

The Influence of Developing an E-Business Adoption Model in Technological and Organizational Contexts in SMEs with TAM model: A Pretest Assessment

Asrul Sani¹, Dian Ikha P², Meida Rachmawati³, Ninuk Wiliani⁴, Indra Samsie⁵
{c70101180014@aeu.edu.my¹, dianikhapramayanti@gmail.com², Meida_r@unw.ac.id³,
ninukwiliani15@gmail.com⁴, indrasamsie@dipaneegara.ac.id⁵}

School of Graduates Studies, Asia e University Malaysia^{1,2,3,4,5}

Abstract. Performance studies for SMEs (Small and Medium Enterprises) are feasible and can be done and used for a range of SMEs. One approach is to integrate and integrate Technology Acceptance Model and e-business conceptual framework are two instances of existing models to create a new model (TAM). This is a quantitative study using the Sequential Equation Model of the analyst (SEM). Before proceeding to the next phase of the process research, this study will establish the questionnaire's psychometric features and test it research. The tests are being performed to evaluate the level of validity and trust of the indicators used A 5 Likert rating scale is used in the questionnaire. The created path's effect is made of 12 connections and results in seven variables.

Keywords: E-Business; TAM; SEM; SMEs

1 Introduction

In 1997-1998 Indonesian economic crisis with the vulnerable was a watershed moment in how Micro, Small, and Medium Enterprises (SMEs) throughout Indonesia, particularly on Java Island, could survive and demonstrate their presence in business. Following the crisis, statistics According the Central Statistics Agency (BPS), the number of workers in SMEs increased to 116.67 million in 2017. Data on SMEs' growth of 13.98 % were provided by the Ministry of Cooperatives and SMEs percent between 2012 and 2017, with significant absorption of labor of just 14.7 % [1].

Another aspect is a rise in the degree Staff and management knowledge and education, degree of skills and entrepreneurship, SMEs' access to financial sources, access to business development institutions, and external variables such as licensing ease and transaction costs all are factors to take into account all are factors to consider are all factors to consider. all are factors to consider. Despite the fact that SMEs' competitiveness varies widely, identifying SMEs' competitiveness is determined by three factors: potential, process, and performance [2].

As a result of the increased use of information technology The business sector in SMEs is growing of management. The The The simplicity in which information technology can be used and acquired affects its worth. Because the various applications employed Being a

business actor in SMEs has a very positive effect on increasing the owner's wellbeing if done correctly. Customer service, partnership cooperation, and electronic transactions all are elements in buying and selling goods and/or services all are types of online business activities that take place on networked computers [3, 4].

The purpose of this study is to provide an assessment of the indicators of validity and reliability TAM variables are used in e-business research, especially in the context of innovation and technology organizations, to be aware of the indicators contained in each variable in terms of response and input, as well as the respondents' assessment. This assessment is based on responses as well ' views, with end goal being an investigation from the researcher's perspective.

The key the introductory section's elements, as well as the context for choosing the title, issue statement, and writing goal, are discussed in this paper's four sections. The theoretical framework section will cover both the concepts that support model development research and the concepts that support model development research concepts that support model development research. factors that influence it The section on research methods dives into the research's methodological components, such as data collection procedures, data sources, and data analysis, in order to satisfy as a reference for future work. The findings, which include comments, limitations, and future study ideas, as well as the results of the analysis phase, are the fourth component. This research adopts Input-Output Process Logic (IPO Logic), This was developed with the same goal in mind: to assess and produce good systems. The core theory of this system is used to give the highest overview about what a systematic system implies it can be comprehended customers can grasp it quickly. IPO logic models are continuously in use by researchers to evaluate and modify system quality results and as research references [5].

2 Methodology

The development of the model is a step-by-step process with five stages (Figure 1), the first stage begins with creating a followed by the development of a list of questions whose suitability is based on the developed model of a model based on the assessment design.

