Scientific Journal of Informatics
Vol. 4, No. 2, November 2017
p-ISSN 2407-7658 http://journal.unnes.ac.id/nju/index.php/sji e-ISSN 2460-0040

An Evaluation Model Using Perceived User Technology Organization Fit Variable for Evaluating the Success of Information Systems

Imam Muslimin[1], Sasongko Pramono Hadi[2], Eko Nugroho[3]

[1,2,3] Electrical Engineering and Information Technology Department, Universitas Gadjah Mada, Indonesia
Email: [1]imammuslimin@mail.ugm.ac.id, [2]sasongko@ugm.ac.id, [3]nugroho@ugm.ac.id

Abstract

In the information systems field, the fit between the components of information systems is a topic that has attracted the attention of many researchers. Various concepts of the fit such as Task-Technology Fit (TTF), Fit between Individuals, Tasks, and Technology (FITT), and Human Organization Technology Fit (HOT-Fit) are proposed and studied in various studies. In those various concept, the fit is one of the keys to the successful implementation and acceptance of information systems. Through a study of relevant literature, this study proposes a model consisting of human, organization, and technology characteristics, and adds the Perceived User Technology Organization Fit (PUTOF) variable as the initiated variable that influences the intention to use. In subsequent research, this model can be tested quantitatively with case studies of the information system implementation in an organization.

Keywords: Integrated Evaluation Model, Fit, Information System

1. INTRODUCTION

Information systems are implemented in social system such as organization in which different kind of people and environment interact with each other [1]. In the information systems studies, the fit between the people, environment, organization, and technology itself, has been studied by many researchers. Various fit concepts have been studied and developed by various studies and have become a reference for research in the field of information systems. One of the fit models that is quite popular in information systems research is Human Technology Organization Fit (HOT Fit) developed by Yusof et al [2]. In the HOT Fit model, human, organization, and technology is an important elements of the information system [2]. Lack of the fit between those three elements contribute to the implementation failure of information systems [3]. In the other words, the fit between the three elements is a key to the successful implementation of the information systems [1]. In the use of information systems, the higher the fit between users, technology, and organization is, the higher the impact on the user acceptance of information systems is [1]. The alignment between organization, technology, and human components become an important point in the implementation of information technology which affects investment in the information technology [4].

In addition to the fit, the other factors that affect the acceptance and success of information systems are also widely-studied. DeLone and McLean developed IS

Success Model as a comprehensive framework to evaluate information systems [5-6]. This model consists of six dimensions: system quality, information quality, service quality, intention to use/use, user satisfaction, and net benefits. Yusof et al proposed the HOT Fit model based on DeLone McLean IS Success Model and IT-Organization Fit Model [7]. Yusof et al grouped factors influencing net benefits into human, organization, and technology. In line with the HOT Fit model, Hu [8] explains that the technology acceptance has three dimensions: users, technologies, and organizational contexts.

The HOT Fit model uses variables in the technology factor based on information system success model developed by DeLone and McLean [6]. In the technology factor, variables that influence the success of an information system are system quality, information quality, and service quality [5-6]. The HOT Fit model uses variables in the organization factor based on the concept of the fit between technology and organization developed by Morton [7]. In the organizational factor, variables that influence the success of an information system is facilitating condition and culture [2].

Mohamadali and Garibaldi proposed a model called an Integrated Evaluation Model [9]. The Integrated Evaluation Model developed based on various well-known theory: DeLone McLean IS Success Model, Unified Theory of Usage and Acceptance of Technology (UTAUT), and Task-Technology Fit. Different with the HOT Fit model, Mohamadali and Garibaldi uses variables in the UTAUT model developed by Goodhue [10] to be used as variables in the human/individual components. In the human/individual component, the variables that affect the use of information systems is performance expectancy, effort expectancy, and social influence [9]. The dependent variables that are used in the integrated evaluation model are intention to use, user satisfaction, and net benefits.

This study proposes a modification of the Integrated Evaluation Model focuses on the fit between three components, human/user, technology, and organization. The fit is expected to influences the intention to use information systems.

