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Research paper

Knowledge Management of Traditional Batik in Central Java

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Abstract

The Central Java is known as one of the important centres of batik development, and several towns and cities in the region are closely associated with batik. Those may include Pekalongan, Surakarta, Lasem, Pati, Tuban, and Semarang. Batik centres help with the sustainable development of batik in Indonesia, but –especially nowadays, efforts need to be made to pass the knowledge and skills of creating batik, so as to make it interesting, attractive, and easy. Besides, efforts are needed to retain and sustain the cultural heritage so that the Indonesian original products remain in the possession of the nation. The WIKI model enables anybody to become a contributor, putting the thoughts on batik in writing, onto the prepared WIKI. This paper discusses the application of a knowledge management method –such that of WIKI's– that is put forward by Ikujiro Nonaka, the formulation of which is known as SECI. The good documentation of both tacit and explicit objects may enable the step-by-step tracing of knowledge, so that the original source of knowledge is known. This study also adapts a design to retrieve local knowledge and communal identity created by Chuenrudeemol, focusing on aspects of artistic, social and cultural values, and also economic values, with respect to domestic and gender issues.

Keywords: *batik; explicit knowledge; Knowledge Management; tacit knowledge.*

1. Introduction

Batik clothing has been existing in Indonesia –even long before Indonesia was established, i.e. during the Majapahit Empire in the 13th century. The art of drawing the motif on the cloth was originally practised only among the nobility within the palaces, but gradually it became very common among common people [2].
Recognized by UNESCO as one of Indonesia's cultural heritage, and one of Masterpieces of the Oral and Intangible of Humanity, batik requires the nation's responsibilities to preserve it. The Indonesian Government has been working hard to produce and develop batik, and make the clothes more popular not only in the country, but also internationally. Batik has become common clothing to most Indonesians, with both traditional and modern motifs. Men and women wear batik for formal and informal events.
Batik also conveys historical values, design aesthetics, styles, coloring techniques, the whole creation process, environment, and the workers, all are mixed into priceless compound values. Despite the fact that such values have been documented and published as books, stored in libraries and museums, publicised on the web, etc., more values remain on the actors in different manifestation of the culture. Why, for instance, traditional batik manual producers are mainly women, or why –despite the high value it has– batik does not substantially help the economical aspects of the producers? Hence is the need for a way to document important facts and values attached to the actors of batik.
Information system as part of information technology can be used to answer the need for preserve values. It is not only the explicit values, but also the implicit values. Information system not only can be used to track down preserved values, but can also be used to reconstruct something that went extinct. One of the Information System that can be used to manage the explicit values and also implicit is Knowledge Management System (KMS). Some of KM theory can be used to do this.
This research is advising in a sustainable way in gathering explicit values which been documented in various forms. In addition also collected implicit values contained in the Indonesian batik world, especially Central Java Batik. All those values been combined as a KMS model, so that it can be reconstructed when needed at some point. To the development of this KMS model expected that the future generation can reconstruct the glory of the Indonesian national batik. Besides the batik artisan, mostly are women, can be made to be information technology literate. By using information technology, namely KMS, the artisan have opportunity to connect with others around the world, so their economic value be improved along with their batik value.

2. Related Research

Nasir and Noor, proposed an approach to integrate the ontology in a Knowledge Management System (KMS) in order to allow full potential of e-museum applications on the web. Their work is concentrated in designing community based e-museum which is intended to support the digital cultural heritage preservation. The aim of their study is to identify the actual activities involved in the mapping process between Revised Traditional Malay Textile (TMT) Knowledge Model and CIDOC CRM to facilitate in the creation of Batik Heritage Ontology (BHO) [3].
In an economic point of view, Kridalukmana, adopt Information Technology (IT) to strengthen batik micro-scale entrepreneurs in Central Java, Indonesia. Their research aimed to offer an IT adoption strategy that attaches knowledge management system, collaboration-based information system and shared e-commerce application as an integrated system to support problem solving in batik

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making process and in reaching the global market. The strategy highlights on two concerns of improvement on product quality and better product selling. The strategy approached by doing work field program, community service program and research and as a collaborator between stakeholders[5].

