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EXPLORATION OF KAGANGA BATIK PAINTING TECHNIQUES ON LANTUNG BARK MATERIAL WITH THE APPLICATION OF APPLIQUE AND RAFFIA EMBROIDERY TECHNIQUES IN READY-TO-WEAR DELUXE

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Abstract: Indonesia is a culturally diverse country with thousands of different cultural traditions dispersed over the archipelago. Bengkulu Province is one of the islands in Indonesia with natural and cultural wealth that has its own characteristics and uniqueness. One of the characteristics obtained from the Bengkulu forest is Lantung bark. Kaganga batik is a culturally unique product made according to the philosophy of Rejang, one of Bengkulu's districts. The history of kaganga batik explains that in ancient times kaganga batik was used to cover corpses, aqiqah processions and other traditional events. Over time, kaganga batik began to be developed in 1985-1990, when the Bengkulu region effectively promoted basurek batik as Bengkulu typical batik to be known in general. Now the use of kaganga batik is widely used as uniforms for civil servants, Bengkulu province school students, and even created into certain forms of clothing. Due to a lack of innovation in lantung bark products and the introduction of kaganga batik, these two things are less well-known and kept among Indonesians today. One way to maintain both is to combine kaganga batik with batik painting techniques on lantung bark cloth in a fashion product ready-to-wear deluxe. Clothing shows the concept of classic, structural, and edgy fashion in the form of ready-to-wear deluxe women's clothing. Fashion items are manufactured by putting kaganga batik with a diwo motif to lantung bark material using the batik painting technique. In addition, to give interest and aesthetic value to the outfit, kaganga batik using lantung bark material was applied with an appliqué and raffia embroidery technique in the form of curves of the island line of Bengkulu province.

Keywords: Kaganga Batik; Lantung Bark; Appliqué and Raffia Embroidery Technique; Ready-to-Wear Deluxe.

1. INTRODUCTION

Bengkulu Province is one of the islands in Indonesia with natural and cultural wealth that has its own characteristics and uniqueness. Lantung bark is one of the features found in the Bengkulu forest. Lantung bark, also known as jomok, is a traditional material manufactured by beating the bark of a tree in the Moraceae family known as Arthocarpus Elastica (jackfruit tree, breadfruit, cempedak) with traditional tools like perikai. Lantung Bark are shown in Figure 1.

Figure 1. Lantung Bark

Kaganga batik is a culturally distinct product manufactured in Rejang, one of Bengkulu's districts, according to the philosophy of Rejang. Kaganga batik is a batik with a specific symbolic motif from the land of Rejang Lebong Bengkulu, which is inspired by the Kaganga letters, the Renjang tribe's old script, and natural goods. Kaganga Batik are shown in Figure 2.

Figure 2. Kaganga Batik

Applique technique is a sort of surface design material that involves bonding pieces of cloth or parts of fabric together using hand or machine stitching. Applique is a decorative method that is frequently used to enhance the appearance of a product. Applique technique are shown in Figure 3.

Figure 3. Applique technique

Raffia Embroidery is an embroidery technique for decorating textile products that uses raffia embroidery as the raw material, which is then molded by hand according to the pattern. Raffia Embroidery Techniques are shown in Figure 4.

Figure 4. Raffia Embroidery technique

The combination of lantung bark with kaganga batik motifs using batik painting techniques can be an alternative to the preservation of natural resources (SDA), human resources (HR), and culture in Bengkulu. This combination is expected to be able to create an innovation that is able to attract the interest of the people of Bengkulu and Indonesia in the cultural and natural wealth that exists in Bengkulu. Faisal Rafandi (2017) has carried out creativity on the combination of lantung bark with kaganga batik motifs using batik techniques with other fashion media, namely shoes. An example of applying the batik technique to lantung bark material can be seen in Figure 5.

Figure 5. An example of applying the batik technique to lantung bark material

The aim of the research is to maintain and develop the culture and natural products of Bengkulu Province with a combination of lantung bark and kaganga batik with batik painting techniques on ready-to-wear deluxe clothing with the application of applique and raffia embroidery techniques so as to add functional value and be able to attract public interest. .

