.	Nigerian Origin	5	1.22	
9.	Simplicity	4	0.98	
10.	Motif	4	0.98	
_		409	100.00	

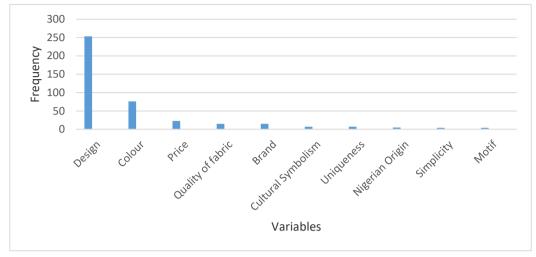
What Users Look Out for in African Print Fabric Designs

Source: Researcher's Fieldwork, 2019

Table 1 shows that 409 responses were received from 384 respondents. The responses received exceeded the number of respondents because the respondents were allowed to give more than one response due to the nature of the questionnaire (openended questionnaire). The table shows that the respondents highlighted ten features they look out for in African print fabrics. 253 respondents (61.86%) identified a design element as the major feature that attracts them to African prints. 76 (18.58%) indicated that they are specifically attracted to the colours of African prints, 4 (0.98%) are attracted to motifs, 7 (1.17%) are attracted to the cultural symbolism of African prints and 4 (0.98%) are attracted to the simplicity of African print designs while 7 (1.71%) are attracted to only unique designs. 15 (3.67%) identified the quality of the fabric in terms of durability and colour fastness as the major feature that attracts them to African prints, 23 (5.62%) indicated that the low cost of African print is a major factor that attracts them to the fabric, 15 (3.69%) stated that they look out for the brands of fabric before choosing an African print while 5 (1.22) respondents are attracted to African prints because they believe they are Nigerian products.

Figure 1





Source: Researcher's Fieldwork, 2019

Figure 1 reveals clearly that design is the major factor the users of African print fabrics in Southwest Nigeria look out for in the fabric. Other factors such as colour, motif, cultural symbolism, simplicity and uniqueness are components of design, this substantiates design as a major factor the users of African print fabrics consider before purchasing the commodity. Figure 1 also reveals that after design, the price is an important factor influencing the consumers' purchasing decisions. The quality and brand of African print fabrics have an equal level of influence on the purchasing decisions of African print fabrics in Southwest Nigeria while the country of origin has the least influence on the purchasing decision of the users of African prints.

The in-depth data was also collected using an open-ended question to know specifically what the users of African print fabrics like in the designs. This question generated a large data from the respondents, some of the responses were ambiguous. This data was cleaned and sorted out based on the different age categories of the respondents. The preferences peculiar to the age groups were identified and summarized as presented in Table 2.

Table 2

Open- endedBriefly give a description of an African print fat like to have putting into consideration colours, detailsQuestiondetails			ų .
Age Groups	Colour Preferences	Motif Preference	Design Preference
14-20	Blue, green, yellow, red, brown and wine.	Love for Simple motifs.	Simple African Print Design
21-30	Dark colours, blue, yellow, green, orange, red, brown.	Love for communicative motifs	African print design depicting Mother's Love

Design Preferences of African Print Users

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31-40	Yellow, blue, orange, brown, green	Love for Abstract motifs.	Abstract African print design
41-50	Deep colours, blue, orange, yellow, brown and green	Love for Afro- centric motifs	African print design celebrating the African continent.
Above 50	Green, blue, yellow, wine, brown	Love for Cultural and household motifs.	African print design using cultural motifs and household items

Source: Researcher's Fieldwork, 2020

Table 2 shows that the users of African print fabrics between the age of 14 and 20 love the simple African print fabric designs with any of the following colours: blue, green, yellow, red, brown and wine. The users between the age of 21 and 30 are attracted to the communicative African print fabric designs with a dominating dark colour and any of the following colours: blue, yellow, green, red, orange and brown. The users between the age of 31 and 40, however, prefer the African print fabric designs with abstract motifs with the following colours: blue, yellow, orange, brown and green. The users between the age of 41 and 50 love the simple African prints that are above 50 years indicated a preference for the simple African print fabric designs with cultural motifs and few colours, preferably the shades of red, white, blue, green and yellow.

