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Original Research Report

Production of Innovative Fashion Accessories from Blends of Raffia and Polypropylene Fabrics

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Abstract: This study examined the production of innovative fashion accessories from blends of raffia and polypropylene fabrics. The study took place in Bayelsa State and employed a survey and Research and Development design. The target population consisted of 1,704,515 households in Bayelsa State. The unit of observation and respondents were male and female homemakers. Krejcie and Morgan's statistical table for sample size determination was used to determine the sample size. A sample size of 300 respondents was selected using a multistage sampling technique. To collect data in the first phase, a structured questionnaire was utilized. The internal consistency of the questionnaire was assessed using Cronbach's alpha, which yielded a value of 0.839. Data were analyzed utilizing mean, standard deviation and t-test. A blended fabric weaved on loom from raffia and polypropylene was produced. This fabric was utilized for the production of four fashion accessories. The fashion accessories produced include a sandal, slippers, handbag, and hat. Findings revealed that the probability values (0.22-0.85) are greater than 0.05 level of significance ($p > 0.05$). Hence, the null hypothesis was upheld. The study concluded that raffia and polypropylene blends are compatible and can be processed on a loom for the production of fabrics that could be used for the production of fashion accessories. Based on the findings, it was recommended, among others, that fashion accessories should be produced from raffia and polypropylene blend fabrics as income-generating opportunities for individuals and households.

Keywords: Fabrics blend, Fashion accessories, Polypropylene, Production, Raffia

1. Introduction

Fashion accessories are decorative items used to contribute in a secondary manner to one's outfit. It is usually used to complete an outfit as well as to complement the wearer's outlook. These fashion items include bags, hat, jewelleries, bangles, shoes, sandals, belts, purse among others. In textile industries, small and medium scale businesses, fashion accessories has been of economic importance to individuals, families and the nation at large as it has provided employment opportunities and skills to millions of people worldwide (Kiron, 2021). Fashion accessories are made from textile fibres and fabrics that are transformed from fibres.

Fibres are raw materials for any textile products. They are fine hair like substances that are thin, flexible and have a natural staple substance that ranges in length from a few centimetres to hundreds of metres capable of being twisted into yarns (Murthy, 2019). Fibres come in the form of natural fibres or artificial fibres. The natural fibre and synthetic fibres are generally used for the production of clothing, home furnishing, sheeting, electrical insulation, carpeting, wigs, fashion accessories, among others. Fibres can be woven or processed into fabrics by interlacing a set of yarn on a loom (Warp and weft) at right angles to form fabric. In this study, the research fibres raffia and polypropylene will be woven to produce fabrics that will be used to produce innovative fashion accessories.

Raffia are fibres obtained from the leaves of the Raffia palm (*Raphia farinifera*). Raffia palm is a monocotyledonous plant found in Africa. It is a native to Madagascar and in Nigeria, it is found in South-South geopolitical zone (Ohimain & Oduah, 2015). Raffia fibres are renewable, sustainable, biodegradable and environmentally friendly. Raffia palm is a multifunctional plant as it is used as food, cosmetics, medicine, in agricultural field and the textile industry. In the textile industry, special ceremonial costumes are made from raffia fabrics (Unal et al., 2020). The fashion world relies on raffia fabric in modern and innovative designs of garment and fashion accessories (foot wear, hats, and bags). In the same vein, Narkhedkari and Vora (2016) noted that the fashion accessories made from raffia fibres are unique, appealing and attractive and that raffia blends alongside synthetic fibres polypropylene (nylon) can be utilized to produce innovative fashion accessories that are aesthetically pleasing and fashionable.

Polypropylene (PP) is made from polypropylene monomer obtained from naphtha. It is processed into film for packaging and into fibres for carpets, clothing and fashion accessories.

Polypropylene fiber is the second most important fibre next to polyester. Global production of PP was around 56 million. This makes PP useful in a wide range of application in automotive industry, carpeting, packaging, fibre, filament, films, pipes, agriculture, furniture, upholsteries, construction of fabrics and accessories (Mcginnis 2020). It is also widely used to make undergarments, socks, swimming suits, sportswear among others. However it's utility in apparel industry is yet to meet commercial success. To overcome the demerits of polypropylene and to exploit its superior quality in order to make it widely acceptable in the apparel industry, PP can be blended with raffia that is compatible and have value for the production of various fashion accessories.