2. MATERIALS AND METHODS

1. Materials

a. Lantung Bark

The use of lantung bark material is determined by the type of lantung bark and its features, which include weight, thickness, color, and surface texture compatibility. A good quality of lantung bark that meets the requirements has a gramation of more than 300 grams per square meters, an average material thickness ranging from 1.50 to 1.90mm, a light or light color, and a cloth surface with clean fibers. The use of excessively thin cloth has a negative impact on the fiber surface as well as the outcomes of batik coloring. The bark of the lantung tree is used to make appliqué techniques on clothes.

The materials for making painted batik are batik wax, painted batik dyes, and materials for the finishing process of making batik. Batik wax and painted batik dyes are made with the right composition in order to produce appropriate and good quality batik. Composition of making batik wax, mordanting, and batik dyes can be seen in table 1.

Table 1. . Gondorukem

Composition of making batik wax (for 1,5m Lantung bark)		
No.	**Name of Materials**	**Compositions (g or ml)**
1	*Paraffin*	125 g
2	*Gondorukem* (pine gum)	50 g
3	*Gondorukem* (resin gum)	25 g
4	*Microwax*	12,5 g
5	Malam (wax)	50 g
6	Malam cap (tembokan)	25 g
7	Cooking oil	1 ml
Mordanting (for 1,5m Lantung bark)		
1	Tawas	200 g
2	Water	1 L
Batik dyes (for 1,5m Lantung bark)		
1	Brown	
	Remazol (code: Brown)	5 g
	Remazol (code: Ultra black)	2 g
	Soda ASH (Na_2CO_3)	5g
	Water	800 ml
2	Black	
	Remazol (code: Ultra black)	5 g
	Remazol (code: Brown)	1 g
	Soda ASH (Na_2CO_3)	5g

	Water	1 L
3	Yellow	
	Remazol (code: Yellow FG)	5 g
	Remazol (code: Orange)	4 g
	Remazol (code: Blue RSP)	1 g
	Soda ASH (Na_2CO_3)	5g
	Water	1 L

The materials for making batik and batik dyes can be seen in Figure 6.

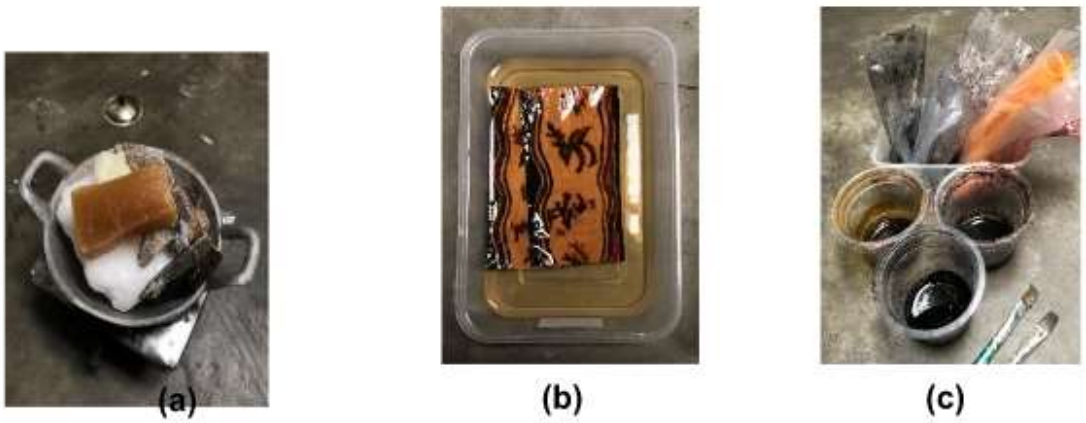

Figure 6. (a) **C**omposition of making batik wax (b) Mordanting (c) Batik dyes

b. Supporting Materials

Other supporting materials are determined based on the alignment of the lantung bark material which has characteristics, thickness and weight to produce the product. clothing that fits the concept. Supporting materials can be seen in Figure 7.

Figure 7. Supporting materials

c. Raffia Embroidery

The use of raffia embroidery technique as a complement to clothing improves the visual value and aesthetic for ready-to-wear deluxe clothing. Raffia embroidery is made with a particular raffia rope created for embroidery. Raffia Embroidery Rope are shown in Figure 8.

Figure 8. Raffia Embroidery Rope

2. METHODS

a. Design Concept

1. Moodboard

The methods used to make this clothing are to produce a concept design based on the inspiration, which is then described on a moodboard. The idea for this fashion concept was drawn from the Indonesia Trend Forecasting 2022, which has a Spirituality theme. Illustration of the moodboard are shown in Figure 9.