2. METHODS

The method in this research refers to the research conducted by [9, 11]. This study consists of three main steps. The first step is a literature review on previous studies related to information systems evaluation models and studies related to fit. The second step discuss theories about information systems evaluation models and fit. The third step is the analysis and model identification. The research steps can be seen in Figure 1.

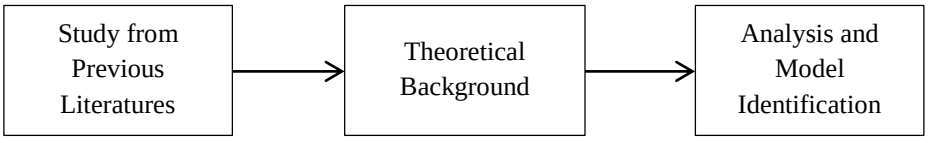

Figure 1. Research Steps

2.1. Literature Review

2.1.1. Integrated Evaluation Model

Some studies use the Integrated Evaluation Model as a reference to identify the factors that affect the acceptance and success of the information systems. The Integrated Evaluation Model combines the DeLone McLean IS Success Model, UTAUT, and TTF. Mohamadali and Garibaldi showed that the proposed model can better identify factors that influence the acceptance of technology. Yuliasari [12] conducted a study using the model referring to a model proposed by Mohamadali and Garibaldi. This research makes individual factors, technological factors, and organizational factors as independent variables that affect the intention to use. Raharjo [13] also conducted research using the integrated evaluation model. In line with the research conducted by Yuliasari, this study makes individual factors, technological factors, and organizational factors as independent variables that affect the intention system use.

2.1.2. Research Related to Fit

Many studies have been done using various concepts of fit. Beside the HOT Fit model, there is a fit model called the Task-Technology Fit or TTF developed by Goodhue [14]. The TTF model focuses on the fit between work or task with technology to accomplish the user's job. TTF model also focuses on the importance of the fit between the user and the task. Goodhue said that the performance impact depends on the fit between the three variables: technology characteristics, task characteristics, and individual ability. Based on TTF, the higher the fit between task and technology is, the better the performance of individuals and organizations is. Another concept of the fit is person-organization fit that was used in studies related to user behavior [15-16]. Organization is a factor that influences the use of information technology. Person-organization fit is the degree of match between human and organization [16]. Some studies show that the higher level of fit between human and organization, the better performance and behavior of workers [17-18]. Another concept of the fit is the FITT or Fit between Individuals, Task, and Technology framework developed by Ammenwerth et al [19]. The FITT framework shows that IT adoption depends on the fit between individual, technology, and task.

2.2. Theoritical Backgroud

2.2.1. Integrated Evaluation Model

Mohamadali and Garibaldi [9] proposed a model that combines three widely-used theories related to information systems: DeLone McLean IS success model, UTAUT model, and TTF. The Integrated Evaluation Model combines the advantages of the three models to complement the limitations of each model. The Integrated Evaluation Model groups the independent variables into the individual/people factor, the organizational context, and the technology context. The fit between individual, organizational, and

technology was considered important so that the fit was added to this model. The individual/people factor consists of three independent variables: performance expectancy, effort expectancy, and social influence. The technology context consists of three independent variables: system quality, information quality, and service quality. The organizational context consists of two variables: facilitating condition and culture. The Integrated Evaluation Model developed by Mohamadali and Garibaldi can be seen in Figure 2.