Innovation is the driving force of economic growth in any business venture. Innovation is the process of creating, experimenting, transforming not only what is offered but the way in which it is offered (Kozlowski, 2016). This increases efficiency of production and quality of products. This research previewed fashion accessories from the conventional scenario to future scenarios in order to turn customers' needs into value and create a market opportunity for utilization of raffia and polypropylene fibre blend woven fabrics for the production of innovative fashion accessories. According to a report and data from 2019, the volume of metric tons for a certain metric reached approximately 88.0 million in 2018. It is projected to continue growing at a rate of approximately 5.7% and is expected to reach around 88.0 million metric tons by the year 2026 (Globe News Wire, 2019). This significant increase in demand for PP is primarily driven by its unique technical characteristics, including its lightweight nature, hydrophobic properties, flexibility, and low thermal conductivity.

Production involves conversion of raw materials into useful products. Ayim (2018) sees production as the way fibre/fabrics are being converted into finished products in an industry. Production process transforms raw materials into products. In this study, weaving technique which is a fabric construction technique will be utilized to produce fabrics that will be used to produce fashion accessories using blended raffia and polypropylene fibres. The term blend indicates that a fabric is manufactured from two or more types of fibre. When fibres are blended, fabrics may be given improved properties such as greater strength, better drape and wash-ability (Madiche, 2013). To explore the superior quality of raffia-polypropylene blend fibres and increase it usage in textile industries, brought about the study on production of fashion accessories from blends of raffia and polypropylene fabrics.

1.1. Statement of Problem

Fashion trend changes and consumers preference for variety in their fashion accessories keep revolving as current fashion changes are influenced by dynamism of globalization. The use of raffia fibre in Bayelsa State has been limited to production of brooms, mat, hand fan, basket among other locally made products. In the same vein, polypropylene fibres are mostly used for industrial applications and production of sack bags for packaging despite the durability, strength, beauty and aesthetics qualities of polypropylene and fibres made from blended fibres (Zhou et al., 2022). Blends of raffia and polypropylene for production of fashion accessories have not been adequately explored in Nigeria as a possible income generating opportunity. These fibres are underutilized in textile industries. Hence, the need for the production of fashion accessories from blends of raffia and polypropylene fabrics.

1.2. Purpose of the Study

The general purpose of this research is to: produce fashion accessories from blends of raffia and polypropylene fabrics. Specifically, the study:

a) Identified types of fashion accessories that could be produced from raffia and polypropylene blended fabrics in Bayelsa State.
b) Produced woven fabric from raffia and polypropylene blend.
c) Utilized the raffia and polypropylene fabric blend for the production of fashion accessories (slippers, sandal, hat and hand bag)

1.3. Research Questions

a) What are the types of fashion accessories that could be produced from raffia and polypropylene blended fabrics in Bayelsa State?
b) How is woven fabric produced from raffia and polypropylene blend?
c) How is raffia and polypropylene fabric blend utilized for the production of fashion accessories (slippers, sandal, hat and hand bag)

1.4. Hypothesis

The following research hypothesis guided the study:

$H0_1$. There is no significance difference in the mean ratings of male and female home makers on types of fashion accessories that could be produced from raffia and polypropylene fabric blend.

2. Materials and Methods

2.1. Design of the Study

The design of the study was a descriptive survey design and Research and Development (R&D). The survey design was used to gather facts from members of the chosen population with the use of a questionnaire. Also, R& D is an evaluation research used to design new products and approaches (Gall, Gall & Borg, 2007; Uzoagulu, 2011).

2.1.1. Ethics Statement

The study was carried out with informed oral consent, anonymity, and confidentiality of the respondents. The data was collected with strict compliance regarding ethical demands of respondent's data protection management as required in research involving human subject.

