

**Digital transformation in enhancing knowledge acquisition of public sector employees****Adi Suryanto<sup>a\*</sup>, Nurliah Nurdin<sup>b</sup>, Erna Irawati<sup>b</sup> and Andriansyah<sup>c</sup>**<sup>a</sup>*Lembaga Administrasi Negara Republik Indonesia, Indonesia*<sup>b</sup>*Politeknik STIA LAN, Jakarta, Indonesia*<sup>c</sup>*Universitas Prof. Dr. Moestopo (Beragama), Jakarta, Indonesia***CHRONICLE****ABSTRACT***Article history:*

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This research was conducted to determine knowledge acquisition by employing digital technology for public sector employees. This study adopts system quality, information quality, user satisfaction, service quality, and net benefit as the empirical considerations. The data analysis technique in this study used SEM (Structural Equation Modeling). Respondents in this study were 198 people consisting of public sector employees who used a learning management system. The results showed that service quality has a significant effect on user satisfaction. User satisfaction has a significant effect on net benefits. Meanwhile, system quality had no significant effect on user satisfaction, information quality had a significant effect on user satisfaction. The findings would imply the strategies to strengthen the implementation of e-learning is to increase user satisfaction. The finding managerially points out the necessity to evaluate the transformation of classical training programs in terms of face-to-face learning to blended learning by integrating online learning and face-to-face in the public sector knowledge acquisition model of training. The findings present an evaluation using empirical examination and highlights the importance of continuity to arrange action plans in public sector to synchronize knowledge acquisition model through training to obtain behavioral change and wider organizational impact of the training on public sector institutions.

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**1. Introduction**

The recent rapid development of information technology and computer technology has received positive feedback from the community. Various public services implement information and communication technologies. Known as e-business or e-commerce in the world of business, e-government in the world of government, and e-learning in education. According to Effendi & Zhuang (2005), the term of e-learning refers to all training activities that use electronic media or information technology. However, not all of these e-learning implementations run well and provide benefits to users. Digital transformation in training has a major influence on the existence of paradigms in learning. Horn and Staker (2017) mention two forms of digital transformation in training as follows. The first is online learning, namely changing instructions in learning from face-to-faceteacher to web-based content and instruction and the participants have the element of control over the learning. The second is blended learning, namely formal learning where the participants learn through online learning. In this model, the participants have control over time, place, method, and/or pace and supervised learning at the training site away from home/office to produce an integrated learning experience. These two forms of learning change the learning paradigm, including the relationship between facilitators and participants. For example, the role of lecture/facilitator in lecture-based learning is replaced by an information system, participants have high control over the learning, engagement changes from physical to virtual, and other variations that can be found in learning in the current millennial era. Digital transformation in learning provides a

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new definition of performance, including the performance of training implementation. Generally, performance is associated with advantages such as affordability, convenience, accessibility, or simplicity (Horn and Staker, 2017). Errors in the implementation of information systems by Jogiyanto (2005) can be divided into two aspects. The first is an aspect related to the system itself that describes the technical quality of the information system. The second aspect is the non-technical aspect. Non-technical obstacles refer to perceptions that make information system users want or hesitate to use the developed information system. In fact, it is very important to build synergies between information systems and the technology that supports them, with users, parties who interact with the system every day (Utomo, 2005). The absence of a synergistic relationship between the information system that is prepared with the willingness and readiness of its users can lead to user dissatisfaction. This is usually due to differences in viewpoints between information system providers and business units in viewing an information technology service. Problems like this always arise in the dynamics of the relationship between information system providers and business units anywhere (Utomo, 2005).

In addition, information technology has also become a significant component in every organizational activity, so evaluating the costs and benefits generated by information technology is an important aspect (Turban, 1999). According to Yusof, et al. (2006), system evaluation is crucial because evaluation is carried out to ensure the effectiveness of implementation and the positive impact of the system on services. Thus, to test this many studies have been conducted on successful Information Systems models (e.g., DeLone & McLean, 1992; 2003) and e-Learning (e.g., Beam & Cameron, 1998; Carswell, 1997; Hiltz & Wellman, 1997; Isakson, 2000), research has been conducted to address the conceptualization and measurement of the success of E-Learning as a system in an organization. One of the popular Information Systems models is the model developed by DeLone and McLean (1992) known as the DeLone and McLean Information Systems Success Model. Therefore, this study was conducted to evaluate the implementation of E-Learning that is used effectively in institutions to get net benefits from implementing E-Learning Learning Rooms.

