



Impact of Technology Facility, System Quality and Information Quality on Student Learning Satisfaction

Nani Cahyani^a, Marwan Effendy^b, Gotfridus Goris Seran^{c*}, TB Dicky Faldy^d

^a*Department of Management, Faculty of Business, Institute of Business and Informatics Kesatuan, Jl. Rangka Gading No. 1, Kecamatan Bogor Tengah, Kota Bogor, Jawa Barat, Indonesia 16123*

^b*Department of Information System, Faculty of Informatics and Tourism, Institute of Business and Informatics Kesatuan, Jl. Rangka Gading No. 1, Kecamatan Bogor Tengah, Kota Bogor, Jawa Barat, Indonesia 16123*

^c*Department of Public Administration, Faculty of Social, Political and Computer Sciences, Djuanda University, Jl. Tol Ciawi No. 1, Kotak Pos 35 Ciawi, Bogor, Indonesia 16720*

^d*Marketing Management of Vocational Program, Institute of Business and Informatics Kesatuan, Jl. Rangka Gading No. 1, Kecamatan Bogor Tengah, Kota Bogor, Jawa Barat, Indonesia 16123*

^a*Email: nanicahyani@ibik.ac.id;* ^b*Email: marwaneffendy234@ibik.ac.id;* ^c*Email: ggseran@unida.ac.id;*

^d*Email: tubagusdicky@ibik.ac.id*

Abstract

The emergence and spread of COVID-19 pandemic have impacted on the learning of students by applying e-learning through the usage of information technology. The aim of this research is to partially and simultaneously analyze the impact of technology facility, system quality and information quality on student learning satisfaction. Method of this research correlationally and statistically analyzes data to test hypothesis. Results of this research conclude three findings. *Firstly*, in partial test, technology facility and information quality positively and significantly impact on student learning satisfaction, whereas system quality does not positively and significantly impact on student learning satisfaction. *Secondly*, in simultaneous test, technology facility, system quality and information quality positively and significantly impact on student learning satisfaction. *Thirdly*, the contribution of technology facility, system quality and information quality to determine student learning satisfaction is 44.5% categorized as moderate determination coefficient, whereas 55.5% of student learning satisfaction is impacted by other variables.

Keywords: e-learning; information quality; student learning satisfaction; system quality; technology facility.

* Corresponding author.

1. Introduction

The emergence and spread of Coronavirus Disease 2019 (COVID-19) pandemic since 2020 have impacted on the learning of educational institutions, including higher educational institutions such as universities. To anticipate the spread of COVID-19 pandemic, the Government of the Republic of Indonesia has taken a policy to implement e-learning in all levels of education, both elementary and secondary schools, and universities. The condition has become a challenge for the universities to implement an e-learning concept named as Learning from Home (LfH). LfH has conducted to support the policy of the Government in cutting the spread rate of COVID-19 pandemic.

E-learning of LfH for the universities has been widely implemented through the Learning Management System (LMS) platform. Due to the COVID-19 pandemic, almost every country globally switched to online environments for teaching and learning activities. As a result of the transition, LMS as a teaching and learning platform has been fully utilized. Various LMS features also have facilitated content management, learning activities, assessment and sharing of teaching materials, collaboration and communication between instructors and students. The usage of technology, digitalisation and e-learning has changed the education style of the twenty-first century and modified the role of traditional learning to be more efficient and appropriate for the new era [12, 23, 25].

Since stipulating the LfH policy by the Government, the e-learning method has considerably switched the conventional learning. In this case, the internet technology plays an important role in the learning process of universities. It also can be categorized as the main media used by the students to look for the literatures and informations in improving their learning process, both looking for the additional learning materials, adding the vision, knowledge and references, doing the learning tasks, and supporting the literatures for writing the undergraduate thesis. The internet technology developing rapidly has entered into the digital lives including the educational fields. In 2020, about 64% people, namely 175.4 million people from the total amount of 272.1 million people of Indonesia, have used internet as shown in Table 1.

Table 1: Data of Indonesia's Internet Users (2020)

Internet Users	Amount (Million)	Percentage (%)
Unique Mobile Users	338.2	124
Internet Users	175.4	64
Active Social Media Users	160	59

Source: We Are Social (2020)

Large amount of internet users in Indonesia has impacted on the usage of internet information technology, namely the society's facility to obtain information and at once the usage as media of e-learning particularly in COVID-19 pandemic. Moreover, the LfH policy has impacted on the usage of e-learning in universities. In e-

learning, the universities have used the internet networks to bring out all kinds of learning interaction. As an impact of the LfH policy in COVID-19 pandemic, Institute of Business and Informatics (IBI) Kesatuan in Bogor City, West Java Province, Indonesia, has implemented the e-learning through the usage of information technology. By using the information technology, IBI Kesatuan has well provided the e-learning services for 2603 students as shown in Table 2.