2.2. Area of the Study

The study was carried out in Bayelsa State. Bayelsa is one of the states in the Southern part of Nigeria, positioned in the core of the Niger Delta region. In Bayelsa State, there exist a variety of raffia palm whose fibres have been underutilized. Also, polypropylene fibres are easy to attain on this location. A lot of families on this location utilize raffia and polypropylene for the manufacturing of nearby merchandise which include mat, hand fan, basket, sack bags for packaging goods among others.

2.3. Population and Sample

The population for the study comprised of all households in Bayelsa State. The male and female home-makers were the unit of observation/respondents. According to the 2011 population, approximately 1, 704, 515 people reside in Bayelsa State (Bayelsa City population, 2011). The sample size for phase I of the study was 300 respondents who are homemakers. This was selected through multistage sampling technique. In the first stage, two senatorial districts (Bayelsa central and Bayelsa East senatorial district) were randomly selected out of the three senatorial districts in Bayelsa State. In the second stage three local government areas were randomly selected from each of the two senatorial districts given a total of six local government areas. In the third stage, five wards were randomly selected from each of the six local government areas given a total of 30 wards. In the fourth stage, 10 households were randomly selected from the thirty wards given a total of 300 households. In the last stage, one home-maker was randomly selected from each of the household given a total of 300 home-makers.

2.4. Instrument for Data Collection and Study Procedure

A questionnaire was utilized as the primary instrument for data collection. The respondents were required to provide their responses using a four-point scale, which included the following options: Strongly Agreed (SA) = 4, Agree (A) = 3, Disagree (D) = 2, and Strongly Disagree (SD) = 1. The questionnaire itself was divided into two distinct sections: Section A concentrated on capturing demographic characteristics of the respondents, while Section B focused on exploring the various types of fashion accessories produced from raffia and polypropylene fabric blends specifically in Bayelsa State

2.5. Data Collection Technique

The researchers and three research assistants personally administer the instruments to the respondents. Home-makers were reached in their respective homes. A total of three hundred (300) questionnaire forms were administered with 100% return rate.

2.6. Data Analysis Technique

The collected data were subjected to analysis utilizing the mean and standard deviation. A cutoff point of 2.50 was established for decision-making purposes concerning the four-point scale items. Any item that received a mean rating of 2.50 or higher was considered accepted or in agreement, whereas any response with a mean below 2.50 was deemed rejected or in disagreement. The hypothesis was assessed through the utilization of a t-test. Null hypotheses with a p-value exceeding 0.05 ($P > 0.05$) at the designated level of significance were considered significant, indicating that the observed results were unlikely to occur by chance. Conversely, p-values below 0.05 ($P < 0.05$) were considered not significant, suggesting that the observed results were statistically significant and unlikely to be a result of random variation. To conduct the data analysis, the statistical package of social sciences (SPSS) version 25 was employed.

3. Results and Discussion

Table 1: Mean, standard deviation and t-test analysis of the mean rating of male and female Home-makers on the types of fashion accessories that could be produced from raffia and polypropylene blend fabrics in Bayelsa State

S/N	Clothing articles that can be produced from raffia and polypropylene fibres	Variable	N	$\bar{X}$	SD	Df	Mean Diff	t-value	p-value
1	Slippers	Male	90	3.51	0.50	298	0.08	1.24	0.22
		Female	210	3.43	0.50				
2	Bangles	Male	90	3.43	0.72	298	0.08	0.88	0.38
		Female	210	3.35	0.74				
3	Hat	Male	90	3.50	0.50	298	0.07	1.06	0.29
		Female	210	3.43	0.50				
4	Sandals	Male	90	3.52	0.50	298	0.02	0.35	0.73
		Female	210	3.50	0.50				
5	Fashion Bags	Male	90	3.62	0.49	298	0.06	-1.07	0.29
		Female	210	3.69	0.47				
6	Purse	Male	90	3.48	0.66	298	0.02	0.19	0.85
		Female	210	3.46	0.64				
7	Shoe	Male	90	3.48	0.62	298	0.02	-0.23	0.82
		Female	210	3.50	0.58				
8	Jewelries	Male	90	3.56	0.50	298	0.04	-0.64	0.52
		Female	210	3.60	0.49				
9	Hair bands	Male	90	3.16	0.86	298	0.06	0.54	0.59
		Female	210	3.10	0.80				
10	Socks	Male	90	3.48	0.58	298	0.04	0.53	.59
		Female	210	3.44	0.59				
	Grand Mean	**Male**	**90**	**3.47**	**0.55**	**298**	**0.02**	**0.35**	**.72**
		Female	**210**	**3.45**	**0.52**	**160.404**	**.02**	**0.35**	**.73**

