Maritime biota waste as eco-jewelry materials, potentials and possibilities

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Abstract. This research aims to describe the process of designing jewelry from marine biota waste. The background of this writing is the utilization of marine biota waste which is still conventional in applying visual quality in the form of the uniqueness of marine biota waste as a personal need. Maritime Biota Waste have potential to be developed into jewelry to meet personal needs as self-charm of lifestyle. Some accessories from those waste are usually in the conventional form without any significant changes. Accessories produced by mass production usually do not have removable parts because they prioritize ease and efficiency of production. This research focuses on the development of the waste potentials which is reviewed with a visual strategy and uses the Interchangeable Elements design method. The method conducted has relevance between fluctuations in market share changes and production flexibility. This helps to find out the parameters for applying visuals to jewelry and enhances self-charm by using removable parts of jewelry as adjustments to achieve optimal visual quality.

1. Introduction
Indonesia as a maritime country has the largest territorial waters, considering 2/3 of the Indonesian territory is ocean. Thus, Indonesia has high maritime resources. These potentials are diversing including energy, fisheries and minerals. Fisheries is the most maritime resources utilized by fishermen whose live on the coast area. Some energy such as ocean currents and temperature is often used as an environmentally friendly alternative energy. While the potential of marine minerals including gold mining, silver and others.

In addition to these potentials, the sea also produces biota waste which is usually stranded on the coasts. These wastes include coral, animal shells, etc. In fact, these maritime biota wastes have great potentials to be explored [1]. Unfortunately, many coastal communities prefer in fishery potential to fulfill the primary human needs which is foods.

As all know, that the most uses of potentials maritime biota waste by coastal communities is the manufacture of home décor trinkets or accessories as local souvenirs [2]. Some accessories from maritime biota waste are usually in the conventional forms without any significant changes.

In general, mass-produced accessories do not have removable parts as adjustments because they prioritize ease and efficiency of production. So, this research wants to utilize maritime biota waste with the hope to the renewal adding of the use of accessories oriented to visual quality for the achievement of personal needs to be glamouring self-charm [3]. This utilization will be applied as the main material in this accessories designs.
2. Research methodology

2.1. Research approach
The research approach used in the design process is a qualitative approach using visual strategies [4] as study material for processing research objects.

2.2. Data collection techniques
Data collection techniques used by the author in the design process are by observation and interviews with the research site on the beach area Pameungpeuk starting from Rancabuaya Beach to Santolo. Therefore, then this data collection technique is a direct technique because the authors do research on the spot.

2.3. Design methods
This Research conduct the Interchangeable Elements method that has relevance to the user’s persona but adjustment or removing parts of visual elements in the designed jewelry [5-8]. In this study focus on the element of pendant or charms.

2.4. Design approach
The design approach used in this research is a formalistic analysis offered by Andri Masry and explained in his book with the title Visual Strategy to determine the value of the visual quality of an object based on the impact caused by visual elements on human perception [4].

3. Results and discussion

3.1. Design concept
The final design of this jewelry made that output in the form of jewelry sets consisting of necklaces and earrings. This jewelry has the concepts of a geometric art deco model. Then, the style carried is a formal and classic style. The main material used to make this jewelry is maritime biota waste or more specifically in the form of abalone shells and fringe. Thus, as a material adjustment, this research uses 925 sterling silver.

3.2. Mind map
The following is a description and detail of the mind mapping:

- Design Concept: Art Deco
- Product: Jewelry
- User Identity: Female Mid-Upper Economic capability
- Design Strategy: Visual Strategy
- Visual: Mosaic Texture, Natural color shells and silver/gold plating, Geometrical Form
- Material: Maritime biota wastes in the form of abalone shells and scales, 925 sterling silver.
- Method: Interchangeable Elements

3.3. Design requirement
This research uses a reduction system in the process of data analysis, namely the elimination of the codes that can be based on the subject and object of study [8,9]. Thus, the results obtained in the form of jewelry designs with the natural texture of marine biota waste as the user's self-expression.
3.4. Final design