Figure 9. Moodboard

2. Color Palette

The colors used in making this clothing refer to the Spirituality theme of the 2022 Trend Forecasting. The colors used are earth tone colors, namely earth colors such as dark brown, wood brown, cream and black, so that it gives a classic impression to the clothes. The colors used in the manufacture of ready-to-wear deluxe clothing are shown in figure 10.

Figure 10. Color Palette

3. DESIGN

Fashion Design

The results of the Moodboard be applied to ready-to-wear deluxe fashion design sketch.

The selected designs to be realized were selected with the criteria of being able to show the concept of making clothes, namely a firm or dashing impression on look 1, and a feminine impression on look 2. Fashion Design sketch are shown in Figure 11.

Figure 11. Fashion Design Sketch

Look 1 presents a two-piece dress look with a top in look 1 in the form of a long-sleeved blouse combined with jerkin. Blouse in a crop tee with long sleeves and a turtleneck collar model, as well as a cut & sewn combination on the chest to the waist. The lower part of the dress is a wrap skirt with an asymmetrical cut.

Look 2 present a piece of black mini dress with asymmetrical cuts and a slit on the right side of the dress. The clothing detail on look 2 shows a hanging balloon sleeve model with

a variety of belts to tie the sleeves on the shoulders of the dress. Furthermore, the use of obi at the waist is also applied to the dress.

Design Batik Motif

The application of motif exploration was carried out inspired by the Kaganga batik diwo motif typical of Bengkulu. Making exploration of motifs is carried out while still paying attention to the elements that have become the hallmark of kaganga batik with diwo motifs. This characteristic lies in the use of the kaganga letter motif, gold sash, bamboo shoots, various endemic flowers/flowers typical of Rejang land, such as the corpse flower/rafflesia arnoldi, Malay magnolia flower (cempaka), clove flower and plantation product motifs such as flowers coffee and pepper.

The motifs were developed with modifications from the designer, such as the creation of the location of the diwo batik motif elements, the form of the motif unit, and the addition of the Bengkulu island map line. Making modifications to these motifs is done so that they appear modern or contemporary and the public can get to know Bengkulu's cultural diversity. Modification motif design of batik kaganga are shown in Figure 12.

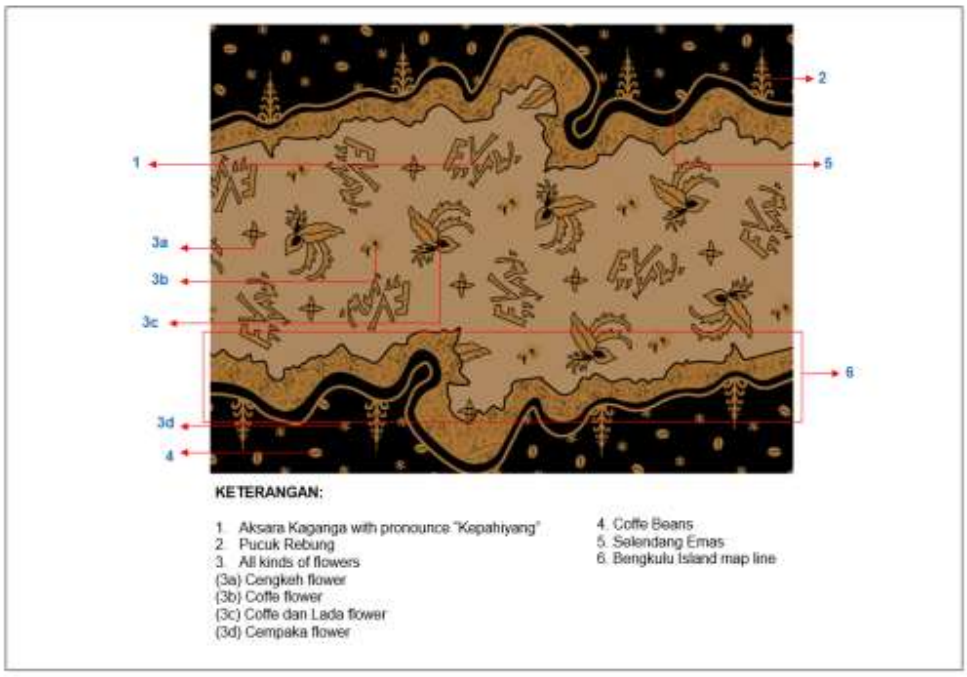

Figure 12. Modification motif design of batik kaganga

b. Experimental

Several procedures are used to create batik painting on lantung bark material for use as an appliqué technique clothing application, including batik preparation, batik process, pelorodan (cleaning/removing wax coating) process, and finishing. Figure 13 shows a flow chart of the experimental procedure.

