

# Innovation Adoption of Natural Color,

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# Innovation Adoption of Natural Color

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**Keywords:** Innovation Adoption, Natural Colouring.

**Abstract:** Research on the analysis of innovation adoption of the use of natural dyes on batik by batik craftsmen aims to find out: 1) the effect of relative superiority on the adoption of natural batik dyes, 2) the effect of suitability on the adoption of natural batik dyes, 3) the effect of complexity on the adoption of batik natural dyes, 4) the effect of experimentation on the adoption of natural batik dyes, 5) the effect of visibility on the adoption of natural batik dyes. Variables in the study, several indicators can be measured, namely Relative Advantage, Compatibility, Complexity, Trialability, Observability, and Adoption of Innovations. Data collection is done by giving questions in the form of questionnaires. The unit of analysis in this study is batik artisans in Giriloyo Village, Imogiri, Bantul, Yogyakarta. The sample of respondents in this study were 62, using a purposive sampling method. The method used in testing the Hypothesis is Multiple Regression. The results of this study: the existence of a significant positive result between relative superiority, suitability, complexity, experimentation, visibility, and partial adoption of innovation.

## 1 INTRODUCTION

In the current era of globalization, batik fever is sweeping the Indonesian fashion world, especially since UNESCO designated batik as cultural heritage at the world level owned by Indonesia in 2009. The phenomenon of the rampant batik that is sweeping the Indonesian fashion world today, of course, in addition to increasing the love of Indonesian people for batik, can also increase the income and growth of the batik industry in Indonesia.

Innovation is defined as new ideas, new practices, or objects that can be felt like something new by the target individual or community (Roger and Shoemaker, 1971). Innovation as an economic success is due to the introduction of new ways or new combinations of old ways of transforming inputs into outputs (technology) that result in significant or drastic changes in the comparison between the use-value perceived by consumers of the benefits of a product (goods/services) and prices set by the manufacturer. Innovation can be said to be a new change towards improvement, which is different or different from the previous one, which was done intentionally and planned or not by chance. Successful innovations are innovations that create significant value for consumers, for the community, and the environment at the same time.

Rogers (1983), several factors are considered by adopters in deciding to accept or reject a product. The distribution of innovation influenced by five characteristics of innovation, namely (1) relative superiority, where innovation is considered to be superior to ever before. The concept shows that the rate of adoption of innovation will be high if individuals can feel the benefits and benefits. (2) conformity, where innovation is considered consistent with applicable values, experience, and the needs of adopters. (3) complexity, where innovation is considered as something challenging to understand and use. (4) experiment, where innovation can be tested within certain limits with the real situation by showing its superiority so that it can be quickly adopted. (5) Visibility, where others can see the innovation process. The easier one sees the process of innovation, the more likely a person or group will adopt it.

Competition in the batik industry is getting tighter, along with the continued growth of the batik industry in Indonesia, especially in Yogyakarta. This increasingly fierce competition triggers batik producers to make breakthroughs or innovations, to increase the performance of consumers' competitiveness and the marketing of the batik they produce. Innovation in a variety of motifs, patterns, and colors, is significant to improve the competitiveness of batik in trade and sales because

what is first noticed and enticed consumers is the variety of motifs, patterns, and colors that are owned by a piece of batik cloth that exudes the beauty of everything.

The use of natural dyes on batik makes an exciting innovation because artisans utilize natural resources as the main ingredient in the coloring process in batik because the results will be better with beautiful colors. The innovation process has been going on for a few years ago by starting the process in stages to produce colors that are truly quality. With this innovation, batik artisans in Giriloyo village have an innovation strategy on batik using natural coloring so that they can attract the competitiveness and appeal of consumers to be more enthusiastic in developing batik culture in Indonesia, especially in Yogyakarta. These innovations provide benefits and positive benefits for artisans and other industries because the process of innovation can improve the ability to make batik so that it increases profits for artisans and can expand creative ideas so that innovations can be more attractive to consumers and of course the public.

## 2 LITERATURE REVIEW

### 2.1 Innovation and Types of Innovation

Roger and Shoemaker (1971) define innovation as new ideas, new practices, or objects that can be felt like something new by individuals or target communities. The new understanding here means that it is not only new to the mind but also new because it has not been widely accepted by the whole community in the sense of attitude and is new in the sense that it has not been accepted and applied by all members of the local community. Rogers (1995), states innovation as an idea and practice, or an object that is perceived as something new by an individual or another adoption unit.

