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Batik MSME Acceptance Model for Technology in Jbatik Application in East Kalimantan, Indonesia

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Abstract. The sub-sector of creative industry that gives the hugest contributes to the national GDP is the handicraft subsector, followed by the fashion subsector and the next is the advertising subsector. Batik handicrafts in East Kalimantan have also been developed into fashion products by starting to hold many fashion events, one of which is made from batik, so that batik in East Kalimantan is very potential because in addition to being included in the handicraft subsector, it is also classified as a fashion subsector where the two subsectors are included in the top three creative industry sub-sectors contributing to national GDP. Of the several technologies made as a form of process innovation for the batik process, the easiest one to be applied is the use of software to design batik motifs considering that the price is affordable compared to equipment for other stages in the batik process. The development of batik including the use of software technology to make batik motif designs first developed in Java in accordance with the history of batik that batik is indeed a tradition of living on the island of Java. Thus, the development of its innovation outside Java is not as fast as in Java, including in the use of technology as like the use of software to design batik motifs. With the background mentioned above, it is necessary to conduct research on the batik MSME acceptance model for technology in the jBatik application in East Kalimantan, Indonesia. The methods used were validity test, reliability test, and Spearman rank correlation test. The result was that the correlation between Perceived Usefulness and the Actual System Use variable had a strong relationship level because the value was 0.859 as well as Perceived Ease of Use with the Actual System Use variable. In addition, the both correlation values had a two-asterisk sign so that the value was significant, or in other words there was a positive and significant relationship between the Perceived Usefulness variable and the Actual System Use variable and also the Perceived Ease of Use with the Actual System Use variable.

Keywords: *reception, batik, technology, jBatik, East Kalimantan*

1. Introduction

The national creative industry is experiencing an increase growth every year. Current developments, the increase in the growth of the national creative industry reaches 7% [1]. Since its emergence in 2007 until now, the creative industry has contributed greatly to the national gross domestic product (GDP), especially in 2015 until now it has shown an increase. In 2015, it was recorded that the contribution of the creative industry to the national gross domestic product (GDP) was Rp. 852 trillion and in 2020 it reached Rp. 1,100 trillion.

The creative industry sub-sector that gives the hugest contributes to the national GDP is the handicraft subsector, followed by the fashion subsector and the next is the advertising subsector. The handicraft sub-sector has remained afloat in recent years as the largest contributor to national GDP because there are still many supporting natural resources available. In East Kalimantan itself as a candidate for a new capital, the growth of the creative industry has also increased and there are 4 subsectors that are the mainstay in the future will develop, namely architecture because there will be many constructions of buildings, especially office buildings, interior design as a filler of buildings that will be made a lot, culinary as food needs that are increasing due to the plan to move the capital and the last subsector is handicrafts. The total export value of East Kalimantan SMEs in 2020 reached Rp. 428.2 billion

The handicraft sub-sectors in East Kalimantan that penetrate the exports include processed wood, bead accessories, stones, rattan handicrafts and Mandau. According to [2], the craft instruments in East Kalimantan that have the potential to be developed are the handicrafts made from textile, leather, wood, webbing, paper, glass as well as metal, furniture/furniture businesses, jewelries and valuable goods. In addition to expanding exports, SME craft products in East Kalimantan are also successful in the domestic market including bead accessories, stones, Samarinda sarongs, woven beads, wicker rattans, Ulap doyo and Mandau. For textile-based handicrafts typical of East Kalimantan, which are already very developed today, they are represented by Samarinda sarongs and Ulap doyo. Meanwhile, another textile-based handicraft that is currently being developed is East Kalimantan batik. Batik handicrafts in East Kalimantan have also been developed into fashion products by starting to hold many fashion events that batik as the main source so that batik in East Kalimantan is very potential. It is because batik is not only included in the handicraft subsector but also in the fashion subsector which both of them are in the three top creative industry subsector that gives the most contribution to national GDP. Moreover, there are batik MSMEs in East Kalimantan that have a fairly high turnover of Rp. 1 billion per year and increasingly increasing.

As a relatively new player, batik MSMEs in East Kalimantan must have a competitive advantage among textile-based MSMEs in East Kalimantan such as Samarinda sarong and Ulap doyo. One aspect that can be used as part of a business strategy is innovation. As concluded from research that has been carried out by [3], [4], [5] that there is a positive relationship between the innovation strategy of the craft industry and the competitive advantage in the era of the Industrial Revolution 4.0. One of the innovation strategies that can be done is innovation in the process, namely production methods. From the research that has been carried out by other parties about production methods is to create tools that can help in the batik process with technology, including the design processed using software [6][7], panthograph canting tool [8] which speeds up the canning process and automatic highlighting tool [9].