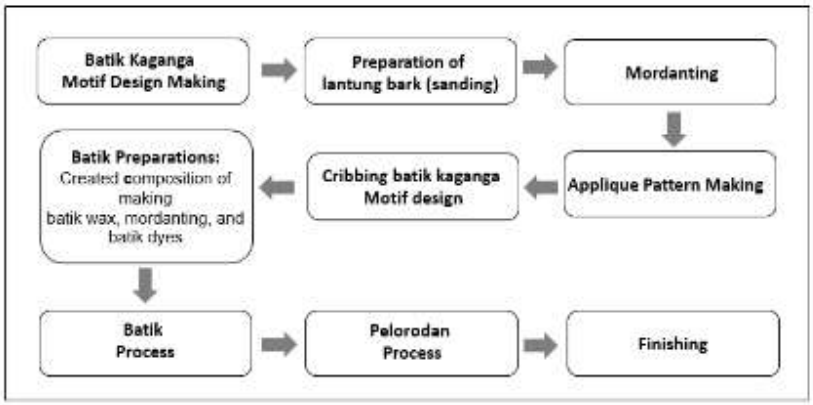

Figure 13. Flow chart of the experimental procedure

1. Exploration of the application of batik techniques to lantung bark material

Batik motifs can be produced using several techniques, such as written batik techniques, stamps, and painting. The process of making batik motifs on lantung bark material was carried out using an experimental method for all batik-making techniques with the results are shown in Table 2.

Table 2. The process of making batik motifs on lantung bark material

No.	Technique	Picture	Information
1	Hand-Written (Batik Tulis)		The motifs produced by the Hand written batik technique are uneven, especially in the small details of the motifs. This can happen because the malam wax does not evenly cover the leather material which is caused by the thick lantung bark material.

2	Stamped (Batik-Cap)		The motifs produced using the stamped batik technique are not evenly distributed throughout the motifs. This can happen because the printing media is done using paper-based batik stamps or because the malam wax temperature is not suitable
3	Painting		The motifs produced by painting techniques are clearly visible and in accordance with the motif designs. In addition, the resulting color is more varied.

2. Exploration of Color Selection for the Material of Lantung Bark

Exploration of Color Selection for the Material of Lantung Bark are shown in Table 3.

Table 3 Exploration of Color Selection for the Material of Lantung

No.	Color	Color Composition	Picture	Information

1	Brown	*Brown* : 5g *Black Ultra*: 2g Yellow *FG*: 2g Soda Ash : 7g Water : 1 L		The resulting color tends to be reddish brown
2		*Brown* : 5g *Black Ultra*: 3 g Soda Ash : 5g Water : 800 ml		The resulting color tends to be dark brown (tends to be too dark)
3		*Brown* : 5g *Black Ultra*: 2 g Soda Ash : 5g Water : 1 L		The resulting color is medium brown (suitable)
1	Black	*Black Ultra*: 5g Biru *RSP* : 2g Soda Ash : 5g Water : 1 L		The resulting color tends to be light black
2		*Black Ultra*: 5g *Brown* : 1 g Soda Ash : 5g Water : 1 L		The resulting color is deep black slightly brown (suitable)
1	Yellow	Yellow *FG* : 5g Orange : 4g		The resulting color is golden brown (gold) (suitable)

		Biru *RSP* : 1g Soda Ash : 5g Water : 1 L		
2		Yellow *FG* : 5g Orange : 4g Soda Ash : 5g Water : 1 L		The resulting color is too light tends to be bright yellow

3. Color Selection Exploration of Mordanting Process

Exploration of color selection for the mordanting process was carried out in order to produce the desired color for lantung bark material. Experiments on mordanting were carried out three times with three different types of mordant techniques, such as Tawas/alum, tunjung, and turkish red oil. Observations of color experiments on mordanting types are shown in Table 4.

