The Effect Of Computer Self-Efficacy Toward System Quality, Information Quality, Service Quality, Usage, User Satisfaction, And Individual Impact (A Study on University Students Using the E-Learning System at Kopertis III Jakarta)

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Abstract

This study aims at analyzing and explaining the influence of computer self-efficacy (CSE) on system quality, information quality, service quality, usage, user satisfaction and individual impact. The study was conducted on university students as users of the e-learning system in Kopertis III Jakarta. The population consisted of 144.686 students, and a sample of 178 students was taken. The sampling technique used was the proportional random sampling. The analytical method used was GSCA Generalized Structured Component Analysis. The results showed that 13 of the 16 hypotheses had a significant effect and the remaining 3 hypotheses resulted in a non-significant effect. The hypotheses with a significant effect were: (1) the effect of CSE on system quality, on information quality, on service quality, on usage, on user satisfaction, and on individual impact; (2) the effect of system quality on information quality, on usage, and on user satisfaction; (3) the effect of information quality on usage and user satisfaction; and (4) the effect of service quality to usage and user satisfaction. The hypotheses with a non-significant effect were: (1) the effect of CSE on user satisfaction, the effect of usage on individual impact, and the effect of user satisfaction on individual impact

Keywords: Computer Self-Efficacy (CSE), system quality, information quality, service quality, usage, user satisfaction, and individual impact

1. Introduction

The e-learning system has become the latest educational innovation in the early 21st century. It is believed that the e-learning system has the ability to meet a variety of learning needs and diverse characteristics of learners in many countries. The e-learning system can provide stimulating interactive applications to study, either at home, at school, or at work. The e-learning system has been widely accepted and used by the world community, as evidenced by the widespread implementation of e-learning systems, especially in educational institutions (schools, training institutes, and universities) and industries (Cisco Systems, IBM, HP, Oracle).

Rosenberg (2001) explains that learning is a blend of outcomes and processes. We must come to an understanding that learning is a process that is experienced by humans to gain expertise / skills and new knowledge in order to improve performance. Furthermore, the e-learning system is a form of internet technology utilization to distribute learning materials, so that students can access it anytime and anywhere (Rosenberg, 2001). The e-learning system is a learning process where learning materials are delivered through electronic media such as the internet, intranet, satellite, TV, CD-ROM, and others. Internet is not the main ingredient of e-learning; however, it is a part of e-learning (Urdan and Wegen, 2000). The development of the e-learning system has contributed significantly to the emergence of distance education based on Information and Communication Technology (ICT) or virtual learning in all parts of the world (Khan, 2005). The measures to success of the e-learning system are system quality, information quality, usage, and user satisfaction (Freeze et al., 2010), whereas Ramayah et al. (2010) suggest that the success of the e-learning system implementation is on user satisfaction and on the continuous use of the system itself. Wang et al. (2007) conduct a study to develop and validate multi-dimensional models to assess the E-learning Systems Success (ELSS) from the perspective of the employee (e-learners). The research done by Wang et al. (2007) provides some implications regarding the

effectiveness of the e-learning system for management and empirical results emphasize the importance of a multidimensional analytical approach. In addition, such examination on the success of the e-learning system in the context of information systems is rather difficult to conduct because different users and different organizations will gain different benefit from the system (DeLone and McLean, 2003).

This study focuses on individual users' perceptions of a website-based e-learning system in order to test the effect of the system on individuals (university students), which refers to individual impact caused by the use of the e-learning system. The readiness of individuals to technology refers to the tendency of a person to accept and use the technology to accomplish goals in daily life and at work (Parasuraman, 2000). Successful implementation of the e-learning system using the IS Success Model (DeLone and McLean, 2003) is an extension of the theory of reason action (TRA) (Azjen and Fishbein, 1980) in which individual beliefs over something determine their attitudes and can be known from their perceptions on the quality of something that they use, and the Technology Acceptance Model (TAM) (Davis, 1989) that refers to the use of a real thing, in this case is the e-learning system. Although the nature of Information Systems (IS) success is multidimensional and contingency, the efforts to elaborate the model continued in order to simplify the steps for measuring success in SI.

