User Acceptance Model for Assessing Trust on Electronic Transaction Succession

Yusuf Durachman[1*], Herlino Nanang[1], Ahmad F. Misman[2], Zahidah Zulkifli[2]

[1]Department of Information System,
 State Islamic University of Syarif Hidayatullah Jakarta, Banten, 15412, INDONESIA

[2]Department of Information and Communication Technology,
 International Islamic University Malaysia (IIUM), Gombak, 53100, MALAYSIA

*Corresponding author

Abstract: Trust is very important for the sustainability of an online business. Take care of the trust of customers is a must for an online store that is very different from the normal physical store. Due to a number of situations, the seller and the buyer cannot meet in person, the customer cannot see the products we sell directly and the payment process must be through a bank transfer or with an online payment system. This study report and combine technology acceptance model within an information system (IS) success model in the context to assessing trust on electronic transaction succession. The researcher has developed the model base on the input-process-output the IS success models. Study observes how trust and risk affect an Internet consumer's related with intention to use. Development of theoretical framework de- scribing that trust making process a consumer uses when purchase. Success of an electronic transaction on many factors, one of the important is trust. Acquiring customer trust depends on many things such as web site, quality service, and trust tendency. This paper analyses the role of trust from the transaction perspective to building customer trust.

Keywords: IS model, Technology acceptance model, Customer trust, Perceived trust risk, Electronic transaction system.

1. Introduction

Trust has been studied in the literature from a variety of ways such as transaction, technology, product, and information content. This study investigates the success factors of electronic transaction, one that presents information delivery to consumers' intention. Trust is important relation with customer and social aspect [1,2]. Trust is a mechanism who controlling a few facilitates related with maintains uncertainty, weakness, and dependency [3,4]. It is showed in online shopping behavior, where customers can not individually to check the subject. In implementation, customer has to limit to get information and resources thereby attempting to the complexity of online transaction directly [5]. Trust refers to the vulnerability and any action on the expectation by other, and this is ability to control the other party [6]. Therefore, trust suggestion becomes considered as component in assessment an implementation.

According to TAM (Technology Acceptance Model) model, a user's attitude has the potential to use the system given a hypothesis to determine whether he actually uses it or not. Attitudes towards use, in turn, are based on two main beliefs, namely perceptions of benefits and perceptions of ease of use. Perception of ease of use has a causal effect on perceived benefits. Then it directly affects the perception of benefits and perceptions of ease of use [7].

Trust and risk are important to support intention to uses. Trust and risk have the opposite relationship [8]. Therefore, the necessity of information technology and also from the other angle such as web site, must be taken to the risks faced adopting it.

Research in the field of IS [9-12] has explained that SI performance studies are very necessary to improve performance levels, this is closely related to technology risk management [13, 14] and is useful for IS implementation [15]. Therefore, this phenomenon is very interesting that SI performance studies by developing new things are related to IS models for success in adopting, combination or adaptation of previous IS models. Development may be important to explore opportunities for IS models to improve performance.

The purpose of this research is to improve the quality of security and confidentiality to the service of electronic transaction related with assessing trust model. Minimize potential risks among customers. In the system, the transaction must ensure that the transaction is secure and can legally verify, authorize and acknowledge. The purpose of this paper is to explore the influences mentioned above and to develop IS models relating to the assessment of trust in the success of electronic transactions by adopting, combining, and adapting technological advances and the success of the IS [16, 17] model.

Based on the research mentioned above, two research questions were then submitted for the implementation of this exploration study.

Q-1. How to understand the relationship between user assessments of the model of trust in the success of electronic transactions?

Q-2. How does combining the user acceptance model in the IS success model relate to the intention to use the system?

This paper is divided into two parts, where the first part explains the research program. Then the second part continued with a literature review, research methods, the results and discussion, and the conclusions section.