So, innovation can be seen as an effort to achieve specific goals. Fullan and Allan (1977) stated that the 1970s were an era in which many contemporary educational innovations were adopted, such as mathematics, chemistry, and new physics, machine learning (teaching machine), open education, individual learning, team teaching and included in this case is an independent learning system.

The division of other types of innovations was proposed by Robertson (1976); categorizing innovation into three, namely: (1) continuous innovation (the continuous), (2) dynamically continuous innovation, and (3) innovation discontinuous.

### 2.2 Adoption Category

For some innovations, the actual target potential users are divided into two, adopters and non-adopters of new technology. Adopters are classified into 5 (five), namely: innovators, early adopters, early majority groups, late adopters, and late adopters.

Innovators (Innovators) are a group of individuals who are most responsive to innovation, and first of all, adopt an innovation.

Performers early adoption (early adopters) are a group that is more integrated into the social system of local compared to the innovator category adopters have leadership level opinion (opinion leadership) higher, so that prospective potential adopters often refer to the perpetrators of early adoption as informers and advisers in adopting innovation.

The early majority is the highest group that adopts innovation. This group is a follower of opinion leader who has first adopted innovation despite often interacting with others.

The final majority (late majority) is a group that is slow to respond to innovation for some reason, which is to have a skeptical view and a cautious nature of innovation. They will adopt the innovation after the other members first adopt the innovation.

The most recent adopters (Laggards) are the most recent groups to adopt because they are mostly isolated in their social systems.

### 2.3 Characteristics of Innovation

The factors taken into account by the adopter in deciding to accept or reject a product if it is associated with the thinking of Rogers (1983) in the spread of innovation (diffusion of innovation) is influenced by 5 (five) characteristics of innovation namely, (1) relative superiority, (2) compatibility, (3) complexity or complexity, (4) experimentation, and (5) visibility. Each aspect is used as a benchmark in the acceptance of innovative products because they are considered to be able to represent all aspects of the ability of individuals to receive innovative products.

Rogers (1995) identifies that individuals regarding the characteristics of innovation affect the speed of adoption of an innovation. The speed of adoption means that the person is faster in time before other system members do it. Rogers (1983) suggests five characteristics of innovation include:

Relative advantage is an innovation considered to be more or superior than ever before. This can be measured from several aspects, such as economic aspects, social prestige, comfort, satisfaction, and others. The higher the relative superiority felt by adopters, the faster the innovation can be adopted. Rogers (1995) defines relative superiority as the

advantage of innovation compared to previous ideas or ideas that are a rival.

Conformity or compatibility is an innovation considered to be consistent with applicable values, experience, and the needs of adopters. For example, if a particular innovation or new idea is not following the applicable values and norms, then the innovation cannot be adopted quickly, as is the case with innovations compatible.

The complexity of innovation is considered as a difficult one to understand and use. Specific innovations can be easily understood and used by adopters, and some are the opposite. The more easily understood and understood by adopters, the faster an innovation can be adopted.

Trial or testing ability is an innovation that can be tested to a certain extent. An innovation that can be tested in actual settings will generally be adopted more quickly.

Visibility or the ability to be observed is others can see the result of innovation. The easier one sees the results of an innovation, and the more likely that person or group of people will adopt it. Visibility is defined as the degree to which the results of innovation can be easily seen and communicated to other parties.

## 2.4 Previous Research Regarding the Adoption of Innovation

- a. Said S. Al-Gahtani (2003), researching the adoption of computer technology in Saudi Arabia, this study examines how the attributes of computer technology affect the rate of adoption in the workplace. The results of this study are that there are five attributes of innovation consisting of relative superiority, compatibility, complexity, reliability, and observability. This study was analyzed using linear regression analysis, which resulted in 5 attributes of innovation, increasing to 87% of the number of adoption innovations. Around 1200 workers know about innovation adoption in 56 medium-sized private and public organizations in Saudi Arabia.
- b. Research on the effect of perception of innovation attributes on the adoption of an android-based smartphone has been conducted by Rahab (2009), with the title of the relationship between the characteristics of technology with the possibility of small businesses to adopt IT in Yogyakarta. The results show that relative superiority, complexity, and perceived cost have a significant influence on the likelihood of small

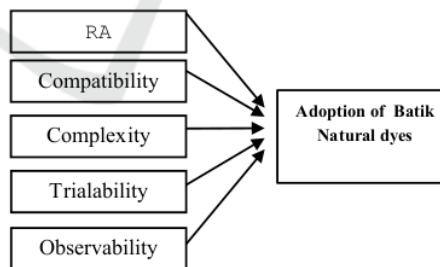
businesses to adopt IT. In other words, it does not affect the likelihood of small businesses adopting IT. This research contributes to finding out IT adoption caused by the relative advantage in IT, the level of IT complexity, and the perceived cost of IT investment.

