

Custom and Order Batik Application System (COBS)

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Abstract : Batik in general is a very delicate thing to make and design. As the design of batik keep on evolving throughout the years the same goes for the buyer where many of them want to create a new and unique batik design for themselves. So, the problem resulting to this project development is that batik buyers are having a hard time in specifying their needs and preferred batik design to the batik seller. This research aims to design and develop a custom and order function within a mobile batik identification application. Thus, the project objective is to provide a more efficient platform for the customer to express their needs regarding their preferred batik design where they can custom the batik design by themselves using the tools provided in the application system. Then, the methodology selected for this project development is Rapid Application Development (RAD) model and it includes 4 phases of management strategy. Through previous research we can see that it is more beneficial for all the business industries to improve their business operation through digital implementation. Compatible with the previous research, this project findings indicates that though digital implementation which in this case is the COBS do help improve the batik seller business operation mainly through customer satisfaction. In conclusion, COBS help improve the customer buying batik experience. This project help contributes a better alternative through digital implementation for all the clothing business entrepreneurs to further improve their business operation.

Keywords: Batik, Custom & Order system

1. Introduction

Batik has become one of Malaysia's prominent national treasures that has always been used by Malaysian people in important occasions. Also, the World-Asia Pacific Craft Council (WCC-APR) has recognized Malaysian batik as one of the globally renowned local crafts [1]. Batik has been known to the world community that It is a tradition craft which is originated mainly from Asia [2]. Custom pattern often has a symbolic meaning that is used in certain ceremonies, while the coastal pattern draws inspiration from various cultures. Batik has been used as everyday clothing since ancient times, and is still used and very loved by many Indonesian people today in events ranging from formal to casual. Batik is also an art or craft that is produced through a variety of textile designing techniques. It designs were copies and certain designs were being used by certain people and occasions. Many patterns of

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batik are symbolic. In Malaysia, there are two most common ways of creating Batik pattern and design, which is "Lukis" or "Terap". "Batik Lukis" literally means the artist would draw the pattern onto the material of choice. And "Batik Terap" means that the patterns are made by stamping method using blocks of design.

In 1994, SIRIM had designed an automated tjanting (or is more known as chanting) system to assist local Batik manufacturers in response to the difficulties in mass production of Batik [3]. This system is called Integrated Computer Aided Tjanting System (ICATS M1.0-1). However, this system only allows the artists themselves to design the Batik and imply it to the machine; not the customer themselves. Knowing that by allowing the customer themselves to design their own 1 patterns and design will make the system more interactive and increase customer attractions, a new system called " Custom & Order Batik System " is to be developed as it will let the customers be more in control of their wants and needs.

2. Materials and Methods

The study was conducted following the Rapid Application Development (RAD) methodology proposed by Martin [4]. RAD is an adaptive software development approach which involves prototyping in gathering the requirements for the systems of apps. Although software development methodology transformed continuously [5], RAD is still relevant and being used widely by software developers. The key benefit of a RAD approach is fast project turnaround, making it an attractive choice for developers working in a fast- paced environment like software development. It consists of four main phases namely requirements planning, user design, construction, and cutover as shown in **Figure 1**.

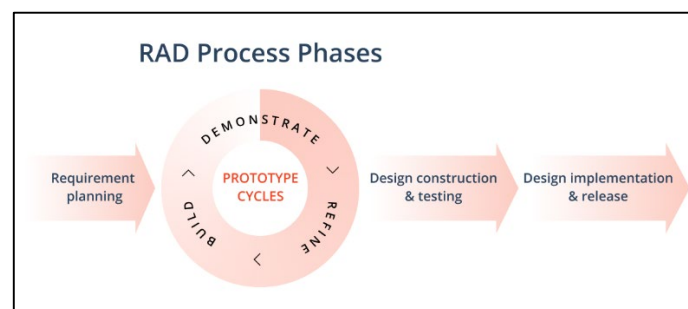


Figure 1: The phases of RAD

Requirement planning stage is to collect system requirements that can be known from the results of observations, interviews and research regarding batik customizing and order. This is to find the current problem, define the requirements for the project and finalize the goal for the project. The requirement for this project is gathered through previous research reference and interview. All of the previous research are search through related keyword such as batik, batik process, batik manual way of designing problems, batik digital implementation or effects of batik design process. Then, there are simple interviews conducted with three of batik buyer through google meet platform. Simple questions are asked such as what is the problem they faced when they want to custom their batik design. Through the research and interview session all the requirements need for this project further development are gathered.