This study implemented the model by DeLone and McLean (2003) by eliminating some of the variables and adding CSE variables to obtain an extension model of SI success and creates novelty to the present study. To know the influence of user satisfaction on the success of the e-learning system (DeLone and McLean, 1992; Doll and Torkzadeh, 1988) and its impact on the intention to use the e-learning system (Chiu et al., 2005; Roca et al., 2006), some research has been conducted using several models, but this study did not raise the issue on the interest variable. This marked the difference of the present study and the other studies, which lies in the intention to use the e-learning system, in which the system was studied again using the technology acceptance model or TAM (Davis, 1989).

D and M model has been widely used as stated by Petter et al. (2008). D and M has been modified to meet the requirements established by several studies from various perspectives of SI. For example, Holsapple and Lee-Post (2006) modify and develop the research to evaluate e-learning systems. Lin (2007) modifies the model of the successful D and M in the assessment of the success on the use of online learning systems. Furthermore, Wang et al. (2007) use the model to assess the efficiency and success of e-learning systems from the perspective of organizations and employees. DeLone and McLean use their success models (DeLone and McLean, 2003) when evaluating the success of e-commerce. From the perspective of e-commerce, the key users are the internal users, customers, and providers. In addition, interactions and business processes can be evaluated with the help of the six dimensions (DeLone and McLean, 2004).

When an institution has implemented the e-learning system within the organization, the success or effectiveness needs to be measured and determined. Some researchers, including DeLone and McLean (1992), Doll and Torkzadeh (1988), Seddon (1997), conclude that the success of the e-learning system is largely associated with user satisfaction as well as other factors. Stokes (2001) suggests that issues on learner satisfaction in a digital environment is something that is very important, while the model developed by DeLone and McLean (2003) can be regarded as a more comprehensive approach than the other existing model approaches. The model comprehensively measures the success of the SI system of e-commerce. The successful SI model developed by DeLone and McLean (2003) mention that variables on user satisfaction are influenced by a number of dimensions, such as information quality, system quality, and service quality. In this study, all three of these variables are the attitudes representing the students' perceptions resulting from their beliefs on their ability to use computers. This is consistent with what is proposed by Compeau and Higgins (1995), that CSE is the judgment toward the capability of a person to use the computer / information systems / information technology. This is also in line with social cognitive theory developed by Bandura (1986), stating that self-efficacy is the belief that one has the ability to perform a particular behavior. The basic premise underlining self-efficacy theory by Bandura (1986) is the expectation of personal mastery (self-efficacy) and of success (expectancy outcomes) that determines how an individual gets themselves involved in a particular behavior (Lenz and Baggett, 2002). The afore-pesented description becomes the basis of this study, so CSE determines the perceptions on the quality of the system, information, and service.

In the Main Dictionary of Indonesian Language, perception is defined as a direct response or acceptance of something or the process of knowing a few things through the five senses. This research is related to students' perceptions of system quality, information systems and e-learning services that are implemented in Private College of Kopertis III Jakarta. System quality is the result of interaction between the users and the system. In the context of the e-learning system, system quality is the interaction between users (learners) and the system.

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Attributes of system quality, for example, are the availability of equipment, equipment reliability, ease of use of the system, and the response time. System quality is a measure on the management of the information system itself and focuses on the outcome of the interaction between the users and the system. Quality system is measured by six indicators, namely navigation, instructional, ease of use, usability, interactivity, and comfort access (McKinney et al., 2002), Doll and Torkzadeh (1988), Davis (1989), Chua (2004), and Bollinger and Martindale (2004). Information quality is the result obtained from the internet indicated by attributes such as information obtained from a system, accuracy of information, relevance of information, timeliness, and completeness of the information. Best information quality can be provided by the internet when it can be obtained easily, meaning that it is not difficult to search for the information as it is organized and available in large amount. Therefore, content, format, timeliness, feedback and assessment, and accuracy are often used as the criteria in the measurement of system quality (Wang, 2003; Lee and Strong, 2003; Klein, et al., 2002; Hisham , et al., 2004). Service quality directly relates with the readiness of the e-learning system providers to assist users in providing fast and responsive service, the ability to provide a reliable system to provide assurance to users, and the ability to understand the wants and needs of users; thus, assurance, empathy, and speed of response are used as measurement criteria (Madu and Madu, 2002).