![Figure 1. Final design (Earrings and Choker) (source: authors).](image)

This design sketch was chosen because the design has a good mosaic line composition [9] to be applied to the texture of the conch shell. The scallop shell uses a mall/mold to create a mosaic texture so that it can be repeated during mass production. For parts of the house or body of the necklace, there are separate parts at the ends of the junction to follow the curve of the collarbone [10]. Then, the selection of this type of jewelry is based on the body parts of young women who have an attractive side to enhance their persona [11,12], as for these body parts as follows:

- Ear: According Cosmopolitan Website, one of the attractive parts of a woman’s body according to men is the ear [13].
- Neck: According to Glamour Website, one of the sexiest body parts of a woman is the neck [14].

In addition, the pendant of this jewelry can be removable or have adjustment parts according to the model which has been provided.

4. Conclusion

The utilization of maritime biota waste is still very rare which prioritizes the unique visual side for personal needs. Therefore, according to the results of the discussion regarding the Jewelry Design FOR Accessories from maritime biota waste drawn some conclusion as follow:

- With the visual quality of the natural texture of abalone and scallop shells using the Interchangeable Elements method in jewelry, it can meet the needs of the user by improving self-charm.
- Increasing the charm of a woman can be applied to the jewelry placed on some body parts of a woman as it is considered exotic such as the nape, collarbone, fingers, and ears.
- Unfortunately, the use of this jewelry is occasional

For further development, this research will provide input that is expected can be useful in the future, namely the consideration of other aspects as a companion of visual quality which is also studied equally. This study is to reduce concerns about the visual quality based on instincts and perceptions of each user, then making this visual quality will not be too prominent compared to the system and/or removable parts that apply to the product design.
References

[1] Pratiwi R 2006 Biota Laut: I. Bagaimana Mengenal Biota Laut? *Jurnal Oseana* 31(1) 27-38

[2] Morgan A 2000 Interchangeable Jewelry Item *US 6,427,487 B1*

[3] Richardson A 2010 *Innovation X: Why a Company's Toughest Problems Are Its Greatest Advantage* (San Francisco, CA: Jossey-Bass)

[4] Norman D A 2004 *Emotional Design, Why We Love or Hate Everyday Things* (New York, United States: Basic Book)

[5] Masri A 2010 *Strategi Visual, Formalistik dan Semiotik* (Bantul: Jalasutra)

[6] Golove B, Kaplan M, Paglia D and Kerner S 2009 Jewelry with Interchangeable Settings and Attachable Charms and Methods for Their Use *US 7,937,966 B2*

[7] Johnson R and Johnson J 1988 Jewelry with Interchangeable Elements *US. 4,879,882.*

[8] Richardson D. 2008 Clasp, Interchangeable Jewelry Pieces, and Methods for Connecting The Same *US 7,353,665 B2*

[9] Rose L 2004 Interchangeable Jewelry System *US 2004/0011079 A1*

[10] McSwiney 2008 *The Jewellery Making Handbook* (Singapore: Page One Publishing Private Limited)

[11] Guhde K and Guhde R 2005 System and Method for Designing Custom Jewelry and Accessories *US 2005/0222862 A1*

[12] Lau J 2012 *Basics Fashion Design 09: Designing Accessories: Exploring the Design and Construction of Bags, Shoes, Hats, and Jewellery* (Lausanne: AVA Publishing SA)

[13] Frank C 2014 *The 12 Sexiest Parts of a Woman's Body, Ranked* [online] retrieved from https://www.cosmo.ph/relationships/the-12-sexiest-parts-of-a-woman-s-body-ranked

[14] Bonnell K 2008 *What's the Sexiest Part of a Woman's Body?* [online] retrieved from https://www.glamour.com/gallery/glamour-asks-whats-the-sexiest-party-of-a-womans-body