Batik Originality Marker as a Protection Model to The Manufacturer and Batik's Consumer

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Abstract—Such way from Pekalongan City Government in protecting the existence of crafstmen/batik seller and its consumer is by publishing region regulation of Pekalongan City Number 6 in year 2014. By that regulation, Pekalongan city government obligue all manufacturer/batik seller that produce and sell batik product in/from Pekalongan city should label their product with " Batik Pekalongan", hence it is not only functioned as a marker for consumer that is not able to identify the kinds of batik nor differentiate with printing batik, but also functioned as a protection model for the manufacturer/batik seller in Pekalongan. Nevertheless the absence of monitoring in the usage of label "Batik Pekalongan", has been absorbed by certain manufacturer/batik seller to make fraud, thus the effort of Pekalongan city governmnt in giving protection to the manufacturer/batik seller and also their consumer hasn't been well realized. The research resulted an e-label batik application that supports the effort of Pekalongan city government, by augmented reality technology utilization will make the label of "Batik Pekalongan" displaying such information about the kinds of batik, batik pattern/motif, the profile of the manufacturer/batik seller and other related information, if consumer scans that label by their smartphone, the information will be just displayed, and when the Pekalongan city government as the observer of the usage of batik label has done the validation based on the sustainability of the label certainty with the kinds of batik sold by the manufacturer/seller, the label of "Batik Pekalongan" will be functioned as the trusted mark.

Keyword: Batik, consumer, manufacturer/seller, protection.

1. Introduction

Batik is an art of painting above material with certain model or pattern using "malam", that is stretching "malam" which placed on the bowl ("canting" or printing) on the material. Several manual activities by the batik manufacturer that is quite complicated are needed to produce batik besides it needs much time hence the batik price becomes more expensive than the other textile product and make batik has its own uniqueness.

Batik is a custom of Pekalongan city society, for some generations, half of them make it as an income source, thus Pekalogan is famous as the city of batik.

The height of consumer interest, either in or out of the country to Pekalongan city batik has attracted the interest of textile enterpreneur to produce textile with the pattern or motif in batik, and by the society it is then famous as a printing batik. Though the name is printing batik, it is non batik, but textile product. The production process of printing batik is so fast due to the use of modern textile machines, thus it can reduce the production cost and make the selling price of the printing batik becomes much cheaper than the selling price of batik.

The missperception of most consumer that take printing batik as a batik, has damaged the manufacturer/batik seller of Pekalongan city batik, due to the tendency of consumer in buying, they will surely choose the printing batik for its cheap price. Moreover, the consumer ignorance in differentiating the kinds of batik (there are only three kinds of batik, they are written batik, printing batik and the combination of written and printing batik) has been used by some negative people of manufacturer/batik seller to make fraud, like the difference of the offered batik with the batik they sell, in this case it is disadvantaged the consumer and in other word, the disappointment of the consumer will cause negative effect to the business development of manufacturer/batik seller in Pekalongan.

Considering those situation, the Pekalongan city government

is trying to give protection to the manufacturer/batik seller and their consumer by publishing the regional rule of Pekalongan City Number 6 in year 2014 about the use of "Pekalongan Batik" label. The regulation obligue all manufacturer/batik seller in Pekalongan city to stick on the label of "Pekalongan Batik" as a marker to the consumer in identifying the kinds of batik as well become the information media to the consumer in differentiating with printing batik, furthermore there will be punishment from Pekalongan city government to the manufacturer/batik seller who against that regional rule.

Nevertheless the publishing of that regional rule is not followed by monitoring from the local government of Pekalongan city upon the use of "Batik Pekalongan" label, thus there are some findings that some people attached that label not suitable with the kinds of batik, hence it is disadvantaged either the consumer or the manufacturer/Pekalongan batik seller.

By those considerations, a protection model to the manufacturer/batik seller and their consumer will be resulted in this research in an e-label batik application that able to produce the label of "Pekalongan Batik" as a trusted marker.

