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Technology Acceptance Model on SIMBA Adoption in SIM-ZAWA Subject

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Abstract. SIMBA is one of the technologies in zakat management information systems developed and used by BAZNAS. This system produces an accountable and transparent zakat report because it is integrated from the central to regional BAZNAS. The use of SIMBA in the SIM-ZAWA course has not been maximally applied for various reasons, so an analysis of lecturers and students' perceptions in using SIMBA is needed. The most appropriate technology acceptance model is the Technology Acceptance Model (TAM) which is then analyzed using Bayesian Structural Equation Modeling (SEM) because of its tiered structure and the assumptions that are not fulfilled in SEM analysis. This research was conducted on 50 respondents are students who are currently and have taken SIM-ZAWA courses. The results showed that the acceptance of SIMBA technology was influenced by Perceived Ease of Use (PE) and Perceived Usefulness (PU) with PU and PE influenced by Subjective Norm (SN) and Innovativeness (I).
Keywords. *TAM; SEM Bayesian; SIMBA; SIM-ZAWA*

Abstrak. SIMBA merupakan salah satu teknologi dalam sistem informasi manajemen zakat yang dikembangkan dan digunakan oleh BAZNAS. Sistem ini menghasilkan laporan zakat yang akuntabel dan transparan karena terintegrasi dari BAZNAS pusat sampai daerah. Penggunaan SIMBA pada matakuliah SIM-ZAWA belum diaplikasikan secara maksimal dengan berbagai alasan sehingga diperlukan analisis tentang persepsi mahasiswa dalam menggunakan SIMBA. Model penerimaan teknologi yang paling sesuai adalah Technology Acceptance Model (TAM) yang selanjutnya dianalisis menggunakan Structural Equation Modeling (SEM) Bayesian karena strukturnya yang berjenjang dan tidak terpenuhinya asumsi pada analisis SEM. Penelitian ini dilakukan pada 50 orang responden yang merupakan mahasiswa yang sedang dan telah mengikuti matakuliah SIMZAWA. Hasil penelitian menunjukkan penerimaan teknologi SIMBA dipengaruhi oleh Perceived Ease of Use (PE) dan Perceived Usefulness (PU) dengan PU dan PE dipengaruhi oleh Subjective Norm (SN), dan Innovativeness (I).
Kata kunci. *TAM; SEM Bayesian; SIMBA; SIM-ZAWA*

1. INTRODUCTION

The development of information technology is changing one's mindset and perspective to be more effective and efficient in various fields one of which is education. To support the effectiveness in the delivery of information in order to advance education requires the application of learning based on information and communication technology (ICT). The success of lecturers in the delivery of material one of which is influenced by the use of learning technology but its use is very minimal and often ignored (Lim and Khine, 2006 in Teo, Lee and Chai, 2007). This is very unfortunate considering the use of learning technology plays an important role to help students understand material that is visualized using technology that is integrated with the curriculum (American Psychological Association, 1997 in Wozney, Venkatesh and Abrami, 2006).

The role of technology is needed in a variety of courses, one of which is the Management Information System for Zakat and Waqf (SIM-ZAWA). SIM-ZAWA is a course that discusses information technology in the management of zakat management. The role and function of zakat especially in reducing inequality in Indonesia can be improved by managing zakat that is transparent and accountable. The technological device used in the SIM-ZAWA course is SIMBA. SIMBA or BAZNAS management information system is a system of management and reporting of zakat developed by BAZNAS. This system can print integrated reporting from central to regional BAZNAS. The use of SIMBA in SIM-ZAWA courses has not been maximally

applied for various reasons. This is the reason underlying the need for research to find out the extent of the perception of student acceptance in using SIMBA.

Technological acceptance models that can be used are Theory of Planned Behavior (TPB), Theory of Reasoned Action (TRA) and Technology Acceptance Model (TAM). However, the most appropriate model today is TAM (Davis in Khosrow-Pour, 2006) and its effectiveness in measuring technology acceptance has been recognized by many researchers (Lee, Li, Yen, and Huang, 2010). TAM has the main variables namely Perceived Ease of Use (PE) and Perceived Usefulness (PU) (Davis, 1989 in Teo, et al., 2007). Factors in TAM will form a tiered causal modeling graph. The appropriate statistical analysis for stratified causal modeling chart structure is Structural Equation Modeling (SEM). SEM is a multivariate technique used to test dependency relationships and describe concepts that cannot be measured by multiple variables to simultaneously estimate existing interdependence relationships (Hair, Anderson and Tatham, 1998). Deep modeling SEM is for latent variables where all observations are normally multivariate (Lee, 2007).