## 2.5 Hypothesis

- H1: Relative advantage (RA) influences the adoption of batik coloring innovations using natural dyes.
- H2: Compatibility influences the adoption of batik coloring innovations using natural dyes.
- H3: Complexity influences the adoption of batik coloring innovations by using natural dyes.
- H4: Trialability influences the adoption of batik coloring innovations using natural dyes.
- H5: Observability affects the adoption of batik coloring innovations using natural dyes.

## 3 FRAMEWORK CONCEPTUAL

This study examines several factors that influence the adoption of natural coloring innovations in batik artisans in Imogiri, Bantul, Yogyakarta. Batik artisans who use the adoption of natural coloring innovations on batik are influenced by five characteristics of innovation, which include relative excellence, suitability, complexity, trial, and visibility. The theoretical model proposed in this study is as follows:



## 4 RESEARCH METHOD

This study uses a survey method. This research was conducted using a data instrument in the form of a questionnaire consisting of several structured questions. This research was conducted in Imogiri, Bantul, Yogyakarta. This research is directed to test the hypothesis that explains the relative superiority,



suitability, complexity, trialability, visibility, partial effect on the adoption of natural coloring innovations.

#### 4.1 Population and Sample

A population is a whole group of elements, where the element is the smallest unit that is the source of the required data (Kuncoro, 2009). The population in this study were all Batik Craftsmen in Giriloyo Village, Imogiri, Bantul, Yogyakarta. The sample is considered representative of the population whose results represent the overall symptoms observed (Sekaran, 2006). The sample in this study was a portion of Batik Craftsmen in Giriloyo Village, Imogiri, Bantul, Yogyakarta. The technique used in sampling is purposive sampling. The purposive sampling method is sampling from the population-based on specific criteria. Respondents in this study numbered 130, namely, all batik artisans in Giriloyo Village, Imogiri, Bantul, Yogyakarta. After researching with the questionnaire method, which fulfilled the criteria and the results of the questionnaire that could be processed amounted to 62, the remaining 68 respondents who did not meet the criteria or had not adopted innovation.

#### 4.2 Measurement of Research Variables Measurement

The scale is an agreement that is used as a reference to determine the length of the interval that is in the measurement so that the measuring instrument when used in measurement will produce quantitative data (Sugiyono, 2004). Measurement of the variables of relative superiority, suitability, complexity, experimentation, visibility, and adoption of natural coloring innovations using a Likert scale with 5 answer choices, namely Highly Agree (SS) has a score of 5, Agree (S) has a score of 4, Neutral (N) has a score 3, Disagree (TS) has a score of 2, Strongly Disagree (STS) has a score of 1.

#### 4.3 Data Analysis Techniques and Hypothesis Testing

Quantitative Analysis in this study is used to test the effect of relative superiority, suitability, complexity, trials, visibility to the adoption of innovation staining natural on batik. Quantitative data analysis techniques in this study used multiple regression analysis. Hypothesis testing using the regression coefficient test using the t-test. T-test was conducted to determine the effect of variables including relative superiority, suitability, complexity, experimentation, partial visibility to the adoption of innovations in Batik Craftsmen in Giriloyo Village, Imogiri, Bantul,

Yogyakarta. Based on the results of multiple regression analysis testing the hypothesis as follows:

- a) If the probability of the error rate t arithmetic  $\leq 0.05$ , then there is a positive influence on the variables of relative advantage, suitability, complexity, trials, visibility to the adoption of innovations.
- b) If the probability of error rate t arithmetic  $> 0.05$ , then there is no positive effect on the variable relative advantage, superiority of suitability, the superiority of complexity, the excellence of experimentation, the superiority of visibility towards the adoption of innovation.

## 5 RESULTS

### 5.1 Validity Test

According to Imam Ghozali (2001), the construct validity test takes precedence in the development and evaluation of a concept and theory. A validity test is used to test the accuracy and accuracy of the measuring instrument, whether obtaining information as expected. The questionnaire is said to be valid if the questions on the questionnaire can reveal something that is measured by the questionnaire. Each indicator is declared valid if the test is performed using the Pearson product-moment correlation technique between the scores of each data indicator compared with the total score. In the validity test, validity can be checked through a significant value. That is, if the significance level is below 5% ( $\leq 0.05$ ), then the questionnaire is considered valid. The results of testing the validity can be seen, Relative Advantage (*relative advantage*) shows that all items have a significance level of under 5% ( $\leq 0.05$ ), which means valid. The correlation coefficient obtained ranged from 0.813 to 0.849. Suitability (*compatibility*) shows that all items have a significance level of under 5% ( $\leq 0.05$ ), which means valid. The correlation coefficient obtained ranged from 0.884 - 0.929. Complexity (*complexity*) shows that all items have a significance level of under 5% ( $\leq 0.05$ ), which means valid. The correlation coefficient obtained ranged from 0.747 - 0.830.