2. Literatur Review

Kusumaningtyas, on her research, stated that "it is needed to give special protection, which it is given to the expression of traditional custom that has the sense of perpertuating the custom heritage and to retain the

extinction of that custom heritage"[1]. This is suit the regional rule number 6 in year 2014 in protecting Batik as the custom heritage.

The Augmented Reality technology has been used and applied in many fields, some of them are : applied in the home cathalogue with android based [2], applied as the information media of spesification and the interactive goods price android based [3], applied in tourism industry in Dublin by inserting the tourism route of many section and considering the necessity of many parties involve in tourism [4].

3. Research Methodology

The data collecting in this research has been done by some methods, they are : interview, literature review and questioner spreading.

The interview session with Mrs. Wulan Utoyo as the Pekalongan manufacturer/batik seller as well as the owner of Bulan Batik Pekalongan and the member of ASEPHI Pekalongan, some obtained information are as the following:

a) In her effort of supporting the implementation of Pekalongan regional rule number 6 in year 2014, ASEPHI Pekalongan obligue all the member to attached the hologram of "Batik Asli" on all of the batik product they sell.

b) Below is the outlook of the hologram:

Figure 1. Hologram "Batik Asli" (front look)

Figure 2. Hologram "Batik Asli" (back look)

c) The Hologram of "Batik Asli" is used as the marker that the batik is a real one based on its kind and not printing batik.

d) Nevertheless on its implementation, there are no proper monitoring from ASEPHI Pekalongan, thus some negative people of the manufacturer/batik seller use this chance to make fraud by attaching the hologram that is not appropriate with the kinds of batik.

Concerning to the rule of Pekalongan region no.6 in year 2014 [5], yielded the information that all manufacturer/batik seller in/from Pekalongan city should attach the label of "Batik Pekalongan" appropriate with the

kinds of batik and there will be punishment for the one who break the rule.

The questioner spreading has done into 2 (two) group, they are the consumer for about 65 people and the batik manufacturer for about 15 people, the recapitulation are as the following:

The Information from consumer group are:

- 87% consumer stated to have difficulty in differentiating the kinds of the recent batik and how to differ with printing batik;
- The consumer difficulty hasn't been solved by the publishing of regional rule Pekalongan city No. 6 in year 2014, this can be seen by 92% of the consumer stated that batik product sold in Pekalongan hasn't been attached on the label of "Batik Pekalongan";
- Responding to the content of Pekalongan city regional rule No.6 in year 2014, 93% of consumer support the implementation of the rule and 97% of the consumer agree if there is an easiness in accesing the information about the kinds of batik they bought.

The Information from manufacturer/batik seller group are:

- 93% of the manufacturer/batik seller support the implementation of Pekalongan city regional rule No. 6 in year 2014;
- 97% of the manufacturer/batik seller confirm that there should be a monitoring from Pekalongan city government upon the use of "Batik Pekalongan label;
- 94% of the manufacturer/batik seller agreed consumer are given an easiness in accesing such information concerning about the kinds of batik they bought.

From the data collected, problem identification has been done and below are the results:

- The missperception from the consumer that take printing batik as a batik has disadvantages the manufacturer/batik seller in Pekalongan city, this for the consumer tends to choose printing batik for the cheap price.
- The consumer ignorance in differentiating the kinds of batik has made them susceptible to have disadvantaged of a negative people and to have disappoitment from that cheating, this will effect negatively to the business development of the manufacturer/other batik seller;
- The implementation of "Batik Asli" hologram by ASEPHI Pekalongan city as the batik originality marker, hasn't been runned properly since there are no monitoring of it.

After the problems identification are yielded, the next step is identifying the needs, below are the results:

- Consumer need trusted marker to identify the kinds of batik they will buy, thus consumer will not be cheated by some negative people of the manufacturer/batik seller, and this will be an aknowledgement for the consumer to make batik differentiation with other textile product thus the

existence of Pekalongan batik manufacturer/seller will still be sustained.