Another goal of this study is to examine the influence of trust, security, and experience privacy. Mayer and Davis (1995) propose a trust model that outlines conditions when trust occurs. In this study, focus on the beginning of trust or no relationship be- tween consumers and online stores. Trust and risk in the theory of planned behavior, will be a concept in this research as a belief that has an impact on the intention to transact online. Trust relates to consumers to believe that online stores are able to carry out trans- actions and protect consumers' personal information

2. Literature Review

It is explained that the application of IS cannot be avoided will have an influence on the owner, but must bring success to the implementation of the system [10, 18]. The success of the implementation of SI is a challenge for the owner before getting benefits. Conversely, failure of the implementation of IS will have an effect on finance so that failure can also affect the business survival of the system owner [19].

The role of IS has changed and developed over the past decade. Likewise, academic field investigations into IS effectiveness measurements have developed over the same period [16]. Shannon and Waver define that technically the level of communication is the accuracy and efficiency of the communication system that produces information. Semantic level is the success of information in conveying the intended meaning. The level of effectiveness is the effect of information on the recipient. In IS Success Model [16], the quality of the system is measuring technical success, information quality is measuring semantic success, and use, user satisfaction, individual impact, and the impact of the organization is measuring the effectiveness of effectiveness.

Based on the consideration of the process of causal relations, the dimensions of success are proposed to be related to each other independently. This has important implications for the measurement, analysis, and reporting of IS success in empirical studies. The process model show that the first IS was made containing various kinds' features, which can be characterized as displays of various system levels and quality of information. Next, the user uses this system to assess whether satisfied or dissatisfied with the system or product information. The use of information systems and products then impacts individual users in doing their work, and the impact of these individuals collectively results in an impact on the organization [16]. Based on the research of Mayer et al (1995), it defining that trust has become increasingly widely accepted in e-commerce domains [22]. Trust is the desire of the party to be vulnerable to the actions of other parties based on expectations that others will take important actions for the trustor, regardless of the ability to monitor or control the other party [21]. Previous research has stated that e-commerce trust has an impact on online trade-based penetration rates [23]. Trust presents calculative calculations, predictions, abilities, and transference the process between the relationship of buyers and sellers [24].

For research related with tendencies of many IS studies which developed the research models by adopting, combining, and adapting the previous IS models [25].

3. Research Method

The selection of an important framework is in planning, making and maintaining an application. The resulting application becomes more stable and reliable; this is because the Framework has gone through a process of testing both stability and reliability and also makes it easier for developers to document applications that are being built.

The model development study was carried out by adopting from several previous models so that the model developed was obtained. The study was conducted by looking at some literature related to the success of the SI model. Besides reviewing the literature that too conducted to formulate a research program [26, 27]. Research using positive claims method to develop knowledge, researcher test hypothesis related with theory to get result of hypothesis or denied result of hypothesis. Therefore, researchers will try to compare, adopt, and combine several models with the basic process of system theory, then testing and analysis with previous literature to support the argument is required.

The research model developed and instrument data were then proposed in reporting phase.

Table 1 – List of the basic theories

List of the Basic Theories	References
Information processing theory	[28, 29]
IS success model	[16, 29]
Technology Acceptance Model	[7]
Trust model	[30, 31]

4. Research and Discussion

Researchers do the concept of trust as a model of decision making in electronic transactions. Trust becomes very important and is recognized as a major factor to overcome the risk problem [32]. Risks relate to positive transactions and reliability whereas negative things relate to the perceived impact of the transaction experience.

Fig. 1 presents the proposed of IS to assessing trust on electronic transaction. The development was inspired by the previous model development researches [29].