The findings presented in Table 1 suggest that there were no statistically significant differences in the mean ratings of male and female Home-makers regarding the various types of clothing articles that can be produced from blends of raffia and polypropylene blend fibers in Bayelsa State. This conclusion is drawn from observing the probability values (ranging from 0.22 to 0.85), which exceed

the predetermined significance level of 0.05 ($p > 0.05$). As a result, the null hypothesis, which posits that there is no significant distinction in the mean rating of male and female Home-makers concerning the clothing articles derived from raffia and polypropylene blend fibers, is supported.

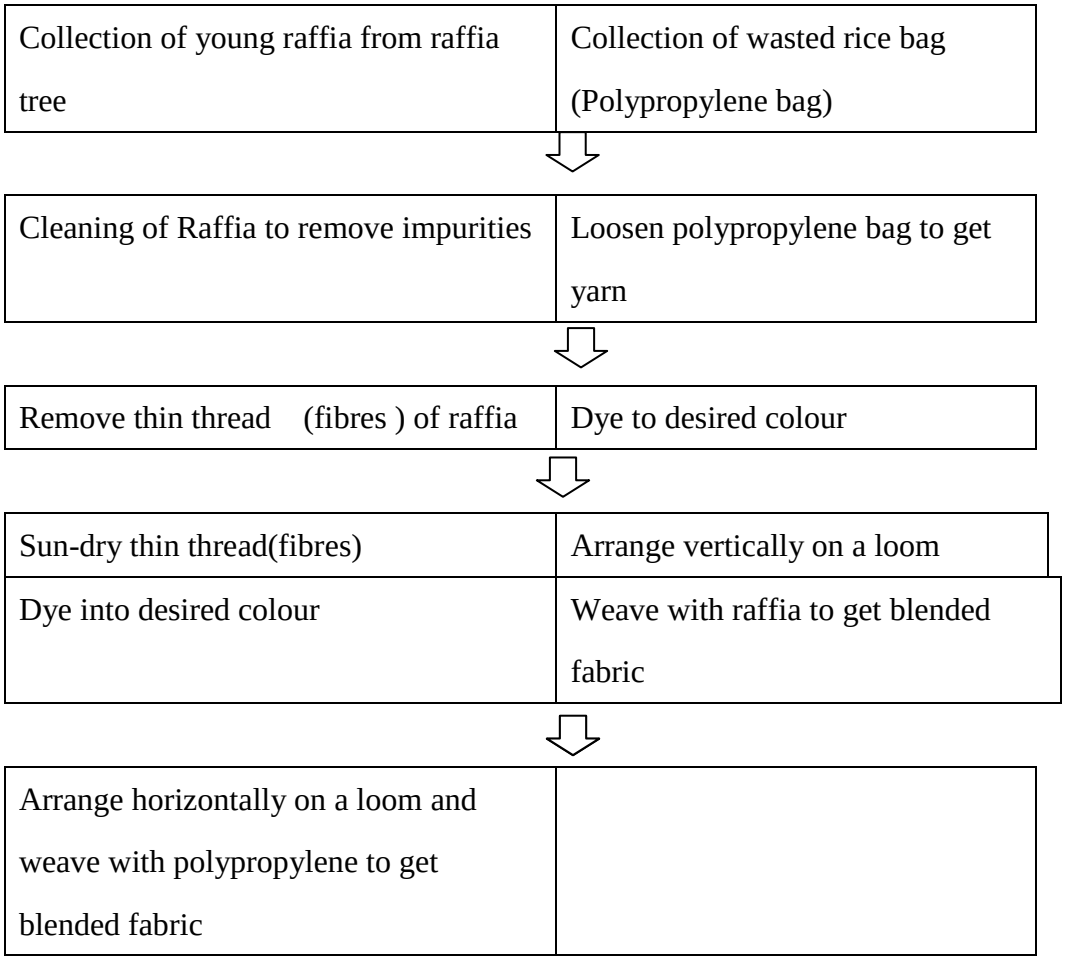


Figure 1. Flow Chart for Production of Woven Fabric from Raffia and Polypropylene blend