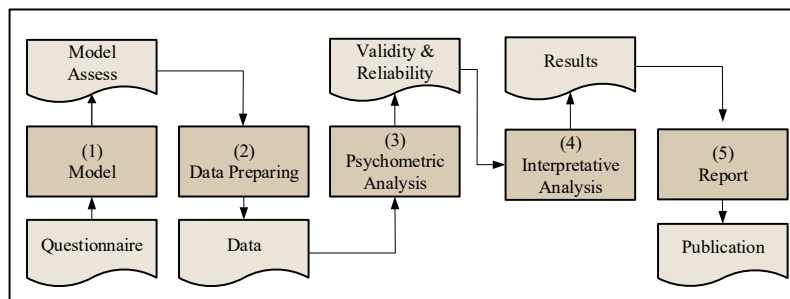


Fig. 1. Research Method

The preparation of data is the second stage. The researchers used a random sampling technique to distribute questionnaires to respondents online or in - store. SME employees or entrepreneurs who have ran businesses using information technology or specific software are the responses in question. After then, 60 samples were randomly assigned to an online and 16 face-to-face questionnaire. Researchers processed the collected data using MS Excel 2013 and

SmartPls to prepare for the data analysis stage, which included conducting reliability and validity tests on the data to analyze it based on the amount of data. The After all of These research groups now are complete, the final stage is carried out. The tiny notes written will act as a guide During the research, for finalizing the report The final report's results will be published and used as a material for future research. To make the research process more manageable, the general processes have been condensed Tests

The survey was scored to use a Likert scale with the following potentials: Strongly disagree (STS), disagree (TS), uncertain (TT), agree (ST), and completely agree (ST) are indeed the 5 stages of disagreement (SS). The poll has received a response form 46 men and nine women. They are the most powerful owners or managers of small and midsize enterprises, and they are between the ages of 25 and 53. Table 1 shows some research In order to integrate a model with other models, reference models and theories are used, and the theory that shows the relationship between input, process, and output.

Table 1. List of models and theories.

Models and Theories	Reference
Information Process Model	[4, 6, 7]
E-business Adoption Model	[8, 9]
Technology Acceptance Model	[10]
Logic Model IPO	[6, 11]
Process and Causal Models on Development Models	[12-14]

Figure 2 shows the results of the integration model, which builds on the previous model [4, 11], which was based on previous models and became an empirical study. The Technology Acceptable Model [10] is used to develop integration e-business adoption models by adopting, developing, and adapting such [11]. E-business variables include Technology Competence (TC), Firm Scope (FC), and Firm Size (FZ), and also Perceived Usefulness (PU) and Perceived Ease of Use (PEU) are TAM variables (PE), and Attitude Toward Using Technology (AT). The outcome is the predicted Actual Acceptance (AS). Previous research has found that developing an information technology adoption plan for SMEs has positive results, with a 76 percent success rate [15-17], and that it provides a better understanding of how important technology is now in the corporate world operating a company so that it has the greatest effect on the company's progress [18].

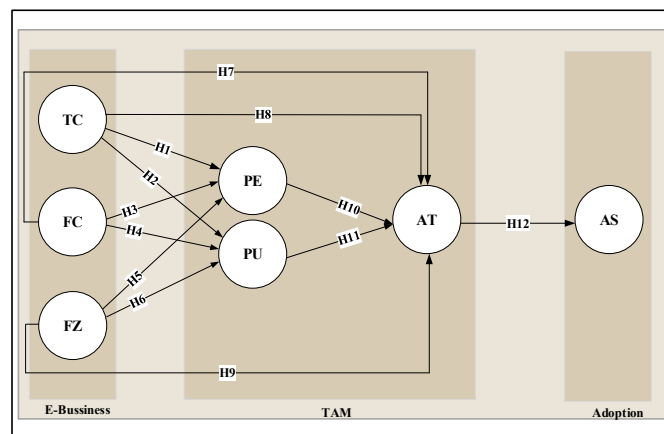


Fig. 2. Research Model

Table 2. Variabel Definition

Code	Item	Definition
TC	Technical Competence	The likelihood that an assets will expand horizontally.
FC	Firm Scope	The extent to which a company believes it can expand vertically.
FZ	Firm Size	Having the confidence of a larger company may offer you an advantage over smaller businesses.
PU	Perceived Usefulness	The extent to which one feels confidence in the system's capacity to increase one's work performance.
PE	Perceive Ease of Use	What helps the work is the level of confidence in IT that will be used.
AT	Attitude Toward Using	The user's degree of trust inside his own evaluation of his willingness to use technology.
AS	Actual Acceptance System	The extent toward which you believe the system would be adopted.

3 Results and Discussion

A total of 76 questionnaires were issued to respondents, with 55 of them being completed and returned. There are 46 male respondents and nine female respondents in this poll. Respondents varied They were top In between ages of 25 and 53, In the management of SMEs, owners or implementers According the respondents' education level, 22 people have a diploma, 31 have a bachelor's degree, and two have a master's degree. The path diagram in Figure 3 is the result of data processing with the SmartPLS 3.0 application. The path diagram is generated by multiplying the number of indicators by the number of variables in the preset model, resulting in a total of five indicators..