Generally, the model was developed by adopting, combining, and adapting the technology acceptance model [7] and IS success models [16, 29] with its nine variables, i.e., Information Quality (INQ), System Quality (SYQ), Perceived Security (PSC), Reputation (REP), Perceived Risk (PRI), Perceived Trust (PTR), Intention to Use (INT), User Satisfaction (USF), and Actual Use to Transaction (AUT). The first two variables were adopted from the Technology acceptance Model [7] and four variables were adopted from Kim Model [30], and then three ones were from the IS success model [16, 29].
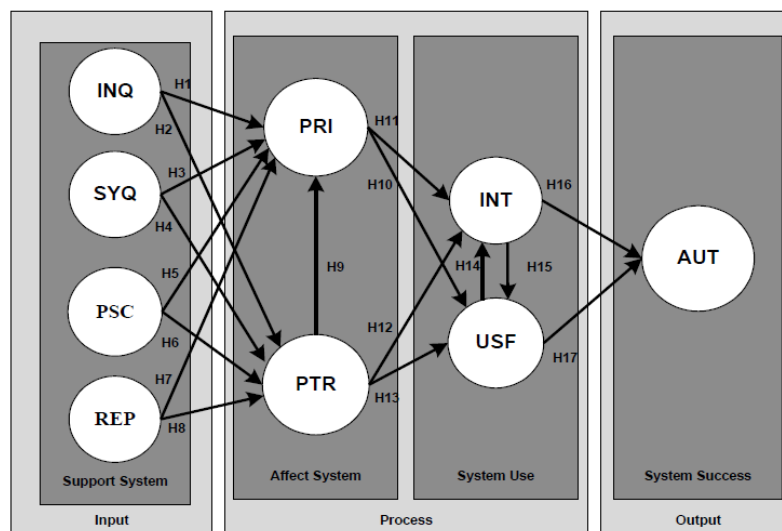
Fig. 1 – The Proposed IS on Assessing Trust on Electronic Transaction Success.

Table 2 – List of The Variables [7, 16, 29, 30]

Var.	Definitions
INQ	The level the produced information of the IS consistently and the requirements in expectations of the user
SYQ	The level related with describe the quality of the content of the IS model
PSC	Perception of use who fulfill security requirements
REP	The level the produced website with honest which concluded that the selling party is trustworthy
PRI	Purchasing from this Website would involve more financial risk
PTR	The level where Website vendor gives the impression that it keeps promises and commitments.
INT	likely to recommend this site to public
USF	The level of the satisfaction of users during using the IS
AUT	The achievement of the IS based on its implementation planning

Referring to the several study [10-12] which this paper use the input-process-output (IPO) logic [33, 34] in the research model development, and researcher assumed that the IS model can also be assumed within the above mentioned logic. According the DeLone and McLean's [16] that IS success model also use the process and output dimensions of the IPO logic. In term of the transaction, the author believed that the trust factor is also one of the input factors [30, 31].

In short, the assessing trust [30] and IS success [16] constructs were then adopted, combined and adapted by the researcher in the AUT model development for assessing the trust factors towards the success of the Actual use in electronic transaction succession. Accordingly, the researcher hypothesized that each variable of the system creation influences each variable of the system use (H14, H15). Thus, the author has also hypothesized that each variable of the process dimension influences the out-put dimension variable (H16, H17).

Furthermore, the definitions of each variable, its broke down indicators and statements of the questionnaires can be seen in Table 2, Table 3, and Table 4 respectively.

Table 3 – List of the indicators [21, 22, 31, 36]

Indicators	Definitions
INQ1 Completeness	The level of the produced information whole without missing part
INQ2 Ease of understanding	The level of the produced information by the IS from contain not difficulties
INQ3 Consistently	The level of the produced information by the IS to demonstrate the same information within appearing and qualities
SYQ1 Ease-of-use	The simple by the IS from constrains, difficulties, and troubles during its usages
SYQ2 Maintainability	The level related to easiness in maintenance
SYQ3 Response time	The level related with the amount of time it takes for the IS responding
PSC1 Threat	The level related to the system situation that could cause disaster
PSC2 Failure	The level related to the possibility that a system uncomfortable might happen
PSC2 Integrity	The level of security related with integrity of information
REP1 Degree of honesty	The level associated with convincing users that the system is right
REP2 Good services	The level of customer satisfaction from using IS with the appropriate results
REP3 Esteem	The level of relations between parties using the system requires each other
PRI1 Financial	Costs and budget estimates needed in operating the system
PRI2 Social	The level of informal social gathering, especially that organized or group
PRI3 Time	The precision degree of the information processing of the system and duration and prediction
PTR1 Ability	The level of user competence related to the expertise to run the system
PTR2 Benevolence	The level good deeds to produce appropriate results
PTR3 behavioral	The level of suspicion can see effects in a different behavioral context
INT1 Website	The level of the user related advertising and promotion
INT2 Products	The amount of production produced in the management of SI is carried out
INT3 Number of transactions executed	The amount of buying and selling relationships with businesses

