Study of User Acceptance and Satisfaction of a Mandatory Government-Regulated Information System

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Abstract—This paper discusses the user acceptance of a mandatory government-regulated information system. The issue is investigated by using a modified UTAUT framework. From random sample data of 65 respondents, a regression model is established from which the conclusion is drawn. The study concludes that the aspects of performance expectancy, effort expectancy, social influence, and information system quality affect the user acceptance. The four aspects are equally important.

Index Terms—DAPODIK System, UTAUT, Mandatory System, User Satisfaction, User Acceptance

I. INTRODUCTION

DAPODIK is a mandatory information system for all schools of all formal education institutions throughout Indonesia. The government enforces the use of the system via the Decree No. 2, 2011, of Indonesian Education Ministry. Moreover, the ministry reinforced the system usage via the instruction letter No. 0293/MPK.A/PR/2014. All schools should use DAPODIK system. Therefore, each school should appoint an operator for the system.

In 2015, Directorate General for Islamic Education issued the bill of DT.I.I/2/PP.00/73.C/2015, which declared that SIAP Padamu Negeri, another national education database aiming for performance evaluation of teachers and professionalism, was integrated to DAPODIK system. The policy made DAPODIK a critical system within the national education strategic planning.

Throughout the years, DAPODIK system has suffered various problems. Many schools are confused with its usage and benefits. Many questions its effectiveness and regards the system as a nuisance [1]. As the teacher certification process depends on DAPODIK data, Ref. [2] found that many teachers failed to be certified due to the data discrepancy in DAPODIK system. Those problems seem to suggest that the use and acceptance of DAPODIK system still have some obstacles. By considering those aspects, this research focuses on the user acceptance of the DAPODIK system.

The issue of the acceptance of a technology and the related level of satisfaction has been a widely discussed topic. Reference [3] suggested that the issue was an integral part of the system development. Meanwhile, Ref. [4] asserted that the aspect of satisfaction should come first before the aspect of acceptance. Reference [5] believed the two aspects occurred simultaneously.

Many studies on the technology acceptance were performed using the theory of Technology Acceptance Model (TAM). TAM that relates a number of predictors to a technology usage is originated from the Theory of Reasoned Action (TRA). TAM, with the addition of the constructs of trust and perceived risk, has been proposed for the use of e-commerce acceptance study [6]. TAM has become the key model in the understanding of the predictors of human behavior toward an acceptance or rejection of technologies [7].

Reference [8] proposed the Unified Theory of Acceptance and Use of Technology (UTAUT). It is a synthesized model that presents a more comprehensive picture of the acceptance process than the previous models. UTAUT has four constructs, namely, performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC). The first two constructs are refashioned from the constructs perceived usefulness and perceived easy of use of TAM. However, Ref. [5] argued that the behavioral intention could be associated with the user satisfaction. They stated that satisfaction is similar to an attitude, and can be assessed as the sum of the satisfactions with the various attributes of the product or service. However, attitude can be a pre-decision construct, and satisfaction is a post-decision experience construct.

In addition, Ref. [9] proposed Mandatory Use of

Software Technology model (MMUST) derived from the basis of TAM model, D&M IS Success model, and Wixom-Todd model. MMUST model aims to address the mandatory use of software that is how well the users perceive that they are informed (information quality) all the way to the organizational benefits by using the software. They argued that the current studies of software usage are still scarce due to the lack of theoretical studies aiming at that particular environment. Furthermore, Ref. [9] asserted that performance expectancy, social influence, and effort expectancy, drove satisfaction. These relations are in agreement with Ref. [8]'s UTAUT model.

The 1992 D&M IS Success model established a framework for measuring and assessing the impacts of an information system on individual and organization. The model was updated in 2003 by integrating the measurement challenges of the growing e-commerce world [10]. By using D&M IS Success model, Ref. [11] found that the constructs information quality, system quality, and service quality seriously influenced the aspects of system development and implementation. Those constructs also affected the quality of the information system [12]. Finally, Ref. [13] proposed some dimensions to each of the constructs. To the system quality construct, they added four dimensions, namely, reliability, flexibility, accessibility, and timeliness. To the service quality construct, they added five dimensions, namely, tangible, responsiveness, empathy, service reliability, and assurance.

The major aspect differentiating the current work to any previous works is the aspect of the user acceptance on an environment regulated by a government.

II. Research Method and Research Framework

The required data are collected from a sample of 65 operators of DAPODIK system from vocational and senior high schools in Batam, Indonesia. The sample consists of 57% male and 43% female. The age distribution of the respondents is various: 8% are less than 20 y.o, 51% are within the range of 20-29 y.o, 25% are within 30-39 y.o, and only 17% are older than 40 y.o. In regards to the education level, 57% respondents have a bachelor degree, 17% have an associate degree, 2% have a graduate degree, and the remaining respondents have finished high school. In regards to the DAPODIK user-experience, 37% respondents have been using the system for more than 2 years, 31% for 1–2 years, 20% for 6 months to 1 year, and 12% for less than 6 months.

Their responses are collected by questionnaire using Likert scale where each question has five options of 'Strongly Disagree', 'disagree', 'Neutral', 'Agree', and 'Strongly Agree.' The current research framework adopts UTAUT and D&M IS Success model with the additional measurement indicators from TAM, MMUST, and 3Q models. The framework is depicted in Fig. 1 and the working research hypotheses are as follows.

- H1: The Performance Expectance affects the User Satisfaction.
- H2: The Effort Expectancy affects the User Satisfaction.
- H3: The Social Influence affects the User Satisfaction.
- H4: The Information System Quality affects the User Satisfaction.

