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Cite as: AIP Conference Proceedings 2331, 060017 (2021); <https://doi.org/10.1063/5.0042020>
Published Online: 02 April 2021

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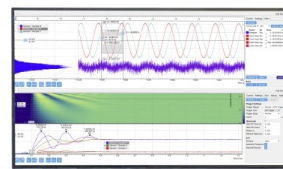
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The Effect of Technology Readiness in IT Adoption on Organizational Context Among SMEs in the Suburbs of the Capital

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Abstract. The role of Information Technology (IT) in the digital era today is critical in the business environment. IT will provide convenience in the process of managing a Small and Medium Enterprises (SMEs) so that companies have a competitive advantage in the current economic development. Some research has been discussed the issue of IT adoption's impacts and uses in SMEs, in particular in the suburbs bordering the national capital. The purpose of this study is to identify the impact of IT and the factors that influence technology readiness in IT adoption the organizational context among SMEs located in the suburbs of Jakarta. This article follows a quantitative research approach based on case studies and structured questionnaires. The results of SEM analysis using the SmartPLS3 application give the results that awareness of technology, local government support, SME management support, and financial support are essential factors in IT adoption in SMEs. This article tries to look at other phenomena regarding the limitations SMEs have in using IT and tries to make a recommendation on how to overcome them. It is hoped that this research will contribute to the development of information systems models both in terms of academics and practitioner.

INTRODUCTION

Indonesia is a developing country with a population, based on the results of the 2015 Intercensal Population Survey (Central Bureau of Statistics), was 267 million in total [1]. Each population struggles to meet basic needs such as water, clothes, housing, health care, and better education living standards. Small and Medium Enterprises (SMEs) is one important part of a business that will be developed and connected directly to alleviate poverty, particularly in remote areas in the Republic of Indonesia [2,3]. Information and communication technology (ICT) can provide SMEs to be an efficient company in the field of economic development of a nation. This provides great potential in making a decision which is important for SMEs' success and makes it more competitive and creative so that it can produce growth [4]. ICTs can increase productivity and make SMEs more competitive in various ways, including technical increase, decrease transaction costs, resource distribution increased, and output role changed [5-8]. Because for SMEs, it is critical to be in a strategic position and involve ICTs in their organizations, so organizations can improve in accordance with desired performance [9,10].

The crisis that struck Indonesia in 1997 began with a crisis of values the exchange of the rupiah against the US dollar and the monetary crisis that impacted the Indonesian economy, namely the economic recession. This is a very important lesson to re-examine an economic development that really has a strong structure and can survive in any situation [5,11].

When the economic crisis hit the world, it automatically worsened the economic conditions in Indonesia. Crisis conditions occurred in the time period of 1997 to 1998, and only the SMEs were able to remain strong. Data from the Central Bureau of Statistics released the situation after the economic crisis where the number of SMEs did not shrink, but it increased its growth to the most. It was even able to absorb 85 million to 107 million workers until 2012. In that year, the number of Indonesia's employers was 56,539,560 units. From this number, SMEs occupied 56,534,592 units or 99.99%. The remaining roughly 0.01% or 4,968 units are large enterprises. This phenomenon explains that SMEs are productive enterprises which are built to support macro and microeconomic development in Indonesia and influence other sectors that can develop [3].

The purpose of this study is to identify the impact of IT and the factors that influence technology readiness in IT adoption the organizational context among SMEs located in the suburbs of Jakarta. The method uses quantitative data obtained from the results of a survey of SMEs in Jakarta, using the purposive sampling technique. The results of the study will provide an initial overview of the IT adoption model that will be applied to SMEs.

LITERATURE REVIEW

The use of ICTs has a very significant impact on the management of an SME and crucial for the development and economic growth of developing countries in general and SMEs in particular. Through the use and utilization of ICT, SME management can be maximized by managing several sections such as resources, reducing work process development costs of production capacity and sales capacity, collect and disseminate information on an international scale, and get access with a very fast flow of information. [12]. SMEs who do not take advantage of the use of ICT will have significant and catastrophic potential consequences and possibility being left behind economically.