USF1 Efficiency	The user satisfaction level in the IS based on the system achievement and produce	
USF2 Effectiveness	The user satisfaction level in the IS based on the system capability	
USF3 Flexibility	The user satisfaction level in the IS related to the adaptability and required demand	
AUT1 User Satisfaction	The level of creation value in the system for their business	
AUT2 Performance	The level related with achievement in the product result	
AUT3 Productivity	The level related to the system support for improving output	

Table 4 – List of the statements.

Variables	Statements	Adopted
INQ	The Website provides correct information about the item that want by the usage.	[37]
SYQ	The system is easy to be used and maintained then able to respond quickly following the given command	[12]
PSC	The user usually ensures that transactional information is protected from accidentally being altered or destroyed during a communication	[35, 36]
REP	The Website has a reputation for being honest.	[38]
PRI	Purchasing from Website would involve more financial risk like fraud when we compared with traditional ways of shopping.	[39, 40]
PTR	The Website gives the impression that keeps promises and commitments.	[39]
INT	The system likely to recommend and make another purchase where need the products that will buy.	[39]
USF	Users are satisfied with the efficiency of the system	[12]
AUT	The system is performed efficiently to improves the user satisfaction	[11, 12]

According the above-mentioned research questions, the following descriptions to statement that relationship between the assessing trust and IS success constructs to the system can be illustrated reflective analysis of the satisfaction, acceptance, and the success constructs of the internet-based system.

In the early era described that psychological reactions and organizational factors contribute to the system success from user, and this model can be developed [41]. According Venkatesh and Davis [27] extended the user acceptance model theories by combining both constructs within a combination model.

Similarly, adoptions of the system use and user satisfaction factors can also be seen in the DeLone and McLean's [16] base on the IS success model. It is clearly show that assessing trust to user acceptance and IS success constructs are connected within a sequential influence context. It is consistent with indications of the previous study which indicated that adaptation of the prior models in the social studies is a common model development, in regard to explore the new model [25, 29-31].

Next, the developed IS electronic transaction model (Fig. 1) is one of the new model developments. The adoption, combination, and the adaptation from IS success [16] models implemented by the researcher based on the input-process-output (IPO) assumption [33, 34], and also presented by the previous studies [10, 11, 12, 14]. In short, it can be clearly seen that the IS electronic transaction model development proved the new model development possibility by combining, adopting, and adapting the assessing trust [30] and IS success [16] constructs.

5. Conclusion

This research presents three factors in the successful implementation of electronic transaction such as user satisfaction, performance and productivity. The IS success model has been issues toward interesting studies for researcher since many decades ago. The studies indicated that many models have been developed based on previous theories and this has doing as empirical studies for researches.

Customer trust is something that is very important in business and must continue to be built and must be maintained. Poor customer trust can affect the image of the business, it can even make our business not work well. The business world has penetrated into the digital world, making many fraud cases that cause customer confidence to decline and can hinder the growth of the business.

Electronic transaction success model developed with adopting, combining, and adapting several trust models and IS success model, in term of assessing trust toward user acceptance. To implementation the system, researcher use The IPO logic.

The proposed model consisted of the nine variables with 27 indicators. Besides that exploratory study may contribute theoretically in terms of the trust model and IS success model combination.

