Hybrid Model to Assess the Readiness of Information Technology Implementation in Islamic Banking Based

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Abstract— **Based Indonesia's economy is driven by micro and community-based community segments. To support the development of the sharia economy very rapidly, Islamic banking needs to be equipped with an integrated system before the latest information technology. Through e-banking banks and clients can be mutually beneficial, this has become a necessity in the banking industry today. Utilization of Information Systems is still problematic with problems between organizations of the organization's business processes. The main objective of this research is to propose a financial model for Islamic banking, a model that supports several levels, which aims to achieve factors and customers, with possible values. Through a truly systematic viewpoint, e-readiness is a concept that encompasses the environment, processes and output phases of the Islamic banking system facilitated by internet users. An assessment model that includes all information and information about e-readiness is one of the benefits of the proposed model, including features at the national and regional levels in providing better opportunities for banks in e-banking development.**

Keywords : e-banking, e-readiness, information systems, information technology.

I. Introduction

Syariah Banking or other organizations must have the vision and mission to be achieved, to achieve the vision and mission of the organization must have challenges because vision is the future that has not happened. The role of Information Technology (IT) to achieve the vision and goals of the organization becomes very significant, the IT conditions in Syariah Banking in developing countries have not gone well due to high costs, IT malfunctions, and limited use of IT to support the organization, which has an impact on organizational progress. According to (Ward & Peppard, nd), there are three main targets of IT implementation efforts in an organization. First, improve work efficiency by automating various processes that manage information. Second, improve management effectiveness by satisfying information needs for decision making. The previous studies reveal that the organizational capabilities affect the acceptance facilitation of information technology. A part of such organizational capabilities is resulted from reaction of the culture and science in the organization and forms the absorption

capacity. The acceptance of innovation of technology depends on the tendency for effort to use the methods, processes and the new production systems. (Lin & Lee, 2005). A combination of management and business knowledge with technical knowledge, business development strategies, defining IT Strategies, stakeholder interaction with IT and business. vision of collaboration stakeholders. To do this, it is important to measure readiness to implement or implement IT in a developing Syariah Banking. To find out the success of its implementation, Readiness is one of the most important aspects as a tool used (Aziz & Yusof, 2012; Batoya, Wabwoba, & Kilwake, 2015; Iskandar, 2009; Koen et al., 2016; Kurniawan & Suhardi, 2013; Rohayani, Kurniabudi, & Sharipuddin, 2015). Therefore, the purpose of this research is to identify the mechanisms available to measure readiness and to find out the factors that are readiness instruments for IT implementation in Syariah Banking. This study aims to determine the status of IT implementation in the banking sector. Almost half of these institutions were established more than 10 years ago because they can be considered mature institutions. The rest is less than 10 years. On average, these Syariah Banking implement IT without using a strategic plan. According to IT guides consist of three phases of implementation:
1. Make awareness of ICT fields which have more priority for Islamic Banking.
2. Business Environment Analysis
3. Support any kind of ICT planning and policy making in strategic level.

II. Research Methodology

Lacovou et al, 1995 and Crook and Kumar, 1998 stated that organizations have different abilities in the reception of electronic commerce. Studies conducted in this field and available literature have discussed various aspects and their impact on the acceptance of electronic commerce. But there is no model that can be discussed with the inter-office factors, especially in the banking industry. Bank banks can be used in e-banking development. So the question like that using what

models can we find the bank's readiness in the direction of e-banking development and how to find out from each of the factors recognized, will be the main question of this study. Replication for these questions in the survey on the general model of the organization's survey will refer to the evaluation model and research carried out with research conducted in the fields of trade and e-banking development, the conceptual model of study is designed and accordingly, readiness evaluation tools electronics from the country's banks are presented. The research processes carried out have shown the number one.