This study aims to determine the perception of acceptance of SiMBA technology in the learning process in the Zakat and Waqf Management Department of the Islamic Economics and Business Faculty of IAIN Tulungagung in accordance with the structure of the Technology Acceptance Model (TAM) with the Bayesian Structural Equation Modeling (SEM) approach.

2. METHOD

The data used in this study are primary data, which are the results of a survey conducted on students majoring in Zakat and Waqf Management of FEBI IAIN Tulungagung. The questionnaire in this study consisted of 29 questions related to students' perceptions of SiMBA acceptance in the SIM-ZAWA course. The question is an indicator for external latent variables and the main latent variables in TAM. In filling out perceptions in the questionnaire, the respondent's answers were in the form of a Likert scale that was limited to 5 (five) categories starting from "Strongly Disagree" to "Strongly Agree".

The main variables of TAM on the adoption of SiMBA in SIM-ZAWA subjects in this study are Perceived Ease of Use (PE), Perceived Usefulness (PU), Behavioral Intention to Use (BI) and Actual System of Use (AU). PU and PE in TAM are influenced by external variables. External variables are identified based on previous research using TAM and also based on the real conditions of the research object. This study uses external variables Subjective Norm (SN), Innovativeness (I), Training (T), Experience (E) and Facilitating Conditions (FC) with the model of relationship between variables as follows

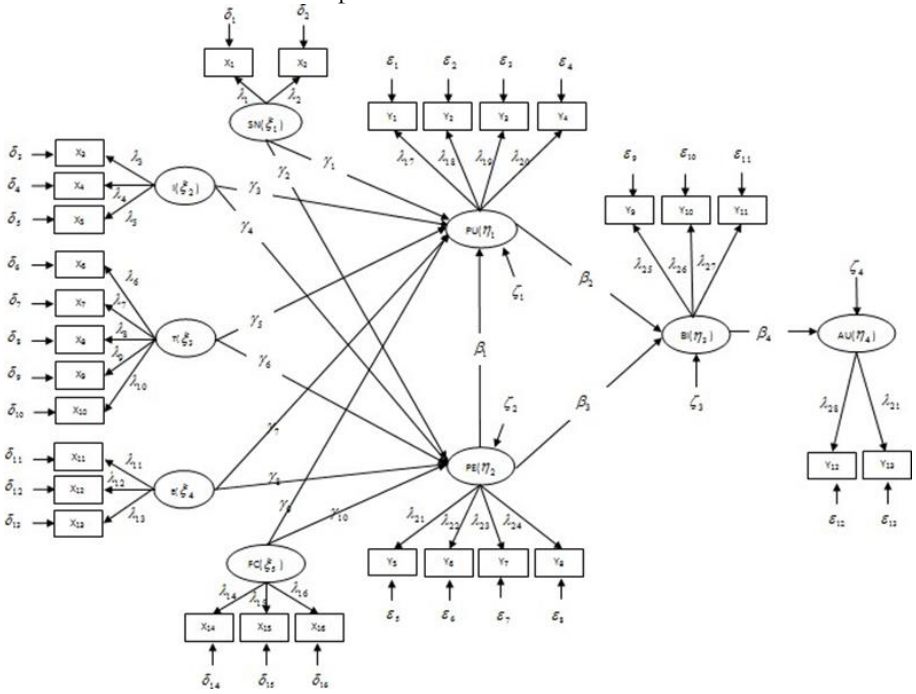

Figure 2.1 Model SEM TAM Adoption of SIMBA in SIM-ZAWA Subjects

The data analysis phase is done by 1) determining the measurement model and structural model, 2) determining the parameter matrix to be estimated, 3) calculating the threshold for each research variable to convert categorical data into continuous data (Y) with the N distribution (0.1), 4) determine the prior distribution for each parameter to be estimated; 5) apply the MCMC with the Gibbs Sampler algorithm to the full conditional model to get the posterior distribution and parameter estimation, and 6) the model validation.