Based on all the requirements gathered in phase 1, COBS prototype design is start to develop. The prototype design is develop focusing more on the custom tools that will help the user in designing their preferred batik design efficiently. Here is where all the process of build, test and redo the prototype keep repeating. So, the custom interface prototype design was constantly changing in order to give the best experience to the user. Using use case diagram, class diagram and sequence diagram.

The use case diagram helps me understand the COBS process from the user (batik buyer) perspective better and it is develop using Visual Paradigm website tools. Then, class diagram was

developed in order to provide detailed insight into the structure of the custom and order systems and we used VioletUML tools to develop it. To further understand the sequences of COBS the sequence diagram was developed using Visual Paradigm tools. Lastly the activity diagram is added to complete the prototype design. This method gives developers the opportunity to tweak the model as they go until they reach a satisfactory design. Both the software developers and the clients learn from the experience to make sure there is no potential for something to slip through the cracks.

The third phase rapid construction phase is where the prototype is turned into a real software system. Based on the second phase prototype, the developers can construct the final working model more quickly because all the iterative parts have already been done. The high-fidelity prototype was developed on Figma where it helps me to easily construct the interface of COBS because all the tools are provided in the Figma platform. Then, the design has been presented to my lecturer and supervisor for further improvement. Only then, the design buttons and functions are developed to make a full high-fidelity prototype which is COBS working properly as an application system.

This is the implementation phase where the finished product goes to launch. All the custom and order system's data conversion, testing, and changeover as well as user training is included in this phase. This is where the systems field testing is done. For the field-testing process, we have decided to choose 20 random people to act as the user and answer the post-task questionnaire provided through google form platform. Further explanation regarding the field-testing result will be explained in section. Any changes regarding the system function are made during this phase while the developers and client are looking for any bug during maintenance. So, based on the field-testing result and feedback from the customer, further improvement is made to COBS.

3. Results and Discussion

The application prototype for COBS is named Batik Brew. It represents the requirements explained in the previous subsection. Software prototyping is a standard way of demonstrating the software requirements so that further comments and suggestions could be obtained from the users based on their experience in interacting with the prototype. The high-fidelity prototyping has been done using Figma application tools. Meanwhile, Visual Studio Code was used as the main integrated development environment (IDE) tool. Further, the Firebase development platform was used to facilitate crucial functions like user authentication, and database for data storage. Screenshots in **Figure 2** show some of the selected interfaces of Batik Brew COBS.



Figure 2: Custom main interface (left) and flora motif pattern interface (right)

3.1 The evaluation setting

A formative usability evaluation was conducted on 20 respondents, consist of various people in Malaysia. This is a qualitative approach to collect feedback on the user flow and interface of the prototype. The evaluation is conducted through google form platform [6] blast in the social media such Whatsapp group and Facebook. The respondents participated in the study on a voluntary basis. The post-task questionnaire was adapted from [7] which consists of 19 items in three sections. Section A asked the respondents' demographic information, Section B asked the respondents opinion about Custom and Order Batik System (COBS) in a five-point Likert scale where one represents strongly disagree, and five represents strongly agree. Lastly, Section C asked the respondent regarding their satisfaction using COBS in a simple multiple-choice question that provide three answer option which are Yes, No and Not sure answers. The respondents performed the following step-by-step procedure for the evaluation: (1) read the instruction (2) interacted with COBS as stated in the experiment procedure, and (3) answered the post-task questionnaire

3.2 The respondent's demographic information

The 20 respondents involved 13 females and 7 males' random people. The respondents' demographic information revealed that half of the respondents aged between 20 to 30. Meanwhile, 8 respondents (40%) are 30 above and only 2 respondents aged below 20. Then, most of the respondents are interested in which 70% of them. The other 30% include 3 respondents are no interested and the extra 3 not sure whether they are interested in batik. However, it is an achievement because most of them are interested. Next, almost all of the respondent does buy batik which include 16 of the respondents (80%) and only 4 respondents do not buy batik. This is a very crucial question as it might affect their perspective towards application system. The last question asked in the respondent's demographic section is whether they face any difficulties when they want to buy customize batik. 11 respondents (55%) of them answer yes while the other 45% answer no. This might vary based on whether the respondents have ever bought any custom batik stuff or not.