Sediyono, et.al. empower batik crafts people by introducing and utilizing ICT in their activities. Different levels of ICT training were conducted to elevate the artisans' knowledge and skills. ICT is also implemented as a means of communication among the groups, and provides them with more access to productive resources and markets. The research also aims at promoting the alternative markets, the Fair Trade[6].

The Central Java region is closely associated with batik. Pekalongan, a city on the northern coastal area, is known as 'the city of batik'. It helps with the sustainable development of batik in Indonesia, and is well-known with the beautiful motifs, mostly using the stamping technique. The technique enables the production of batik in large quantities, with generally cheaper prices than the hand-drawn batik. Beside Pekalongan and Surakarta, other regions in the province contributing to the batik industry include Lasem, Pati, Tuban, and Semarang.

This paper discusses the application of the information system and technology on the management of batik knowledge in Central Java. A common method of knowledge management is the one put forward by Ikujiro Nonaka in Kaur [8], the formulation of which is known as SECI, or Knowledge Spiral.

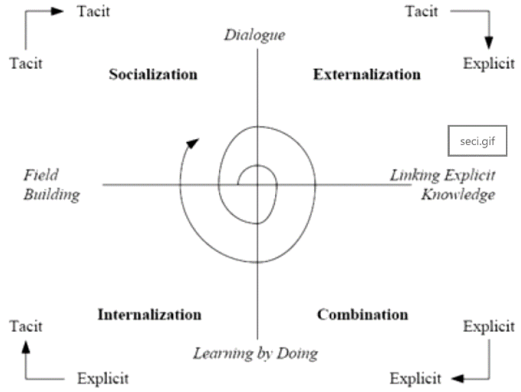


Fig 1. SECI Model of Knowledge Creation [8]

The SECI method deals with repeated activities (Figure 1), involving both tacit and explicit objects, and well documented as such that the documentation may be carried out and studied by other people. Good documentation by the use of information system and technology may enable the step-by-step tracing of knowledge, so that the original source of knowledge is known.

Chuenrudeemol, proposed a design to retrieve local knowledge and communal identity, The method was applied to document indigenous knowledge of the Bangchaochas of Thailand in the creation of various bamboo handicraft [2]. The method will be adapted to study Central Java's local wisdom on batik, employing indicators as shown in the figure 2.



Fig 2. Values found in the bamboo handicraft as a heritage of knowledge[2].

In this research we use Kansei Engineering method, proposed by Mitsuo Nagamachi. Kansei is a Japanese term used to express one's impression towards artefact, situation and surrounding. Deeply rooted in the Japanese culture, direct translation of Kansei to other language is rather difficult. Having various interpretations by different literature, Kansei is generally referred to sensitivity, sensibility, feeling and emotion**Error! Reference source not found.**. Spiller cited by Shaari **Error! Reference source not found.** describe Kansei model in more clear, that can be seen in the Figure 3.

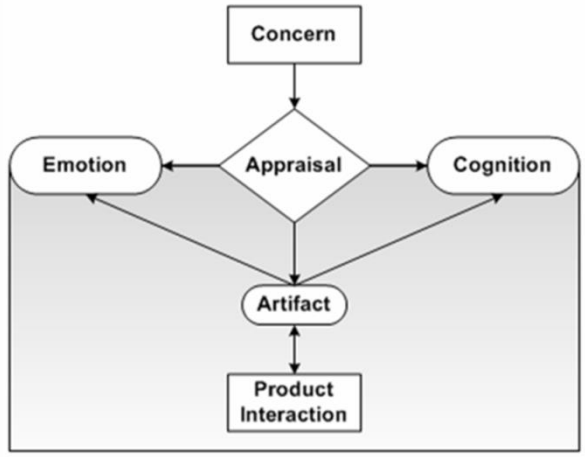


Fig 3. Kansei Model by Spiller [1]

3. Research Method

This research is done in two stages, as displayed in the figure 4. The first stage is the stage where we were collected data, field observation, interview, recording the batik activity using video and audio recorder. The collected data are artistic values, culture and social values, and economic values that be found in the field. The subjects and respondents are batik artisan community in Pekalongan, Surakarta, Lasem, Pati, Tuban, and Semarang. From the observation, interview, audio and video recording we hope to find the fundamental values of the batik craft tradition.