Mordant Type: Alum/Tawas			
Picture			

Mordant Technique	Pre-mordanting	Post-mordanting	Pre-Post Mordanting
Information: The resulting color tends to naturally follow the original color of the material	• The color on the material is too bright • The color of the resulting motif is too deep/dark	The color on the material and motif is less deep/dark	The colors on the material and the motifs produced are suitable
Mordant Type: Turkish Red Oil			
Picture			
Mordant Technique	**Pre-mordanting**	**Post-mordanting**	**Pre-Post** Mordanting
Information: The resulting color on the material is brown (tends to be too deep/dark)	The colors on the material and motifs are too deep/dark	The color on the motif looks unclear/faded	Interesting pattern color
Mordant Type: Tunjung			
Picture			

Mordant Technique	Pre-mordanting	Post-mordanting	Pre-Post Mordanting
Information: The resulting color on gray material (tends to be very deep/dark)	The colors of the material and motifs show the brightest of the TRO mordant types	The colors on the material and motifs look unclear/faded	The color on the pattern is too deep/dark

4. Painting Batik Process

The process of making painted batik is not much different from the process of writing batik, the only difference is in the coloring process and the use of the canting. Some of the processes carried out are as follows:

a) Material preparation of lantung bark

- Prepare lantung bark material that has been cut according to the shape of the applique dress application. Sheets of lantung bark are smoothed slowly using fine sandpaper to make it easier to trace motifs and printouts.
- Lantung bark is soaked with alum for 30 minutes to produce the appropriate color of lantung bark material. After that, it is dried in the sun to dry.
- Prepare a batik motif design to then carry out the process of tracing the batik motif using carbon paper and an ink-less pen tip.
- The dried lantung bark is traced using carbon paper.

The process of preparing lantung bark material before making batik are shown in Figure 14.

Figure 14. The process of preparing lantung bark material before making batik

b) Nyanting Process *(ngelowongi)*

- Prepare tools and materials used in the batik process. The evening recipe used as a barrier is based on the evening recipe sourced from Sembung Batik, a batik producer in Central Java. The author conducted experiments as needed, namely with a ratio of 1:40 from the actual recipe.
- All of these ingredients are melted at a temperature of 60 degrees Celsius until they melt. Lantung bark is painted according to the pattern that has been traced.
- Pinpointing is done to provide an outline to prevent some motifs from mixing with other colors. Outline editing process.

Nyanting Process are shown in Figure 15.

Figure 15. Nyanting Process

c. Batik Painting Dyeing Process

- The painting process is carried out on lantung bark material with the following dye recipe for each desired color:
  Remazol dye with a total of 5g of dye for each desired color mixing in the ratio (2: 2: 1)

  MS (Remazol Color Enhancer) : 5 g

  Water : 100 ml (to give thickness to the dye)

  The coloring process is done by painting using a paintbrush.

- After the color of the painting is dry, the color fixation is carried out using a water glass by applying it to the entire surface affected by the color and rinsing it clean, then drying it in the sun.
- Make modifications to batik motifs on certain parts, such as crack motifs, by applying paraffin to block the part to be given the cracks, after drying the paraffin parts are crushed by hand. The crushed surface is smeared with remazol dye which is mixed with a water glass so that it absorbs following the shape of the crumb and is immediately fixed.

The coloring process of painted batik on lantung bark material can be seen in Figure 16.

Figure 16. The coloring process of painted batik on lantung bark material

d) Pelorodan Process

- Pelorodan is carried out using 1 liter of boiling water and the addition of a chemical substance in the form of 2 grams of soda ash at a temperature of 100 degrees Celsius. Pelorodan is done repeatedly until the malam wax all the remaining barriers are removed from the material, which is then washed until clean.
- Fabric that has been washed clean is treated with fabric softener to improve the limp grip properties of lantung bark material.
- The bark material is dried by drying it supine in the shade.
- The semi-dried lantung bark material is ironed to improve the surface of the cloth.

The process of pelorodan batik painting on lantung bark material are shown in Figure 17.

Figure 17. The process of pelorodan batik painting on lantung bark material

4. Fashion Application Exploration

a. Raffia Embroidery

The process of making a raffia embroidery design using the embroidery technique of attaching thread by including strands of raffia rope and upholstery, as well as adding a wire framework to the design or shape of the edge of the component is considered the most effective in producing good quality and appropriate raffia embroidery technique applications. Raffia Embroidery Processed are shown in Figure 18.