Readiness Index

They were generally explained by Parasuraman that the readiness of technology tends to gather and use new technology to achieve their goals, both in work and daily life. In this case, the Technology Readiness Index (TRI) created by Parasuraman is to measure the general convictions and thoughts of the individuals about how technology is being applied in an environment. Anyone who has thoughts how the use of technology should be more optimistic in carrying out their tasks, namely excitement in talking on application technology and a tendency to get inconvenience and cynicism on technology use. Thus, technological readiness has four dimensions: optimism, innovation, discomfort, and insecurity [13,14].

The first two steps concerning technology readiness are optimism and innovation that can be revived readiness for using technology, and the rest who feel uncomfortable and insecure are considered obstacles that can suppress the level of technology readiness [15]. Parasuraman and Colby emphasize that readiness to implement technology is a measurement tool where someone can include observations or thoughts on the use of technology and not as a measure of one's ability or capacity to use technology. Based on the order of readiness for the use of technology applications, users are classified into five parts: explorers, pioneers, skeptics, paranoids, and lenient. Cruiser type has the maximum score in the generous dimension (optimism, innovativeness) and low in inhibitor score (discomfort, insecurity) [16].

Explorers are easily hooked on new technology and become the first group to try it. On the other hand, sluggish is the last type of group to adopt new technology and has the highest score on the inhibitor dimension and a low score on the generous dimension. Meanwhile, the other three are pioneers, skeptics, paranoids who have more complex technological assumptions. High optimism and innovation among pioneers are like exploration. However, at the same time, they can easily stop being used if they feel uncomfortable. [13,16].

TOE framework

TOE is a creation of a multi-perspective system implemented in an organization by Mitchell Fleischer [17]. TOE framework theory is an organizational level theory, which represents one part of an innovation process, namely what and how the company's context influences adoption and implements an innovation [18]. The process of adopting innovation is based on the framework which has three side of aspects of the company's context:

- The technological context, in which the internal and external members of technology are linked to the company. Technologies which are already available used in the company, as well as the ones in the market but are not currently used. This technology can include appliances or procedures.

- The organizational context is related to the organizational firm's resources and characteristics, e.g. the size and structure of its management.
- The environmental context, which related to the domain of which the company carries out the business that relates to related factors such as trade, competitors, and the presence of technology service providers.

Those three examples present obstacles and expectations for technology innovation [17]. These elements affect the company level of technological innovation

METHOD

This quantitative method study was carried out in six phases (Fig. 3). The strategy carried out in sequence by using quantitative methods that are primarily used in research [19,20]. The population consists of around 365 people, including employees who have an interest in managing IT in their respective companies that were sampled, namely members of the middle manager and top management. Multi purposive sampling was calculated by considering the main characteristics of informants [21-23] of participants, especially those relating to their direct involvement in implementation of systems. Around 108 respondents were selected to fill out the survey and ten companies to interview.

The researchers developed the research model with respect to the research programme by adopting and adapting to the IT adoption model [12,24] in the third study phase. In the indicator development phase, in addition to the questionnaire that was bruised from developing models, and interview questions are developed referring to the process of project management (initiation, planning, implementation, and impact measure), the tool was also developed by considering research questions which are raised in this study. The questionnaire consisted of 70 questions, including 10 respondent profile questions, five questions about IT readiness profile, and 55 study questions on a 5-point Likert scale.