The second stage is an analytical stage. Kansei method [1] combined with Seci method are used to structure explicit values and formulate the implicit values (tacit) to be explicit values. With this combined method we hope that the explicit values can be reconstruct in the future time. The result of data collection and analysis serve as internet based knowledge.

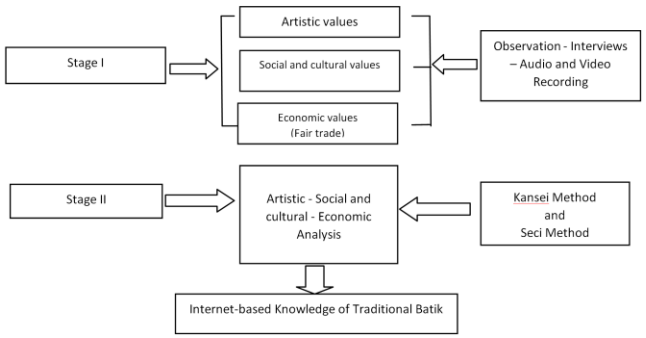
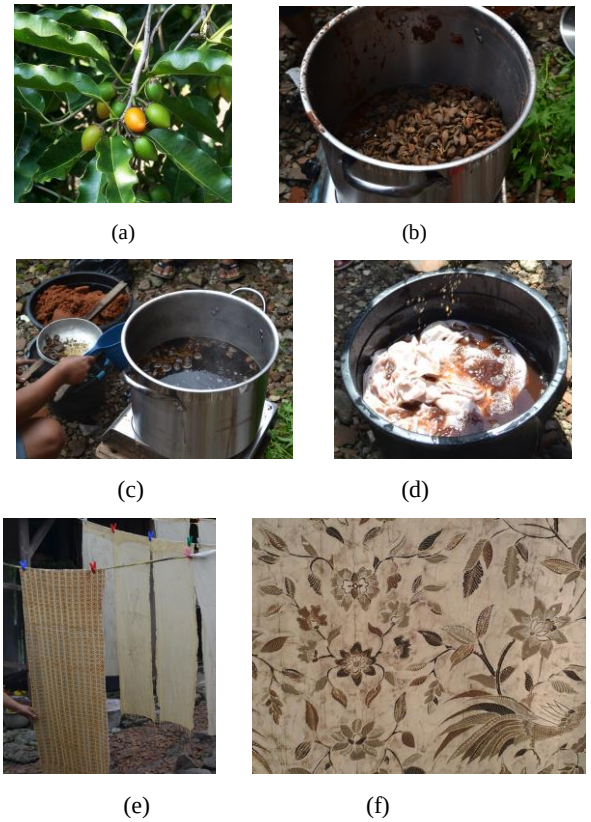


Fig 4. Research Methodology

4. Research Result

The implementation of Seci model in this research is as follow :

Tacit to Explicit (Externalization) - We do by onsite interview to the batik artisan. We do audio and video recording, and then do transcription. For example to capture the artistic values in coloring the batik using indigo bean (*Nymphaea lotus*). We capture each step in coloring process. The Process can be seen in the figure 5.



(a) (b)

(c) (d)

(e) (f)

Fig 5. The process of batik making using indigo (*Nymphaea lotus*) bean. (a) example of ripen indigo fruit, (b) dry indigo seed, (c) dry seeds indigo boiled until the water is brown, (d) cloth that is marked by wax dipped in indigo water, (e) The batik pattern that has already appeared on the cloth surface heated under the sun, (f) the final result of batik.

Figure 5 show step by step process of creating batik using natural color from indigo bean that brings natural brown color. We can see the final result of the process (f) is batik with shades of brown. it is done in three times dyeing. In the real situation, it is not just cloth processing, but also there are many subjects of life from their discussion during batik processing. From the recorder we transcript it to be an explicit knowledge.

We also record the activity in batik creation. There is a social and culture values in this activity, such as the conversation, the communication among them, the art of painting. It cannot be described using words but visually.