Table 2: Data of IBI Kesatuan's Students (2021)

No.	Department	Amount of Student
1	Management	1040
2	Accounting (S1)	708
3	Entrepreneurship	49
4	Information System	93
5	Information Technology	84
6	Tourism	98
7	Accounting (D3)	237
8	Banking and Finance	141
9	Marketing Management	153
Total Amount		2603

Source: BAAK IBI Kesatuan (2021)

In supporting the policy of the Government regarding the overcoming of COVID-19 spread, IBI Kesatuan has implemented all services of e-learning for the students. In this case, the information technology management has related closely to providing e-learning services. In order to have a good management service, IBI Kesatuan needs a right strategy in managing and developing all services of information technology management, including to fastly obtain e-learning services for the students. Therefore, a good information technology management in e-learning operations is needed to achieve high student learning satisfaction in using e-learning. Based on the background, this research aims to partially and simultaneously analyze the impact of technology facility, system quality and information quality on student learning satisfaction.

2. Theoretical Framework

The user of the learning information technology is student, so that the user satisfaction is the student satisfaction [26]. The user satisfaction is impacted by the technology facility. Moreover, the system quality and the information quality partially and simultaneously impact on the user satisfaction [7]. The technology facility, system quality and information quality are based on the user perception. The user, namely student, perceives that the technology facility, system quality and information quality impact on the student learning satisfaction. This research constructs a theoretical framework that indicates the impact of technology facility, system quality and information quality on student learning satisfaction.

2.1 Technology Facility

Technology facility is used to measure the quality of information technology management system. Technology facility is tool and equipment used for systematic application of knowledge to enhance classroom teaching and learning. It is used to transmit, process, receive, store and retrieve information. Information technology is output of human engineering on process of sending information from sender to receiver in order to send information quickly and broadly [14, 21]. Technology facility refers to the technology used to facilitate the data processing in order to afford the qualified information [11, 15, 16, 20]. It characterizes: (a) easy to understand, (b) easy to operate, (c) easy to do task, and (d) easy to improve skill.

2.2 System Quality

System quality is used to measure the quality of information technology management system. System quality constitutes the desirable characteristics of the technology itself. It focuses on usability aspects such as ease of use, efficiency, navigation, and reliability. System quality focuses on the technical characteristics of information system and the corresponding ease of using the information system [3, 7, 18]. System quality, or site quality, refers to the quality associated with site design and usability, for example, appearance, ease of use and navigation, and the image conveyed to the user [4]. The indicators of system quality include: (a) consistency of representation: the degree of similarity and compatibility of information representation format, (b) easy to use, (c) clarity of interaction, (d) easy to read, (e) information arrangement, (f) speed to access, (g) layout of website [22].

2.3 Information Quality

Information quality is used to measure the quality of information technology management system. Information quality refers to the desirable characteristics of information as the output of an information system [3, 7]. Information quality as an output of an information system is one of major components explaining user satisfaction [8]. Information quality refers to the quality of site content: the suitability of information for the user's purposes [4]. Information quality indicates the integrated combination of information system elements affording the qualified information [1, 4]. It includes measures such as: (a) accessibility: the degree to which information is available, easily obtainable, or quickly retrievable when needed), (b) accuracy: the degree to which information represents a realworld state, (c) ease of manipulation: the applicability of information to different tasks, (d) interpretability: the appropriateness and clarity of information language and symbols to the user, and (e) ease of understanding: the degree of comprehension of information.

2.4 Student Learning Satisfaction

The user of information technology in learning is student, so that the user satisfaction is the student satisfaction [26]. One of most important aspects to be considered in implementing e-learning in universities is student satisfaction as users of e-learning. Student satisfaction is one of important indicators of the successful implementation of e-learning, so this is an important aspect that must be continuously improved [2]. Student learning satisfaction refers to the compatibility experienced between expectations and realities of e-learning

process. The usage of information technology impacts on the student learning satisfaction. The indicators to measure the student learning satisfaction through the usage of information technology are: (a) providing learning service accurately, (b) helping student to complete task on time, (c) encouraging student to use information system in learning, and (d) encouraging student to recommend information technology usage to other users.