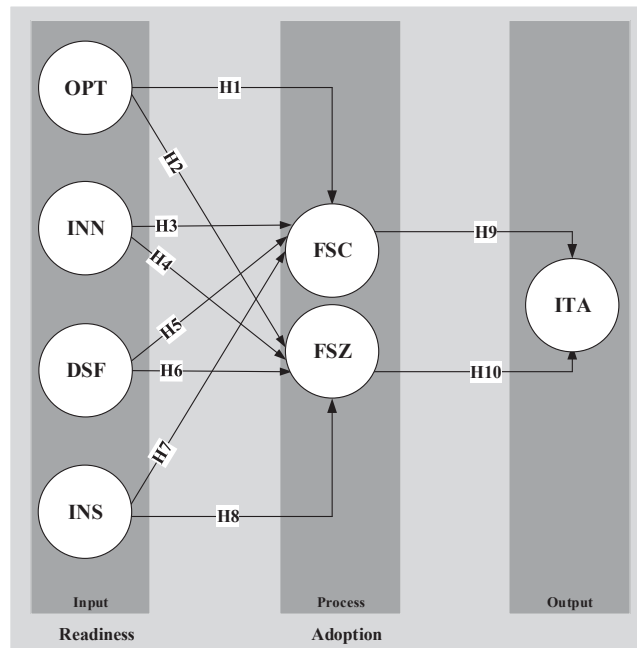


FIGURE 1. Model Research Proposed

In the readiness model developed by Parasuraman, there are four variables namely: Optimism (OPT), Innovativeness (INN), Discomfort (DSF), and Insecurity (ISC). While the IT Adoption model in the organizational context developed by Zhu, there are two variables namely: Firm Scope (FSC) and Firm Size (FSZ). The output generated is the IT Adoption (ITA) variable Hypothesis 1 (H1) explains whether there is a significant relationship between OPT and FSC, as well as Hypothesis 2 (H2) whether there is a relationship between OPT and FSZ and that also applies to subsequent hypotheses. Data obtained from the results of the questionnaire are then sorted based on the location of the questionnaire. The questionnaire data is then processed using Microsoft Excel 2013 for processing demographic respondents and using SmartPLS 3.0 to explain the results obtained in the form of inferential analysis.

This analysis phase is subsequently used to estimate the distribution of data by validating the results of inferential analysis at the stage of interpretation. The inferential data is obtained in the form of statistical analysis, which is a form of analysis conducted to obtain the validity and reliability of a model so that the model can still be developed to analyze the structural model. In this study, the steps carried out only up to statistical analysis with the consideration that if the model can be developed according to needs, this model can be used as a reference to see the development of SMEs in the suburbs of the capital.

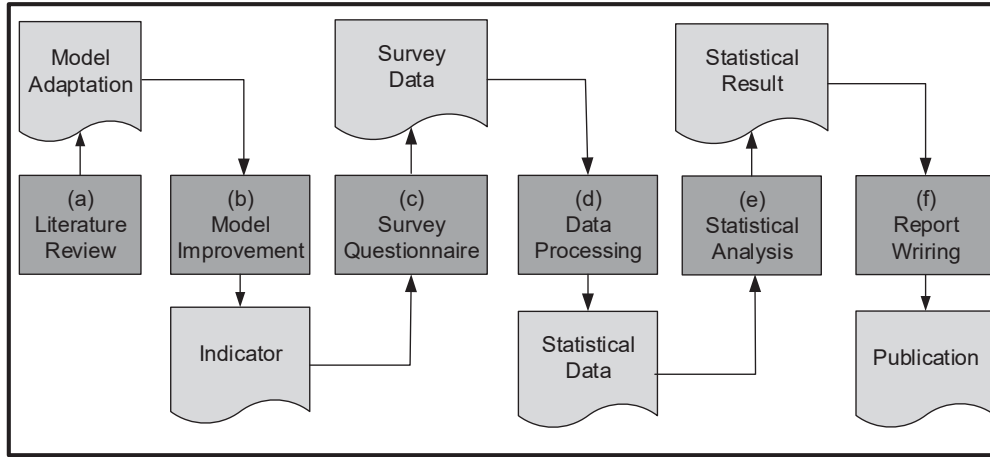


FIGURE 2. Research Methodology

The study will go through six (6) stages starting from literature review and model adaptation followed by model creation by making indicators of the existing variables, then conducting surveys, data collection, statistical analysis and analyzing them, and finally writing papers. This research will use Input-Process-Output (IPO Logic) logic assumptions.