## 2. Theoretical Review and Hypotheses

### 2.1 System Quality and User Satisfaction in Knowledge Acquisition

According to Gorla et al. (2010) the quality of the system consists of the quality of hardware and software in a technology. System quality, as a key feature of users' perceptions of their use of information technology, has a direct positive impact on user satisfaction (Freeze et al. 2010; DeLone and McLean 2003). Based on the user's perspective, there are several attributes and functions that can have an impact on the use of e-learning such as usability, reliability, and efficiency that meet and are categorized in system quality and are the top attributes in many research models (Dreheeb, et al. 2016). Reliability, ease of use, flexibility, and functionality are also measures of system quality (DeLone and McLean 2003; Indriani and Reza 2009). Indriani and Reza (2009) empirically prove that reliability, flexibility, functionality positively affect system user satisfaction. Users of the e-learning system are satisfied if the e-learning system has easy-to-understand guidelines, the material presented is in accordance with learning needs, the system is easy to operate, has easy to access features, and intensifies the communication between teachers and students (Pawirosumarto et al. 2015; Yuwono 2018).

Ease of use is the main factor affecting system user satisfaction (Arbaugh, 2002). Perception of ease of use is the user's perception of the ease obtained from an information system adoption. This factor affects the behavior of information system users which then has an impact on individual behavior in adopting information systems (Arbaugh, 2002). Cidral et al. (2018) found that e-learning system satisfaction and usage increased when it was easy to navigate and well-structured in terms of content and functionality. The quality of an information system is the characteristic of inherent information about the system itself as a perceived usability. That is, the level at which computer technology is perceived as relatively easy to understand and use. This indicates that when information system users find it easy to use, they feel satisfied because it does not require much time and energy to use it (Pawirosumarto 2016). The minimal constraints that an e-learning application has can make it easier for users to use and have an impact on increasing user satisfaction (Harris & Affandi, 2011).

**H<sub>1</sub>:** *System quality has a significant effect on user satisfaction in knowledge acquisition process.*

### 2.2. Information Quality and User Satisfaction in Knowledge Acquisition

Information quality is the value obtained by end users according to information that has characteristics of content, form and time (Larasati & Andayani, 2019). Information quality refers to the traditional measure of system performance. The system generates key information in the form of reports. Information quality characteristics required of a system include accuracy, precision, timeliness, reliability, completeness, conciseness, relevance, understandability, meaningfulness, timeliness, comparability, and form. increase. (Freeze et al., 2010; Swaid & Wigand 2009). The quality of information covers the content of e-learning. The basic purpose of an e-learning system is to provide learning information for learning participants (Bhatti, et al., 2000; Freeze et al. 2010). The accuracy of information and features will affect user acceptance (Lin & Lu, 2000; Freeze et al. 2010). It is important to keep information up to date with adaptive system ideas (; Freeze et al. 2010). User satisfaction is also influenced by feedback received during learning (Klein et al., 2010; Freeze et al., 2010), and this feedback can be considered a factor in information quality. User satisfaction increases when the quality of information meets the user's needs and needs, when the information provided by the system is reliable, and when the information provided is always up-to-date.

(Wijaya & Suwastika 2017). Learning features relate to the general utility of e-learning features and the arrangement of learning materials into logical and comprehensible components. The information influences satisfaction, system usage, and learning outcomes (Eom et al., 2006; Freeze et al., 2010). Pawi Rosmalt and others (2015) their research shows that there is a one-way relationship between user satisfaction and information quality. In other words, the higher the quality of information provided, the better the e-learning system and the more satisfied users are with the e-learning system. If the e-learning system provides details related to lecture material, provides clarity of lecture material, is timely in presenting information, and provides accurate assessments, users will feel satisfied in using the system. So, the e-learning feature that can facilitate users and affect user satisfaction is content suitability (Clark, 2002; Harris & Affandi 2011).