- Consumer may have accessed the information related to the kinds of batik they will buy/already bought through their smartphone by scan the label of "Batik Pekalongan', thus the information may become their true guideline concerning to the kinds of batik they will buy/already bought as well as to be their aknowledgement and information in differentiating the kinds of batik;
- Consumer may have accessed related information about the kinds of batik they will buy/already bought through smartphone by scan the label "Batik Pekalongan", the application feature is needed to support the Pekalongan city government in monitoring the usage of "Batik Pekalongan" label, thus the implementation of related regional rule may running well.

By those identifications, the needed solution is : Building an e-Label Batik application that able to produce "Batik Pekalongan" label that may be functioned as a trusted marker and become information media to the consumer as well as a supporting feature for Pekalongan city government in doing monitoring.

Below is the system flow for the manufacturer/batik seller:
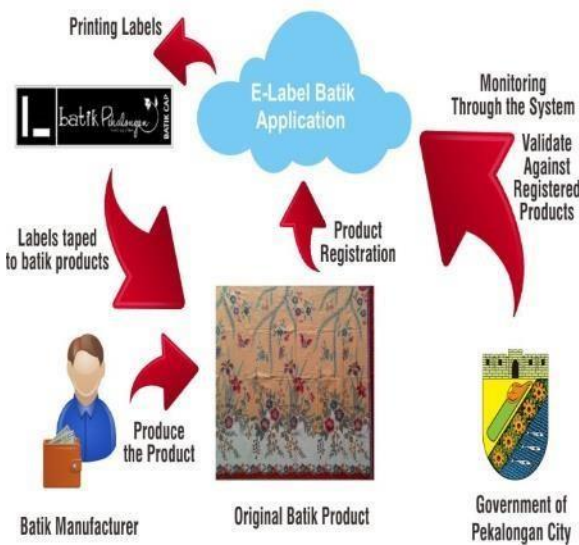
Figure 3. Sistem flow of the Batik Manufacturer/seller

The explanation of the sistem flow of the batik manufacturer/seller:
1. Batik manufacturer/seller register their product to the e-Label Batik system
2. The e-Label Batik system inform the Pekalongan city government, that there is a batik product needs a "Batik Pekalongan" label.
3. Pekalongan city government (or any certain foundation) will print the label of "Batik Pekalongan"
4. Batik manufacturer/seller will attach the label on their registered batik product.

5. The Pekalongan city governmnet will do a validation after checking that the attached label is sustain with its kind.
6. The information of the validated "Batik Pekalongan" label will may be accesed through scanning from the consumer smartphone.
7. The non-validated "Batik Pekalongan" label will give information that the batik product hasn't been yet validated by Pekalongan city government.
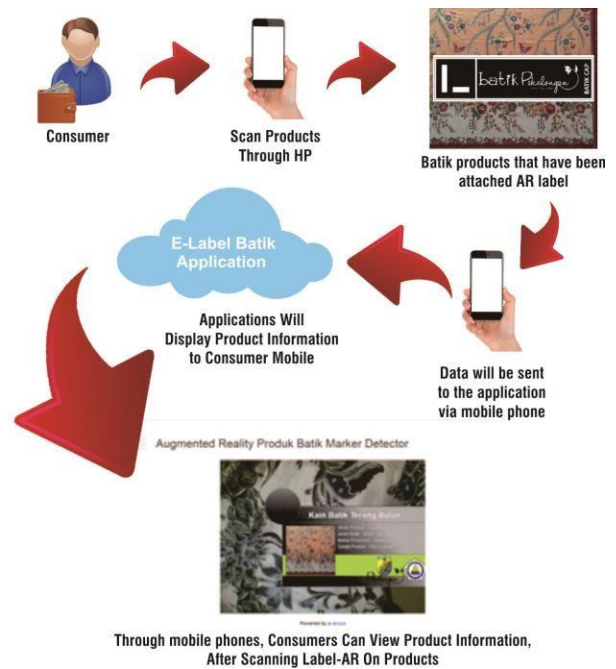
Below is the consumer system flow:

Figure 4. Consumer System Flow

Consumer system flow explanation:
1. Consumer scan the label "Batik Pekalongan" that attached on the batik product, using smartphone that is installed by e-Label Batik application.
2. The e-Label Batik application will read the marker written on the label and connect to the system to attain information for consumer.