Perceptions on system, information and service quality are critical to the decision to use or not to use the system and the level of satisfaction after using it. The use of information system can be indicated by the absent use of the system, the frequent use of the system, the more frequent use of the system, the lingering use of e-learning system, and the motivation to always use the e-learning system. It shows that the system is very good. Besides the use of the system, it also relates to who use the system, the levels of usage, the attitude of accepting and rejecting an information system; so the duration of use, the amount of connect time, regularity of use, and the motivation to use is used as measurement criteria (Ives and Olson, 1984). The level of satisfaction felt after using the system is the achievement of what is perceived by the users through an experience with the system at any given time and based on the resulting value. This value is described as a belief regarding the interests of the users. User satisfaction is an overall evaluation of the user experience in the use of information systems and the potential impact of information systems. Thus, software satisfaction, efficiency, effectiveness, and information satisfaction become the measurement criteria of satisfaction related with the use of e-learning systems (McGill and Klobas, 2005).

The systems used and perceived to provide satisfaction certainly give effect to the individual users of the system associated with behavior that is closely related to performance, such as improved performance. The effects are known as individual impacts, which refer to the effect of information on users' behavior. As shown by Mason (1978), the impact sequence starts from receiving the information, understanding the information, applying the information toward specific issues and decisions to change organizational behavior and performance results.

Furthermore, from the afore-presented description, as many as 16 hypotheses are formulated, including the significant effect of CSE on the quality of e-learning systems; the significant effect of CSE on the quality of e-learning information; the significant effect of CSE on the quality of e-learning; the significant effect of CSE on the use of e-learning systems; the significant effect of CSE on user satisfaction of e-learning systems; the significant effect of CSE on individual impacts; e-learning system quality significantly influences the quality of e-learning information systems; e-learning system quality significantly influences the use of e-learning systems; e-learning system quality significantly influences e-learning system user satisfaction; e-learning information system quality significantly influences the use of e-learning systems; e-learning information system quality significantly influences e-learning system user satisfaction; service quality of e-learning system significantly influences the use of e-learning systems; service quality of e-learning system significantly influences e-learning system user satisfaction; the use of e-learning system significantly influences e-learning system user satisfaction; the use of e-learning systems significant influences individual impacts; and e-learning system user satisfaction significantly influences individual impacts.

2. Research Method

This study was designed as survey under confirmatory research. The population of the study consisted of 144.686 students from 8 private universities in Kopertis III Jakarta. Samples consisted of 178 students, and were taken using the Slovin formula followed by the proportional random sampling technique. Methods of data analysis used were descriptive and inferential statistics employing Generalized Structural Component Analysis (GSCA). This study used seven variables, namely CSE, system quality, information quality, service quality, user satisfaction, e-learning system usage, and individual impact. Descriptive statistical analysis and tests of validity

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and reliability were performed using SPSS 21 software, while inferential statistical analysis was performed using GSCA employing gesca software. The analyses were used to test the research hypotheses that had been established by using sample data obtained.

3. Result and Discussion

The results of the hypotheses testing showed that 13 of the 16 hypotheses had a significant effect and the remaining 3 hypotheses resulted in a non-significant effect. Test results using the Generalized Structured Component Analysis (GSCA) employing gesca software are as follows:

Table 1 Measurement Model

Model Fit	
FIT	0.529
AFIT	0.522
NPAR	69

Source: Data processed, 2013

FIT = 0.529: FIT shows the total variance of all the variables can be explained by the specific model. A good value of FIT ranges from 0 to 1, in which the bigger the FIT value, the greater the the possibility of the variance to be explained by the model (Ghozali, 2008). Table 1 shows that the model can account for all the existing variables as much as 0.529. This means that the diversity explained by the model is equal to 52.9%, thus the model can be considered quite good.

AFIT = 0.522: AFIT (Adjusted Fit) is similar to R-square adjusted analysis. AFIT can be used as model comparison. AFIT model with the greatest value can be selected from the better models. The value of AFIT seen in Table 1 is 0.522, meaning that the diversity explained by the model is equal to 52.2%. The test results on the relationship among variables can be seen in Table 2 as follows:

Table 2 The Results of Hypotheses Testing

Hypotheses	Relationship among Variables	Estimate	SE	CR	P-Value	Note
H1	computer self-efficacy > system quality	0.911	0.01	89.27*	0.000	Significant
H2	computer self-efficacy > information quality	0.489	0.101	4.82*	0.000	Significant
H3	computer self-efficacy > service quality	0.817	0.02	40.05*	0.000	Significant
H4	computer self-efficacy > usage	0.291	0.08	3.62*	0.000	Significant
H5	computer self-efficacy > user satisfaction	0.119	0.064	1.88	0.062	Non-Significant
H6	computer self-efficacy > individual impact	0.221	0.103	2.13*	0.035	Significant
H7	system quality > information quality	0.414	0.105	3.96*	0.000	Significant
H8	system quality > usage	0.254	0.06	4.25*	0.000	Significant
H9	system quality > user satisfaction	0.168	0.044	3.81*	0.000	Significant
H10	information quality > usage	0.286	0.041	6.98*	0.000	Significant
H11	information quality > user satisfaction	0.135	0.038	3.52*	0.001	Significant
H12	service quality > usage	0.207	0.034	6.17*	0.000	Significant
H13	service quality > user satisfaction	0.148	0.036	4.11*	0.000	Significant
H14	usage > user satisfaction	0.457	0.096	4.78*	0.000	Significant
H15	usage > individual impact	0.253	0.238	1.06	0.291	Non-Significant
H16	user satisfaction > individual impact	0.49	0.251	1.95	0.053	Non-Significant

CR* = significant at .05 level

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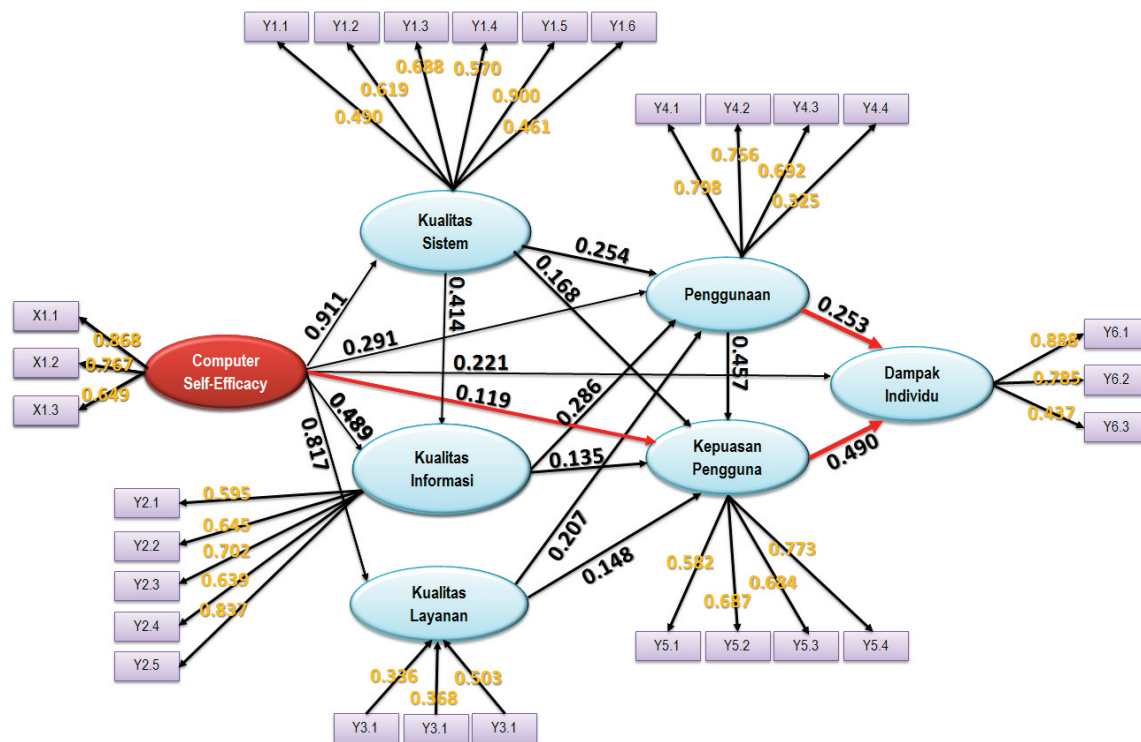These results can be illustrated on the research model as shown in Figure 1:

Figure 1. Reseach Model and Research Results

The interesting aspect of the research model was on the exogenous variable, that was only one variable, namely CSE. The variable represented the belief on TRA model that determined the attitude represented in the perception of the system, information and service quality. The results showed that CSE significantly influenced the quality of the system, the information, the service, and the usage, as well as the individual impact; the results support the findings by Chang et al. (2011), Park (2009), and Isik (2005). The results showed that CSE did not affect significantly to user satisfaction, and this result does not support the notion by Compeau and Higgins (1995) and Bandura (1986).