There is a significant implication between trust and intentions of online transactions where the greater consumer confidence in on- line transactions will make business online business people increasingly visited and buy products on offer. And vice versa, if consumer confidence is low on online business and minimal service, then consumers will not be interested in buying online products offered. Based on previous research there are significant implications between the qualities of websites with online transaction intentions.

Despite the fact that, the used assumption of the model development, the author understanding may be the study limitations and time. The next may be used the different assumption, method and understanding may present the different propositions. In addition, the limitations may helpful for the further study, especially validity of the proposed model.

Acknowledgement

References

[1] Blau, P. M. (1964). Exchange and Power in Social Life. New York: John Wiley and Sons.
[2] Chow, K. K., Abdal-Kadhim, A. M., Kok, S. L., and Lau, K. T. (2019). Finite Elements Method Simulation of P(VDF-TrFE) Piezoelectric Sensor for Internet of Things Application. The International Journal of Integrated Engineering, 11(1), 77-83.
[3] Bradach, J. L., and Eccles, R. G. (1989). Price, authority, and trust: from ideal types to plural forms. Annual Review of Sociology, 15(1), 97-118.
[4] Gismalla, M. S. M., and Abdullah, M. F. L. (2017). Device to Device Communication for Internet of Things Ecosystem: An overview. The International Journal of Integrated Engineering, 9(4), 118-123.
[5] Grabner-Kraeuter, S. (2002). The role of consumers' trust in online shopping. Journal of Business Ethics, 39(1-2), 43-50.
[6] Mayer, R. C., Davis, J. H., and Schoorman, F. D. (1995). An integrative model of organizational trust. Academy of Management Review, 20(3), 709-34.
[7] Fred, D. Davis. (1986). A Technology Acceptance Model for Empirically Testing New End-User Information Systems: Theory and Results. B.S. Industrial Engineering, Wayne State University.
[8] Okah, J., Nwankwo, S., and Shoniregun, C. (2007). Trust and e-Procurement Transaction Management. Proceedings of the International Conference for Information Society. Indiana U.S.A.
[9] Nguyen, T. D., Nguyen, T. M., and Cao, T. H. (2015). Information Systems Success: A Literature Review. International Conference on Future Data and Security Engineering, 242-256.
[10] Subiyakto, A., and Ahlan, A. R. (2013). A coherent framework for understanding critical success factors of ICT project environment. International Conference on Research and Innovation in Information Systems, 342-347.
[11] Putra, S. J., Subiyakto, A., Ahlan, A. R., and Kartiwi, M. (2016). A Coherent Framework for Understanding the Success of an Information System Project. TELKOMNIKA (Telecommunication, Computing, Electronics and Control), 14(1), 302-308.
[12] Subiyakto, A., Ahlan, A. R., Kartiwi, M., and Sukmana, H. T. (2015). Measurement of Information System Project Success Based on Perceptions of the Internal Stakeholders. International Journal of Electrical and Computer Engineering, 5, 271-279.

[13] Talet, A. N., Mat-Zin, R., and Houari, M. (2014). Risk management and information technology projects. International Journal of Digital Information and Wireless Communications, 4(1), 1-9.

[14] Ahlan, A. R, and Arshad, Y. (2012). Information Technology Risk Management: The case of the International Islamic University Malaysia. Journal of Research and Innovation in Information Systems, 1, 58-67.

[15] Kauffman, R. J., Liu, J., and Ma, D. (2015). Technology investment decision-making under uncertainty. Information Technology and Management, 16, 153-172.

[16] DeLone, W. H., and McLean, E. R. (2003). The DeLone and McLean model of information systems success: a ten-year update. Journal of management information systems, 19, 9-30.

[17] Lim, B. T., Zhang, W., and Oo, B. L. (2018). Sustainable Procurement in Australia: Quantity Surveyors' Perception on Life Cycle Costing . The International Journal of Integrated Engineering, 10(2), 1-6.

[18] Chan, Y. E., and Reich, B. H. (2007). IT alignment: what have we learned?. Journal of Information technology, 22, 297-315.

