

# USING SMARTPHONE IN BATIK AND TRADITIONAL TEXTILE : INTENTION MEASUREMENT AND TAM APPROACH

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**Abstract**—The development of mobile internet services allows more and more consumers to adopt smartphones as their main communication device. This study focuses on the application of TAM to determine the level of willingness of batik and textile craftsmen to use smartphones and the variables in TAM that influenced the willingness. The population of the study was batik and textile craftsmen in the region of Bayat, Klaten, Central Java, with 243 samples using 30-question questionnaires with the answers measured on 1-5 Likert scale. The results of data analysis used the GSCA software. From the eight hypotheses proposed, it can be seen that there are two hypotheses which are not proven to be influential. Technical support is not statistically significant for the variable of ease of use. The findings in this study strengthen the TAM2 technology acceptance theory. Management support has an effect on the variable of usefulness. This finding is consistent with or strengthens Igarria's technology acceptance theory (1997). Social Influence does not have a significant effect on usefulness. The results of this study do not support the TAM technology acceptance theory since this research was conducted when smartphone was no longer a new technology.

**Keywords**— ease of use, usefulness, TAM, Mobil Internet Service

## I. INTRODUCTION

At a glance, the growth of mobile businesses appears promising (Pipitwanichakarn and Wongtada, 2019; Park et.al., 2019; Choe, 2018; eMarketer, 2017). Along with the development of mobile internet services, more and more consumers are adopting

smartphones as their main communication device. It certainly has a significant impact on smartphone sales worldwide (Marinkovic, 2017; Gartner, 2011). The operating system used on some phones can vary, but most use the operating systems based on Android, iOS and Windows Mobile. However, the most operating systems used by various handsets from various manufacturers today is Android-based operating system contributing 50.9 percent of the world market (Marinkovic, 2017).

According to the data from the Indonesian Ministry of Communication and Information, cellular phone customers in Indonesia up to 2017 reached 435.19 million customers. Compared to the number of cellular telephone users in 2011 which were 249.8 million, an increase of 49.62 percent occurred. With the growing popularity of cellphones, it is expected that more business transactions will be made using smartphones. According to the data from [www.statista.com](http://www.statista.com), the number of mobile applications (apps) listed on Google Play until March 2019 was 2.6 million. Various existing applications consist of games, books, chat applications, TV, magazines, banks, and music. Although the use of the technology is not completely risk-free (such as: viruses, data theft, theft or damage to devices, the use of mobile phones as a proxy to establish virtual connections from attackers to internal networks, Malformed Short Message Service), the role of using mobile phones / smartphones will be increasingly important in creating business excellence (Kapoor, 2014).

Responding to the development of the phenomena above, Bank Indonesia had conducted the trial of branchless banking utilizing the high use of mobile phones and the collaboration with local units/ agents. The target of this program was unbanked and

underbanked people. Branchless banking was subsequently expanded into digital financial services which were payment and financial system services carried out through a collaboration with third parties and used mobile and web-based technology and facilities in the context of financial inclusion (PBI 16 / 8 / PBI / 2014). DFS is the spearhead of financial inclusion as part of the efforts to increase technology-based economic activity. DFS has the potential to be developed. A survey conducted by APJII revealed that the majority (132.7 million) of the Indonesian population are connected to the internet.

Despite the financial and technological potential of shopping, "research in the field of shopping is still in its infancy" (Grob, 2015). The existing literature is dominated by anecdotal discussion on mobile technological development, its functions and benefits, mobile marketing campaigns and business activities of service providers. More systematic academic research typically focuses on consumer attitude and shopping acceptance based on the Technology Acceptance Model (TAM; Davis, 1989, Kapoor, 2014) and the utilitarian and hedonic motives driving m-shopping. However, functional attributes such as perceived usefulness and ease of use (derived from the TAM) do not exclusively drive m-shopping. Consumption motivations may be socially and culturally embedded in consumers' lives (Park et.al, 2019).

