

Research Article

Processing of Pearl Clam Shells as Beads Materials in Deluxe Ready-to-Wear Fashion

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Abstract.

Indonesia is famous for its territorial waters, including the sea and islands, which have a high potential for resources produced, namely mussel shells. Clams have economic value, both meat and pearls, while the shells cannot be utilized, resulting in the accumulation of shell waste, one of which is pearl clam shells. The shoreline that becomes a dumping ground for shell waste makes the beach unattractive and uncomfortable. Pearl clam shells can be utilized as a basic material with strong and shiny characteristics. The utilization of pearl mussel shell waste is currently only used as the main basic material for making various crafts, and there is an opportunity to develop pearl mussel shells as an alternative material for beads with beading techniques. Beading is one of the design techniques used to embellish or add value to the decoration. Stringing like beads gives a three-dimensional effect on the fabric's surface. The results of this research produce innovative beads in the form of shells that can be applied to fashion products using beading techniques. The data used by the author is a qualitative method consisting of collecting data from literature studies, interviews, observations, and conducting experiments to find out the characteristics of shells that have lustre.

Keywords: pearl shell waste, beading, ready-to-wear deluxe

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1. Introduction

Indonesia has territorial waters, including the Indonesian territorial sea, archipelagic waters, and inland waters. One of them is a producer of aquatic animals, namely shellfish, which includes soft-bodied animals (mollusks). Indonesia is a country that has potential natural resources ranging from minerals to marine biota diversity [1]. Besides fish and other shellfish, high resources are produced from the sea [2]. One is in the coastal area, with most people living there engaged in processing marine products, such as shellfish. Most of the fishermen only take the shells, and the inside of the shells cannot be utilized optimally, causing the accumulation of shell waste, one of which is pearl clam shells. The shoreline that becomes a dumping ground for clamshell waste makes the beach not beautiful and uncomfortable. Pearl clam shells have economic value; both the meat

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and shells are used as basic materials by having the characteristics of radial-patterned shells on hard and shiny shells, and pearl clams are marine fishery commodities with good and relatively stable market value [3].

The utilization of pearl mussel shell waste is currently only used as the main basic material for making various handicrafts by the community and a group of partners, for example, the shell to be used as furniture such as chairs, tables, and decoration elements [4]. The existence of development opportunities in pearl mussel shells as an alternative material for beads, can produce applications that have novelty values with optimal fashion product end results and also consider the advantages and disadvantages of the mussel shells used for beading processing. Beading is a design technique that aims to embellish or add decorative value by giving a three-dimensional effect to the fabric's surface by stringing like beads [5].

Materials that can be developed are clam shells with the characteristics of shells that are shiny and strong, which can be processed better with appropriate techniques, namely beading and for the final result in fashion products, namely ready to wear deluxe clothing. Ready-to-wear deluxe is clothing that is ready to use with a certain and limited design with a luxurious concept using materials and techniques used by handmade [6]. With a good application, pearl clam shells become one of the potential to be used as new beads by applying ready-to-wear deluxe clothing following the inspiration of the same concept.

2. Research Methods

In this research, the author uses a qualitative method with data collection methods of literature study, interviews, observation, and experiments.

2.1. Qualitative

Through literature studies, namely obtaining data through books and interviews related to data collection regarding shell waste materials in the form of data, types, and groupings, observations of shell waste in Badung, Bali, are made by observing and also looking for references to shell waste used.

2.2. Experiments




The experiments carried out by the author use the techniques of cutting, crushing, and punching holes in the shells. Because each shell has different characteristics ranging from thickness, calcification, and durability. By considering the advantages and disadvantages of these shells because it will affect the results and success rate.

3. Result And Discussion

3.1. Initial Exploration

The results of the initial exploration examined various shell materials using different techniques to find out which could be used for further research: coloring with acrylic paint, coloring with synthetic mordant, and cutting techniques.

TABLE 1: Initial Exploration.