RESULT AND DISCUSSION

Table 1 provides information on the respondents' profiles in terms of education, job position, and experience using IT. It was seen that more respondents with bachelor education ($\pm 60\%$) than with other levels of education, namely high school (8.94%), Diplomacy (19.57%), Vocational (1.7%), Masters (9.36%), and Doctor (0.43%).

As for the job position, the majority of respondents were from middle management ($\pm 66\%$), followed by top management ($\pm 33\%$), and others ($\pm 1\%$). Finally, for respondents with IT experience, the biggest respondents are those who have 6-8 years ($\pm 66\%$), 4-6 years ($\pm 33\%$), and above 8 years ($\pm 1\%$) experience.

TABLE 1. Profile of Respondent

Profile	Item	F	Percentage
Education	High School	10	9.26
	Diplom	21	19.44
	Vocational	2	1.85
	Bachelor	64	59.26
	Master	10	9.26
	Doctor	1	0.93
Job Position	Top Management	36	33.33
	Middle Management	71	65.74
	Else	1	0.93
IT Experience	4 - 6 Years	36	33.33
	6 - 8 Years	71	65.74
	> 8 Years	1	0.93

TABLE 2. Statistical Analysis

Indicator	Outer Loading	AVE	CA	CR	R²
OPT1	0.81				
OPT2	0.87				
OPT3	0.72	0.67	0.87	0.91	
OPT4	0.86				
OPT5	0.80				
INV1	0.81				
INV2	0.87				
INV3	0.94	0.79	0.93	0.94	
INV4	0.92				
INV5	0.89				
DCF1	0.78				
DCF2	0.95				
DCF3	0.96	0.81	0.94	0.95	
DCF4	0.88				
DCF5	0.91				
ISC1	0.97				
ISC2	0.96				
ISC3	0.98	0.90	0.97	0.97	
ISC4	0.97				
ISC5	0.82				
FSC1	0.89				
FSC2	0.98				
FSC3	0.89	0.86	0.95	0.96	0.95
FSC4	0.89				
FSC5	0.96				
FSZ1	0.91				
FSZ2	0.77				
FSZ3	0.91	0.77	0.92	0.94	0.94
FSZ4	0.87				
FSZ5	0.90				
ITA1	0.80				
ITA2	0.63				
ITA3	0.69	0.53	0.78	0.85	0.37
ITA4	0.73				
ITA5	0.76				

Statistical analysis obtained from the calculation results using SmartPLS 3.0, which can be seen that there are two indicators that are not accepted, based on the defined limitation above 0.7. The rejected indicators are ITA2 and ITA3. Whereas for other indicator tests such as Average Variance Extracted (AVE), Composite Reliability (CR), and Cronbach Alpha (CA) also exceeded the required conditions. AVE > 0.5, CR > 0.7 and CA > 0.7.

Based on statistical analysis, a statement can be taken that the model proposed above can be seen as a model that can be utilized for the development of SMEs, especially SMEs that adopt information technology, so SMEs will be able to compete in their business. Some things that discuss the results are complemented by evidence from case studies and quantitative analysis. The importance of support from top management in the form of financial aid and support from the government will have significant benefits for the development of SMEs, especially in terms of IT adoption and utilization. If top management has knowledge of IT adoption, the use of

IT will undoubtedly be effortless for the development of these SMEs. This study established a strong positive relationship between financial support and adoption of ICT.

CONCLUSION

The results that are obtained indicate that the importance of the application and use of information technology strongly supports the development and sustainability of SMEs themselves. Judging from the large percentage of experience using IT and the level of education in SMEs, this model is feasible to be developed with several considerations that will be discussed in structural analysis. The proposed model is an adoption model based on the development of the current communication technology industry. However, the model that is adopted is a model developed several years ago in developed countries. The magnitude of the outer loading value, AVE, CR, and CA shows that this model can be developed with a note. This study requires the continuation of further research that is useful to ensure that the model is reviewed in terms of structural analysis. The chosen organizational context is one of the TOE frameworks that has been developed. Hope in the future the development of SMEs, especially in Indonesia can develop in harmony with developments in the world of information technology.