**H<sub>2</sub>:** *Information quality has a significant effect on user satisfaction in knowledge acquisition process.*

### 2.3 System Service Quality and User Satisfaction in Knowledge Acquisition

System service quality is a service provided on the system for users from system developers in the form of information system updates and responses from developers regarding problems that occur in information systems (Larasati & Andayani, 2019). The quality of service is quite good if the service received is in line with expectations. On the other hand, the information system is bad if the service received is not as expected (Pawirosumarto et al., 2015). Pawirosumarto et al. (2015) showed that there is a positive correlation between service quality and user satisfaction. An e-learning system that provides a fast download process for lecture materials, assessment of online learning outcomes that is equivalent to conventional learning, and the ease of contacting managers when they encounter problems in accessing the e-learning system will increase system user satisfaction. Another special feature possessed by e-learning that can affect user satisfaction is the use of instructional methods so that the material presented is more understandable by users. E-learning also has a special feature, namely the use of media elements such as pictures and sentences to convey learning methods and content that help in delivering the material provided. Media elements also assist users in accessing data contained in e-learning and also make the system display more attractive (Clark, 2002; Harris & Affandi 2011). E-learning learning that uses various evaluation methods is perceived by users as a form of interaction between students and lecturers and is their effort to obtain an adequate assessment in the learning process (Harris & Affandi 2011). The case study conducted by Cidral et al. (2018) show that if e-learning systems provide various ways for learning assessment or evaluation through quizzes, tests, and other means of testing knowledge and e-learning users can interact with each other, then this will lead to increased satisfaction.

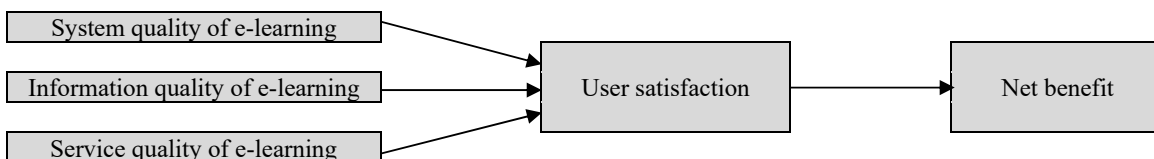
**H<sub>3</sub>:** *System service quality has a significant effect on user satisfaction in knowledge acquisition process.*

### 2.4 User Satisfaction and Net Benefit in Knowledge Acquisition process

User satisfaction is the response given by the user in the form of perceived satisfaction with the system after using it. According to Gerson (2002), satisfaction is the customer's perception that his expectations have been met or exceeded. So, it can be concluded that satisfaction is a level of feeling by comparing expectations with the reality of a product or service. Kotler (2000) cited by Samuel (2006), consumer or customer satisfaction can be interpreted as a person's feeling of pleasure or dissatisfaction after comparing the product's performance with what is expected. Net benefits are often measured in terms of organizational performance. That perceived benefit is the impact of using an information system. The relationship between system end-user satisfaction and net profit has been tested by previous researchers such as Jaafreh (2017) and Wijayanto (2013), people who are satisfied with the information systems they use tend to use them safely and comfortably. The higher the user satisfaction with the information system, the higher the expected net profit for the user.

**H<sub>4</sub>:** *User Satisfaction has a significant effect on Net Benefit in knowledge acquisition process.*

The model that will be used in this study refers to the research model used by DeLone and McLean (2003). Theoretical literature was then formulated to arrange the research framework developed to reflect the relationship between variables used in this study (Fig. 1).



**Fig. 1.** Theoretical Model

## 3. Research method

This study used a quantitative approach to its investigation to test relationships between variables. Quantitative methods are methods used on a particular population or sample, data collection using research tools, and data analysis is quantitative with the aim of testing established hypotheses (Sugiyono, 2012). This study uses cross-sectional or time-based questionnaire

means. The scale used is the Likert scale, which is a graded representation of the size of the rating scale. The sampling technique used is targeted sampling, where surveys are conducted on groups of individuals with specific characteristics or who are believed to be closely related to previously known population characteristics. Participants in this study were 198 public sector workers who had learned or experienced online training through a website or application. Statistical testing for this study was performed using the Structural Equation Modeling (SEM) tool based on Partial Least Squares version 3. Efficacy tests were used to measure the effectiveness of the inductor elements in a questionnaire. Validity testing in this study uses convergent validity by considering a minimum factor loading index value of 0.6 for each indicator item (Sarwono, 2006). The following reliability tests are the Cronbach alpha and composite reliability values used to measure internal consistency in data reliability tests, and his AVE value (Average Variance Extracted). From latent variables estimated by loading standardization. In this test, researchers also use composite confidence limits  $> 0.7$  and Cronbach's alpha  $> 0.6$  and AVE values  $> 0.5$  (Sarwono, 2006).