No	Material Name	Engineering	Research Results	Description
1.	Shells Sipping	Acrylic coloring	Acrylic paint coloring techniques sticking and not visible mollusk content, namely (luster)	
2.	Shells Daraa White	Primary mordant and synthetic coloring	The results are attached only to the center of the shell and the characteristics of this white virgin shell are not shiny or do not have mollusk content.	
3.	Shells Macan	Cut and grinder	Shells that are very hard when cut, quite difficult, characteristic of patterned shells do not cause, mollusks	

Findings: The use of acrylic paint coloring techniques on shells is easy to stick to without taking a long time, and primary and monochrome synthetic coloring techniques without mordant are very difficult for colors to stick to shells even though soaking for

8 hours at the time of washing the color fades. But if using mordant coloring is easy to stick even though it takes about 6-8 hours.

3.2. Concept And Design



Figure 1: Mood Board.




The image board aims to be a reference in the design process of the entire concept and theme of the work created. In this image board entitled “PINCTADA”, the design uses alternative material beads, namely pearl clam shell waste, also called *Pinctada maxima*, using cutting techniques with symmetrical shapes such as rectangles, triangles, circles,

and hexagons. The composition of the shells is like a mosaic, a work with a three-dimensional shape made by stacking small pieces. The concept uses neutral colors such as black, cream, and white colors taken from the character of the scallop, which has a luxurious gradation and follows the 2023/2024 trend forecast.

3.3. Further Exploration




In the final resistant exploration, the author explores the composition of shells, using crushing and cutting techniques and tools and materials.

TABLE 2: Developmental Exploration.

No	Material Name	Process	Research Results	Description
1.	Pearl clam shells	Cut and grinder	1. The resulting shape is regular and the same when using cutting techniques. 2. (Shapes like a semicircle but only have one corner point on the shape to give the impression of more variety and not symmetrical) 3. Yield size 2- 3cm and Thickness measuring 0.1 - 0.3 mm	1. Rectangle  2. Circle 
2.	pearl clam shells	Cut and grinder	<ul style="list-style-type: none"> The resulting scallop sides are easy to cut. The resulting shape is regular and the same. With a yield size of 2- 4 cm. 	

Findings: Cutting shells using a 105 mm electric grinder is the most effective technique compared to breaking because it can save time and energy, and it also produces neat results on the edge of the shells without requiring sandpaper.

TABLE 3: Final Exploration.

No	Material Name	Engineering	Research Results	Description
1.	white pearl clams	Cut and grinder	Technique:cutting and beading Composition: The composition follows the concept of abstract mosaic with shape design elements with the design principles of balance and proportion as the modular shape is balanced with the top and bottom.	
2.	Brown pearl clams	Cut and grinder	Technique: cutting and beading Composition: The composition follows the abstract concept of mosaic with shape design elements. The design principle uses dominance because there are shapes that are not boring in certain parts and attract attention.	
3.	white pearl clams	Cut and grinder	Technique: cutting and beading Composition: The composition follows the abstract concept of mosaic with shape design elements. The design principle is unity as each has a relationship.	

Findings: The author performs abstract mosaic composition as the main exploration motif by using cutting technique to produce the same shape and beading on fabric application with basic stitch technique. Pearl clam shells have the advantage of shape, texture, and color, and they have an elegant gradation, so there is an opportunity for a variation of beads' material.

4. Conclusion

In this research, the author utilizes pearl mussel shell waste as an alternative beading material, which is considered appropriate and achieves the concept that has been raised properly. To the phenomenon problems listed, most fishermen only take shells only the inside of the shells cannot be utilized optimally, causing the accumulation of shell waste, one of which is the pearl clam shell. The selection of utilization of pearl clam shell waste originating from Indonesia as an alternative to beads using beading techniques which is a technique of decorating the surface of the fabric to give a three-dimensional impression applied to exclusive fashion products which are done by the author himself using hands that give the value of craftsmanship that copes with the final result of fashion products.

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