2.5 Framework and Operational Definition

The theoretical framework that states the impact of technology facility, system quality and information quality on student learning satisfaction is shown in Figure 1.

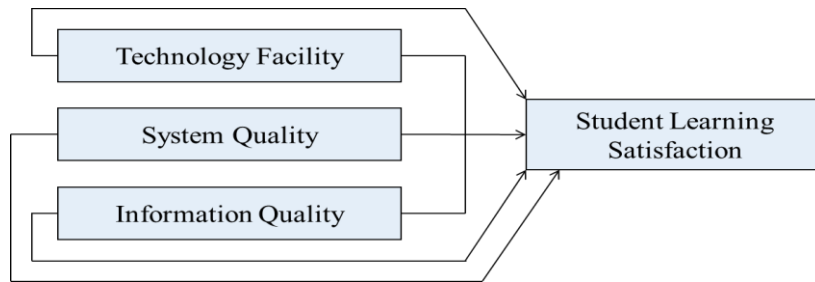


Figure 1: Theoretical Framework of Technology Facility, System Quality,

Information Quality, and Student Learning Satisfaction

Variables of technology facility, system quality, information quality, and student learning satisfaction are operationally defined in Table 2.

Table 2: Operational Definition of Technology Facility, System Quality, Information Quality, and Student Learning Satisfaction

Variable	Definition	Indicator
Technology Facility	the technology used to facilitate the data processing in order to afford the qualified information	(a) easy to understand, (b) easy to operate, (c) easy to do task, (d) easy to improve skill
System Quality	the desirable characteristics of the technology itself focusing on the technical aspects of information system and the corresponding ease of using the information system	(a) consistency of representation, (b) easy to use, (c) clarity of interaction, (d) easy to read, (e) information arrangement, (f) speed to access, (g) layout of website
Information Quality	the integrated combination of information system elements affording the qualified information	(a) accessibility, (b) accuracy, (c) ease of manipulation, (d) interpretability, (e) ease of understanding
Student Learning Satisfaction	the compatibility experienced between expectations and realities of e-learning process	(a) providing learning service accurately, (b) helping student to complete task on time, (c) encouraging student to use information system in learning, (d) encouraging student to recommend information technology usage to other users.

3. Method

This research constructs a framework that states the impact of technology facility (X_1), system quality (X_2) and information quality (X_3) on student learning satisfaction (Y) and formulates hypothesis as follows as:

- a. H_0 : technology facility (X_1) positively and significantly does not impact on student learning satisfaction (Y). H_1 : technology facility (X_1) positively and significantly impacts on student learning satisfaction (Y).
- b. H_0 : system quality (X_2) positively and significantly does not impact on student learning satisfaction (Y). H_1 : system quality (X_2) positively and significantly impacts on student learning satisfaction (Y).
- c. H_0 : information quality (X_3) positively and significantly does not impact on student learning satisfaction (Y). H_1 : information quality (X_3) positively and significantly impacts on student learning satisfaction (Y).
- d. H_0 : technology facility (X_1), system quality (X_2) and information quality (X_3) positively and significantly do not impact on student learning satisfaction (Y). H_1 : technology facility (X_1), system quality (X_2) and information quality (X_3) positively and significantly impact on student learning satisfaction (Y).

This research was conducted during five months (from April to August, 2021) to the students of Institute of Business and Informatics Kesatuan in Bogor City, West Java Province, Indonesia, that consist of 180 respondents of students distributed in Semester 2 (81 students), Semester 4 (60 students) and Semester 6 (39 students). Primary data stem from Likert's scale-based questionnaires regarding technology facility, system quality, information quality, and student learning satisfaction. Data of questionnaires are analyzed by using multiple regression, multiple correlation, determination coefficient, t_{test} , and F_{test} [5].

Firstly, multiple regression [5, 9, 10] is used to predict the value of student learning satisfaction based on the value of technology facility, system quality and information quality. *Secondly*, multiple correlation [5, 27] is used to know the correlation of technology facility, system quality and information quality to student learning satisfaction. The value of correlation coefficient is interpreted on the following category: coefficient interval 0.00 – 0.19 categorized as lowest, 0.20 – 0.39 (low), 0.40 – 0.59 (moderate), 0.60 – 0.79 (strong), 0.80 – 1.00 (strongest) [5, 27]. *Thirdly*, determination coefficient is used to both partially and simultaneously know the contribution of technology facility, system quality and information quality on student learning satisfaction. To know the contribution, the value of determination coefficient is interpreted on the following category: coefficient interval 0% – 20% categorized as lowest, 21% – 40% (low), 41% – 60% (moderate), 61% – 80% (high), 81% – 100% (highest) [5, 24, 27].