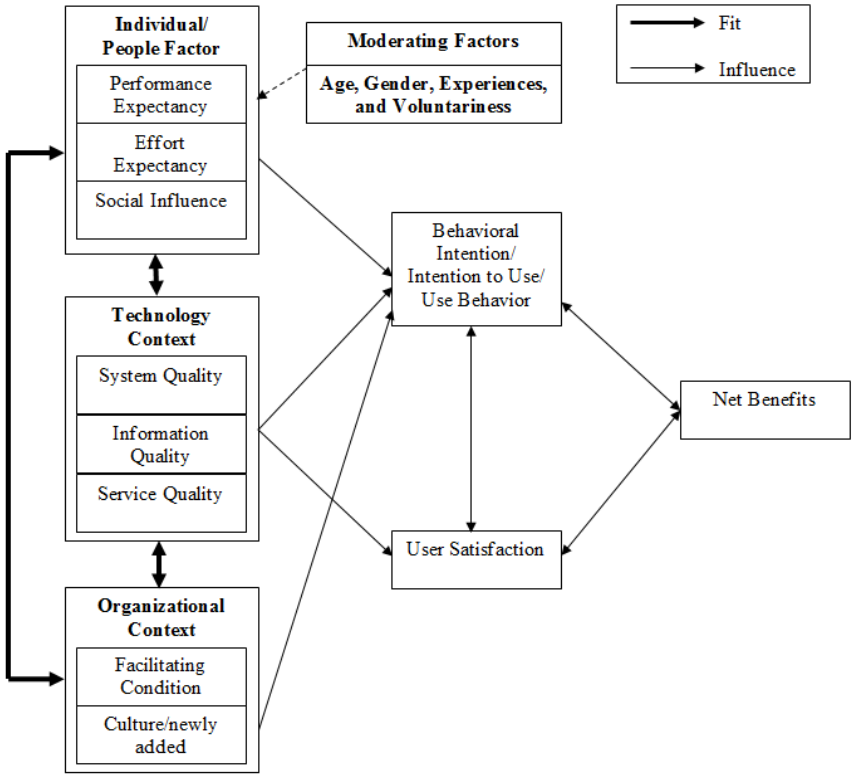

Figure 2. Integrated Evaluation Model [9]

2.2.2. Perceived User Technology Organization Fit (PUTOF)

The higher level of the fit between user, technology, and organization, the greater the influence on the acceptance of the technology [1]. Users with basic IT capabilities may not be able to use the new system, they must have capability that match the needs of the system. If the users do not have sufficient capability, the management must provide training or guidance to ensure the system is accepted and used. Likewise, every new systems must be aligned with the conditions and needs of the organization.
The fit between the three dimensions of user, organization, and technology can be more important than the dimension itself. The concept of the fit can help to better understand the issues in user acceptance. When technology meets user needs to do the job, it will

increase the use of technology [20]. In studies [21-22] show that the organization plays an important role to build the perception and behavior of the user to use the technology by encourage and provide facilities to support the use of technology. The fit between the user, organization, and technology, plays an important role in influencing the intention of the use of technology [1].

2.3. Analysis and Model Identification

From the previous descriptions can be analyzed as follows:

1. The Integrated Evaluation Model [9] can be used to evaluate the acceptance and success of information systems from three different dimensions: human, technology, and organization. The Integrated Evaluation Model had been referred by a study conducted by [11-13]. In these three studies, human, technological, and organizational dimensions, become independent variables that affect the intention to use information systems.
2. The fit between user, organization, and technology, is an important factor that determines the use of information systems [1]. Mohamadali proposed a variable called the perceived user technology organization fit or PUTOF as perception that is perceived by users related to the fit between themself, technology, and organization [1]. So, the PUTOF variable is influenced by the characteristics of the users, technology, and organization.

3. RESULTS AND DISCUSSION

3.1. Research Model

The proposed model of the information system evaluation refers to the Integrated Evaluation Model. The independent variables in this model are human, organization, and technology. Those three independent variables affect the intention to use [9, 11-13]. Those three variables are also very influential on the perceiced fit between human, technology, and organization. The proposed evaluation model can be seen in Figure 3.

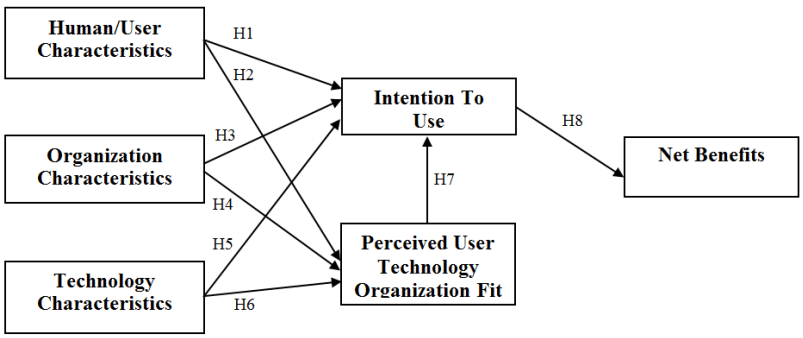

Figure 3. Proposed Model

3.2. Hypothesis

Mohamadali and Garibaldi in his research stated that the factors that affect the acceptance and success of information systems existed in human, technology, and organization dimensions [9]. In studies [11-13], the three dimensions of human, technology, and organization were used as the independent variables that affects the intention use of information systems.

