Analysis of usability and user experience on the batik’s website design

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Abstract. Batik is one of Indonesia’s cultural heritage that has been recognized internationally such that this commodity is in demand by most local and international markets. For that reason, it is significant to promote and make an offer to those markets in an effective and attractive way. E-marketing is a method of the company to communicate, promote, and sell products and services over the internet. However, some Batik industry in Indonesia has not applied this technique optimally though they have the website. It is indicated by a number of customers interacting with the company are still low which is around 3,735 visitors for 4 months. And they utilize the Batik’s website for only the tour, not executing the purchase. Thus, it is beneficial for evaluating the quality of the Batik website. The objective of this study is to analyze the usability and responsiveness level of one of the Batik websites in a certain company in Indonesia. Usability test and user experience method were utilized in this study where about the 30 experienced respondents is participated. Descriptive statistical analysis is conducted to explain the status of the website. Result of this study shows that the usability level of the existing Batik website is not effective, not efficient, not satisfaction. While the level of responsiveness is not responsive (Bad Level). This is indicated a score of attractiveness, perspicuity, efficiency, dependability, stimulation, novelty is 0.12, -0.25, -0.24, 0.12, 0.08, -0.20 respectively. The recommended design in this study is valid to satisfy the user requirements at 5% of significant levels statistically.

1. Introduction
Batik is one of Indonesia's cultural heritage that has been recognized internationally with approved by UNESCO (United Nations of Educational, Scientific, and Cultural Organization) at October 2, 2009 as the artefact cultural heritage of Indonesia. This recognition makes a glory and at the same time a very strategic milestone for Indonesia as the cultural identity as well as bringing to increase the economic value where the fact show that Indonesian’s Batik is in demand by most local and international markets. For this reason, it is significant to promote and make an offer to them in an effective and attractive way. E-marketing is a method of the company to communicate, promote, and sell products and services over the internet [1].

Currently, the internet is a media used mostly by people in the world and likewise in Indonesia. Internet users in Indonesia are increasing from 132.7 million in 2016 to 143.26 million in 2017 from a 262 million populations [2]. It was also noted that everyday people (43.89% of population) in Indonesia operating a minimum duration of internet about 1 to 2 hours. As for 50% more of people uses internet for 4 up to 7 hours per day [2]. This fact raises business opportunities to be able to increase the sales of Batik products, one of which is by utilizing the website as an e-marketing method.

However, some Batik industry in Indonesia has not mostly taken advantage of this opportunity optimally though they have the website. It was indicated that a number of customers who interacts with the company through the website are still low around 3,735 visitors in May to August 2019. And they utilize the Batik’s website for only the tour, not executing the transaction. This circumstance emerging a question about how good is the quality of the website system? It may the design of the website is not
easy to use and attractive for a customer such as it was stated by [3] in which the difficulties in the use of the system will give an impact to the reputation of a company.

Thus, it is beneficial for evaluating the quality of the Batik website. The objective of this study is to analyze the usability and the responsiveness level of one of the Batik websites in a certain company in Indonesia.

2. Research Method

2.1. Survey
The survey was conducted by interviewing the company's Co-Founders who were business partners and handled the sales and digital marketing systems of the Batik website. This activity aims to explore the problems experienced by the company related to suboptimal function of the website used as an e-marketing media. It was indicated with the data of sales. The survey was conducted in 2 times on May 29 and July 30, 2019.

2.2. Empirical Study
The empirical study was carried out to collect the relevant data on usability and user experience of Batik websites.

2.2.1. Subject
The respondents participated in this study are some customers who familiar with e-marketing and have experienced buying a product via the websites. Their age is in range 15-27 years as well as have 6 to 16 years in utilizing the internet. They are consisted of 15 males and 15 females.

2.2.2. Apparatus
This study used some apparatus as the follows:
- Questionnaires of System Usability Scale (SUS) and User Experience Questionnaire (UEQ) for analyzing usability and user experience aspects. SUS is a questionnaire that refers to the Standard Usability Questionnaires that are used to measure satisfaction aspect. And the main goal of the UEQ is to allow a fast and immediate measurement of user experience which includes aspects of attractiveness, perspicuity, efficiency, dependability, stimulation, and novelty [4].
- Screen recording software is used to record respondent's activities when accessing the website.
- Corel X7 software, Canva application, Adobe XD software, Marvel App application, are used to redesign initial websites and make prototypes.

2.2.3 Experimental Design
The experiment was done in the Ergonomics Laboratory which participants were asked for doing the task by using laptop Intel Core i3 version. A preliminary test was conducted to identify an experience of respondents in using website. They are in sitting position to operate the computer in comfortable position and complete the task for 30-60 minutes. Subsequently the respondent is asked to fill in the questionnaires to test usability and user experience of the website. Then the interview is conducted to explore some matters in using Batik website to make a deal with the company. Figure 1 describes the layout design of experiment.
2.2.4. Task Design
A task conducted in this study was composed of three parts which is the result of discussions with the company’s Co-Founders who want to find out how good the quality of the 3 main features of the website are. The first task is to buy 1 batik cloth with a price in range 440,000 rupiahs to 545,000 rupiahs for male and 1 batik cloth with a price more than 950,000 rupiahs for female by using full payment. The second task is to confirm the payment done. And last task is to carry out the process of returning and exchanging goods purchased because of there was a discrepancy between the items received and those ordered.