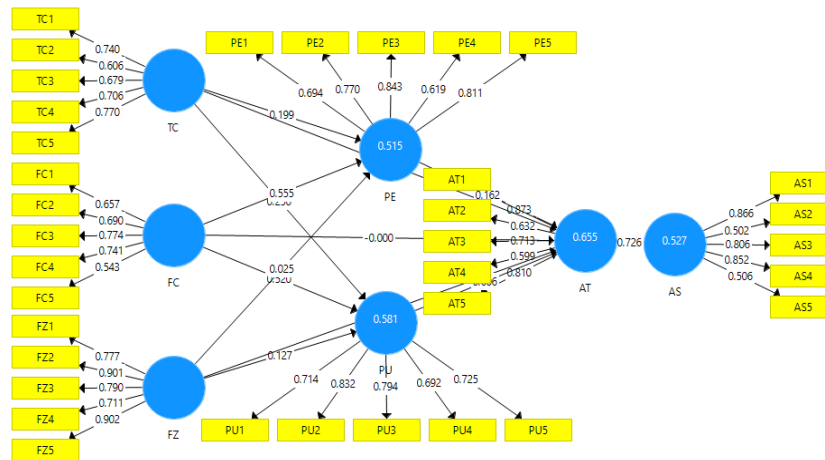


Fig. 3. Path Chart

Table.2 depicts the general a rule of thumb for assess the performance of a model The quality analysis of the model will be affected by the indicators in the questionnaire.

Table 3. Parameters Test

Testing	Parameter	Rule of Tumbs
Convergent	Outer Loading (OL)	> 0,7
Validity	Average Variance Extracted (AVE)	> 0,5
Discriminant Validity	AVE Square and Correlation Between Latent Variables	AVE Square > Correlation Between Latent Variables
	Cross Loading (CL)	> 0,7
Realiably	Cronbach Alpha (CA)	> 0,6
	Composite Reliability (CR)	> 0,6

a) Validity Result

Validity testing is performed in order to determine if the indications in each variable are valid or not, as indicated by the threshold value of a test findings. The cross-loading factor's value can be used to evaluate whether a variable has an adequate cross-loading factor. By comparing the intended loading value to an actual loading value variable to the loading value on other variables, discriminant could be accomplished. The value of cross-loading is seen based on the value of the outer loading of each indicator on a predetermined variable. The following is the value of the outer loading factor for each research variable indicator based on the SmartPLS output. Outer loading test (OL) results show TC2, TC3, FC1, FC5, PE4, AT2, AT4, AS2 and AS5 values that are less than a predetermined threshold of 0.7. As a result, the validity of the TC2, TC3, FC1, FC5, PE4, AT2, AT4, AS2 and AS5 indicators In hypothesis testing, these two indicators must be removed because they do not meet the requirements.

All indicators meet the criteria for the average variance extracted value (AVE) and are greater than 0.5 except for the Firm Scope (FC) variable. In the case of cross-loading (CL) values, there are nine indicators, TC2, TC3, FC1, FC5, PE4, AT2, AT4, AS2 and AS5, whose values are less than the 0.7 threshold. It is possible that both the TC2, TC3, FC1, FC5, PE4, AT2, AT4, AS2 and AS5 In terms of questionnaire Indicators, including such statements and questions, confused respondents or filled in gaps with non-conformities The nine indicators that do not meet the threshold will be used as evaluation material informing question sentences or statements that will later be used again for re-questioning at the time of data collection. Some other evaluation materials before the deployment test is carried out are preparing a list of questions that will be re-adjusted to the respondents based on the SME business group

b) Reliability Result

The reliability test verifies The precision, consistency, and accuracy with which device detects indicators. The importance of Cronbach's alpha (CA) values with such a limit of greater than 0.7, and the Cronbach's alpha (CA) values with a limit of higher then 0.7, are being used to examine the reliability test results. Table 3 shows the results. The All variables possess CA and CR values greater than the threshold, indicating that the variables in the model had survived the reliability test and can now be used to testing theories testing testing [19-21].

These results provide an understanding that the answers given by respondents in data collection can be trusted as a data collection tool and can reveal factual information. This reliability test also shows the degree to which a measuring instrument may be relied upon. When a measuring device is used repeatedly to test the same symptoms and the results are

relatively consistent, the component is called reliable. To put it differently, the reliability test of this study shows the consistency of a measuring instrument in measuring the same symptoms.