There are three types of users on the e-Label Batik system, they are: Pekalongan city government, Batik seller/manufacturer, consumer. Following is the explanation table:

Table 1. The user policy

User name	Policy
Pekalongan city government	- Doing monitoring (control and validation) to the usage of "Batik Pekalongan" label - Printing the label "Batik Pekalongan" - Maintaining the e-label batik system
Manufacturer/batik seller	- Doing member registration as Pekalongan manufacturer/batik seller to the system - Input their their business profile

User name	Policy
	- Doing registration for their batik product to attain the "Batik Pekalongan" label that suit its kind. - Doing follow up upon society complain
consumer	- To acces information about the originality of the batik they bought - To access various information related to batik - May do complain upon incompatibility

The next stage is designing the "Batik Pekalongan" label that refer to the regulation of Pekalongan city No.6 in year 2014, and the results are :

Regular requirements for the "Batik Pekalongan" label:
- To have marker and unique register number
- The length of the label 6.5 cm and the width 2 cm
- Using font "Batik Pekalongan": Mr. Larry Tate (15 pt).
- Using font "Batik Tulis": Arial (7 pt)

a. The shape of the label for written batik:

Figure 5. Label for Written Batik

The color of the written text "Batik Pekalongan" is gold.

b. The shape of the label for printing batik

Figure 6. Label for Printing Batik

The color of the written text "Batik Pekalongan" is white.

c. The shape of the label for combined batik

Figure 7. Label for Combined Batik (Written and Printing)

The color of the written text "Batik Pekalongan" is silver.

The further step is building the applicaiton. The building of this E-label batik is a web based, using framework css bootstrap and programing language php. MySQL is also used in building the database. Library js-aruco library is used in making the marker on augmented reality. Whereas in making the augmented reality, Vuforia that is a software for AR is used and it is developed by Qualcomm.

After finishing the application building, the next step is a unit testing. In this test is not only testing the form of administrator page (Pekalongan City government), form of consumer page, but also testing the marker.

4. RESULT AND DISCUSSION

The builded application consist of three user page, they are: administrator page form (Pekalongan city government), manufacturer/batik seller page form, consumer page form.

Each user has its own authority, as explained on table 1.

Figure 7. Administrator Wall Page

Administrator wall page (Figure 7) is used to maintain the data from manufacturer/batik seller, kinds of batik, marker detection, and doing the product validation.
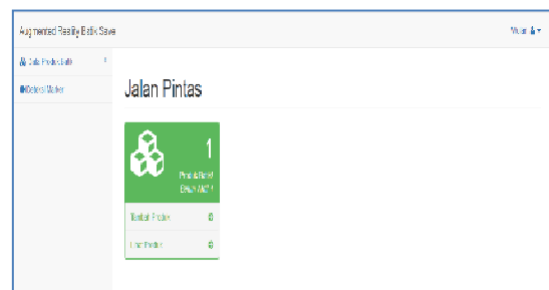

Figure 8. Manufacturer Wall Page

The manufacturer/batik seller wall page consist of two main menu, they are the data of the batik product and the marker detection. On this page, the manufacturer/batik seller are able to add the data of the batik product they will register and may see the product detail as well, moreover they will be able to scan the registered product label.

