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A Product Potential Development of Semarang Local Batik through Optimalizations of Planting Areas of *Indigofera* and *Mangrove* as Natural Coloring Materials, on the Attempt of Regional Economic Improvement (Case Study: Sentra Batik (Batik Center) Gunung Pati, Semarang, Central Java)

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Abstract

This research focuses on potential development of a community by utilizing existing natural resources potentials such as indigo plant (*Indigofera tinctoria*) and waste of mangrove plant (*Rhizophora Apiculata),* to be used as natural coloring raw materials on batik industry in Gunung Pati, Semarang, Central Java. In addition, there is also conducted a design development on local batik center (*sentra batik*). Those attempts are conducted in order to improve local potentials that are still not optimized, which it is in accordance with environmental issues and global community interest on sustainable products that have local values.

Result of this research is a model/road map of a comprehensive system which thereafter can be implemented to related community. The system implementation is expected to help the community to be able to anticipate market demands with high quality products and in order to be competitive through the products' overall design and quality. Through Inspective Intuition method, this research will be conducted by directly dealt with the objects and issues that are being researched as well as explore on problem solving of existing issues. It is also assured that through this research, it will give supporting skills and knowledge to the community to manage their environment. In addition, the community wil be able to produce high quality natural coloring material independently as well as to make final product creation – batik – that has local signature and also to give a positive contribution for their environment. Thus, through this research, it is expected that along the awakening of small and medium industrial activities, there will be economic improvement for local community, so that it will also help national economic and creative industry.

Keywords: Product Development, Local Batik, Gunung Pati, Indigofera, Mangrove

1. Introduction

Most of people at Gunung Pati, Semarang, Central Java has the ability to make *batik*, and has been trying to utilize surrounded areas as indigo (*Indigofera tinctoria*) plantation and use waste of mangrove (*Rhizophora apiculata)* as natural coloring material. Nevertheless, there are some issues occurs such as people do not work systematically because they do not have the knowledge to do so.

It needs adjustments and improvisations several times. Limited knowledge in optimizing natural coloring technology impacts the product and working efficiency. Therefore, as the attempt to maximizing existing natural resources and human resources, it is essential to maximizing public industry in small and medium scale. This industry is the driving force; it will facilitate people's activities in designed-products management and production process until they reach the market. So that the people will be in a proper system in order to have a directive management. Small and Medium Industry (IKM) is the nation's backbone. Its contribution to strengthen the nation's economic foundation has been tested by having brought Indonesia passed the crisis. IKM gives significant contribution both for regional and national economic, such as absorbs many manpower. In addition, *batik* has been included as one of creative products among 14+1 subsector to the Indonesian Creative Economy.

Thereafter, along the *hype* of sustainable behavior as the action to save the planet, natural material become a right decision. Taking natural coloring as the research topic is not merely taking an eco-friendly product issue, but also local genius and trend material issues.