Table 4. Statistical Result

VAR IND	AS	AT	FC	FZ	PE	PU	TC
AS1	0,87	0,57	0,37	0,27	0,36	0,52	0,45
AS2				REJECT			
AS3	0,81	0,65	0,50	0,33	0,48	0,64	0,46
AS4	0,85	0,64	0,42	0,36	0,38	0,51	0,49
AS5				REJECT			
AT1	0,60	0,87	0,49	0,34	0,61	0,76	0,41
AT2				REJECT			
AT3	0,37	0,71	0,39	0,19	0,51	0,43	0,24
AT4				REJECT			
AT5	0,65	0,81	0,55	0,26	0,64	0,74	0,65
FC1				REJECT			
FC2	0,40	0,49	0,69	0,09	0,51	0,58	0,35
FC3	0,45	0,51	0,77	0,22	0,55	0,54	0,66
FC4	0,28	0,36	0,74	0,09	0,47	0,47	0,50
FC5				REJECT			
FZ1	0,29	0,21	0,06	0,78	0,17	0,18	0,13
FZ2	0,27	0,37	0,19	0,90	0,19	0,27	0,19
FZ3	0,30	0,24	0,22	0,79	0,15	0,31	0,25
FZ4	0,15	0,18	0,14	0,71	0,00	0,12	0,18
FZ5	0,26	0,30	0,25	0,90	0,22	0,29	0,28
PE1	0,33	0,46	0,41	0,10	0,69	0,49	0,39
PE2	0,33	0,61	0,53	0,13	0,77	0,55	0,54
PE3	0,42	0,60	0,65	0,13	0,84	0,68	0,51
PE4				REJECT			
PE5	0,43	0,54	0,64	0,10	0,81	0,77	0,46
PU1	0,39	0,48	0,61	0,26	0,71	0,71	0,57
PU2	0,62	0,62	0,67	0,25	0,66	0,83	0,70
PU3	0,62	0,73	0,52	0,26	0,52	0,79	0,42
PU4	0,47	0,59	0,52	0,13	0,60	0,69	0,44
PU5	0,48	0,58	0,38	0,26	0,61	0,72	0,28
TC1	0,45	0,30	0,49	0,32	0,41	0,39	0,74
TC2				REJECT			
TC3				REJECT			
TC4	0,44	0,50	0,53	0,16	0,40	0,46	0,71
TC5	0,41	0,45	0,56	0,11	0,56	0,55	0,77
CA	0,76	0,78	0,71	0,88	0,81	0,81	0,74
CR	0,84	0,85	0,81	0,91	0,87	0,87	0,83
AVE	0,53	0,54	0,51	0,67	0,57	0,57	0,52

4 Conclusions

Model development by integrating the in the context of technology, a TAM model combined with an e-business adoption model and organization goes according to the desired plan. Variables and indicators that are made based on the previous variables produce validity and reliability tests by showing that nine indicators must be eliminated, namely TC2, TC3,

FC1, FC5, PE4, AT2, AT4, AS2, and AS5. The The The instruments used in this study should be viewed in the context of information system testing and how technology is applied to smaller companies. Because three Three TAM variables, PU, PE, and AT, are known to be influenced on organizational variables TC, FC, and FZ, and these impacts are beneficial to the development of SMEs. Given the fact that it has a significant impact based on the instruments used in this study, this model can be used to SMEs. It should also be considered in the context of information system testing and how technology is applied to SMEs. Because three Three TAM variables, PU, PE, and AT, are thought to be affected on organizational variables TC, FC, and FZ, these impacts are vital to the growth of SMEs. This model applies to SMEs because it has a significant impact validity and reliability testing, with the proviso that the questions and statements of nine indicators must be adjusted to meet all of the existing indicators. The testing of By evaluating the structural model in subsequent studies, this model can be improved a more in-depth discussion.