Step 2: Generation of Design Briefs (Design Guides)

The summary of data on Table 2 was used to generate the design briefs for the production of the designs. The design briefs are sets of instructions guiding a design process, the design briefs clearly state the scope of the designs. The design briefs were categorised using the age groups because of the similarities in the responses of respondents within the same age group. The design briefs were generated collectively by a group of textile designers. The following design briefs were generated:

- 1. A very simple African print design using any of the following colours: green, blue, yellow, wine, brown and red. This design brief was generated for users between the age of 14-20.
- 2. A simple African print design suitable for general use depicting mother's love using a combination of any of the following colours: blue, yellow, green, orange, red, brown and any dark dominating colour. This design brief was generated for users between the age of 21-30.
- 3. A simple abstract African print design creatively using the following colours: blue, yellow, orange brown, green and any deep colour. This design brief was generated for users between the age of 31-40.
- 4. A simple African print design to celebrate the African continent using any of the following colours: blue, orange, yellow, brown, green and any deep colour. This design brief was generated for users between the age of 41-50.
- 5. A simple and creative African print design using a combination of African motifs and household items. The colour composition should be within this range of colours: wine, red, yellow, white, blue and green. This design brief was generated for users above 50 years old.

Step 3: Collective Interpretation of Briefs

The design briefs generated from the data collected were collectively interpreted by a group of textile designers. The interpretation of briefs involved collective brainstorming of designers in groups to generate African print fabric designs.

The following designs were generated by the researcher and research assistants to answer the design briefs. The designs were named by the designers for the purpose of record keeping. The following designs were produced.

1. African print fabric designs for the users between 14-20 years' old

Figure 2



Source: Researcher's Fieldwork, 2020



Source: Researcher's Fieldwork, 2020

2. African print fabric designs for the users between 21-30 years' old

Figure 4

Design 3 (Mother and Child)



Source: Researcher's Fieldwork, 2020

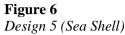
Figure 5 Design 4 (Mother's Love)



Source: Researcher's Fieldwork, 2020

Figure 7

3. African print fabric designs for the users between 31-40 years' old



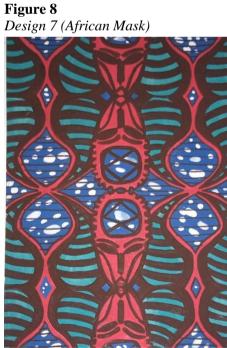


Source: Researcher's Fieldwork, 2020



Source: Researcher's Fieldwork, 2020

4. African print fabric designs for the users between 41-50 years' old



Source: Researcher's Fieldwork, 2020

Figure 9 Design 8 (African Pride)



Source: Researcher's Fieldwork, 2020

Figure 11

5. African print fabric designs for the users above 50 years' old.



Source: Researcher's Fieldwork, 2020

justify how it relates to the design briefs

Design 10 (Beauty and Wealth)

Source: Researcher's Fieldwork, 2020

Step 4: Analysis of Designs This is a process of collectively discussing the elements of the designs produced to ascertain that they answer the design briefs. Here, the designers picked each designs to

Analysis of Design 1 (Union)

Design 1 comprises of simple shapes and lines with shades of green, red and blue. This design attempts to answer the design brief for African print fabric users between the age of 14 and 20. This design was named union because the motif comprises of interconnected lines and shapes.

Analysis of Design 2 (Bulb)

Design 2 is a beautifully finished simple African print fabric design comprising of colour green, red and blue. This also answers the design brief for African print fabric users between the age of 14 and 20. This design was named bulb because the motif has the shape of a stylized onion bulb.

Analysis of Design 3 (Mother and Child)

Design 3 is a beautifully crafted design aimed at showing the mother-child bond using the colours yellow, red, peach and navy blue as the deepest shade of colour. This design answers the design brief for African print fabric users between the ages 21 and 30. This design was named mother and child because the motif shows the image of a mother and her child

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Analysis of Design 4 (Mother's Love)

Design 4 is a communicative African print fabric design suitable for the general use depicting the mother's love using different shades and tints orange, brown and blue. This design answers the design brief for African print fabric users between ages 21 and 30. This design was named mother's love because it depicts the love of a mother.