The hypothesis of this research is partially tested on t_{test} and simultaneously on F_{test} [5, 9, 10]. *Firstly*, t_{test} is used to test the partial impact of technology facility (X_1), system quality (X_2) and information quality (X_3) on student learning satisfaction (Y). The criteria of significance test (α) = 0.05 (2-tailed) based on the rule of drawing

conclusion are: (a) if $t_{\text{test}} < t_{\text{table}}$, H_0 is accepted, and (b) if $t_{\text{test}} > t_{\text{table}}$, H_0 is rejected. *Secondly*, F_{test} is used to test the simultaneous impact of technology facility (X_1), system quality (X_2) and information quality (X_3) on student learning satisfaction (Y). The criteria of significance test (α) = 0.05 (2-tailed) based on the rule of drawing conclusion are: (a) if $F_{\text{test}} < F_{\text{table}}$, H_0 is accepted, and (b) if $F_{\text{test}} > F_{\text{table}}$, H_0 is rejected.

4. Results and Discussion

4.1 Results

Results of this research regarding the impact of technology facility, system quality and information quality on student learning satisfaction of Institute of Business and Informatics Kesatuan in Bogor City, West Java Province, Indonesia are analyzed by using multiple regression, multiple correlation, determination coefficient, t_{test} , and F_{test} .

4.1.1 Result of Multiple Regression

The value of student learning satisfaction based on the value of technology facility, system quality and information quality is predicted by the multiple regression as shown in Table 3.

Table 3: Multiple Regression

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Coefficients		
1	(Constant)	-.407	1.869		-.218	.828
	Technology Facility	.406	.114	.234	3.558	.000
	System Quality	.202	.116	.117	1.739	.084
	Information Quality	.517	.078	.450	6.640	.000

a. Dependent Variable: Student Learning Satisfaction

Multiple regression in Table 3 indicates that, *firstly*, constant value -0.407 indicates that student learning satisfaction (Y) is not impacted yet by technology facility (X_1), system quality (X_2) and information quality (X_3). *Secondly*, value of regression coefficient X_1 0.406 indicates that technology facility (X_1) positively impacts on student learning satisfaction (Y). It means that if other variables are held constant (X_2 and X_3 are assumed 0), increase of technology facility (X_1) by one unit will impact on student learning satisfaction (Y) 0.406. *Thirdly*, value of regression coefficient X_2 0.202 indicates that system quality (X_2) positively impacts on student learning satisfaction (Y). It means that if other variables are held constant (X_1 and X_3 are assumed 0), increase of system quality (X_2) by one unit will impact on student learning satisfaction (Y) 0.202. *Fourthly*, value of regression coefficient X_3 0.517 indicates that information quality (X_3) positively impacts on student learning satisfaction (Y). It means that if other variables are held constant (X_1 and X_2 are assumed 0), increase of information quality

(X_3) by one unit will impact on student learning satisfaction (Y) 0.517. *Fifthly*, value of regression coefficients X_1 0.406 + X_2 0.202 + X_3 0.517 (1.125) indicates that technology facility (X_1), system quality (X_2) and information quality (X_3) positively simultaneously impact on student learning satisfaction (Y). It means that if other variables are held constant, increase of technology facility (X_1), system quality (X_2) and information quality (X_3) by one unit will simultaneously impact on student learning satisfaction (Y) 1.125.

4.1.2 Result of Multiple Correlation

The multiple correlation is used to analyze the relation of technology facility, system quality and information quality to student learning satisfaction as shown in Table 4.

Table 4: Multiple Correlation

		Technology Facility	System Quality	Information Quality	Student Learning Satisfaction
Technology Facility	Pearson Correlation	1	.450**	.457**	.493**
	Sig. (2-tailed)		.000	.000	.000
	N	180	180	180	180
System Quality	Pearson Correlation	.450**	1	.497**	.447**
	Sig. (2-tailed)	.000		.000	.000
	N	180	180	180	180
Information Quality	Pearson Correlation	.457**	.497**	1	.616**
	Sig. (2-tailed)	.000	.000		.000
	N	180	180	180	180
Student Learning Satisfaction	Pearson Correlation	.493**	.447**	.616**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	180	180	180	180

**Correlation is significant at the 0.01 level (2-tailed).

Multiple correlation in Table 4 indicates that, *firstly*, technology facility to student learning satisfaction has positive, significant and moderate correlation (having value of correlation coefficient 0.493). *Secondly*, system quality to student learning satisfaction has positive, significant and moderate correlation (having value of correlation coefficient 0.447). *Thirdly*, information quality to student learning satisfaction has positive, significant and strong correlation (having value of correlation coefficient 0.616).