Figure 18. Raffia Embroidery Processed

b) **Appliqué Technique**

The appliqué background design is made side by side with the kaganga painted batik motif. The process of making the appliqué at the beginning of the process is carried out by forming the lantung bark material which has been processed for batik by forming the lantung bark material first according to the shape of the pattern, then the batik painting is carried out. Appliqué Technique Processed are shown in Figure 19.

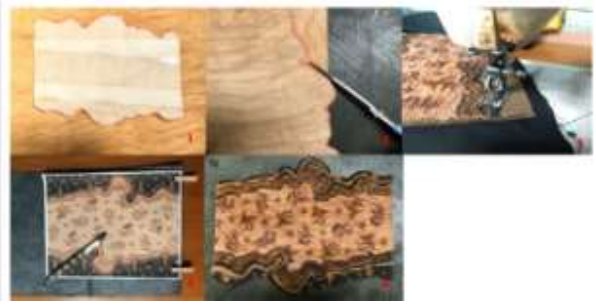

Figure 19. Applique Technique Processed

3. RESULTS

Figure 20. Result of Batik Painting Techniques on Lantung Bark Material with The Application of Applique and Raffia Embroidery Techniques in Ready-To-Wear Deluxe

Figure 21. Result of Raffia Embroidery Techniques in Ready-To-Wear Deluxe

Figure 22. Result of Application AppliqueTechniques in Ready-To-Wear Deluxe

4. DISCUSSION

The application of the batik painting technique with the kaganga motif on the lantung bark material can be carried out and results in good experiments with the application of the applique on deluxe ready-to-wear clothing, the right color composition and the appropriate characteristics of the lantung bark material. The use of lantung bark material in clothing applications can be used because it is assessed because it has characteristics with a type of material that is strong against good pulling and tearing. the testing process in this study has been carried out. based on research, research conducted four types of tests to ensure the feasibility of using lantung bark material in combination with painted batik. the results of the four tests carried out are as follows:

No.	Test Type	Test Method	Description/Result
1	**Tear Strength of Lantung Bark**	Trapezoid	Instron Tool Load: 50 kg **a. Longitudinal Tear Strength (Warp)** Yield Average material tear strength = 19 Kg **b. Wide Directional Tear Strength (Weft)** Results The average tear strength of the material is = 4.4 Kg
2	**The Tensile Strength of Lantung Bark Material**	Cekau	Instron Tool Load: 250 kg a. Based on the test results, the average tensile strength results of lantung bark material are as follows: a. Average tensile strength in the longitudinal fiber direction (warp) = 1087,80 N b. Average tensile strength in the stretched fiber direction (weft) = 841,17 N
3	**Decomposition**	Theoretical Weight	364,1 gram/m^2
		Thickness	1,96 mm
4	**Color Fastness Batik painting technique on lantung bark material**	Washing	Scale 4/5
		Water	Scale 4/5
		Dry Rubbing	Scale 4/5
		Wet Scrub	Scale 4/5

Based on these tests, it can be concluded that lantung bark has strong characteristics and is not easily brittle, so no initial processing is needed to strengthen lantung bark material. Based on experiments on the exploration of lantung bark in producing kaganga batik, several previous experiments were carried out on batik techniques, namely written, stamped, and painted batik. Based on the results of the experiments that have been carried out, it is concluded that the application of the painting batik technique in producing batik motifs on lantung bark material is considered the most effective to be carried out. The effectiveness is assessed based on the results of the batik motifs that are produced in more detail, and the colors produced through the batik painting process are considered to be more varied.

The use of lantung bark material is based on the type of lantung bark with the characteristics and points of agreement between the weight, thickness, color, and surface texture of the bark. The quality of lantung bark is good and suitable, namely it has a grammation range of 200-300 g/m^2, with an average thickness of material ranging from 1.50 - 1.90mm. An example of good lantung bark material are shown in Figure 23.

Figure 23. An example of good lantung bark material

Experiments on the coloring process for the manufacture of painted batik were carried out based on compounding recipes or color composition on the suitability of the desired color results and the quality of the dye on discoloration. Experiments on color compounding were carried out using a type of remazol synthetic dye by considering the composition of the dye to produce a lighter or darker color.