MSMEs are economic agents with a great contribution to economy. However, the ability of MSMEs to access formal financial institutions is often constrained by various procedures and requirements that cannot be fulfilled so that they hamper business development. The implementation of Digital Financial Services (DFS) on MSMEs will increase the opportunity to obtain financial services, to reach markets more broadly, and to be able to accommodate small-value transactions of high frequency. For small micro entrepreneurs who are vulnerable to cash transfers, DFS is a non-cash payment instrument that can avoid leakage of funds. One of the most reliable and growing MSMEs in Indonesia is Batik and textile product MSMEs; one of which is located in Klaten Regency.

Bayat Village, located in Klaten Regency, Central Java Province, is one of the traditional batik and textile centers with international market shares, such as Britain, Italy, America and the Asian regions. Because

the business scope is global, the use of global technology in transactions must continue to be developed. When the marketing strategy has been implemented using web and exhibitions, the technology of transactions and payments needs to be developed. The formulation of the problem in this study was: what factors that influence a craftsman who wants to use a smartphone in his business transactions.

## II. LITERATURE REVIEW

This study focused on the application of TAM to determine the level of willingness of the craftsmen to use smartphones and the variables in TAM that influenced the willingness. To be able to use technology well to be able to improve the quality of its work, technical support in the form of guidance, training, and consultation in using technology is needed (Marakarkandy, 2017; Chtourou, 2010; Igbaria, 1994; Igbaria *et.al.*, 1997). The high level of technical support is estimated to increase the confidence on the benefits of applying technology among individuals (Igbaria *et.al.*, 1997). Besides, technical support has a positive significant effect on perceived ease of use (Barhoumi, 2016; Kwak *et.al.* 2012).

H1. Technical support has an effect on ease of use.

Training is defined as "a broader and deeper explanation related to the system intended for users and presented by internal and external sources." Training is an important factor that influences the acceptance of technology in organizations (Cheney *et.al.*, 1986). An appropriate training will increase the possibility that IT implementation will be acceptable because training provides better understanding and experience of technology (Venkatesh and Morris, 2000). Training has a positive impact on perceived ease of use (Igbaria *et.al.*, 1997; Son *et.al.*, 2012; Kwak *et.al.*, 2012)

H2. Training has an effect on perceived ease of use.

In the context of the use of IT, conformity with work is defined as "individual perceptions on the extent to which a technology is only suitable for his work " (Venkatesh and Morris, 2000). Individual attitude toward new technology is influenced by the characteristic of his work (Son *et.al.*, 2012). Empirical studies had found that Job Relevance has a positive significant effect on perceived usefulness (Venkatesh and Morris, 2000; Pérez *et.al.*, 2004).

H3. Job Relevance has an effect on usefulness.

Management support is defined as "an individual's perception of the extent to which top management understands the importance of IT and the extent to which top management is involved in IT implementation" (Ragu-Nathan *et.al.*, 2004). Top management support is a key factor in technology acceptance (Igarria, 1994; Igarria, 1997). Strong commitment from leadership is very important to ensure the acceptance of technology by creating an environment that supports IT in an organization. Previous studies found that leadership support (management support) significantly influences perceived usefulness (PU) (Igarria *et.al.*, 1997; Lewis *et.al.*, 2003 dan Son *et.al.*, 2012).

H4. Management support has an effect on usefulness.

According to the innovation diffusion theory built by Rogers (1995), the decision of individuals to adopt new types of technology is influenced by social forces to fulfill their own desires or because of the opinions of others. Social influence is a key to the emergence of IT acceptance theories, such as the reason action theory (Fishbein and Ajzen, 1975), planned behavior theory (Ajzen, 1985), technology acceptance models (Davis, 1989), and the unified theory of acceptance and use of technology (Venkatesh *et.al.*, 2003). Social influence has a positive impact on perceived usefulness (Venkatesh and Morris, 2000; Lee *et.al.*, 2006; Son *et.al.*, 2012).

H5. Social influence has an effect on usefulness.

A person develops a positive or negative attitude on cellphone use based on usability and ease of use evaluation (Taylor and Todd, 1995). Previous studies show that there are significant and positive effects between perceived ease of use and usefulness (Pai and Huang, 2011; Maier *et.al.*, 2013; Son *et.al.*, 2012; Mariani *et.al.*, 2013).

H6. Ease of use has an effect on usefulness.