3. RESULTS & DISCUSSION

3.1 Descriptive Data Analysis

The results of the questionnaire indicate that the use of SIMBA by students is due to the existence of lecturer encouragement that requires its use in the SIM-ZAWA course. 40 out of 50 respondents or 80% of respondents said that they use SIMBA because of the encouragement of someone who has influence (which in this case is a lecturer). Lecturers are more likely to use SIMBA in SIM-ZAWA subjects because SIMBA has been used as a tool for zakat reporting by BAZNAS or other amil zakat (LAZ) institutions that have integrated reporting to the center (Rafikasari, E.F., 2019).

3.2 Bayesian SEM Estimation

Results are the third section of this template paper. Its purpose is to present the new information gained in. Bayesian SEM estimation begins by first changing the data into continuous data with N distribution (0.1) by determining the threshold value because respondents' choices tend to be in the high category (Lee, 2007). The next step is to estimate the Bayesian SEM parameters combined with the Markov Chain Monte Carlo (MCMC). MCMC with Gibbs Sampler algorithm makes posterior analysis simpler than the classical method (Anggorowati, Iriawan, Suhartono and Gautama, 2012). Bayesian SEM parameter estimation is done by determining the prior distribution in Table C.1 which is a conjugate prior that refers to research in Lee (2007).

Table C.1 Prior Distribution Used

No	Parameter Model
1	$\Theta_{\delta} \sim$ Invers Gamma(10,8)
2	$\Theta_{\varepsilon} \sim$ Invers Gamma(10,8)
3	$\begin{bmatrix} \Lambda & \theta_{\delta} \end{bmatrix} \sim \text{Normal}\begin{bmatrix} 0.6; 4\theta_{\varepsilon} \end{bmatrix}$
4	$\begin{bmatrix} \Lambda_y & \theta_{\delta} \end{bmatrix} \sim \text{Normal}\begin{bmatrix} 0.6; 4\theta_{\varepsilon} \end{bmatrix}$
5	$\xi \sim$ Multivariate Normal$(0, \phi)$
6	$\phi \sim IW\left(\begin{bmatrix} 8.0 & 0.0 & 0.0 & 0.0 & 0.0 \\ 0.0 & 8.0 & 0.0 & 0.0 & 0.0 \\ 0.0 & 0.0 & 8.0 & 0.0 & 0.0 \\ 0.0 & 0.0 & 0.0 & 8.0 & 0.0 \\ 0.0 & 0.0 & 0.0 & 0.0 & 8.0 \end{bmatrix}, 30\right)$
7	$\Theta_{\eta} \sim$ Invers Gamma(10,8)
8	$\beta \sim$ Normal$(1.1; 10.0\theta)$
9	$\gamma \sim$ Normal$(1.5; 9.0\theta)$
10	$\theta \sim$ Invers Gamma(10,8)

Estimation results with the Bayesian SEM approach can be seen in Figure C.1. Convergent parameter estimates are obtained through an iteration process of 100,000 times by taking one sample for every 20 iterations so that a total of 5,000 samples is obtained. The estimation results show that there are five significant relationships out of a total of 14 relations, i.e. 1) SN to PU, 2) SN to PE, 3) I to PU, 4) PU to BI, and 5) PE to BI.