No.	Color	Color Composition	Picture	Information
1	Brown	*Brown* : 5g *Black Ultra*: 2 g Soda Ash : 5g Water : 1 L		The resulting color is medium brown (suitable)
2	Black	*Black Ultra*: 5g *Brown* : 1 g Soda Ash : 5g Water : 1 L		The resulting color is deep black slightly brown (suitable)
3	Yellow	Yellow *FG* : 5g Orange : 4g Biru *RSP* : 1g Soda Ash : 5g Water : 1 L		The resulting color is golden brown (gold) (suitable)

The mordanting process of lantung bark material is also applied to produce the desired color. Mordanting is done using a type of mordant in the form of alum with early and late mordant techniques. The use of this type of alum is considered to be able to fulfill the desired color, both the color of lantung bark material and the color of the painting results.

The coloring that is carried out in the batik painting process on lantung bark material needs to be considered for its fade resistance so that the quality of the product is maintained and does not tarnish the combination of other materials in a garment. Therefore it is necessary to test the color fastness of the staining of lantung bark material. The results of the color fastness test against wet and dry washing, and rubbing showed a good to very good value, with a value scale of 4 to 5.

The quality of batik cloth can decrease over time due to several factors, one of which comes from the washing process. Batik clothes have a variety of beautiful patterns and colors, but apart from that the manufacturing process is no less unique and quite complicated which requires special

product care. Several types of washing materials for batik cloth include 1) Water (as the main ingredient); 2) detergent; 3) alkaline (soap); and 4) lerak fruit.

The process of washing lantung bark media with a combination of batik painting techniques is carried out using water, detergent, and lerak fruit juice. The results of this study indicate that remasol dyed batik which is washed using water, detergent, lerak, lerak sari, and without washing agent has good quality washing results. These results showed that there was no difference between the washing results of remazol synthetic dye batik cloth using lerak, lerak extract, detergent, and without washing agent.

5. CONCLUSIONS

The application of lantung bark is carried out as a form of preservation of nature and culture in Bengkulu province by adding use value. the use of lantung bark as a form of nature conservation. The combination of exploration of lantung bark techniques and kaganga batik, clothing application, and materials to be used in the manufacture of clothing is expected to add use value, aesthetics and preserve culture and nature in Indonesia.

Trend Forecasting the Spirituality in 2022 relates to the production of fashion products, which carries the concept of culture and philosophy by using materials that seem natural and raw. The concept is packed with a new look, with a mix of classic, structural and edgy style. The choice of colors taken in the manufacture of this dress is earth tone, namely earth colors such as brown, wood brown, beige and black so that it gives a classic impression on the clothes. The I line, in particular, has classic wardrobe pieces. Clothing conveys a sense of strength, bravery, and femininity. The applique and raffia embroidery techniques are used to create a structured and edgy ready-to-wear ensemble. The placement of the details of the ready-to-wear deluxe carried out by paying attention to the accuracy of the placement of the applique technique and the raffia embroidery on a balanced composition of clothing to produce a focus of clothing application.

The creation of ready-to-wear deluxe clothing with the application of painted batik with kaganga motifs applied to lantung bark as the application of local wisdom and Bengkulu cultural roots, combined with raffia embroidery details and appliqué techniques on the garments gives a structural and edgy impression. The development of innovation makes raffia rope can be used as a complement to clothing to make it look more attractive. The use of raffia rope can be an effort to increase the use of raffia rope because of its limited use. The use of raffia rope is applied to clothing with an abstract motif raffia embroidery technique. The process of

making the appliqué is done by shaping lantung bark material which has been processed in batik with the outline of the Bengkulu Island map to add to the aesthetic value of the dress.

The application of the batik painting technique with the kaganga motif on the lantung bark material can be carried out and results in good experiments with the application of the applique on deluxe ready-to-wear clothing, the right color composition and the appropriate characteristics of the lantung bark material. The use of lantung bark material in clothing applications can be used because it is assessed because it has characteristics with a type of material that is strong against good pulling and tearing. The use of lantung bark material is based on the type of lantung bark with the characteristics and points of agreement between the weight, thickness, color, and surface texture of the bark. The quality of lantung bark is good and suitable, namely it has a grammatical range of 200-300 g/m^2, with an average thickness of material ranging from 1.50 - 1.90mm.

The coloring process for the manufacture of painted batik were carried out based on compounding recipes or color composition on the suitability of the desired color results and the quality of the dye on discoloration. The mordanting process of lantung bark material is also applied to produce the desired color. Mordanting is done using a type of mordant in the form of alum with early and late mordant techniques.

The process of washing lantung bark media with a combination of batik painting techniques is carried out using water, detergent, and lerak fruit juice.

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