Of the several technologies made as a form of an innovation in the process for the batik process, the easiest process to be applied is the use of software to design batik motifs considering that the price is affordable compared to equipment for other

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stages in the batik process. One of the software for designing batik motifs is Jbatik. The use of Jbatik software has been widely applied by MSMEs / batik business actors, especially in Java, as according to [10] that the use of jbatik design software in Alfa Shoofa and Muria Batik SMEs in Kudus for making batik motifs with only one digital batik pattern can be combined with other patterns in jbatik can produce new patterns. According to [11] about training on the use of jBatik software to teachers of MGMP cultural arts at Tulungagung Regency Junior High School that after the training was carried out, participants agreed that the activities carried out by the team provided great benefits in increasing the knowledge of junior high school cultural arts MGMP teachers in Tulungagung Regency regarding fractal batik patterns and jBatik software.

The development of batik including the use of software technology to make batik motif designs was first developed in Java in accordance to the history of batik that batik is indeed a tradition of living on the island of Java. According to [12] in Acculturation in Rupa Language on Dutch Batik Motifs Cirebon and Javanese coastal batik explained that the cultural products produced in textile products were batik, which was a technique of dyeing typical Indonesian fabrics, especially developing rapidly in the Java region. In addition, Rouffer explained that the gringsing pattern batik motif had been used by the people of Kediri, East Java in the 12th century. Unlike in Java, in East Kalimantan batik art has only begun to exist since 1983 [13] and began to develop in the 2000s. Thus, the development of innovation is not as fast as in Java, including in the use of technology as like the use of software to design batik motifs. With the background mentioned above, it is necessary to conduct a research on the batik MSME acceptance model for technology in the jBatik application in East Kalimantan, Indonesia.

2. Materials and Methods

2.1 Materials

The research was carried out in East Kalimantan on batik MSMEs spread across Samarinda, Balikpapan and Kutai Kartanegara. The total population of batik MSME workers in East Kalimantan was 101 according to the Provincial Government in Indonesia in Siregar, et al (2020). The sample size was carried out using the Slovin technique according to [14]. This research used the Slovin formula because in sampling, the number must be representative so that the results of the reserach can be generalized and the calculation does not require a table of the number of samples but can be done with simple formulas and calculations. The Slovin formula is $n = N/(1+Ne^2)$, where the Slovin formula has a provision that is the value of e = 0.1 if the population is large, and the value of e = 0.2 if the population is small. Because the number of samples is only 101, a percentage of 20% (0.2) is used. Then the sample of this research can be calculated as follows:

$n = 101/(1+101x0.2^2)$

$n = 101/5.04 = 20.04;$

rounded up to 20 respondents.

Based on the calculations above, the respondents in this research were at least 20 respondents. Because there were 39 respondents in this research so that they had met the applicable formula.

Before presenting data analysis, in this section descriptive statistics are presented based on all the results of respondents' answers to each variable measurement indicator. The descriptive statistics in this research are as follows:

1. Variable Perceived Usefulness (X1)

   Variable X1 in this study used 4 question items spread across 39 respondents. The results of the response are as follows:

Table 1. Variable Perceived Usefulness (X1)

No.	Question Items	1	2	3	4	5	6	7	Total
1	Using computer software to create batik motifs improves my work performance	0%	0%	2,6%	10,3%	7,7%	25,6%	53,8%	100%
2	Using computer software to create batik motifs accelerates my work	0%	0%	2,6%	7,7%	5,1%	28,2%	56,4%	100%
3	Using computer software to make batik motifs increases the effectiveness of my work	0%	0%	2,6%	7,7%	15,4%	25,6%	48,7%	100%
4	I feel computer software to make batik motifs useful in my work	0%	0%	2,6%	10,3%	10,3%	33,3%	43,6%	100%
	Average	0%	0%	2,6%	36%	9,6%	28,18%	50,6%	

The table above shows that the majority of respondents answered in agreement by 88.38% on the Perceived Usefulness variable. Of the 4 question items, the one that received the most positive responses was question number 2 and 3, which was 89.7% respectively.