Analysis of Design 5 (Seashell)

Design 5 shows an abstract African print fabric design using stylized sea shells as the major motif. This design was achieved with the creative use of red, green and navy blue as the deepest colour. This design is a response to the design brief for African print fabric users between the ages 31 and 40. This design was named seashell because it is shows an abstract design of a seashell.

Analysis of Design 6 (Water Depth)

Design 6 is a beautifully finished abstract African print fabric design comprising of lines and shapes using shades and tints of red, blue and brown. This design is also a response to the design brief for African print fabric users between the age of 31 and 40. This design was named water depth because the colour and other design depicts the water bodies.

Analysis of Design 7 (African Mask)

Design 7 is a communicative African print fabric design with an Africancentered motif (mask) using a combination of the following colours: red, blue, green and brown as the deepest shade of colour used. This design is an answer to the design brief for African print fabric users between ages 41 and 50. This design was named African mask because the central motif is an African mask.

Analysis of Design 8 (African Pride)

Design 8 is a beautiful African print fabric design using the African map as the major motif suitable for general use with a combination of the following colours: blue, orange, green and brown as the darkest colour. This design is also a response to the design brief for African print fabric users between ages 41 and 50. This design was named African pride because it displays the African map boldly.

Analysis of Design 9 (Healthy Life)

Design 9 is an African print fabric design generated from a household object (broom) and a cultural motif (a gourd). The colours used are yellow, brown and navy blue. This design answers the design brief for African print fabric users above 50 years old. This design was named healthy life because its components promotes healthy living. Broom symbolizes sanitation and calabashes are traditionally used for eating. Sanitation and proper feeding promotes healthy life.

Analysis of Design 10 (Beauty and wealth)

Design 10 is an African print fabric design using a combination of cutting combs which signifies beauty and cowries which signifies wealth as the main motif of the design. The colours used are yellow, wine and navy blue. This design answers the design brief for African print fabric users above 50 years old. This design was named beauty and wealth because the components of its motif connotes beauty and wealth. The hair liner (comb) signifies beauty and cowries represent wealth.

Step 5: Selection of Designs by African Print Fabric Users

After the analysis and certifying that the designs answered the design briefs, 10 produced designs were administered to potential users to select their preferred designs. This was done by conducting an opinion sampling using convenient sampling technique. 10 respondents each from all the age groups were sampled. This allowed respondents in the different age categories to choose their preferred designs and also make recommendations. Table 3 shows the result of the selection.

Age Groups	Designs	Selection by Users(10)	Summary of Remarks by Respondents
14-20	1	2	The design is too busy.
	2	8	The design is simple and the colours are cool.
21-30	3	-	Design is not appealing and the colours do not look good.
	4	10	Interesting design and colour concept
31-40	5	7	Interesting design concept but the colours are dull.
	6	3	The design looks good but the colours do not look appropriate.
41-50	7	2	Simple design with good colours.
	8	8	Lovely design with very good choice of colours.
51 and above	9	1	The design is too busy.
	10	9	Interesting motif.

 Table 3

Source: Researcher's Fieldwork, 2020

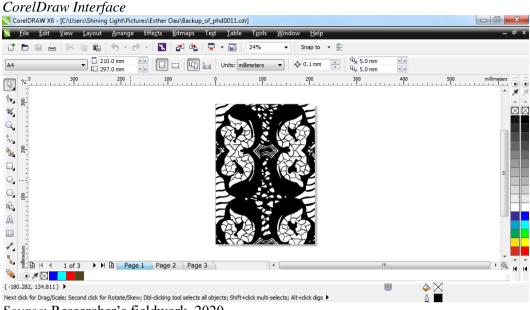
The designs with the highest rating in all the categories were selected. Therefore, for Age group 14-20, design 2 was selected, for the age group 21-30, both design 3 and design 4 were selected, for the age group 31-40, design 5 was selected, for the age group 41-50, design 8 was selected and for the users of African prints above 50 years old, design 10 was selected.