ACKNOWLEDGMENT

Thank you to friends who have helped in this research and also to STMIK Widuri for bridging this research with grants. Hopefully, we can carry out further research together.

REFERENCES

1. Badan Pusat Statistik, *Statistical Yearbook of Indonesia 2015* (Statistics Indonesia, Jakarta, 2015).
2. Koperasi, Available from: http://www.depkop.go.id/uploads/tx_rtgfiles/Sandingan_Data_UMUKM_2012-2017_.pdf, [Accessed 2018].
3. Tempo.co, "Baru 40 Persen UKM Manfaatkan Teknologi i Informasi," Tempo, 2014 [Online]. Available from <https://bisnis.tempo.co/read/564637/baru-40-persen-ukm-manfaatkan-teknologiinformasi> [Accessed Nov 1, 2017].
4. V. Barba-Sánchez and A.I. Jiménez-Zarco, *Problems and Perspectives in Management*, **5** (1), pp. 103-114 (2007).
5. L. Chairael, S. Widyarto and V. Pujani, *The International Technology Management Review*, **5** (2), pp. 82-93 (2015).
6. S.C. Eze, S. Olatunji, V.C. Chinedu-Eze and A.O. Bello, Key success factors influencing SME managers' information behaviour on emerging ICT (EICT) adoption decision-making in UK SMEs. The Bottom Line. 2018.
7. G. Harindranath, R. Dyerson and D. Barnes, *Electronic Journal of Information Systems Evaluation*, **11** (2), (2008).
8. H. Ntwoku, S. Negash and P. Meso, *Information Technology for Development*, **23** (2), pp. 296-317 (2017).
9. B. Ritchie and C. Brindley, *New Technology, Work and Employment*, **20** (3), pp. 205-217 (2005).
10. A. Tarutè and R. Gatautis, *Procedia-Social and Behavioral Sciences*, **110**, pp. 1218-1225 (2014).
11. R. Rahayu and J. Day, *Eurasian Business Review*, **7** (1), pp. 25-41 (2017).
12. A. Sani, T.K.A. Rahman, A. Subiyakto and N. Wiliani, in *SEWORD FRESSH 2019: Proceedings of the 1st Seminar and Workshop on Research Design, for Education, Social Science, Arts, and Humanities* (European Alliance for Innovation, 2019).
13. A. Parasuraman, *Journal of Service Research*, **17**, (2014).
14. A. Parasuraman, *Journal of Service Research*, **2** (4), pp. 307-320 (2000).
15. C.L. Colby, "Techno-Ready Marketing of e-Services: Customer Beliefs About Technology and the Implications for Marketing e-Services" in *E-Service: New Directions in Theory and Practice* (Routledge, 2016), pp. 37-56.
16. A. Parasuraman and C.L. Colby, *Journal of Service Research*, **18** (1), pp. 59-74 (2015).
17. L.G. Tornatzky, M. Fleischer and A. Chakrabarti, *Processes of Technological Innovation (Issues in organization and management series)* (Lexington Books, 2013).
18. P. Chatzoglou and D. Chatzoudes, *Journal of Enterprise Information Management*, **29** (3), pp. 327-358 (2016).
19. J.W. Creswell, *Research design : qualitative, quantitative, and mixed methods approaches*. 2014.
20. V. Venkatesh, S.A. Brown and H. Bala, *MIS Quarterly*, **37** (1), pp. 21-54 (2013).

21. A. Yazdani, *et al.*, *IISE Transactions on Occupational Ergonomics and Human Factors*, **5** (3-4), pp. 172-184 (2017).
22. C. Homburg, M. Klarmann, M. Reimann and O. Schilke, *Journal of Marketing Research*, **49** (4), pp. 594-608 (2012).
23. S. Asrul, T.K.A. Rahman, B. Agus and D. Rouly, *Journal of Theoretical and Applied Information Technology*, (2019).
24. A. Sani, A. Subiyakto and T.K.A. Rahman, in *International Conference On Recent Innovations (ICRI 2018)* (JHCC, 2018).