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Figure 9. Consumer Wall Page

The consumer wall page, is used in detecting the originality of the batik product through AR based batik label, only by scanning the attached label on the product through E-label batik application. If the product bought is the original batik, thus the E-label batik application will display such information concerning that product.

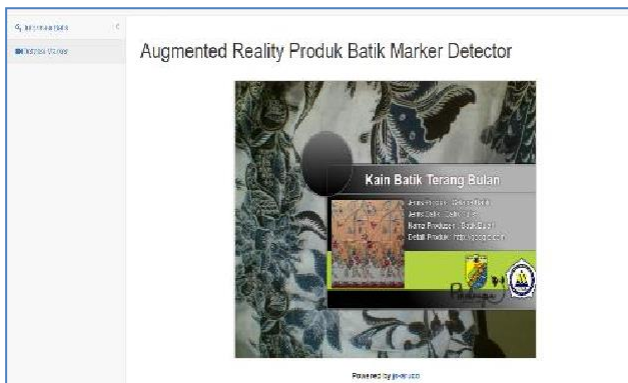In addition, on this page there is also a menu that will give information about how to differentiate batik with printing textile material in batik pattern.

Figure 10. The Registered Product

The testing result done on the marker is as follow: when the marker notified by system through camera on the AR camera view, the ID marker will be displayed, and the marker will clearly be displayed on the marker view display.

Whereas if the marker is not detected by the system, the view marker display will not display the marker (Figure 11). This is due to the camera when catching the marker, the system will catch the dark and bright color bit, if the dark and bright color bit is hard to be analyzed thus the marker will surely be hard detected. Otherwise if the dark and bright bit color is easy to be analyzed thus the marker will easily be detected (figure 12).
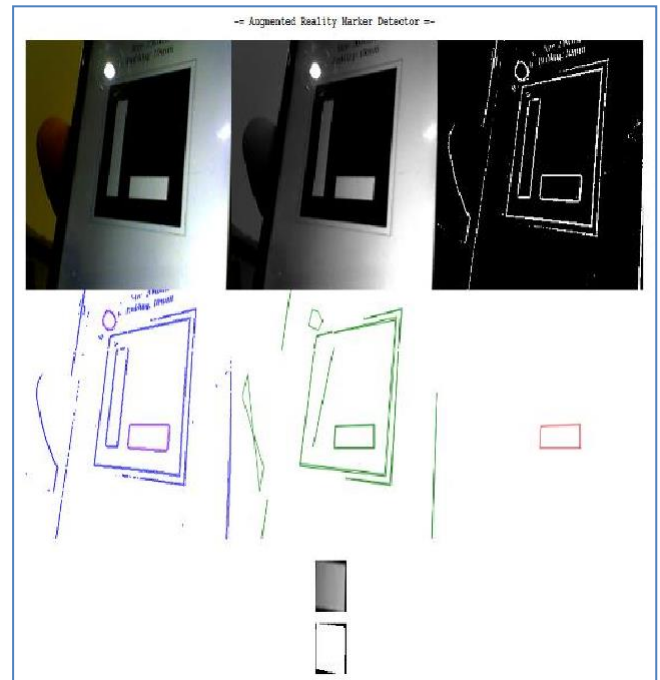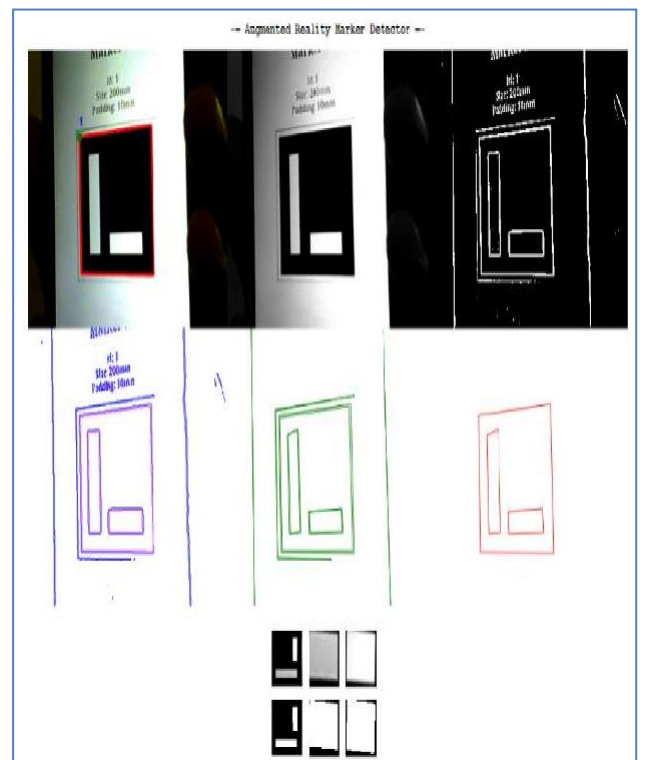