2.2.5. Procedure of Experiment
Experiment study was conducted as following procedure. Respondent was informed about the objective and the rules of this study. Each respondent was asked to do the task by clicking the start button on the screen recording software. After each task is completed, the respondent tells the researcher to press the stop button and save the video. Then, each respondent was asked to fill in the SUS and UEQ questionnaire related to their assessment of the website. After completing the questionnaires, each respondent submits the questionnaire to the researcher. Lastly, each respondent was asked about their perceptions and responses experienced when interacting with the Batik website. The researcher shows the website design that is tested and asks questions about the website based on the answers to the questionnaires. The researcher closes the interview session and thanks the respondent for the time given.

2.3. Statistical Analysis
Descriptive statistical analysis is conducted to test the hypothesis of the website. The data is presented in graphical form of average calculation and percentage calculation of each aspect.

3. Result and Discussion

3.1. Result of Usability Analysis
Figure 2 describes the result of usability test. It explains the effectiveness in use of the Batik website which the average success rate in completing the task is 85.6%. This phenomenon shows that user of the website still experiences some error in access that is 13 respondents from 30 (43.3%). The errors
occurred is resulted from uninformative and unresponsive of interface as well as incomplete command. This condition produces confusion of user in accessing the website to make transaction.

![AVERAGE SUCCESS RATE](image)

**Figure 2.** Average success percentage of effectiveness.

As for Figure 3 presents a level of error for each task. This figure explains level of error in completing task 1; buy 1 batik clothes for male and 1 batik clothes for female in which as much 232 errors were occurred consisting of mistake in selecting a size (53 times), mistake in typing an address (10 times), mistake in filling some data such as a misspelt word in typed (25 times), mistake in filling out the address (3 times), mistake in choosing filter and catalogue (12 times), mistake in choosing the clothes (2 times), mistake in choosing the quantity of clothes (10 times), mistake in clicking unrelated features with the given task (85 times), mistake in doing revision activity errors task (19 times), mistake in name input (2 times), mistake in repeating clothes buying activities (11 times). In completing task 2; to confirm the payment done in which as much 77 errors were occurred consisting of mistake in filling account number (7 times), mistake in filling name of account owner (1 time), mistake in filling date (2 times), mistake in filling some data such as a misspelt word in typed (44 times), mistake in doing revision activity errors task (7 times), mistake in filling data name (8 times), mistake in clicking unrelated features with the given task such as opening the basket feature, click payment, click home, click make order (8 times). And in completing task 3; to carry out the process of returning and exchanging goods purchased in which as much 150 errors were occurred consisting of mistake in not selecting the return feature (1 time), mistake in clicking unrelated features with the given task (149 times) such as clicking catalog feature, blog feature, search feature, home and page refresh feature, FAQ feature, privacy policy feature, my account feature, size guide feature, promotions feature, store location feature, order tracking feature, login feature, Instagram feature, confirm payment feature, Facebook feature, chat feature.
Figure 3. Level of error for each task.

Figure 4 explains the efficiency level of customer in using the Batik website in which the average time in completing the task 1 is 567 second. It because of the customer experienced some error, 232 errors, when ordering 1 batik clothes for male and 1 batik clothes for female. While task 2 is 136 second where this was happened because of the customer experienced some error, 77 errors, when confirm the payment done. And task 3 is 194 second where this was happened because of the customer experienced some error, 150 errors, when carry out the process of returning and exchanging goods purchased.

Figure 4. Average elapsed time for each task.
Figure 5 explains the level of customer satisfaction in using the Batik website as many as 12 respondents (40%) assess the average satisfaction level of the website with 62.1 results categorized as Ordinary and Marginally Acceptable. It means the Batik website can still be accepted within marginal limits because the customer feels no significant obstacles and is not too confused. But there are still many features that are inconsistent so that customers make mistakes. While as many as 15 respondents (50%) assess the average website satisfaction level with 34.5 results that are categorized as Poor and Not Acceptable. And as many as 3 respondents (10%) rate the average website satisfaction level with 21.7 results categorized as Worst Imaginable and Not Acceptable. It means the Batik website is not informative in which the content is still difficult to understand so as the most errors occurred. And moreover, the Batik website is also not responsive in which if there is some error, no immediate feedback to the user. Thus, this phenomenon proves that the existing Batik website does not accumulate the requirements of the customer.