III. RESULT AND DISCUSS

This research was conducted in several stages, namely: literature study, research design, research instrument making, data collection, data analysis, data interpretation, and report making. This study uses quantitative methods and the model used is adopted from the Technology Readiness Acceptance Model (TRAM) (Lin et al, 2007). The questionnaire used was designed based on TRI 2.0 and TAM indicators with 5 Likert scales (Likert, 1932; Nazir, 2003). Respondents involved in this study are the managers and employees of Syariah Banking. Samples were taken using multi-stage purposive sampling technique (Onwuegbuzie and Collins, 2007). Syariah Banking selected are Syariah Banking that have applied information systems, after which the respondents involved must have experience using information systems. The distribution of questionnaires was carried out by direct distribution sent to several Syariah Banking in West Java. In addition, researchers also conducted literature studies to strengthen existing theories so that this research is scientific. Questionnaire data is transformed into digital. Hypothesis testing and data processing were performed using the Partial Least Square Structural Equation Modeling (PLS-SEM) method with SmartPLS version 3.0 software (Henseler et al., 2009; Urbach & Ahlemann, 2010; Hair et al., 2011; Yamin & Kurniawan, 2011; Hair et al., 2012; Yuliasari et al., 2014; Wong, 2013; Chinomona & Dubihlela, 2014; Alshibly, 2014; Irawati & Putra, 2015; Gutierrez et al. 2015; Nugroho et al., 2016). The variables used are Culture (CTR), Optimism (OPT), Innovativeness (INN), Discomfort (DIS), Insecurity (INS), system quality (SYQ), information quality (INQ), service quality (SVQ), Perceived Usefulness (PUF), Perceived Ease of Use (PEU), Intention to Use (ITU).
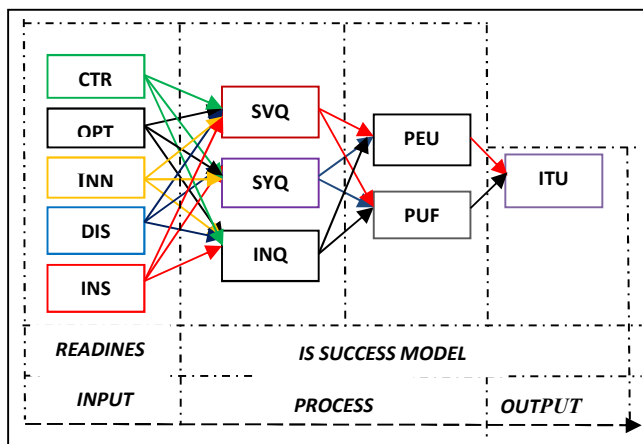

Figure 1. The Proposed Readiness Model

Some of these variables are used as appropriate indicators of each of the variables. Table 1 shows the definition of each variable.

Table 1. List of Variable

Variable	Definition
CTR	How to measure the relationship between workplace culture and the use of IS.
OPT	Optimism is a person's optimistic view of the use of technology, and believes that technology will provide control, improved performance, and efficiency in life.
INN	A person's tendency to try and explore the latest technology. Innovative thinking will influence a person in increasing the capability of using technology
DIS	Discomfort illustrates the lack of mastery of the use of technology so that someone feels burdened with the use of the technology.
INS	A sense of insecurity illustrates a person's lack of confidence in the integration of technology such as data security and the availability of technology that raises doubts about the use of technology.
INQ	The level of consistency of information system output is the expectation of users.
SYQ	Levels in measuring Information System quality to improve software, hardware, and IS policy procedures that provide user requirements.
SVQ	The level of quality expectations issued by IS users.
PEU	Perception / assumption that technology users believe that technology will be useful and provide benefits so that it will improve job performance
PUF	Perception / assumption of the use of technology will provide convenience.
ITU	Process of development and training, system characteristics and others to one's interest in receiving information systems