III. Results and Discussions

We use multivariate analysis to assess the relation established in Figure 1. The results are of the following. The analysis establishes the regression equation of

$$US = 0.219 + 0.343 \cdot PE + 0.180 \cdot EE + 0.190 \cdot SI + 0.254 \cdot ISQ, \tag{1}$$

where US denotes the user satisfaction, PE denotes the performance expectancy, EE denotes the effort expectancy, SI denotes the social influence, and ISQ denotes the information system quality.

The model is statistically analyzed for its importance and reliability by using a number of statistical tests of the following.

The first is the analysis of variance regarding the overall significance of the model that is evaluated via an F-test. The results show the computed F-stat has a value of 35.238 with a p-value of 0.000 suggesting that the relation between the user satisfaction and the set of the independent variables is statistical significance.

The second is regarding the fitness of the data to the current model. We obtain a coefficient of determination or R^2 of 0.701, suggesting that the data fit the model very well.

The third is regarding the statistical significance of each independent variable. The results are presented in Table I.

The computed t-statistics and its associated p-values presented suggest that the coefficients of the four independent variables are statistical significance.

The fourth is regarding the potential collinearity of the four independent variables. We obtain the tolerance and Variance Inflation Factor (VIF) presented in Table I. A tolerance value higher than 0.3 and a VIF value lower than five indicate that multicollinearity is not existed in the model.
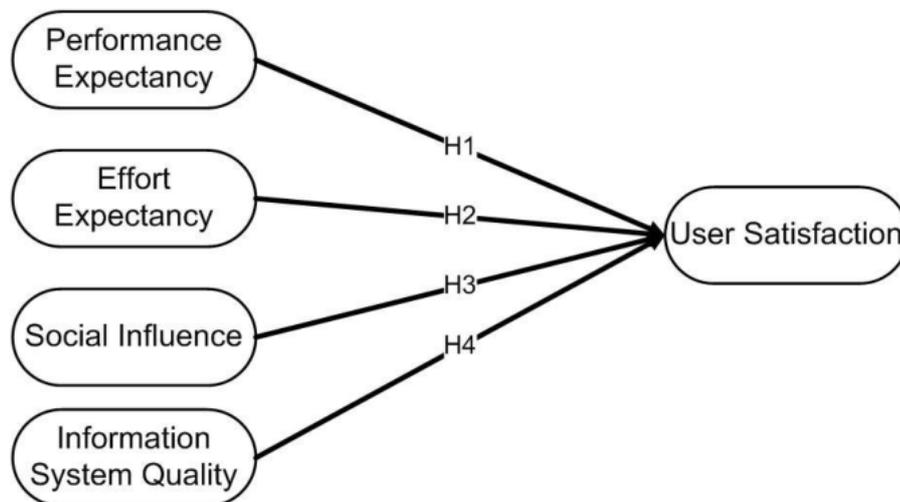
Fig. 1. The current research framework.

TABLE I
THE STATISTICAL ANALYSIS RESULTS OF THE SIGNIFICANCE OF EACH INDEPENDENT VARIABLE AND COLLINEARITY.

Model	Unstandarized Coef.		Std. Coef.	t	p-value	Collinearity Statistics	
	B	Std. Error	β			Tolerance	VIF
(Constant)	0.219	0.365		0.600	0.551		
PE	0.343	0.136	0.265	2.517	0.015	0.449	2.229
EE	0.180	0.075	0.238	2.420	0.019	0.516	1.940
SI	0.190	0.088	0.222	2.147	0.036	0.465	2.152
ISQ	0.254	0.096	0.277	2.627	0.011	0.447	2.236

The final test is regarding the randomness and distribution of the model residual. A Kolmogorov-Smirnov test is performed and it results in a p-value of 0.278, suggesting that the residual are indeed normally distributed.

In the context of the user acceptance of the DAPODIK information system, the study concludes the acceptance of the following hypotheses: the aspects of user satisfaction are related to the aspects of performance expectancy, effort expectancy, social influence, and information system quality. The level of importance of the four independent variables are relatively similar, marked with the nearly equal magnitude of the standardized model coefficients.

Although the research is carefully prepared, we aware of its limitations and shortcoming. Firstly, the sample size is relatively small. Only 65 out of 76 respondents return completely filled questionnaires. Secondly, at the time of study, the DAPODIK operators are busy with another mandatory government-issued application, so called PMP.

This research has demonstrated that in a mandatory environment, the users have a higher satisfaction when they perceive the system as useful in their work and able to increase their productivity. Therefore for the future recommendation, the aspect of usefulness should be prioritized and socialized to ensure obtaining the high user satisfaction level of the system.

Some issues may be addressed in the future are:

- We measured user satisfaction using four instruments of performance expectancy, effort expectancy, social influence and information system quality. Future research should attempt to identify additional components that are specific to mandatory usage of information system.
- Although we consider our sample to be appropriate for the study we conducted, we believe that research should test the revised user satisfaction instruments on different strata of the population, different time of different geographical area.
- Additional research could investigate the relation between user satisfaction and work performance. To further proven examine the gap satisfaction between expectancy and performance.

IV. CONCLUSION

The study focuses on the factors affecting user acceptance of a mandatory government-regulated information system. The study utilizes a modified UTAUT framework. The statistical analysis suggests that on such condition, the aspects of performance expectancy, effort expectancy, social influence, and information system quality affect the aspect of user satisfaction. All of those aspects are equally important.

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