4.1.3 Result of Determination Coefficient

The value of determination coefficient indicates the contribution of technology facility, system quality and information quality to student learning satisfaction as shown in Table 5.

Table 5: Determination Coefficient

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.667 ^a	.445	.436	1.39962

a. Predictors: (Constant), Technology Facility, System Quality, Information Quality

Multiple correlation of all variables of this research (technology facility, system quality, information quality, and student learning satisfaction) as shown in Table 5 has strong correlation (value of multiple correlation coefficient 0.667). Value of R_{square} 0.445 indicates that the contribution of technology facility (X_1), system quality (X_2) and information quality (X_3) to determine student learning satisfaction (Y) is 44.5% categorized as moderate determination coefficient, whereas 55.5% of student learning satisfaction is impacted by other variables.

4.1.4 Result of t-Test

The t_{test} is conducted to partially know the impact of technology facility (X_1) on student learning satisfaction (Y), the impact of system quality (X_2) on student learning satisfaction (Y), and the impact of information quality (X_3) on student learning satisfaction (Y) as shown in Table 6.

Table 6: t-Test (Partial Test)

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-.407	1.869		-.218	.828
	Technology Facility	.406	.114	.234	3.558	.000
	System Quality	.202	.116	.117	1.739	.084
	Information Quality	.517	.078	.450	6.640	.000

a. Dependent Variable: Student Learning Satisfaction

The t_{test} in Table 6 indicates that, *firstly*, the impact of technology facility (X_1) on student learning satisfaction (Y) obtains t_{test} 3.558 and t_{table} ($df=n-k-1$ or $df=180-3-1=176$, $\alpha/2=5\%$) = 1.974, and value of significance 0.000. Result of this test indicates $t_{\text{test}} > t_{\text{table}}$ and significance < 0.05, meaning that there is a positive and significant impact of technology facility (X_1) on student learning satisfaction (Y). Therefore, H_0 is rejected and H_1 is accepted. *Secondly*, the impact of system quality (X_2) on student learning satisfaction (Y) obtains t_{test} 1.739 and t_{table} ($df=n-k-1$ or $df=180-3-1=176$, $\alpha/2=5\%$) = 1.974, and value of significance 0.084. Result of this test indicates $t_{\text{test}} < t_{\text{table}}$ and significance > 0.05, meaning that there is not a positive and significant impact of system quality (X_2) on student learning satisfaction (Y). Therefore, H_0 is accepted and H_1 is rejected. *Thirdly*, the impact of information quality (X_3) on student learning satisfaction (Y) obtains t_{test} 6.640 and t_{table} ($df=n-k-1$ or

$df=180-3-1=176$, $\alpha/2=5\%$) = 1.974, and value of significance 0.000. Result of this test indicates $t_{test} > t_{table}$ and significance < 0.05 , meaning that there is a positive and significant impact of information quality (X_3) on student learning satisfaction (Y). Therefore, H_0 is rejected and H_1 is accepted.

4.1.5 Result of F-Test

The F_{test} is conducted to simultaneously know the impact of technology facility (X_1), system quality (X_2) and information quality (X_3) on student learning satisfaction (Y) as shown in Table 7.

Table 7: F-Test (Simultaneous Test)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	276.887	3	92.296	47.115	.000 ^b
	Residual	344.775	176	1.959		
	Total	621.661	179			

a. Dependent Variable: Student Learning Satisfaction

b. Predictors: (Constant), Technology Facility, System Quality, Information Quality

The F_{test} in Table 7 indicates that the impact of technology facility (X_1), system quality (X_2) and information quality (X_3) on student learning satisfaction (Y) obtains F_{test} 47.115 and F_{tabel} ($df1=3$, $df2=176$, $\alpha=5\%$) = 2.660, and value of significance 0.000. Result of this test indicates $F_{test} > F_{table}$ and significance < 0.05 , meaning that there is a simultaneous positive and significant impact of technology facility (X_1), system quality (X_2) and information quality (X_3) on student learning satisfaction (Y). Therefore, H_0 is rejected and H_1 is accepted.