Figure 11. Undetected Marker

Figure 12. Detected Marker
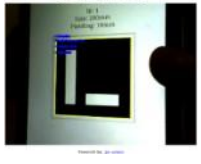
The batik product id will be the feature in analyzing the Batik Product. The result of the testing is shown in the following table, if the id marker hasn't been registered yet thus the id confirmation will not be detected, and this will be happened on the manufacturer information, kinds of batik and batik product will be displayed only if the information have already been registered. From the eight marker testing resulted that 87,5% marker are detected. Table 2 inform about the result of the testing.

Table 2 The result of the marker testing

Result	Id Marker	explanation
	12150	- The first digit, registered manufacturer/batik seller - The second digit, kinds of written and printing batik (combi-nation) - The third digit, production - The fourth digit, undetected id marker
	1001	- The first digit, registered manufacturer/batik seller - The second digit, kinds of written batik - The third digit, batik garment production - The fourth digit, detected id marker
	1011	- The first digit, manufacturer/batik seller - The second digit, kinds of the written batik - The third digit, the production of the batik material - The fourth digit, detected id marker
	1021	- The first digit, registered manufacturer/batik seller - The second digit, kinds of the written batik - The third digit, other batik product - The fourth digit, detected id marker
	1101	- The first digit, registered manufacturer/batik seller - The second digit, kinds of the printing batik - The third digit, the production of batik material - The fourth digit, detected id marker
	1111	- The first digit, registered manufacturer/batik seller - The second digit, kinds of printing batik - The third digit, the production of batik garment

Result	Id Marker	explanation
		- The fourth digit, detected id marker
	1121	- The first digit, registered manufacturer/batik seller - The second digit, kinds of written and printing batik (combi-nation) - The third digit, the production of batik garment - The fourth digit, detected id marker
	1201	- The first digit, registered manufacturer/batik seller - The second digit, kinds of written and printing batik (combi-nation) - The third digit, the production of batik garment - The fourth digit, detected id marker

5. Conclusion

The e-label batik application is able to support the regional rule of Pekalongan city Number 6 in year 2014, this for the label of "Batik Pekalongan" resulted by that application may be functioned as the trusted marker and able to protect consumer in buying the batik product in or from Pekalongan city.

For further action, the active role from Pekalongan city government is needed in doing the monitoring and validation to the usage of "Batik Pekalongan" label, thus the resulted information from the label will be accurate as well as it will not disadvantaged the consumer and it is also indirectly will take part in the conservation of batik custom in Pekalongan city.

By this application, the marker will be detected properly and able to display the expected figure based on the product cathegory. Nevertheless there are still some weaknesses like : this application (in this case js-js-aruco library) will only be runned through Mozilla Firefox browser. Despite the simple marker shape has the possibility of marker imitating.

Hence in the further development, it is expected that the AR marker maker library will be able to run in all kinds of browser and the shape of the marker is expected to be more sophisticated, one of the possible things is by using QR-code.

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6.　Bibliography

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