The flow chart (Figure 1) procedures explained how woven fabric from raffia and polypropylene blend were produced from raffia and polypropylene fibres through the process of weaving on a loom. The woven fabric templates are shown in Figures 2 to 4 whereas the finished product is shown in Figure 5.

Figure 2. Polypropylene

Figure 3. Raffia

Figure 4. Raffia and Polypropylene blend on loom

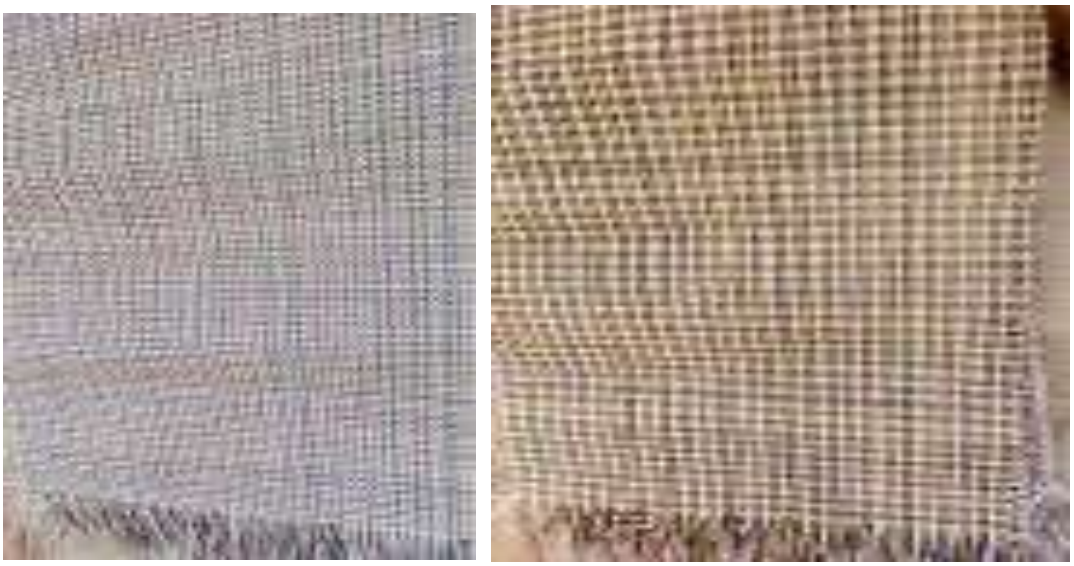


Figure 5. Raffia and polypropylene woven blended fabrics

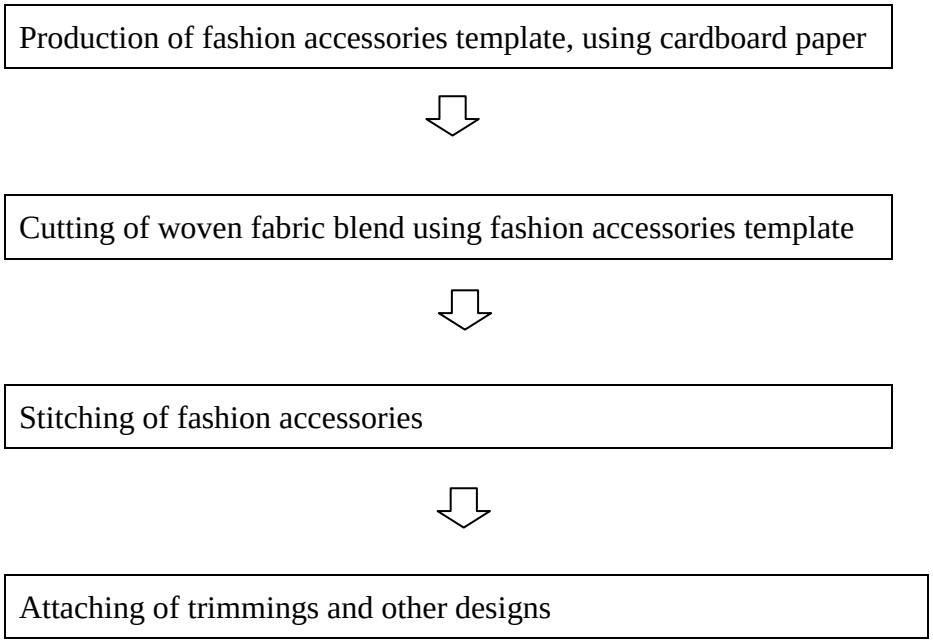
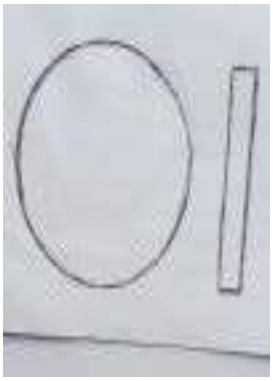
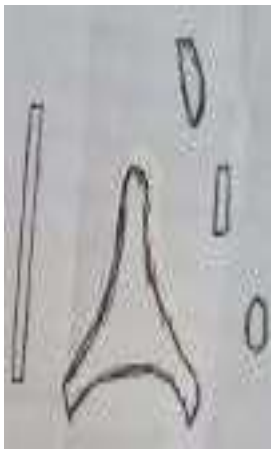


Figure 6: Flow Chart for the Production of Fashion accessories from raffia and polypropylene woven fabric Blends

The flow chart (Figure 6) procedures explain how the produced fashion accessories (slippers, sandal, hat and hand bag) were produces from woven fabric of raffia and polypropylene blends. The template for fashion accessories are shown in Figures 7a to 7c whereas the finished fashion accessories are shown in Figure 8.





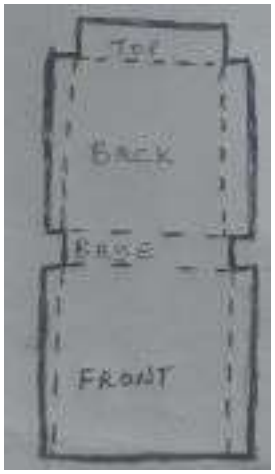


Figure 7a: Hat template **Figure 7b**: Slippers and sandal template **Figure 7c**: Handbag template

Figure 8: Finished Fashion Accessories from raffia and polypropylene fabrics

The findings of the study in Table 1 identified 10 clothing articles that could be produced from blend of raffia and polypropylene fibres. The findings revealed that clothing articles that could be produced from blend of raffia and polypropylene fibres included slippers, dress, hat, sandals, fashion bags, purse, shoes, jewelries, wrapper, cloth bag among others. This finding is in line with Brink and Achigan-Dako (2012) who reported that natural fibres from