The high confidence of the students on the use of computers (CSE) did not go in accordance with their perceptions of the quality of system, information, and service provided by the e-learning system at Kopertis III Jakarta. Empirical data from these three variables tend to point to good direction. It shows the diversity in students' abilities. Users of e-learning system having high confidence and ability to operate the e-learning system tended to have high CSE, and these students would tend to choose a more difficult and challenging task compared to the students having lower CSE.

This result indicates that students were dissatisfied over the quality of the system, information and service of the e-learning system. In addition, the Learning Management System (LMS) used in the study of the e-learning system at Kopertis III Jakarta was based on open source, Moodle (Modular Object Oriented Dynamic Learning Environment). The system is not flawless, since it has unattractive look and is not user friendly, so users can easily get bored, and have low motivation and desire to use. Because the e-learning system had to be used and was mandatory, students were not provided with other options. Mandatory was the nature of the system. Thus, CSE significantly influences the use of e-learning system, which supports the idea by Chang et al., (2011).

The results indicating positive perception on the system quality significantly influences the information quality are suitable and consistent with the opinion by Volery and Lord (2000), Holsapple and Lee-Post (2006), Wang et al. (2007), and Gorla et al. (2010). The quality of the e-learning information system will increase when the e-learning system provides an easy-to-understand guide, presents materials that are in accordance with learning needs, supports the learning process, is easy to operate, is helpful to build more intensive communication between teachers and students, as well as offers easy access to features of the e-learning system. However, students' perceptions on the system and information quality on the e-learning system at Kopertis III Jakarta were still in good levels so some effort to incease them would still be needed—in the guide used, the presentation of learning materials, the learning process, the system to operate, the intensity of communication between teachers

and students, as well as the accessible of the features. Further, the results show that the perceived quality of the system significantly influences the usage and user satisfaction, and this echoes the findings by Davis et al. (1989), DeLone and McLean (1992), Chin and Todd (1995), Sedon and Kiew (1996), Shaberwal et al. (2006), Halawi et al. (2007), Hsieh and Wang (2007), Petter and McLean (2009), and Freeze et al. (2010). Although students' perceptions on the system and information quality on the e-learning system at Kopertis III Jakarta were still in good levels and some effort to incease them are still needed, the students are obliged to use the system because it is mandatory, and when they succeed in using the system, they feel satisfied.

The results indicating positive perceptions on the quality of information affect the usage and user satisfaction, are suitable and consistent with the opinion by DeLone and Mclean (2003), Istianingsih and Wijanto (2008), Lederer et al. (2000), Seddon (1997), Li (1997), Rai et al. (2002), Godhue and Thompson (1995), Halawi et al. (2007), Petter and McLean (2009), Freeze et al. (2010), and Saba (2012). Although the students' perceptions on the quality of information were not good, students were satisfied with the information obtained because there was no other choice ut to use the e-learning system provided by the institutions of Kopertis III Jakarta, as it is mandatory. Similarly, students' perceptions on the quality of service significantly influenced usage and user satisfaction, and are suitable and consistent with the opinion by Wang (2007), Wang and Liao, (2007), Kositanurit et al. (2006), Halawi et al. (2007), Petter and McLean (2009), DeLone and Mclean (2003). Although the quality of the service perceived by the student was still not good, when they used the system they felt satisfied with the service of the e-learning system. This is because the student felt that they had fulfilled their obligations as a student at the university.

The results show that the usage did not significantly affect individual impact, and this does not support the opinion by DeLone and McLean (1992, 2003), Gumaraes and Igbaria (1997), Igbaria and Tan (1997), Livari (2005), Doll and Torkzadeh (1988), Yuthas and Young (1998); yet, this supports the opinion by Almutairi and Subramanian (2005). These results indicate that the levels of usage of the e-learning system does not affect the levels of individual impact, as students at the pivate universities of Kopertis III Jakarta were reluctant to use the e-learning system. The students used the system merely to meet the requirement of the online course activities (forums, quizzes, and assignments) as well as to meet the attendance as a necessary condition for them to take the tests. Most students still enjoyed and were more comfortable with conventional learning system (face to face). The reason was the communication factor in which they could interact directly with their teachers and other students.