H1: Human/User characteristics significantly influences system use/intention to use.

H3: Organization characteristics significantly influences system use/intention to use.

H5: Technology characteristics significantly influences system use/intention to use.

In TTF model, the task characteristic and technology characteristic are variables that affect the fit between task and technology [14]. Using the TTF approach, the fit between human, organization, and technology, is influenced by human characteristic, organizational characteristic, and technology characteristic.

H2: Human/User characteristics significantly influences the perceived user technology organization fit.

H4: Organization characteristics significantly influences the perceived user technology organization fit.

H6: Technology characteristics significantly influences the perceived user technology organization fit.

Dishaw stated that the fit between task and technology affects the use of information systems [23]. Lin stated that the poor fit between task and technology will reduce the user acceptance of information systems [24]. The implementation of information technology systems must also comply with the organization [1]. The fit between user, organization, and technology, is an important factor that determines the use of information systems [1].

H7: Perceived user technology organization fit significantly influences intention to use.

Research [6, 12] proved that the intention to use and user satisfaction have a significant effect on the net benefits.

H8: Intention to use significantly influences net benefits.

3.3. Variables Definitions

The definition of each variable used in this model is shown in Table 1.

Table 1. Research Variables Definitions

Variables	Definitions
Human/User Characteristics	Characteristics of information system's users. The indicators used in this variable are the performance expectation, effort expectation and social influence [10-11, 25]
Technology Characteristics	Characteristics of information system or technology utilized by the user. The indicators used in this variable are the system quality, information quality, and service quality [6, 9]

Organization Characteristics	Characteristics of the organization in which the user involved. The indicators used in this variable are the facilitating condition and culture [9-10]
Perceived User Technology and Organization Fit	How do the users feel that there is the fit between themself and technology and organization, as well as the fit between the technology by organization [1]
Intention To Use	Intention to use that will influence the use of the information system [6, 9]
Net Benefits	The impact or benefit gained from the use of information systems [6, 9]

4. CONCLUSION

An evaluation model using perceived user technology organization fit variable for evaluating the success of information system has been conducted. The proposed model can be tested by quantitative research with case studies of the implementation of information systems in an organizations. In the empirical testing, samples are taken from users in an organization with a proportional number and are considered adequately representative of the population. By using the test, this model is expected to give an explanation of how the fit factor, in this case the PUTOF variable, influences the intention use of information systems in an organization.

5. REFERENCES

[1] N. A. K. S. Mohamadali, J. M. Garibaldi. 2012. "Understanding and Addressing the 'Fit' between User, Technology and Organization in Evaluating user Acceptance of Healthcare Technology." *in International Conference on Health Informatics*. 119–124.

[2] M. M. Yusof, J. Kuljis, A. Papazafeiropoulou, and L. K. Stergioulas. 2008. "An evaluation framework for Health Information Systems: human, organization and technology-fit factors (HOT-fit)." *International Journal of Medical Informatics*. Vol. 77(6): 386–398.

[3] M. M. Yusof, R. J. Paul, and L. K. Stergioulas. 2006. "Towards a Framework for Health Information Systems Evaluation." *in Hawaii International Conference on System Sceinces*. Vol. 39. 1–10.

[4] L. Willcocks. 1994. *Managing technology evaluation—techniques and processes, in: R.D. Galliers, B.S.H. Baker (Eds.), Strategic Information Management: Challenges and Strategies in Managing Information Systems*. .

[5] W. H. Delone, E. R. Mclean. 1992. "Information Systems Success : The Quest for the Dependent Variable." *Information System Research*. Vol. 3(1): 60–95.

[6] W. H. Delone, E. R. Mclean. 2003. "The DeLone and McLean Model of Information Systems Success: A Ten-Year Update." *Journal of Management Information Systems / Spring*. Vol. 19(4): 9–30.