plants have a number of uses, ranging from weaving of hats, baskets, mats, hammocks and ceremonial costumes. This finding is also in agreement with Unal et al. (2020) who noted that natural fibres obtained from the leaves of the natural plants are used for tying plants and other objects and for making mats, hats, sandals, belt, toys, lawyer wig, baskets, hats, furnishings and the likes. The author also noted that natural fibers possess remarkable performance characteristics and are recognized for their natural, renewable, sustainable, biodegradable, and environmentally friendly attributes. Also, in support of the findings, Mcginnis (2020) reported that polypropylene can be used in a wide range of applications in

automotive industry, carpeting, packaging, fibre, filaments, films, pipes, agriculture, furniture industry, absorbent products (diapers), tapes, ropes, twines, woven bags, toys, upholstery, bed covers, construction fabrics and apparel. The author added that polypropylene is widely used to make undergarments, jackets for outerwear, socks, swimming suits, sportswear among others. However, its utility in apparel industry is yet to meet commercial success. To overcome the demerits of polypropylene and to exploit its superior quality in order to make it widely acceptable in the apparel industry, Polypropylene can be mixed or blended with other compatible fibres having rich hand value for the production of various apparel items. Findings from the test of hypothesis (Table 1) indicated that there was no significant difference in the response of male and female home makers on the types of clothing articles that could be produced from blends of raffia and polypropylene blend fibres in Bayelsa State ($p > 0.05$).