The results showed that user satisfaction did not significantly affect individual impact, and this does not support the opinion by DeLone and McLean (1992), Livari (2005), Rai et al. (2002), McGill et al. (2003), McGill and Klobas (2005), Halawi et al. (2007), Abood et al. (2010), These results indicate that the levels of user satisfaction does not affect the levels of individual impact, as the use of the e-learning system at Kopertis III Jakarta was not for all subjects. A high level of CSE brought significant impacts on individuals, yet the use of e-learning system was on the contrary, in which the user satisfaction and the usage brought non-significant influence due to the mediocre quality of the system, and information system and e-learning service which were web-based. So far, the private universities belonging to Kopertis III Jakarta use blended learning in the implementation of e-learning system, which is a combination of face-to-face meetings and online meetings as many as 14 (fourteen) meetings in total per semester. MacDonald (2008) states that blended learning is usually associated with the addition of online media in the learning program, while at the same time retaining the face to face contact and other traditional approaches to support students. These conditions result in students to not feel the immediate impact felt when they learn using the web-based e-learning system.

The implications of the reseach results are that the implementation of web-based e-learning systems ensures the availability of system quality, information quality, complete and relevant services to meet the needs of the users, as to guarantee the usage and user satisfaction of web-based e-learning systems, and the reliability of the system. The use of low system quality will lead to low intention to use, so user satisfaction does not significantly affect individual behavior. Therefore, enjoyment and comfort in using online services must be taken into account by the private universities at Kopertis III Jakarta. To achive that goal, interesting display features of the system and user friendly web-based e-learning must be developed and improved.

4. Conclusion

a. High CSE of the students have a significant effect on the quality of the system, but the students' perceptions at Kopertis III Jakarta on the quality of web-based e-learning system show that the system quality tends to be good.

b. High CSE of the students have a significant effect on the quality of information, but the students' perceptions at Kopertis III Jakarta on the quality of the information released by the web-based e-learning system show that the information is still not good, and needs to be improved in term of completeness and relevance of the information.

c. High CSE of the students have a significant effect on the quality of service, but the students' perceptions at Kopertis III Jakarta on the quality of the service system of the web-based e-learning indicates that the service is not optimal.

d. High CSE of the students have a significant effect on the usage. Although the quality of the system and the information has been neither good nor optimal, the students still use it due to the mandatory nature of this system. In other words, they have no other choice but to use it.

e. High CSE of the students have non-significant effect on students' satisfaction when using the system. This is due to fact that the system, information, and service quality have not been properly and optimally managed at Kopertis III Jakarta.

f. High CSE of the students have a significant effect on individual impact. Students' capabilities in using computers through the magnitude, strength, and generalibility will bring impact on the individual user using the web-based e-learning system. The individual impact is low because of the quality of the system, information, and service that have not been properly and optimally managed.

g. The perceptions of the students which tend to be good on the system quality significantly influence students' perceptions on the quality of the information from the web-based e-learning system at Kopertis III Jakarta.

h. The perceptions of students which tend to be good on the system quality significantly influence the usage of the web-based e-learning system at Kopertis III Jakarta.

i. The perceptions of students which tend to be good on the system quality significantly influence the user satisfaction of the web-based e-learning system at Kopertis III Jakarta.

j. The perceptions of students which tend to be good on the information quality significantly influence the usage of the web-based e-learning system at Kopertis III Jakarta.

k. The perceptions of students which tend to be good on the information quality significantly influence the user satisfaction of the web-based e-learning system at Kopertis III Jakarta.

l. The perceptions of students on service quality which tend to be not optimal significantly influence the usage of the web-based e-learning system at Kopertis III Jakarta.

m. The perceptions of students on service quality which tend to be not optimal significantly influence the user satisfaction of the web-based e-learning system at Kopertis III Jakarta.

n. The use of the web-based e-learning system at Kopertis III Jakarta significantly influences the user satisfaction when the students use the web-based e-learning system.

o. The use of the web-based e-learning system at Kopertis III Jakarta does not significantly influence the individual impact.

p. The user satisfaction of the web-based e-learning system at Kopertis III Jakarta does not significantly influence the individual impact.

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