![Satisfaction Level of Customer](image)

**Figure 5.** Satisfaction level of customer.

### 3.2. Result of User Experience

Figure 6 describes the result of user experience (UX) test on bases customer survey using User Experience Questionnaire. This survey involves six criteria. They are attractiveness, perspicuity, efficiency, dependability, stimulation, and novelty. Attractiveness is user’s impression of the product including like or dislike, enjoyable or pleasing and bringing out the user to experience. While perspicuity is related to easy to get familiar with the product, easy to learn, and easy to understand. And efficiency is associated with an effort used and speed in completing the task. Dependability involves the user feeling in control of the interaction and safety. As for stimulation is a user’s feeling on exciting product and also fun. Finally, novelty is an innovation of product that brings about user’s attention [5]. The result of UX test shows that the average score of each criterion is 0.12 for attractiveness, -0.25 for perspicuity, -0.24 for efficiency, 0.12 for dependability, 0.08 for stimulation, and -0.20 for novelty. Subsequently, these scores were benchmarked with the result of previous research by [6] that using 401 products evaluated. Result of this benchmarking is presented in Figure 6 and Table 1.
Figure 6. UEQ benchmark chart.

Table 1. Comparison to benchmark.

| Criteria     | Score | Score References | Interpretation |
|--------------|-------|------------------|----------------|
| Attractiveness | 0.12  | 0.70             | Bad            |
| Perspicuity   | -0.25 | -0.71            | BAD            |
| Efficiency    | -0.24 | 0.57             | Bad            |
| Dependability | 0.12  | 0.77             | Bad            |
| Stimulation   | 0.08  | 0.50             | Bad            |
| Novelty      | -0.20 | 0.25             | Bad            |

Figure 6 and Table 1 explained that the Batik website investigated was classified into Bad level. It because of the score obtained for each criterion was below the score reference which this level describes the website does not accommodate the user criterion so as its quality is identified as not attractive, not perspicuity, not efficient, not dependable, not stimulate, and not innovative. This state of affairs demonstrates that the Batik website used currently is not responsive to implement in the user mind. Thus, the existing website should be improved based on UX concept. According to [7], UX will help to understand the users need. The impact is the user will be able to memorize an experience obtained so as it may be repeated and trust to make some transactions at another opportunity. While Mc Knight et. al in [8] explained that if consumers see the good quality of the website, they will be encouraged to willing doing an online transaction and it will grow satisfaction and loyalty on customers. Oliver in [9] states that loyalty is a commitment held firm to repurchase a product or service.

4. Conclusion

The conclusion of this study can be mentioned as follow:

- The usability level of the existing Batik website is not effective, not efficient, not satisfaction in which score of them respectively shows that an average of success rate is 85.6%, the level of error in completing task 1 is 232 errors, in completing task 2 is 77 errors, in completing task 3 is 150 errors for effectiveness criteria. As for the average time in completing the task 1 is 567 second while task 2 is 136 second, and task 3 is 194 second for efficiency criteria. While for satisfaction criteria in using the Batik website is only 40% of user with score 62.1 that is classified as Ordinary and Marginally Acceptable, 50% of user with score 34.5 that is categorized into Poor and Not Acceptable, and 10% of user with score 21.7 that is categorized into Worst Imaginable and Not Acceptable.

- The user experience level of the existing Batik website is not responsive (Bad Level) in which the website is not attractive (0.12), not perspicuity (-0.25), not efficient (-0.24), not dependable (0.12), not stimulate (0.08), and not innovative (-0.20).
5. Recommendation
The recommended design in this study as a prototype of the Batik website for improvement can be seen in the appendix in which the design was developed based on the usability and user experience concept. However, this design also involved a guideline developed by the U.S. Department of Health and Human Services (HHS) and U.S. General Service Administration in [10] on The Research-Based Web Design & Usability. And in the second place, the proposed design is valid to satisfy the user requirements at 5% of significant levels statistically.

Acknowledgement
We wish to acknowledge the Directorate of Student Development Islamic University of Indonesia Yogyakarta-Indonesia for funding this project.

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Appendix A. Recommended design

Table A.1 Proposal design results 1.

| Before | After |
|--------|-------|
| ![Before Image](before1.png) | ![After Image](after1.png) |

Avoiding cluttered appearance, creating a level of importance of information, minimizing the number of clicks or pages that correspond to related information.

Table A.2 Proposal design results 2.

| Before | After |
|--------|-------|
| ![Before Image](before2.png) | ![After Image](after2.png) |

Ensure that the required information is displayed by adding supporting documents.
Table A.3 Proposal design results 3.

| Before | After |
|--------|-------|
| ![Before image](image1.png) | ![After image](image2.png) |

Place important features that are often accessed at the top center of the page.

Table A.4 Proposal design results 4.

| Before | After |
|--------|-------|
| ![Before image](image3.png) | ![After image](image4.png) |

Only display information that is needed by removing information that is less useful or optimizing it to make it more useful.
Table A.5 Proposal design results 5.

| Before | After |
|--------|-------|
| ![Before image](image1.png) | ![After image](image2.png) |

Announce changes by adding notification display and message.