The Technology Acceptance Model (TAM) is proposed by Davis (1989) and Davis, Bagozzi, and Warshaw (1989) as an instrument to predict the level of new technology acceptance by an organization or group developed based on the reasoned action theory (TRA) stated by Fishbein and Ajzen in 1975 (Fishbein and Ajzen, 1975). Technology Acceptance Model

(TAM) uses the variable of Perceived Usefulness and Ease of Use variables as the independent variables to predict Actual Use (Davis, 1989).

H7. Ease of use has an effect the use of smartphones

H8. Usefulness has an effect on the use of smartphones.

### III. METHODS

This study examined the relationship between the variables that influence Ease of Use and Usefulness of Davis's TAM model (1989) and from previous studies so that a hypothetical model is obtained as shown in Figure 1. The type of research was explanatory research, with a population of batik and textiles craftsmen in Bayat region, Klaten, Central Java. It used a questionnaire consisting of 30 questions, with the answers measured by a 1-5 Likert scale starting from strongly disagree to strongly agree. 8 of 251 questionnaires entered had the answers which were considered incomplete or annulled because of incomplete filling, and then the samples used were 243. The results of data analysis used the GSCA software.

By the age of the smartphone users who were the respondents, the most was 50.2% of the users aged 21-30 years old. The second most was 46.1%, aged 31-40 years; 3.3% of the users was over 40 years old; and 0.4% of the users was younger than 20 years old. Then, by the users' educational level, 91.4% of the users was high school graduates; 5.8% of the users was diploma graduates; and 2.9% of the users was Bachelor graduates.

### IV. RESULTS AND DISCUSSION

Descriptive analysis was conducted using SPSS 17 for Windows to find out a general description of respondents' responses to the indicators contained in the variables. The hypothesis testing in this study used the Generalized Structured Component Analysis (GSCA) method. And the results obtained are as follows:

**Table 1. Results of Validity and Reliability Tests**

Variable / Indicator	Symbol	Hasil Pengukuran Instrumen			Remarks
		Pearson Correlation	Sig. (2-tailed)	Alpha Cronbach	
Technical Support	X1			0.860	Reliable
	X11	0.821	0.000		Valid
	X12	0.797	0.000		Valid
	X13	0.746	0.000		Valid
	X14	0.877	0.000		Valid
Training	X2			0.882	Reliable
	X21	0.805	0.000		Valid
	X22	0.888	0.000		Valid
	X23	0.886	0.000		Valid
	X24	0.859	0.000		Valid
Job Relevance	X3			0.836	Reliable
	X31	0.914	0.000		Valid
	X32	0.926	0.000		Valid
	X33	0.755	0.000		Valid
Management Support	X4			0.887	Reliable
	X41	0.897	0.000		Valid
	X42	0.939	0.000		Valid
	X43	0.873	0.000		Valid
Social Influence	X5			0.685	Reliable
	X51	0.938	0.000		Valid
	X52	0.929	0.000		Valid
Ease of Use	X6			0.906	Reliable
	X61	0.983	0.000		Valid
	X62	0.838	0.000		Valid
	X63	0.927	0.000		Valid
Usefulness	X7			0.869	Reliable
	X71	0.584	0.000		Valid
	X72	0.949	0.000		Valid
	X73	0.870	0.000		Valid
	X74	0.935	0.000		Valid
Use of smartphones	Y1			0.839	Reliable
	Y11	0.930	0.000		Valid
	Y12	0.697	0.000		Valid
	Y13	0.874	0.000		Valid
	Y14	0.504	0.000		Valid
	Y	0.82	0.000		Valid
	15	5	0.000		

From table 1, it can be seen that all indicators used in the study have a significance of less than 0.05 so that it can be concluded that all indicators are valid and suitable to be used in the research. The reliability testing shows that all variables have the Cronbach Alpha values of greater than 0.60 so that it can be said that all measuring concepts of the variables used in this study are reliable.

The testing index in the GSCA analysis includes Fit. AFit. GFI. and SRMR. The criteria for using GFI mention that when the value of the goodness of fit is  $\geq$  the value of cut off (0.90), the construct formed is appropriate (feasible or good fit). Meanwhile, when the GFI value is in the range of 0.8 - 0.9, the construct formed is stated to be marginal fit (quite feasible). Then, the criteria for using SRMR states that when the  $SRMR \leq$  the value of cut off (0.08), the construct

formed is appropriate (feasible or good fit). However, when one of the goodness of fit has been fulfilled, the model can be stated to be feasible. The results of the construct feasibility testing are summarized in table 2.