Step 6: Production of Selected African Print Designs for Mass Production

The selected designs were adjusted based on the users' recommendations. The designs were redesigned for the mass production using the Coreldraw software. The following Coreldraw tools were used for the production of the designs; pick tool, shape tool, outline tool, bezier tool and colour pallete. Figure 12 shows a template of CorelDraw interface during the designing process of one of the designs.

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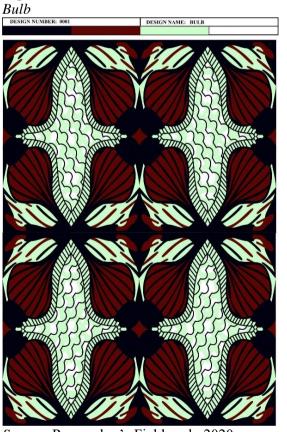
Figure 1	2
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Source: Researcher's fieldwork, 2020

The following are the final outcomes of the design. The designs are based on the researcher's and designer's fieldwork.

Figure 13



Source: Researcher's Fieldwork, 2020

Figure 14 *Mother's Love*



MOTHER'S L

Source: Researcher's Fieldwork, 2020

Figure 16 African Pride



Source: Designer's Fieldwork, 2020

Figure 15 Sea Shell



Source: Designer's Fieldwork, 2020

Figure 17 *Beauty and Wealth*



Source: Designer's Fieldwork, 2020

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The design generation process started with a research from the potential users of African print fabrics which led to the generation of design briefs, interpretation and analysis of the briefs, selection of preferred designs by potential users and finally adjustment of the designs based on the recommendations of the potential users. The outcome of the research revealed that design is a major factor that attracts users of African print fabrics. The research also revealed that the design preference of African print fabric users differs across age groups. Through a collaborative process by a group of designers, design briefs were generated and analyzed to ensure they meet the requirements of the users across the age groups. In order to ensure that the designs meet the specifications of the perspective users, African print fabric users were randomly selected to criticize and pick the best designs for production. The selected designs were adjusted based on the recommendations of the selected users and redesigned using CorelDraw software.

CONCLUSION

The user-centered design is a set of design procedures that emphasizes placing customers at the center of the creation of products. A product team or design team considers the needs, goals and input of the consumers when creating goods. The user satisfaction becomes a priority and each design choice is assessed in light of whether it adds value for the users.

This paper highlighted the processes involved in producing user-centric African print fabric designs. A six step design process was followed. These steps are: research, generation of design briefs, collective interpretation of design briefs, analysis of designs, selection of designs and production of selected designs for mass production.

A survey research was conducted to gather data about what the users of African print fabrics in Southwest Nigeria that look out for in African print fabrics. The data were collected from 384 respondents and used to generate design briefs. The respondents highlighted design, colour, motif, cultural symbolism, simplicity of design, uniqueness of design, quality of fabric, price, brand and the country of origin as features they look out for when purchasing African print fabrics. The data, however, revealed that the design is the key factor influencing African prints purchasing decisions.

The generation of design briefs using the data collected from respondents was done based on the preferences of the different age groups. Five age groups were considered in the questionnaire administered, therefore, a total of five design briefs were generated. These age groups were considered because they represent different stages of human life. These stages influence individual decisions, choices and preferences. It was deduced that the users of African print fabrics between the age of 14 and 20 love simple African print fabric designs, those between the age of 21 and 30 love communicative designs, the users between 31 and 40 love abstract designs, those between the age of 41 and 50 love designs that are the African-centered and users above 50 years love African print designs with cultural motifs. These briefs were collectively interpreted by the researcher and a group of designers. The designs created were analyzed by the designers and two designs that answer the design briefs from each category were selected for the opinion sampling. The most preferred designs by the respondents from each age group were selected for redesigning for mass production. The research showed the feasibility of involving the users in the design process of African print fabrics through research and interactions with the potential users of the products. This will enhance the creativity of African print fabric designers and also promote the production of novel African print designs that will suit the specific tastes of the users. It is, therefore, recommended that the textile designers should focus on producing the user-centered African print fabrics that will directly meet the needs of the consumers.

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