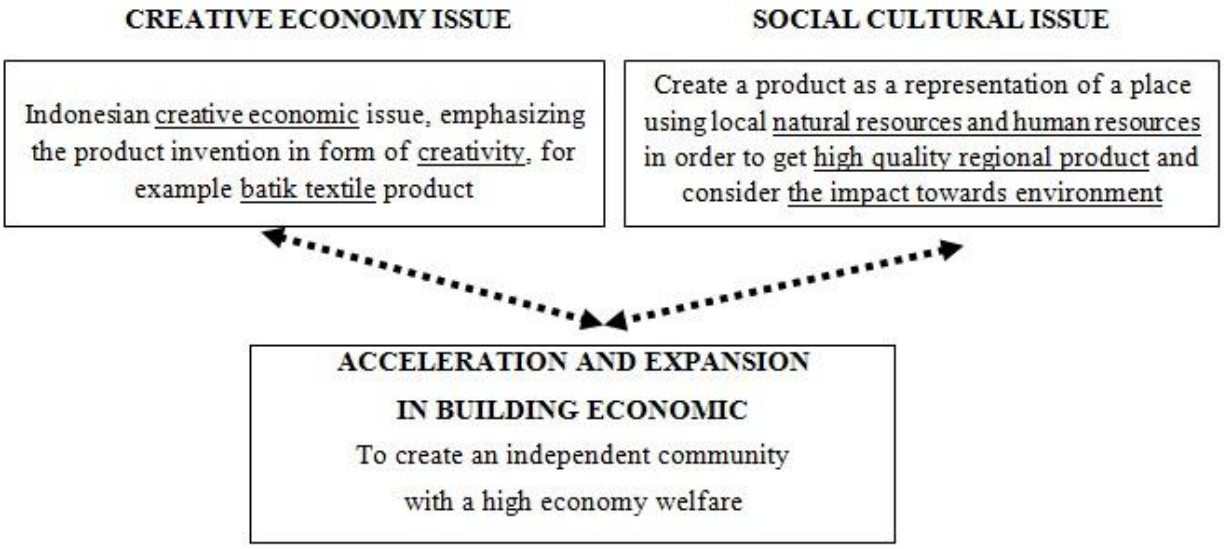

Figure 1. Background of the research

2. Discussion

The Potential of Natural Coloring Batik Usage on Batik Product

Indonesia is a well-known country that has abundant natural resources and a wide variety of textile tradition. One of textile materials on tradition basis is textile with fiber and natural coloring. Those materials were the raw materials for Indonesian traditional textiles in the past. Specific natural condition and cultural tradition of a place influence the creative process of local textile maker, as well as the visualization of textile creation. It has been a lot influenced by the supply of natural resources, such as tropical plants that contain textile fiber and also plants with certained coloring matter that can be used for textile coloring. (Widiawati, 2013).

Traditional textiles, such as *batik* and woven fabric, use natural coloring materials taken from local surroundings, so that different places appear with different colors. For example, dark blue in Tuban is gained from coloring process using Indigo (*Indigofera tinctoria*). Range color of yellowish brown to reddish dark chocolate is gained from *soga* plant (*Peltophorum ferrugineium*) that appears a lot on Yogya and Solo *batiks* with the name of '*Sogan*' (Anas dkk, 1995).

But since a synthetic color is found, knowledge of natural coloring becomes gradually gone and abandoned, of which most of textile industry in Indonesia, even traditional textiles, have used kinds of synthetic colors. However, optimism of natural coloring on Indonesian textiles returns. It comes together with the environmental issue, back-to-nature lifestyle along with the global warming issue. The awareness to use eco-friendly products have been rising, some products such as: *green design, green product, eco labeling, eco fashion* and products with sustainable design concept have been starting to appear. (Widiawati, 2013).

Consumers who are aware of the issues, prefer textiles with natural fiber and coloring because it is eco friendly. Therefore, there is a plan to use natural color material, especially when synthetic color materials are taken out of the market, such as Azo *(naftol, Rapid, direct*) coloring material usually used for *batik*, because it is considered as one of carsinogenic materials (Anas, 1999).

Condition of local batik at Gunung Pati, Semarang, Central Java

Below is the recap based on initial survey to collect initial data regarding the condition of sentra batik at Gunung Pati, Semarang, Central Java:

Table 1: Preliminary data on the condition of batik Sentra in Gunung Pati, Semarang, Central Java

Condition and Potential of Sentra Batik Development	Product Characteristic	Obstacles

- Most of the products has in accordance with current popular issue about sustaining the environment by choosing natural coloring material
- The product result is having exclusive color characteristic

- UKM (Small and Medium Business Unit) is able to provide natural coloring, has their own area for indigo plantation and utilizes waste of mangrove

Indigo plantation (*indigofera tinctoria)*

Mangrove wastes

Raw material

- More or less than 90% uses cotton fabric *primis* from various labels. As well as cotton *dobby* and synthetic shifon.
- *Batik* raw material (*malam*, *canting*, clean water) is supply ready.
- There are two types of coloring:
  a. synthetic (*naftol* and *indogosol*)
  b. natural (mangrove, nila/indigo, and mahoni)

Based on initial survey with the maker, it is said that type of coloring will be used is only natural coloring.