Trialability (*trialability*) shows that all items have a significance level of under 5% ( $\leq 0.05$ ), which means valid. The correlation coefficient obtained ranged from 0.727 to 0.883. Visibility (*observability*) shows that all items have a significance level of under 5% ( $\leq 0.05$ ), which means valid. The correlation coefficient obtained ranged from 0.764 to 0.834. Adoption of Innovation shows that all items have a significance level of under 5% ( $\leq 0.05$ ), which means

valid. The correlation coefficient obtained ranged from 0.462 to 0.703.

### 5.2 Reliability

Test Reliability is an index that shows the level of confidence in measuring instruments. If a measuring device is used twice to measure the same symptoms and the measurement results obtained are relatively consistent, then the tool is reliable (Situmorang, 2008). Testing is done by SPSS 16.0 for Windows. The items that have been declared valid in the validity test will be determined by their reliability, with the following criteria:

- a. If the value Cronbach Alpha > 0.60 (Ghozali, 2005), then the question is declared reliable.
- b. If the value Cronbach Alpha < 0.60 (Ghozali, 2005), then the question is declared unreliable.

The reliability test results show that the reliability coefficient value of Cronbach's Alpha each variable is more significant than 0.60, which means reliable. The coefficient values Cronbach's Alpha obtained ranged from 0.646 to 0.881.

### 5.3 Results of Multiple Regression

Analysis of the results of multiple regression analysis on the effect of relative advantage (*relative advantage*), compliance (*compatibility*), complexity (*complexity*), (*trialability*), and visibility (*observability*) the adoption of innovation.

Mode l	Unstandardized Coefficients		Standar dized Coeffi cients	t	Sig.
	B	Std. Error	Beta		
(Cons tant)	0.89 61	2.239		0.003	.00 0
RA.	.337	.102	.312	3.309	.00 2
X1	.212	.078	.263	2.709	.00 9
X2	-.157	.070	-.212	- 2.242	.02 9
X3	.182	.082	.211	2.216	.03 1
X4	.693	.145	.460	4.773	.00 0
Dependent Variable : Internet Banking Adoption					
R2: 0.517					
F-count: 12					
Sig. F : 0.000					

### 5.4 Hypothesis Test Results

#### 5.4.1 Regression Coefficient Test (t-Test)

1. Effect of relative *advantage* (X1) towards the adoption of innovation. From the calculation results obtained by the relative advantage regression coefficient (*relative advantage*) of 0.337 (positive). Test the significance of this coefficient error probability (p) = 0.002 < 0.05. So it can be concluded that *relative advantage* has a positive effect on the adoption of innovation. Thus, hypothesis 1, which states that relative superiority influences the adoption of coloring innovation in batik using natural dyes, is **accepted**.

2. Effect of *compatibility* (X2) towards the adoption of innovation. From the calculation results obtained compatibility coefficient (*compatibility*) of 0.212 (positive). Test the significance of this coefficient error probability (p) = 0.009 < 0.05. So it can be concluded that *compatibility* has a positive effect on the adoption of innovation. Thus, hypothesis 2, which states that *compatibility* has an influence on the adoption of innovation in batik coloring using natural dyes, is **accepted**.

3. Influence of *complexity* (X3) towards the adoption of innovation. The calculation results obtained the complexity regression coefficient (*complexity*) of -0.157 (negative). Test the significance of this coefficient error probability (p) = 0.029 < 0.05. So it can be concluded that *complexity* hurts the adoption of innovation. Deangan thus, hypothesis 3 which states complexity (*complexity*), affects the adoption of innovation in batik coloring using natural dyes, **accepted**.

4. Influence (*trialability*) (X4) towards the adoption of innovation. From the calculation of regression coefficient (*trialability*) of 0.182 (positive). Test the significance of this coefficient error probability (p) = 0.031 < 0.05. So we can conclude that (*trialability*) a positive effect on the adoption of innovation. Thus deangan hypothesis 4, which states (*trialability*) effect on innovation adoption batik dyeing using natural dyes, **accepted**.