2. Variable Perceived Ease of Use (X2)
   Variable X2 in this research used 4 question items spread across 39 respondents. The results of the responses from the respondents were as follows:

Table 2. Variable Perceived Ease of Use (X2)

No.	Question Items	1	2	3	4	5	6	7	Total
1	Computer software application to make batik motifs clear and easy to understand	0%	0%	2,6%	10,3%	20,5%	30,8%	35,9%	100%
2	Easy to become an expert in using computer software to make batik motifs	0%	0%	2,6%	12,8%	17,9%	35,9%	30,8%	100%
3	Computer software to make batik motifs easy to learn and use	0%	0%	2,6%	12,8%	12,8%	43,6%	28,2%	100%
4	Using computer software to make batik motifs does not require much effort	0%	2.6%	5.1%	17.9%	17.9%	20.5%	35.9%	100%
	Average	0%	0.65%	3.2%	13.45%	17.28%	32.7%	32.7%	

The table shows that the majority of respondents answered in agreement by 82.68 % on the Perceived Ease of Use variable. Of the 4 questions, the one that received the most positive response was question number 1, which was 87.2%.

3. Actual System Use (Y) Variable
   Variable Y in this study used 2 question items spread across 39 respondents. The results of the responses from the respondents were as follows:

Table 3. Actual System Use (Y) Variable

No.	Question Items	1	2	3	4	5	6	7	Total
1	Using computer software to create batik motifs improves my work performance	0%	0%	2,6%	7,7%	15,4%	25,6%	48,7%	100%
2	Using computer software to create batik motifs accelerates my work	0%	0%	2.6%	7,7%	7.7%	25.6%	56.4%	100%
	Average	0%	0%	2.6%	7.7%	11.55%	25.6%	52.55%	

The table above shows that the majority of respondents answered that they agreed with 89.7% on the Actual System Use variable. From 2 questions, it turned out that both of them received a positive response, namely 89.7% each.

2.2 Methods

The methods carried out include validity tests, reliability tests, and Spearman rank correlation tests.

3. Results and Discussion

After explaining the descriptive statistics of the respondents' answers, then to find out the results of data analysis on the variables Perceived Usefulness and Perceived Ease of Use against Actual System of Use, data processing was carried out using Statistical Package Social Science (SPSS) software. Furthermore, validity tests, reliability tests and spearman rank correlation tests would be carried out. According to Sugiyono (2010;179), the criteria are valid as described as follows:

a. If $r \geq 0.3$, then the items are declared valid
b. If $r \leq 0.3$, then the items are declared invalid

The results of validation tests that have been carried out using SPSS can be seen in the following table:

3.1. Validity Test

Validity tests need to be carried out to ensure that the data is reliable and precise to be able to measure what should be measured according to reality. The results of the validity test that had been carried out in this research can be seen as in the following table.

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Table 4. Perceived Usefulness Variable Validity Test

Correlation between	Calculated r value	Standard Values	Information
Question 1 in total	0, 938	0,3	Valid
Question 2 with total	0,938	0,3	Valid
Question 3 with total	0,936	0,3	Valid
4 questions in total	0,940	0,3	Valid

Based on the results of testing the correlation between the answers of each research instrument on the Perceived Usefulness variable, it can be concluded that all research instruments were valid because they had a calculation r greater than 0.3.

Table 5. Perceived Ease of Use Variable Validity Test

Correlation between	Calculated r value	Standard Values	Information
Question 1 in total	0.921	0,3	Valid
Question 2 with total	0.950	0,3	Valid
Question 3 with total	0.873	0,3	Valid
4 questions in total	0.865	0,3	Valid

Based on the results of testing the correlation between the answers of each research instrument on the Perceived Ease of Use variable, it can be concluded that all research instruments were valid because they had a calculated r greater than 0.3.

Table 6. Perceived Ease of Use Variable Validity Test

Correlation between	Calculated r value	Standard Values	Information
Question 1 in total	0.980	0,3	Valid
Question 2 with total	0.921	0.3	Valid

Based on the results of the correlation test between the answers of each research instrument on the Actual System Use variable, it can be concluded that all research instruments were valid because they had a calculated r greater than 0.3.