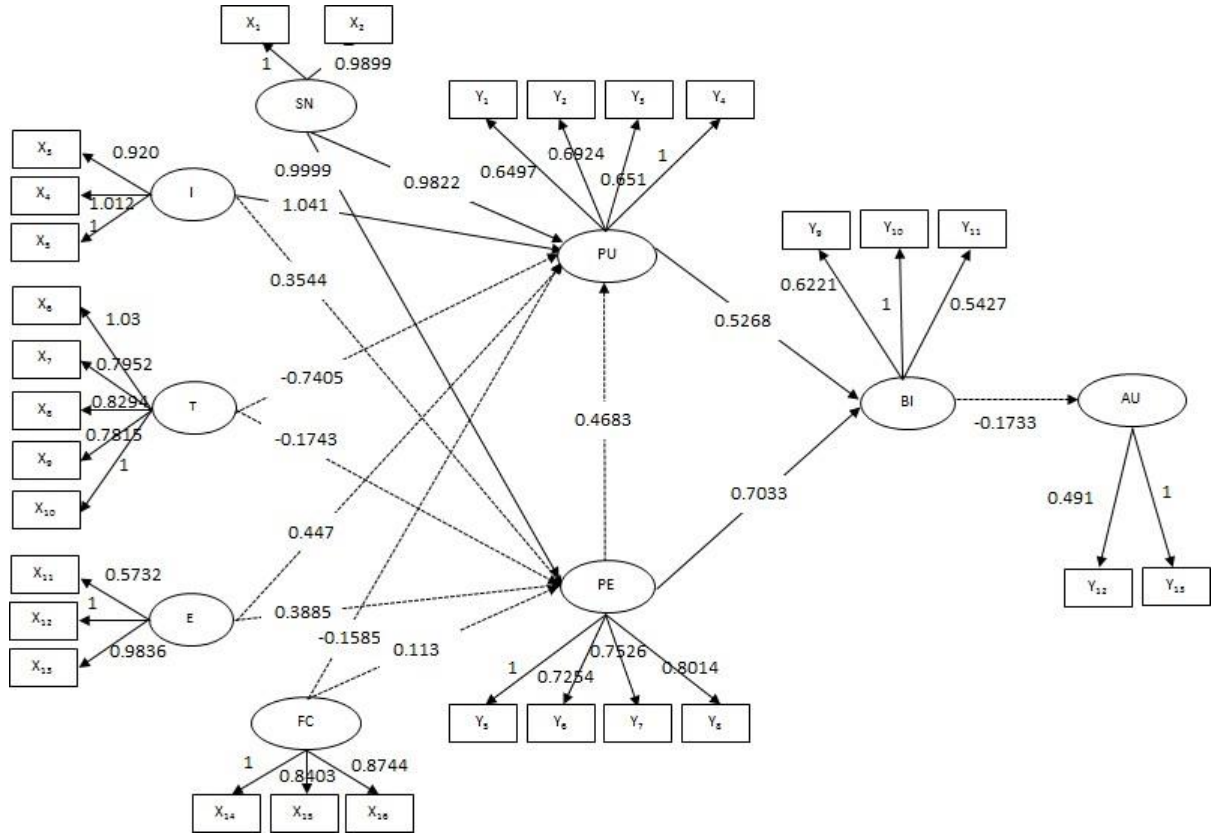

Figure C.1. Structure of SEM Results for TAM on SIMBA Adoption

External variables that significantly influence PU and PE are only SN and I. SN has a significant effect on PU and PE due to the lack of mandatory nature in the Management of Zakat and Waqf Management which results in students still using their subjective perceptions in using SiMBA. Variable I has a significant effect on PU because students can use SiMBA well in carrying out the financial reporting tasks of zakat and the practice of printing Zakat Principal Number (NPWZ) cards. PU and PE significantly influence Behavioral Intention to Use (BI), namely the tendency in the use of SiMBA. Students are committed to using SiMBA in zakat reporting activities because they feel that this technology is very beneficial and very helpful. It's just that this commitment has not significantly influenced the Actual System of Use (AU), which is a high intensity in using SiMBA. The relationship between PU and PE to the AU becomes insignificant because students using SiMBA are limited to lectures on SIM ZAWA only and not at every meeting in the lecture.

4 CONCLUSION

A There are four main variables of the TAM model in SIMBA adosiation in the SIM-ZAWA subjects, namely, Perceived Usefulness (PU), Perceived Ease of Use (PE), Behavioral Intention to Use (BI) and Actual System of Use (AU). External variables that are thought to affect PU and PE are Subjective Norm (SN), Innovativeness (I), Training (T), Experience (E), and Facilitating Conditions (FC). The nine variables have 29 indicator variables as measuring variables. Student acceptance at SIMBA adosi on SIM-ZAWA subject is influenced by PE and PU variables. External variables that significantly influence PU and PE are SN and I. PE and PU have a significant effect on BI but have not affected the habits of students in using SiMBA to complete zakat financial statements.

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