5. Influence of *observability* (X5) towards the adoption of innovation. From the calculation results obtained regression coefficient *observability*(*observability*) of 0.693 (positive). Test the significance of this coefficient error probability (p) = 0,000 < 0.05. So it can be concluded that *observability* has a positive effect on the adoption of innovation. Thus, hypothesis 5, which states that *observability* influences the adoption of innovation in batik coloring using natural dyes, is **accepted**.

## 6 DISCUSSIONS

The results of the study using regression analysis showed that *relative advantages* influence the adoption of batik coloring innovations using natural dyes. This means that if *relative advantages* increase, the adoption of innovations will also increase and vice versa. The results of this study imply that *relative advantage* the high will have a positive impact on the adoption of batik coloring innovations using natural dyes in the batik craftsmen of Imogiri, Bantul, Yogyakarta. By increasing the relative *advantage* to artisans, it tends to increase the adoption of batik coloring innovations by using natural dyes in the batik craftsmen of Imogiri, Bantul, Yogyakarta.

The results showed that suitability (*compatibility*) influences the adoption of batik coloring innovations using natural dyes in the batik artisans of Giriloyo Village, Imogiri, Bantul, Yogyakarta. This means that if *compatibility* increases, the adoption of innovations will also increase and vice versa. The results of this study imply that *compatibility* high will have a positive impact on the adoption of batik coloring innovations using natural dyes in the batik craftsmen of Giriloyo Village, Imogiri, Bantul, Yogyakarta, with an increase in *compatibility* that is suitable/good, it tends to be more likely increase the adoption of batik coloring innovations by using natural dyes in the batik artisans of Giriloyo Village, Imogiri, Bantul, Yogyakarta.

The results of the study using regression analysis showed that *complexity* influences the adoption of batik coloring innovations using natural dyes in the batik craftsmen of Giriloyo Village, Imogiri, Bantul, Yogyakarta. This means that if complexity decreases, the adoption of batik coloring innovations using natural dyes in the Giriloyo, Imogiri, Bantul, Yogyakarta villages will decrease and vice versa. The implication of the results of this study is that *complexity* the high will harm the adoption of batik coloring innovations using natural dyes in the batik craftsmen of Giriloyo Village, Imogiri, Bantul, Yogyakarta, with the smaller *complexity* it tends to increase the adoption of innovation batik coloring using natural dyes at batik craftsmen in Giriloyo village, Imogiri, Bantul, Yogyakarta.

The results showed that (*trialability*) have an influence on the innovation adoption batik dyeing using natural dyes in batik craftsmen Giriloyo village, Imogiri, Bantul, Yogyakarta. This means that if (*trialability*) increases, the adoption of innovation batik dyeing using natural dyes in batik craftsmen Giriloyo village, Imogiri, Bantul, Yogyakarta will increase as well and vice versa. The results of this study imply that high *trialability* will have a positive impact on batik coloring using natural dyes in batik

craftsmen in Giriloyo Village, Imogiri, Bantul, Yogyakarta, with high *trialability*, it tends to increase the adoption of batik coloring innovations. By using natural dyes in the batik artisans of Imogiri, Bantul, Yogyakarta.

The results showed that *observability* influenced the adoption of batik coloring innovations using natural dyes in batik craftsmen in Giriloyo Village, Imogiri, Bantul, Yogyakarta. This means that if *observability* increases, the adoption of innovations will also increase and vice versa. The results of this study imply that *observability* high will have a positive impact on batik coloring by using natural dyes in batik craftsmen in Giriloyo Village, Imogiri, Bantul, Yogyakarta, with *observability* suitable, it tends to increase the adoption of innovation batik coloring using natural dyes at batik craftsmen in Giriloyo village, Imogiri, Bantul, Yogyakarta.

## 7 CONCLUSIONS

The results of this study indicate that there is a positive influence between relative advantages on the adoption of natural colouring innovations. The positive effect of conformity on the adoption of natural colouring innovations. The negative effect of complexity on the adoption of natural colouring innovations. The positive influence of trials on the adoption of natural colouring innovations. The positive effect of visibility on the adoption of natural colouring innovations.

## 8 SUGGESTIONS

REF for further researchers, it is recommended to add other variables, such as perceived costs, profits, employee performance (craftsmen), perceived convenience, and benefits that can strengthen the results of further research on the adoption of innovation. Business center/ regions can make a routine agenda for the training of science in batik in order to process (*trialability*) can repeatedly occur in order to craftsmen easier and know how to use natural dyes from mixing process colours/manufacture of natural colors for batik with the understanding that later craftsmen can do it themselves.

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