Figure 1 shows the flow chart for the production of woven fabric from raffia and polypropylene blend through the process of weaving on a loom using hand weaving. Weaving in the subject context of fabric construction is the production of fabric by interlacing two sets of yarns so that they cross each other normally at right angles (Ajila, 2016).The blended woven fabric produced in this study (fig 5) was hand woven as shown in figure 4. Hand weaving of fabric has been an ancient craft utilized by man. Abdullahi (2016) noted that many fabrics and most blankets are woven these days. Clothing and rugs are woven and weavers may use thread span from such natural fibers as cotton, silk and wool. The author further emphasized that; hand weaving is close to nature as it allows the weaver to express him or herself and at the same time exerts a calming influence.

Figure 6 shows the flow chart for the production of fashion accessories from raffia and polypropylene woven fabric blends. Templates that was used to cut the woven raffia and polypropylene blended fabric for various innovative fashion accessories produced (slippers, sandal, hat and hand bag) were shown in figure 7a, 7b and 7c. Templates were used to cut the fabric blend to produce the fashion accessories. Template is a reusable copy of the pattern used as a guide for cutting out pieces of articles. According to McConnel (2019) templates are essential as it makes production easier, faster and more accurate during production of articles.

Figure 8 shows the innovative fashion accessories produced in this study (slippers, sandal, hat and hand bag). This shows that innovative articles can be produced from blended fabrics of raffia and plypropylene. In support of the fashion accessories produced in this study, Narkhedkari and Vora (2016)

express the view that the fashion industry consistently relies on incorporating raffia fabric blends in contemporary designs for garments, footwear, bags, hats, and even home furnishings, resulting in innovative and refreshing aesthetics. The author further emphasizes the uniqueness and appeal of clothing made from raffia fiber blends, highlighting its status as a captivating aspect within the realm of fashion created by man. The study implication include that awareness on innovative utilization of woven fabric blended products should be created by stakeholders and marketers within and outside Bayelsa State with appropriate information on its potentiality for income generation, job creation, unemployment and poverty reduction. Blended fibres woven products should be showcased at exhibition and trade fair at local, state and international level in order to expose products to more patronage.

4. Conclusion

Based on the findings of the study, it was concluded that the study have practical and theoretical implications. This study contributes to existing literature on clothing articles production using raffia and polypropylene blends. A lot of raffia palm plant exist in Bayelsa state and polypropylene fibres are available, yet these fibres are underutilized and limited to production of local items such as mat, broom, hand fan, basket, sack bags and other locally made products. Hence the need to explore raffia and polypropylene blend for production of innovative clothing articles as a possible income generating opportunity, as well as for households meeting their fashion accessories needs in Bayelsa State, Nigeria in order to promote and enhance its use for both local and international markets. Also, the study shows that raffia and polypropylene blend fibres are compatible and processible on loom for the production of fabrics that could be utilized for production of fashion accessories. For further study, the study can be carried out using other fibre blends available in a different geographical location like the Northern Nigeria to produce clothing articles, interior decoration articles and household articles. Other researchers should also try using other available local fibres with polypropylene blend fibre for production of other innovative items. In view of the findings, fashion accessories should be produced from raffia and polypropylene blend fabrics as income generating opportunity. Raffia fibre should be blended with polypropylene or other synthetic fibres for production of innovative fashion accessories and household articles in order to promote and enhance its use. The government should encourage the use of available local fibre blends for the production of

fashion accessories, clothing and household articles by organizing skill training/enhancement on woven fibre blends and their products.

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Conflict of Interest

The authors declare no conflict of interest.

Author Contributions

CSU designed the study, wrote the first draft of the manuscript and managed literature searches. ADK carried out the practical aspect of the work and literature searches. All authors read and approved the final manuscripts.

Data Availability Statement

The original contributions presented in the study are included in the article. Further enquiries can be directed to the corresponding author.

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