Design

- Dominant motif used is taken from the city's icon – Semarang, such as *buah asam* (acid fruits) plants, *tugu muda*, and *blekok* bird. In general, the motif is still convensional. Some motifs do not represent the city's icon, but not yet innovative and with popular style.
- Dominant colors from natural color materials are gradation of light blue to dark blue and crème to black.
- Most of making *batik* technique is by printing, some by hand-drawing.
- Almost 80% of motif layout is made by randomly covers the whole fabric surface; only small part of the fabric is left plain.
- Application on product up to now is 80% only for fabric, balance of it is made for men shirt.

PelaksanaanKerja/Pengrajin

- Number of *batik* maker is quite big, spread along 3 sub districts, with one coordinator each.
- Plantation of indigo and mangrove have been managed by local community.

Segmentation

- most of the existing products, market segmentation for printed batik is targeted for middle-class people with affordable price.
- natural colored product is especially targeted for middle-up people

Nevertheless, for natural coloring type, batik from this *UKM* (Small and Medium Business Unit) is not yet in premium level.

In general, this sentra batik has big potential, it just needs to be optimized in some aspects as follows:

a. Ornaments design:
Overall, haven't shown interesting ornaments visualization; tend to be all same and boring

b. Raw materials:
Limited variety, limited use only on cotton fabric, effected to variant of color and texture

c. Improvement on production capacity:
Does not have big capacity to create and double the fashion product sample.

d. Design management:
Not yet systematic in design management, documentation, to its business management.

- **Alternative of Solutions:**
- Training regarding **design aspects and motifs**.
- Training regarding **material knowledge and its processing**
- Through **comperehensive improvement of design management,** it is believed that it will be well developed and big.
- Need to be directed to **diversify final product**

Remark:
Batik of local people handmade with folklore motif.

-  Human resources is taken from local people including fisherman		

3. Research Method

This research uses Inspective Intuition method, where the researcher is directly dealt with the objects and issues. Systematically, research is conducted as follows:

A. PRELIMINARY

1. Data and Information Collecting
   - Survey on the researched object
     Conduct a review on the researched object and collect information regarding the location and people of researched location.
   - Data collecting
     Data collected from direct survey to Gunung Pati, Semarang, Central Java. And also interview result with local people, farmer and doer of batik industry.
   - Literature review
     Some litratures and references used are from various book sources
2. Data Analysis (on Local Potential)

   Analyze and formulate the data has been colected to become the information to solve the problems. The analysis covers:
   - A strategy to approach local community, covers implementation of social communication and interaction theory
   - Know the targeted community through the nature and environment, culture condition as well as their skill on making batik
   - Product innovation that covers function concept, user, market segment and final product
3. The making of design with initial innovative batik production, to be tested to the community.

B. DEVELOPMENT

1. Test and evaluation on design using innovative batik initial production system
2. Create a solution related to the expected result which has not been accomplished
3. Design Result and Refinement

C. FINAL & PROTOTYPING

1. Making design technical specification for people's guidance
2. *Prototyping* and using design in production scale
3. *Finishing*

4. Conclusion

Actually, it is a big potential developing Semarang batik using natural coloring. Nevertheless, it is still hampered by limited supplies of raw materials, natural coloring technology, as well as design that eventually accumulated and impact the product. In addition, in terms of design, batik needs to be interestingly visualized by developing its design and motif from what has existed which has local character.

This research also empowers a community by utilizing existing natural resources potentials such as indigo plants (*Indigofera tinctoria*) and waste of mangrove plants (*Rhizophora Apiculata),* to be used as natural coloring raw material on batik industry in Gunung Pati, Semarang, Central Java. In addition, there is also conducted a design development on local batik center. The attempts are conducted in order to improve local potentials that have not been optimized. It is in accordance with environmental issues and global community interest on sustainable products that have local values.

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