#### 4. Results and discussion

The results of the validity test were shown in Fig. 2. The results revealed that all items in this study are declared valid, factor loading value above  $> 0.6$ . Furthermore, reliability testing must have Cronbach's Alpha value  $> 0.6$ , Composite reliability value  $> 0.7$  and AVE value  $> 0.5$  so that it meets the requirements for hypothesis testing (Table 1).

**Table 1**

Composite Reliability and Cronbach's Alpha

	Composite Reliability	Cronbach's Alpha	AVE
Information Quality	0.966	0.960	0.805
Net Benefit	0.968	0.960	0.790
Service Quality	0.960	0.948	0.829
System Quality	0.977	0.973	0.843
User Satisfaction	0.956	0.943	0.784
R Square			
Net Benefit	0.362		
User Satisfaction	0.592		

Table 1 shows the combined reliability scores for all variables above 0.70, Cronbach's alpha  $> 0.6$ , and AVE  $> 0.5$ . Therefore, all variables in this study meet high combined reliability. Additionally, Table 1 shows a model of the impact of service quality, information quality, and system quality on user satisfaction, with an R-squared value of 0.592. This can explain the variables in the user satisfaction structure, explained by the variables service quality, information quality, and system quality with 59.2%. On the other hand, 48.8% are explained by other variables not considered in this study. A model of the impact of service quality, information quality, and system quality, and user satisfaction on net benefit has an R-squared value of 0.362. This could explain the net benefit variables explained by the user satisfaction variable with 36.2%. On the other hand, 63.8% are explained by other variables not considered in this study.

**Table 2**

Results of Path Coefficients

	Original Sample	T-Statistics	p-values
Information Quality → User Satisfaction	0.243	4.501	0.000
Service Quality → User Satisfaction	0.363	5.061	0.000
System Quality → User Satisfaction	0.388	7.731	0.000
User Satisfaction → Net Benefit	0.602	10.900	0.000

In this study, a significance value that is less than or equal to 0.05 ( $\leq 0.05$ ) indicates a hypothesis is accepted. Table 2 showed the influence of the relationship system quality on user satisfaction. The results of this study show that system quality influences user satisfaction. In other words, whether the perception of system quality in e-learning is low or high affects user satisfaction. This indicates that if the quality of the system is good according to the user's perception, they tend to be satisfied with using the system. Information system users who get the expected results are more satisfied and use the system. This study disagrees with Leclercq (2007), Jaafreh (2017), Maulidi (2016), and Sumiyati et al. (2013) found relationships between system quality and user satisfaction, and user usability and user satisfaction in a case study. Results on the impact of information quality on user satisfaction indicate that information quality has a positive and significant effect on user satisfaction. In other words, the higher the perceived information quality in eLearning, the higher the user satisfaction. This shows that reliable information systems can provide high quality information. As a result, users will be satisfied with the information they receive. The results of this study support the model developed by DeLone and McLean (2003). This result is consistent with Jaafreh (2017) and Yuliana (2016). Regarding the impact of service quality on user satisfaction, the results of this study show that service quality has a positive and significant impact on user satisfaction. In other words, users are satisfied whether their perception of the service quality provided by e-learning is low or high. This indicates that the higher the e-learning service quality, the higher the user satisfaction. E-learning provides various methods of learning assessment or evaluation through quizzes, tests, and other knowledge testing methods, and e-learning users can interact and increase satisfaction. The results of this study support the model developed by DeLone and McLean (2003). This result is consistent with Jaafreh (2017), Bahari and Mahmud (2018), Septianita et al. (2014) found a positive correlation between service quality and user satisfaction.