Table 2. List of Indicators and Reference

Code	Indicators	Reference
CTR 1	The levels of shared IS use are interrelated.	[1]–[4]
CTR 2	Level of use of appropriate resources for IS usage.	[5]–[7]
CTR 3	The cultural level of trust in using IS will bring better change.	[8], [9]
CTR 4	The degree to which IS use in organizations can meet future needs.	[10], [11]
OPT 1	Technology contribution on the quality of work.	[8], [12]
OPT 2	Ease of mobility.	[12]–[15]
OPT 3	Control work with technology.	[8], [12]–[14]
OPT 4	Productivity on the quality of work.	[8], [12]
INN 1	Ability to explain technology	[8], [12]–[14]
INN 2	Mastery of the use of technology	[8], [12]–[14]
INN 3	Independence of the use of technology	[8], [12]–[14]
INN 4	Keep up with technology	[8], [12]–[14]
DIS 1	Doubts when facing problems with technology.	[8], [12]–[14]
DIS 2	Doubts over the technical use of technology.	[8], [12]–[14]
DIS 3	Confidence in the use of technology	[8], [12]–[14]
DIS 4	Understanding of technical guidelines for use.	[8], [12]–[14]
INS 1	Dependence on technology.	[8], [12]
INS 2	Perception of the dangers of using technology.	[8], [12]
INS 3	Perception of direct interaction.	[8], [12]
INS 4	Online technology use beliefs	[8], [12]
INQ 1	Timeliness level in the process of delivery information system	[13], [14], [16]
INQ 2	level to measure that user believes in using the system	[8], [13], [14]

INQ 3	the level of information is as good as the quality and information services	[10], [13], [16]
INQ 4	the level of information produced has benefits according to the topic	[17]–[19]
INQ 5	Information level is in accordance with data accuracy.	[8], [14], [16]
SYQ 1	The level of users entering the use of the system	[14], [17], [20], [21]
SYQ 2	The level of time generated by the system in executing commands	[14], [17], [20], [21]
SYQ 3	The level of the system to the process changes made by the user	[14], [17], [20], [21]
SYQ 4	The level that the system suits the needs of the user	[14], [17], [20], [21]
SYQ 5	he level of the system against destructive attacks	[14], [17], [20], [21]
SVQ 1	The level of accuracy of IS in providing services to users	[8], [14], [16], [17], [22]
SVQ 2	The level of IS in relation to the wishes of users	[8], [14], [16], [17], [22]
SVQ 3	Level of IS in the face of attacks that lead to the system	[8], [14], [16], [17], [22]
SVQ 4	IS level of activity felt by users in accordance with its function	[8], [14], [16], [17], [22]
SVQ 5	service levels from IS that exceed the IS's own functionality standards	[8], [14], [16], [17], [22]
PEU 1	Job speed	[13], [15], [16], [23]
PEU 2	Job performance	[13], [15], [16], [23]
PEU 3	Increased productivity	[13], [15], [16], [23]
PEU 4	Job effectiveness	[13], [15], [16], [24]
PEU 5	Then work	[13], [15], [16], [24]
PEU 6	Benefit assessment	[13], [15], [16], [24]
PUF 1	Technology is easy to learn	[13], [15], [16], [24]
PUF 2	Easy to control technology	[13], [15], [16], [24]
PUF 3	Clear and easy to understand	[13], [15], [16], [24]
PUF 4	Flexibility	[13], [15], [16], [24]
PUF 5	Facilitate the work	[13], [15], [16], [24]
PUF 6	Ease of assessment	[13], [15], [16], [24]
ITU 1	Interest in using	[8], [13]–[16]
ITU2	Interest in the development of the System	[8], [13]–[16]
ITU 3	level of achievement IS helps users in terms of business processes	[8], [13]–[16]
ITU 4	the level of IS usage will benefit the organization	[8], [13]–[16]

Table 3. List of Questionnaire Statement Continued

(CTR 1)	System applications can be connected easily
(CTR 2)	System applications display information as needed
(CTR 3)	Trustworthy system applications
(CTR 4)	Trustworthy system applications for future needs
(OPT 1)	The use of the system contributes to the better quality of my work
(OPT 2)	Use of the system facilitates access to work
(OPT 3)	The use of the system gives me control better for work
(OPT 4)	The use of the system makes me more productive in work
(INN 1)	I can explain the use of the system to my co-worker
(INN 2)	I quickly mastered the system within the scope of work
(INN 3)	I am able to understand the use of the system used independently
(INN 4)	I follow the development of the system that suits my field of work