3.2. Reliability Test

The reliability test used in this research was the Alpha Cronbach (ά) method. The criteria for the reliabilities of research instruments refers to the opinion (Nunnally, 1967 in Ghozali, 2007:42) that variables are said to be reliable if they give a Cronbach Alpha value > 0.60. The minimum Immature that is considered qualified is if the alpha coefficient of cronbach's obtained is 0.6. The results of the reliability test using SPSS can be seen in the table as follows:

Table 7. Reliability Test

Variable	Cronbach Alpha Value	Standard Values	Information
Perceived Usefulness	0.959	0.6	Reliable
Perceived ease of Use	0.916	0.6	Reliable
Actual System Use	0,956	0,6	Reliable

Based on the results of testing the reliability of research instruments on the Perceived Usefulness, Perceived Ease of Use, and Actual System Use variables in the table above, that the Cronbach alpha value for the three variable was above 0.6 so it can be said that all research instruments were already variables.

3.3. Spearman Rank Correlation Test

The statistical technique that used in hypothesis testing in this research was nonparametric statistics because it fitted perfectly with data in the form of ordinals. In this research, a statistical test of Spearman Rank was used. The results of the Spearman Rank correlation test can be seen as in the following table:

Table 8. Spearman Correlation Test

Correlation			Perceived Usefulness	Perceived Ease of Use	Actual System Use
Spearman's rho	Perceived Usefulness	Correlation Coefficient	1.000	.859(**)	.863(**)
		Sig. (2-tailed)	.	.000	.000
		N	39	39	39
	Perceived Ease of Use	Correlation Coefficient	.859(**)	1.000	.838(**)
		Sig. (2-tailed)	.000	.	.000
		N	39	39	39
	Actual System Use	Correlation Coefficient	.863(**)	.838(**)	1.000
		Sig. (2-tailed)	.000	.000	.
		N	39	39	39

** Correlation is significant at the 0.01 level (2-tailed).

The results of Spearman's correlation testing using SPSS software can be seen that the correlation value between the Perceived Usefulness variable and the Actual System Use variable has a value of 0.859 while the correlation value between the Perceived Ease of Use variable and the Actual System Use variable is 0.863. The criteria for assessing the correlation between the Perceived Usefulness variable and the Actual System Use variable and the Perceived Ease of Use with the Actual System Use variable are as follows:

Table 9. Spearman Correlation Coefficient Interpretation Criteria
Source: Sugiyono (2012;250)

Correlation Interval	Relationship Level
0,00 – 0,19	Very Low
0,20 – 0,39	Low
0,40 – 0,59	Keep
0,60 – 0,79	Strong
0,80 – 1,00	Very Powerful

Based on the criteria in the table above, it is known that the correlation between the Perceived Usefulness variable and the Actual System Use variable had a very strong relationship level because the value of 0.859 was in the range of 0.80 – 1. And having a two-star mark on the results of the correlation test means that the value is significant, or in other words there is a positive and significant relationship between the Perceived Usefulness variable and the Actual System Use variable. In addition, the correlation value between the Perceived Usefulness variable and the Actual System Use variable also had a very strong relationship level because the value of 0.863 was in the range of 0.80 – 1. And having a two-star mark on the results of the correlation test means that the value was significant, or in other words there was a positive and significant relationship between the Perceived Usefulness variable and the Actual System Use variable.

4. Conclusions

Based on research conducted in the analysis of Perceived Usefulness and Perceived Ease of Use on the use of jBatik software applications based on the Technology Acceptance Model, among others:

Variable Perceived Usefulness

Those relating to benefits, effectiveness, productivity, and performance improvement had a significant relationship to Actual System Use. So far, users had found it helpful with the jBatik application. This was supported by the respondents' answers, namely as many as 89.7% of users felt that the jBatik application was very helpful for completing work and still feel effective at work even without interacting directly.

Variable Perceived of Use

What is related to the user's mindset in using the application had a significant relationship to Actual System Use. So far, users had found it helpful with the jBatik application. This is supported by respondents' answers, namely as many as 8 2.68% of users said they agree that the jBatik application is easy to use.

Correlation between the Perceived Usefulness variable and the Actual System Use variable

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The correlation between Perceived Usefulness and the Actual System Use variable had a strong relationship level because its value was 0.859. In addition, the correlation value had a two-asterisk so that the value is significant, or in other words there was a positive and significant relationship between the Perceived Usefulness variable and the Actual System Use variable.

Correlation between Perceived Ease of use variables and actual system use variables

The correlation between Perceived Ease of use and the actual system use variable had a strong degree of relationship because its value was 0.863. In addition, the correlation value had a two-asterisk so that the value is significant, or in other words there was a positive and significant relationship between the Perceived Ease of Use variable and the Actual System Use variable.

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