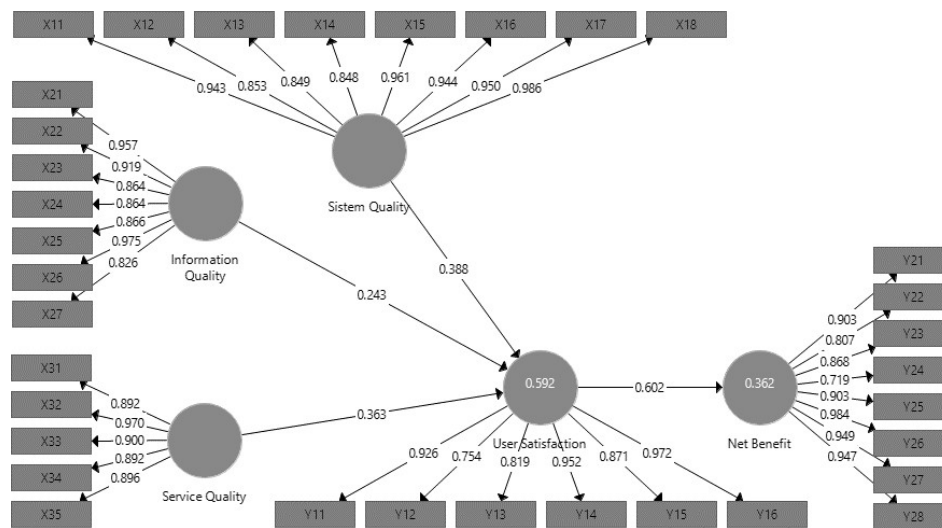
Examining the effect of user satisfaction on net benefits, the results of this study show that user satisfaction affects net benefits. In other words, the higher the perceived user satisfaction in e-learning, the greater the net benefit. Personal satisfaction with e-learning is generally safe and convenient when using e-learning. This ultimately increases the net profit for e-learning his users. This finding is consistent with Halawi et al. (2005) finding an association between user satisfaction and net utility. In addition, the study also showed that user satisfaction mediates the impact of system quality, information quality, and service quality on net utility. It has been shown that the higher the quality of the system and of the information and services produced by the information system, the higher the user satisfaction and impact the net profit perceived by the user. These results also support models developed by DeLone and McLean (2003), Jaafreh (2017) and Saputro (2017), Wijayanto (2013) and Pawirosumarto (2016).

**Table 3**

**Indirect Effect**

Hypotheses	Original Sample	T-statistics	p-values
Information Quality → User Satisfaction → Net Benefit	0.146	4.437	0.000
Service Quality → User Satisfaction → Net Benefit	0.219	4.239	0.000
System Quality → User Satisfaction → Net Benefit	0.234	7.072	0.000

The test of mediating variable of user satisfaction was then carried out. The analysis was conducted by bootstrapping the developed model. The values used for the acceptance was significance level (p-value) of 0.05 for all indirect relationships with mediating effect. The analysis showed in Table 3 and Fig. 2 revealed that user satisfaction is able to mediate the effect of system quality, information quality, service quality on net benefits.



**Fig. 2. Measurement Model Test**

## 5. Conclusion

The results showed that service quality, system quality, and information quality are the main keys to user satisfaction of e-learning and the perceived net benefits of users. The findings highlight that the increase in e-learning system capability in terms of service quality, system quality, and information quality, will be more likely to improve user satisfaction and net benefits. This is because service quality, system quality, and information quality have a significant effect on user satisfaction. Increased user satisfaction will affect the intention of e-learning users to return to using the system. The findings would imply the strategies to strengthen the implementation of e-learning is to increase user satisfaction. The finding managerially points out the necessity to evaluate the transformation of classical training programs in terms of face-to-face learning to blended learning by integrating online and face-to-face learning in public sector knowledge acquisition model of training. The findings present an evaluation using empirical examination and highlights the importance of continuity to arrange action plans in public sector to synchronize knowledge acquisition model through training to obtain behavioral change and wider organizational impact of the training on institutions. The results also practically showed the significance of the implementation of blended learning in terms of the outcomes of the training program such as adoption and benefit to the organization, flexibility, and efficiency.

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