3.3 The usability of COBS

An analysis was conducted on the respondents' responses in Section B of the post-task questionnaire. The section measures the respondents' perception towards COBS usefulness and ease of use. The result show that none of the respondents choose "strongly disagree" and "disagree" answer option. Most of the respondents agree with all the statements provided in the questionnaire. Only a few of them rated "neutral" and "strongly agree" for statements in Section B as shown in **Table 1** and **Table 2** also measured the respondents' satisfaction towards COBS.

3.4 Respondents satisfaction using COBS

Section B consist of five statements regarding the respondent's satisfaction using COBS. The respondent's satisfaction is measured through simple multiple-choice question with three answer option "Yes", "No" and "Not sure". As shown in **Table 3** none of respondents are not satisfied with all statement in Section C. Majority of the respondents were satisfied and only some of them not sure whether they agree with some of the statements or not.

The outcomes of the evaluation suggested that COBS is useful and easy to use. Analysis of the respondents' feedback about the specific features offered by COBS shows that most of the respondents agree that the processes were straightforward, easy to understand and useful. However, further improvement also needs to be taken in order to help the customers meet their needs. Batik seller also can gain benefits through this COBS in order to provide a better platform to their clients. In terms of the user interface, most of the respondents agree that COBS interface is good or pleasant enough for them to use however certain font size might be change for further improvement. Thus, the respondent is satisfied with the appearance of the mobile app and intended to recommend the apps to other.

Table 1: The respondent responses on usefulness of COBS

The post-task questionnaire items	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
COBS improve my batik buying experience.	0 (0.0%)	0 (0.0%)	9 (45.0%)	11 (55.0%)	0 (0.0%)
COBS meets my needs.	0 (0.0%)	0 (0.0%)	9 (45.0%)	9 (45.0%)	2 (10.0%)
COBS does everything I would expect it to do.	0 (0.0%)	0 (0.0%)	2 (10.0%)	16 (80.0%)	2 (10.0%)
COBS is useful in overall.	0 (0.0%)	0 (0.0%)	4 (20.0%)	10 (50.0%)	6 (30.0%)

Table 2: The respondent responses on ease of use of COBS

The post-task questionnaire items	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
All the button function properly.	0 (0.0%)	0 (0.0%)	3 (15.0%)	16 (80.0%)	1 (5.0%)
COBS is easy to use.	0 (0.0%)	0 (0.0%)	0 (0.0%)	11 (55.0%)	9 (45.0%)
COBS is user friendly.	0 (0.0%)	0 (0.0%)	0 (0.0%)	11 (55.0%)	9 (45.0%)
COBS is flexible.	0 (0.0%)	0 (0.0%)	0 (0.0%)	11 (55.0%)	9 (45.0%)
I can use COBS without written instructions.	0 (0.0%)	0 (0.0%)	0 (0.0%)	12 (60.0%)	8 (40.0%)

Table 3: The Respondent Satisfaction using COBS

The post-task questionnaire items	Yes	No	Not Sure
I am satisfied with the overall design.	16 (80.0%)	0 (0.0%)	4 (20.0%)
I am satisfied with COBS.	14 (70.0%)	0 (0.0%)	6 (30.0%)
COBS is really helpful.	11 (55.0%)	0 (0.0%)	9 (45.0%)
I have a pleasant time using COBS.	18 (90.0%)	0 (0.0%)	2 (10.0%)
I will recommend Batik Brew COBS to other people.	13 (65.0%)	0 (0.0%)	7 (35.0%)

4. Conclusion

In conclusion, this paper described the design and development of a mobile app for custom and order batik system. There are many aspects of batik can be studied. Further improvement can be made is that to add more function to this system in order to attract more user. Through the past studies we also can gain many knowledge regarding the effect of manual way of batik design process and many study suggested the batik industry to move to a better in doing it. So that, the batik industry can continue to thrive forward without any disturbance or barrier.

This custom and order system is one of the alternatives that can help make improvement for the batik industries. With the implementation of online platform where people can have freedom on what they want to do it will definitely give benefits to the industry and country. Through this idea if further improvement and more function are added and also if the system can function perfectly, it will bring much joy to all batik entrepreneur and batik buyer. With COBS, batik seller can save a lot of budget and materials meanwhile batik buyer can have a better platform to express their preferred design before go the batik seller.

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