[19] Xu, X., Zhang, W., and Barkhi, R.. (2010). IT infrastructure capabilities and IT project success: a development team perspective. Information Technology and Management, 11, 123-142.

[20] Shannon, C. E., and Weaver, W. (1949). The Mathematical Theory of Communication. Urbana. IL: University of Illinois Press.

[21] Mayer, R. C., Davis, J. H., and Schoorman, F. D. (1995). An integrative model of organizational trust. Academy of Management Review, 20(3), 709–734.

[22] Rousseau, D. M., Sitkin, S. B., Burt, R. S., and Camerer, C. (1998). Not so different after all: A cross discipline view of trust. Academy of Management Review, 23(3, 393–404.

[23] Turban, E., King, D., Lee, J. and Viehland, D. (2006). Electronic Commerce 2006: A Managerial Perspective. Pearson/Prentice Hall, Englewood Cliffs, NJ.

[24] Doney, P. M., and Cannon, J. P. (1997). An examination of the nature of trust in buyer-seller relationships. Journal of Marketing, 61(2), 35– 51.

[25] Subiyakto, A., Ahlan, A. R., Putra, S. J., and Kartiwi, M. (2015). Validation of Information System Project Success Model. SAGE Open, 5(2), 1-14.

[26] Sandra, B., and Brenton, F. (2011). Developers, Decision Makers, Strategists or Just End-Users? Redefining End-User Computing for the 21st Century: A Case Study. Journal of Organizational and End User Computing, 23(2), 1-14.

[27] Venkatesh, V., and Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. Management Science, 46, 186-204.

[28] Davis, W. S., and Yen, D. C. (1998). The Information System Consultant's Handbook. Systems Analysis and Design: CRC press.

[29] Subiyakto, A. and Ahlan, A. R. (2014). Implementation of Input Process Output Model for Measuring Information System Project Success. TELKOMNIKA Indonesian Journal of Electrical Engineering, 12, 5603-5612.

[30] Kim, D. J., Ferrin, D. L., and Rao, H. R. (2008). A Trust Based Consumer Decision Model in Electronic Commerce: The Role of Trust, Risk, and Their Antecedents. Decision Support Systems, 44(2), 544-564.

[31] Susanto, A., Lee, H., Zo, H., and Ciganek, A. P. (2013). User acceptance of Internet banking in Indonesia: initial trust formation. Information Development, 29, 309-322.

[32] Huang, J., and Nicol, D. (2009). A calculus of trust and its application to PKI and identity management. Proceedings of the 8th Symposium on Identity and Trust on the Internet, 23-27.

[33] Davis, W. S., and Yen, D. C. (1998). The Information System Consultant's Handbook. Systems Analysis and Design: CRC press.

[34] Kellogg. W. (2004). Logic model development guide. Michigan: WK Kellogg Foundation.

[35] Chen, M., Han, J., Yu, P. S. (1996). Data mining: an overview from a data base perspective. IEEE Transactions on Knowledge and Data Engineering, 8(6), 866-883.

[36] Cheung, C. M. K., and Lee, M. K. O. (2006). Understanding consumer trust in Internet shopping: a multidisciplinary approach. Journal of the American Society for Information Science and Technology, 57(4), 479–492.

[37] Doll, W. J., and Torkzadeh, G. (1988). The measurement of end user computing satisfaction. MIS Quarterly, 12(2), 259–274.

[38] Moorman, C., Deshpande, R., and Zaltman, G. (1993). Factors affecting trust in market research relationships. Journal of Marketing, 57(1), 81–101.

[39] Jarvenpaa, S. L., Tractinsky, N., and Vitale, M. (2000). Consumer trust in an Internet store. Information Technology and Management, 1(1–2), 45–71.

[40] Kohli, A. (1989). Determinants of influence in organizational buying: a contingency approach. Journal of Marketing, 53, 50–65.

[41] Robey, D. (1979). User attitudes and management information system use. Academy of Management Journal, 22, 527- 538.