(DIS 1)	I feel confused when faced with problems system used
(DIS 2)	I feel technical assistance given not much help and difficult to understand
(DIS 3)	I feel insecure in using the system
(DIS 4)	I find it difficult to understand the system guide used
(INS 1)	I am too dependent on the system my job
(INS 2)	I feel the use of the system as a whole towards work tends to be dangerous
(INS 3)	I feel the use of a quality lowering system relationship because it reduces interaction between individuals
(INS 4)	I feel unsure if I do work with the system online
(SYQ 1)	Applications can be used easily
(SYQ 2)	Applications respond quickly
(SYQ 3)	Applications can change from the input command.
(SYQ 4)	The application works according to standard.
(SYQ 5)	Applications are used safely without interruption
(SVQ 1)	The application provides feedback to users regarding services.
(SVQ 2)	Applications can make changes related to services performed by users.
(SVQ 3)	Applications can protect against attacks.
(SVQ 4)	The service application is functioning properly.
(SVQ 5)	Applications provide services beyond the standard.
(PEU 1)	Using the system makes my work faster
(PEU 2)	The use of the system improves my performance in work
(PEU 3)	The use of the system makes me more productive
(PEU 4)	The use of the system provides deep effectiveness work
(PEU 5)	The use of the system makes it easyin work
(PEU 6)	Overall, the current system is useful and useful for you
(PUF 1)	The system used today is easy to learn
(PUF 2)	The system used today is easy to control
(PUF 3)	The system used today is easily understood
(PUF 4)	The system used today makes work more flexible
(PUF 5)	The system currently used provides convenience in work
(PUF 6)	Overall, the system used today is easy to use
(ITU 1)	Overall, you are interested in continuing use the system at your work
(ITU 2)	Overall, you are interested in updates (upgarade) system to support your work
(ITU 3)	On the whole, Overall, IS achievement can help users in business processes
(ITU 4)	On the whole, the use of IS can benefit the organization

Several questions from the variables and indicators compiled can be proposed: First, develop a model according to the Input Process Output (IPO) model. [25]. Variables and indicators based on Delone and McLean model [26] namely SVQ, INQ, SYQ. Then the authors added the adoption, combination, and adaptation results variables as in previous studies. [10], [11], [4], [27].

IV. CONCLUSION

Developing banks want to fill the gap between Islamic banks and advanced banks by improving their technology infrastructure, which must consider appropriate development strategies. Readiness provides a great tool for readiness assessment in terms of ICT benefits and increased competitiveness to achieve these goals. The existing model results in adoption, combination, and adaptation. This model is based on IPO [25] which consists of 11 variables and 46 indicators. This development results have an understanding that may be different from the others, both in studies, methods, to different presentations. This means that measurements can be made in future research related to data validity, process development models, or literature studies..To extend this study we suggest the following activities: Working on adoption factors such as e-benking by proposing models, Working on adoption factors, composition with proposed

models, Working on adoption factors, Working on priority-based solutions using the latest e-Readiness modeling techniques.

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REFERENCES

[1]   A. Subiyakto, A. R. Ahlan, M. Kartiwi, and S. J. Putra, "The User Satisfaction Perspectives of the Information System Projects," vol. 4, no. 1, pp. 215–223, 2016.

[2]   A. Subiyakto, A. R. Ahlan, M. Kartiwi, and H. T. Sukmana, "Influences of the Input Factors towards the Success of an Information System Project," vol. 13, no. 2, pp. 686–693, 2015.

[3]   J. Wongwuttiwat, "THAILAND'S ICT READINESS FOR THE ASEAN ECONOMIC COMMUNITY Jittima," pp. 1–21, 2016.

[4]   S. J. Putra, A. Subiyakto, A. R. Ahlan, and M. Kartiwi, "A Coherent Framework for Understanding the Success of an Information System Project," vol. 14, no. 1, pp. 302–308, 2016.