[7] M. S. S. Morton. 1991. *The Corporation of the 1990s*. Oxford University Press, New York.

[8] P. J. Hu, P. Y. K. Chau, O. R. Liu Sheng, and K. Y. Tam. 1999. "Examining the Technology Acceptance Model Using Physician Acceptance of Telemedicine

Technology." *Journal of Management Information Systems*. Vol. 16(2): 91–112.
[9] N. A. K. S. Mohamadali, J. M. Garibaldi. 2010. "a Novel Evaluation Model of User Acceptance of Software Technology in Healthcare Sector." *Ima.Ac.Uk*. (July 2015): 392–397.
[10] V. Venkatesh, M. G. Morris, and F. D. Davis. 2003. "User acceptance of information technology: Toward a unified view." *MIS Quarterly*. Vol. 27(3): 425–478.
[11] I. P. Ramayasa. 2015. "Evaluation Model of Success and Acceptance of E-Learning." *Journal of Theoretical and Applied Information Technology*. Vol. 82(3): 462–469.
[12] E. Yuliasari. 2014. "Analisis Faktor Determinan Penggunaan Sistem Aplikasi Pemeriksaan Laporan Keuangan dan Implikasinya." *Jnteti*. Vol. 3(2): 83–89.
[13] B. Raharjo, H. A. Nugroho, and W. W. Winarno. 2016. "Analisis Faktor Determinan Penggunaan Sistem Informasi Sumber Daya Manusia dan Implikasinya terhadap Reformasi Birokrasi pada BPK RI." *Jurnal Informatika*. Vol. 10(1): 1149–1155.
[14] D. L. Goodhue, R. L. Thompson. 1995. "Task-Technology Fit and Individual Performance." *MIS Quarterly*. Vol. 19(2): 213–236.
[15] K. J. Lauver, A. Kristof-Brown. 2001. "Distinguishing between Employees' Perceptions of Person–Job and Person–Organization Fit." *Journal of Vocational Behavior*. Vol. 59(3): 454–470.
[16] A. L. Kristof. 1996. "Person-Organization Fit: an Integrative Review of Its Conceptualizations, Measurement, and Implications." *Personnel Psychology*. Vol. 49(1): 1–49.
[17] R. D. Bretz, Jr., T. A. Judge. 1994. "Person-Organization Fit and the Theory of Work Adjustment: Implications for Satisfaction, Tenure, and Career Success." *Journal of Vocational Behavior*. Vol. 44(1). 32–54.
[18] J. A. Chatman. 1989. "Improving Interactional Organizational Research: A Model of Person-Organization Fit." *Academy of Management Review*. Vol. 14(3): 333–349.
[19] E. Ammenwerth, C. Iller, and C. Mahler. 2006. "IT-adoption and the interaction of task, technology and individuals: a fit framework and a case study." *BMC Medical Informatics and Decision Making*. Vol. 6(1): 3.
[20] T. J. Larsen, A. M. Sørebø, and Ø. Sørebø. 2009. "The role of task-technology fit as users' motivation to continue information system use." *Computers in Human Behavior*. Vol. 25(3): 778–784.
[21] M. Igbaria, N. Zinatelli, P. Cragg, and A. L. M. Cavaye. 1997. "Personal Computing Acceptance Factors in Small Firms: A Structural Equation Model." *Mis Quarterly*. Vol. 21(3): 279–305.
[22] W. W. Chin, P. A. Todd. 1995. "On the Use , Usefulness , and Ease of Use of Structural Equation Modeling in MIS Research : A Note of Caution." *Mis Quarterly*. Vol. 19(2): 237–246.
[23] M. T. Dishaw, D. M. Strong. 1999. "Extending the technology acceptance model with task±technology ®t constructs." *Information & Management*. Vol. 36: 9–21.
[24] T. C. Lin, C. C. Huang. 2008. "Understanding knowledge management system usage antecedents: An integration of social cognitive theory and task technology fit." *Information and Management*. Vol. 45(6): 410–417.
[25] P. Y. K. Chau, P. J. Hu. 2002. "Examining a model of information technology

acceptance by individual professionals: An exploratory study." *Journal of Management Information Systems*. Vol. 18(4): 191–230.