References

- [1] BPS, "Statistical Yearbook of Indonesia 2018," SSCP and SSI, Eds., ed. Jakarta: Statistics Indonesia, 2018.
- [2] K. Koperasi, "http://www.depkop.go.id/uploads/tx_rtgfiles/Sandingan_Data_UMUKM_2012-2017_.pdf," 2018.
- [3] A. Subiyakto, R. Aisy, B. G. Sudarsono, M. Sihotang, D. Setiyadi, and A. Sani, "Empirical evaluation of user experience using lean product and process development: A public institution case study in Indonesia," in *AIP Conference Proceedings*, 2021, vol. 2331, no. 1, p. 060019: AIP Publishing LLC.
- [4] A. Sani, A. Subiyakto, and T. K. A. Rahman, *Integration of the Technology Readiness and Adoption Models for Assessing IT Use among SMEs in Indonesia*. 2018.
- [5] A. Subiyakto, A. R. Ahlan, M. Kartiwi, and H. T. Sukmana, "Influences of the Input Factors towards Success of An Information System Project," *TELKOMNIKA (Telecommunication Computing Electronics and Control)*, vol. 13, no. 2, pp. 686-693, June, 2015 2015.
- [6] A. Subiyakto and A. R. Ahlan, "Implementation of Input-Process-Output Model for Measuring Information System Project Success," *TELKOMNIKA Indonesian Journal of Electrical Engineering*, vol. 12, no. 7, pp. 5603-5612, 2014 2014.
- [7] W. S. Davis and D. C. Yen, *The Information System Consultant's Handbook: Systems Analysis and Design*. CRC press, 1998.
- [8] K. Zhu, K. Kraemer, and S. Xu, "Electronic business adoption by European firms: a cross-country assessment of the facilitators and inhibitors," *European Journal of Information Systems*, vol. 12, no. 4, pp. 251-268, 2003.
- [9] P. Chatzoglou and D. Chatzouides, "Factors affecting e-business adoption in SMEs: an empirical research," *Journal of Enterprise Information Management*, vol. 29, no. 3, pp. 327-358, 2016.
- [10] F. D. Davis, "Perceived usefulness, perceived ease of use, and user acceptance of information technology," *MIS quarterly*, pp. 319-340, 1989.
- [11] A. Sani and N. Wiliani, "Faktor Kesiapan dan Adopsi Teknologi Informasi dalam Konteks Teknologi serta Lingkungan pada UMKM di Jakarta," *JITK (Jurnal Ilmu Pengetahuan Dan Teknologi Komputer)*, vol. 5, no. 1, pp. 49-56, 2019.

- [12] S. Petter, W. DeLone, and E. McLean, "Measuring information systems success: models, dimensions, measures, and interrelationships," *European journal of information systems*, vol. 17, no. 3, pp. 236-263, 2008.
- [13] W. Kellogg, "Logic model development guide," *Michigan: WK Kellogg Foundation*, 2004.
- [14] D. M. Eddy, W. Hollingworth, J. J. Caro, J. Tsevat, K. M. McDonald, and J. B. Wong, "Model transparency and validation a report of the ISPOR-SMDM Modeling Good Research Practices Task Force-7," *Medical Decision Making*, vol. 32, no. 5, pp. 733-743, 2012.
- [15] L. Chairael, S. Widyarto, and V. Pujani, "ICT adoption in affecting organizational performance among Indonesian SMEs," *The International Technology Management Review*, vol. 5, no. 2, pp. 82-93, 2015.
- [16] R. Awiagah, J. Kang, and J. I. Lim, "Factors affecting e-commerce adoption among SMEs in Ghana," *Information Development*, vol. 32, no. 4, pp. 815-836, 2016.
- [17] V. Barba-Sánchez, M. d. P. Martínez-Ruiz, and A. I. Jiménez-Zarco, "Drivers, benefits and challenges of ICT adoption by small and medium sized enterprises (SMEs): a literature review," *Problems and Perspectives in Management*, vol. 5, no. 1, pp. 103-114, 2007.
- [18] A. Sani, T. Rahman, A. Budiyantera, and R. Doharma, "Measurement of readiness in IT adoption among SMEs manufacturing industry in Jakarta," in *Journal of Physics: Conference Series*, 2020, vol. 1511, no. 1, p. 012002: IOP Publishing.
- [19] J. F. Hair, M. Sarstedt, C. M. Ringle, and J. A. Mena, "An assessment of the use of partial least squares structural equation modeling in marketing research," *Journal of the academy of marketing science*, vol. 40, no. 3, pp. 414-433, 2012.
- [20] J. F. Hair Jr, G. T. M. Hult, C. Ringle, and M. Sarstedt, *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage Publications, 2016.
- [21] P. I. Santosa, "Metode Penelitian Kuantitatif, Pengembangan hipotesis dan pengujiannya menggunakan Smart PLS," *I*, vol. I, p. 308, 2018.