[5]   E. Bajramovic, "Forensic Readiness of Smart Buildings," 2016.

[6]   F. Authors, "Article information : Assessing e-Readiness of the Copperbelt University , Zambia : Case Study," 2016.

[7]   N. Bhansali, "Strategic Alignment in Data Warehouses Two Case Studies A thesis submitted in fulfillment of the requirements for the degree of Doctor of Philosophy Neera Bhansali School of Business Information Technology Business Portfolio RMIT University DECLARATION," no. February, 2007.

[8]   H. Hallikainen and T. Laukkanen, "HOW TECHNOLOGY READINESS EXPLAINS ACCEPTANCE AND B2B HEALTHCARE SECTOR ?," 2016.

[9]   M. M. Haque, A. R. Ahlan, M. Jalaldeen, M. Razi, and A. Subiyakto, "Investigating Factors Affecting Knowledge Management and Sharing on Innovation in Universities : Pilot Study," pp. 64–69, 2016.

[10]   J. C. Lin, "The role of technology readiness in self-service technology acceptance," 2013.

[11]   K. Mohitmafi and P. Hanafizadeh, "A Selection Framework of E-Business Model by Assessing Organizational E-Readiness," pp. 1765–1769, 2016.

[12]   A. Parasuraman and C. L. Colby, "Journal of Service Research," no. June, pp. 0–16, 2014.

[13]   R. Walczuch, J. Lemmink, and S. Streukens, "The effect of service employees ' technology readiness on technology acceptance §," vol. 44, pp. 206–215, 2007.

[14]   C. Lin and P. J. Sher, "Readiness into Technology Acceptance : The TRAM Model," vol. 24, no. July 2007, pp. 641–657.

[15]   N. Erdo and M. Esen, "An Investigation of the Effects of Technology Readiness on Technology Acceptance in e-HRM," vol. 24, pp. 487–495, 2011.

[16]   F. D. Davis, "Information Technology Introduction," vol. 13, no. 3, pp. 319–340, 2013.

[17]   A. Hedar, D. I. Sensuse, and P. Sandhyaduhita, "Knowledge Management Readiness of Research Agencies : A Case of BATAN Indonesia," no. Icic, 2016.

[18]   S. S. Hussein, Z. Ismail, M. S. Abdullah, G. N. Samy, M. Zainuddi, and M. Taib, "Towards Designing an EA Readiness Instrument :," pp. 158–163, 2016.

[19]   R. Koen, R. V. O. N. Solms, and M. Gerber, "ICT Readiness for Business Continuity in Local Government," pp. 1–11, 2016.

[20]   A. R. Iskandar, "Readiness For Implementing Data Warehouse of Higher Education System With Sodano ' s Perspective," 2009.

[21]   M. Kiula, E. Waiganjo, and J. Kihoro, "Novel E-Readiness Accession in Higher Education Institutions in Kenya," vol. 5, no. 6, pp. 101–111, 2017.

[22]   A. Subiyakto, A. R. Ahlan, and H. T. Sukmana, "An Alternative Method for Determining Critical Success Factors of Information System Project," vol. 12, no. 3, pp. 665–674, 2014.

[23]   M. Motau and B. M. Kalema, "Big Data Analytics Readiness : A South African Public Sector Perspective," 2016.

[24]   M. Fathian, P. Akhavan, and M. Hoorali, "E-readiness assessment of non-profit ICT SMEs in a developing country : The case of Iran," vol. 28, pp. 578–590, 2008.

[25]   L. P. Ligthart, "Implementation of Input-Process-Output Model for Measuring Information System Project Success," no. December 2003, 2011.

[26]   W. H. Delone and E. R. Mclean, "Journal of Management The DeLone and McLean Model of Information Systems Success : A Ten-Year Update," no. March 2015, pp. 37–41, 2014.

[27]   A. Subiyakto, "Development of the Readiness and Success Model for Assessing the Information System Integration," no. 95, 2017.