**TABLE 2. RESULTS OF MODEL FEASIBILITY TEST**

Index	Value
Fit	0.638
AFit	0.633
GFI	0.972
SRMR	0.247

The analysis results of the Generalized Structured Component Analysis (GSCA) to the hypothesis models are shown in figure 1 .

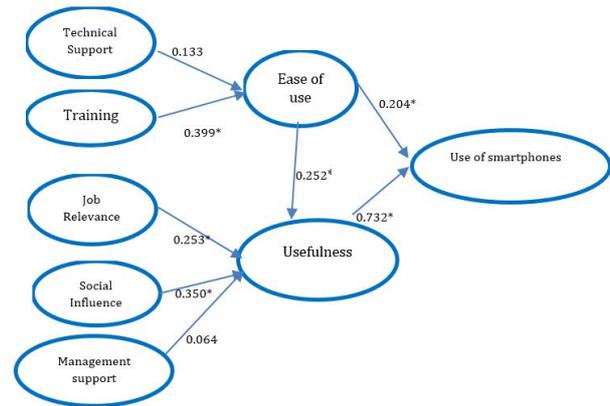


Fig 1. the Flowchart of the Research Results

The testing criteria state that when the critical ratio (CR) is marked with a star or critical ratio (CR)  $\geq$  t-table ( $t = 2.00$ ,  $\alpha = 5\%$ ), it is stated that there is a significant effect of exogenous variables on endogenous variables. The results of the analysis can be found through the summary in table 3.

**TABLE 3. ANALYSIS OF DIRECT EFFECT HYPOTHESES**

Hypothesis	Relationship between variables	Estimate	SE	CR	Remark
H1	Technical Support (x1) → Ease of Use (x6)	0.133	0.118	1.13	Not Significant
H2	Training (x2) → Ease of Use (x6)	0.399	0.086	4.66*	Significant
H3	Job Relevance (x3) → Usefulness (x7)	0.253	0.076	3.31*	Significant
H4	Management Support (x4) → Usefulness (x7)	0.350	0.099	3.54*	Significant
H5	Social Influence (x5) → Usefulness (x7)	0.064	0.064	1.0	Not Significant
H6	Ease of Use (x6) → Usefulness (x7)	0.252	0.065	3.87*	Significant
H7	Ease of Use(x6) → Use of smartphone (y1)	0.204	0.063	3.22*	Significant
H8	Usefulness (x7) → Use of smartphone (y1)	0.732	0.052	14.0*	Significant

## V. CONCLUSION

Based on the results of the data analysis the researchers conducted using the GSCA software, it was found that two out of eight hypotheses proposed are not proven. Technical support is not statistically significant for the ease of use variable because the damage was the damage to the device that was easily completed by the workshop. Then, they were never worried about Technical support. The findings of this study reinforce the importance of training when implementing new technologies because in this training the users could increasingly understand how to use the new technology. According to Venkatesh and Davis (2000), Job Relevance is a part of what they call Cognitive Instrument variables that have an effect on generating usefulness perceptions.

The findings in this study strengthen the of technology acceptance theory of TAM2. Management support has an effect on the usefulness variable. This finding is consistent with or strengthens the technology acceptance theory of Igbaria (1997) which states that management support as part of intra-organizational factors is a determinant of the perceptions of ease of use and usefulness. Social Influence has no significant effect on usefulness. The results of this study do not support the technology acceptance theory of TAM because this research was conducted when smartphones were no longer new technologies. As Venkatesh (2003) stated, social influence is an individual's perception that he always uses a new technology. Ease of Use has a significant effect on usefulness. The results of this study also reinforce the technology acceptance theory of TAM2 from Venkatesh and Davis (2000) which also means that the TAM2 model is still relevant to identify technology acceptance. Ease of Use has a significant effect on Use mSFA.

The results of this study are also in accordance with the technology acceptance model of Igbaria (1997) that the ease of use variable has a positive effect on the acceptance and use of technology. Usefulness has a significant effect on the use of smartphones. These findings reinforce the technology acceptance theory of Igbaria (1997).

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