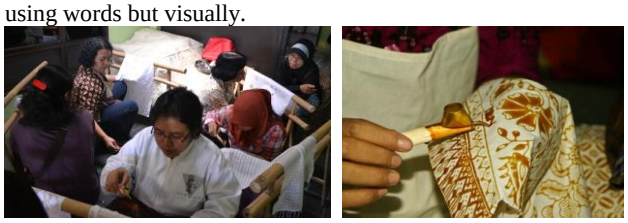


Fig 6. Batik Creating activity

Economic values can be capture and create using the community fair trade. We can emulating or impersonating other established fair trade, such as Mitrabali (en.mitrabali.com), Pekerti (pekerti.com). It is the implementation of explicit to explicit.



Fig 7. Batik community Trade

Explicit to tacit and tacit to tacit, we don't do it because in this research we need to externalized all values in batik artisan to be reconstruct in the next time. Besides, we want to encourage artisan, especially women artisan to grow up economically.
Kansei method is used to analyze and capture the customer's need and connect to the existing batik values. The Kansei parameters that can be adopt are [1]:

- Sensory Experience as an aesthetics experience of the product
- Interactive Experience (Aesthetics of Use)
- Meaningful experience (Symbolic Aesthetics)
- A user perception in finding meaningful associations with a product

5. Conclusion

From this research we have a collection of information about indigenous Batik values. It consist of website, text description, digital video and audio. This information have been analyze and structured using Seci model and analyze using Kansei parameter to be match between existing batik values and customer perception. The result is describe in Parahita Craft website.

Acknowledgement

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References

[1] Chuenrudeemol W. et.al., "Design Process in Retrieving the Local Wisdom and Communal Identity: A Case Study of Bangchaocha's Bamboo Basketry Crafts", *DRS 2012 Bangkok Chulalongkorn University Bangkok*, Thailand, 1–4 July (2011).

[2] Haake A., "The Role of Symmetry In Javanese Batik Patterns", *Computers Math. Applic.* Vol. 17, No. 4-6, (1989), pp. 815-826.

[3] Kaur, Harpreet, "Knowledge Creation And The Seci Model", *International Journal Of Business Management*, VOL. 2(1), (2015).

[4] Kridalukmana, Rinta and Naili Farida and Hari Susanta Nugraha, "IT Adoption Strategy to Promote Batik Micro-Scale Industry in Central Java, Indonesia Strengthening Universities Role in Batik Micro-Scale Industry", *Proceeding on ICITACEE 2016*, October 18-19th (2016).

[5] Lokman, Anitawati Mohd and Mitsuo Nagamachi, "Validation of Kansei Engineering Adoption in E-Commerce Web Design", *Kansei Engineering International Journal* Vol. 9, No. 1, (2009).
[6] Nasir,Syerina Azlin Md.and Nor Laila Md Noor, "Integrating Ontology-based Approach in Knowledge Management System (KMS): Construction of Batik Heritage Ontology", *International Conference on Science and Social Research (CSSR)*, (2010).
[7] Nurhalim SNW, *Landasan Program Perencanaan Dan Perancangan Arsitektur Museum Batik Jawa Tengah Di Kota Semarang*, Thesis, Jurusan Arsitektur Fakultas Teknik Universitas Diponegoro, Semarang, Indonesia, (2009).
[8] Sediyono Eko, Tundjung Mahatma, and Arianti I.R. Hunga, Strengthening Batik Home-workers through ICT based Fair Trade, *Internetworking Indonesia Journal*, Vol.8/No.2 (2016).
[9] Shaari Nazlina, "Indigenous Knowledge Creativity in Batik Cultural Product based on Kansei", *International Conference on Social Sciences and Humanities (ICSSH'15)*, Bali (Indonesia), May 5-6, (2015).
[10] Situngkir, Hokky, "From Data to Celebration of Cultural Heritages: Preservations, Acquisitions, and Intellectual Property Regulations", *Indonesian Archipelago Cultural Initiatives*, Bandung Fe Institute, November 26th, 2010. available online: http://mpra.ub.uni-muenchen.de/27021/, last visit:28.10.2017.