4.2 Discussion

4.2.1 Impact of Technology Facility on Student Learning Satisfaction

This research partially proves the acceptance of hypothesis stating that technology facility (X_1) positively and significantly impacts on student learning satisfaction (Y). It is indicated on the value of t_{test} 3.558 $> t_{table}$ 1.974 and value of significance 0.000 < 0.05 . Value of regression coefficient X_1 0.406 indicates that technology facility (X_1) positively impacts on student learning satisfaction (Y). It means that if other variables are held constant (in this case, system quality X_2 and information quality X_3 are assumed 0), increase of technology facility (X_1) by one unit will impact on student learning satisfaction (Y) 0.406. Furthermore, technology facility to student learning satisfaction has positive, significant and moderate correlation (having value of correlation coefficient 0.493). Another research reveals that the readiness of information technology facility has a significant effect on student online learning satisfaction [17, 19].

4.2.2 Impact of System Quality on Student Learning Satisfaction

This research partially proves the rejection of hypothesis stating that system quality (X_2) positively and significantly impacts on student learning satisfaction (Y). It is indicated on the value of $t_{test} 1.739 < t_{tabel} 1.974$ and value of significance $0.084 > 0.05$. Nevertheless, value of regression coefficient X_2 0.202 indicates that system quality (X_2) positively impacts on student learning satisfaction (Y). It means that if other variables are held constant (in this case, technology facility X_1 and information quality X_3 are assumed 0), increase of system quality (X_2) by one unit will impact on student learning satisfaction (Y) 0.202. Furthermore, system quality to student learning satisfaction has positive, significant and moderate correlation (having value of correlation coefficient 0.447). Another research indicates the significant effect of information system quality on student learning satisfaction [13, 19].

4.2.3 Impact of Information Quality on Student Learning Satisfaction

This research partially proves the acceptance of hypothesis stating that information quality (X_3) positively and significantly impacts on student learning satisfaction (Y). It is indicated on the value of $t_{test} 6.640 > t_{tabel} 1.974$ and value of significance $0.000 < 0.05$. Value of regression coefficient X_3 0.517 indicates that information quality (X_3) positively impacts on student learning satisfaction (Y). It means that if other variables are held constant (in this case, technology facility X_1 and system quality X_2 are assumed 0), increase of information quality (X_3) by one unit will impact on student learning satisfaction (Y) 0.517. Furthermore, information quality to student learning satisfaction has positive, significant and strong correlation (having value of correlation coefficient 0.616). Another research reveals the significant effect of information quality on student satisfaction in online learning [19].

4.2.4 Impact of Technology Facility, System Quality and Information Quality on Student Learning Satisfaction

This research simultaneously proves the acceptance of hypothesis stating that technology facility (X_1), system quality (X_2) and information quality (X_3) positively and significantly impact on student learning satisfaction (Y). It is indicated on the value of $F_{test} 47.115 > F_{table} 2.660$ and value of significance $0.000 < 0.05$. Value of regression coefficients X_1 0.406 + X_2 0.202 + X_3 0.517 (1.125) indicates that technology facility (X_1), system quality (X_2) and information quality (X_3) positively simultaneously impact on student learning satisfaction (Y). It means that if other variables are held constant, increase of technology facility (X_1), system quality (X_2) and information quality (X_3) by one unit will simultaneously impact on student learning satisfaction (Y) 1.125. Multiple correlation of all variables of this research (technology facility, system quality, information quality, and student learning satisfaction) has strong correlation (value of multiple correlation coefficient 0.667). Value of R_{square} 0.445 indicates that the contribution of technology facility (X_1), system quality (X_2) and information quality (X_3) to determine student learning satisfaction (Y) is 44.5% categorized as moderate determination coefficient, whereas 55.5% of student learning satisfaction is impacted by other variables. This research empirically confirms the result of previous research that the drivers of student perceived satisfaction are information quality, system quality, and use of system. Information quality, system quality, and use of system are success determinants for e-learning system [6]. Another research reveals the significant effects of system quality, information quality, and use of system, namely technology facility, on student satisfaction in online

learning [19].

5. Conclusion

This research generally indicates the impact of technology facility, system quality and information quality on student learning satisfaction. *Firstly*, in partial test, technology facility positively and significantly impacts on student learning satisfaction (having value of regression coefficient 0.406 and value of significance 0.000). Furthermore, information quality positively and significantly impacts on student learning satisfaction (having value of regression coefficient 0.517 and value of significance 0.000). Meanwhile, system quality does not positively and significantly impact on student learning satisfaction (having value of regression coefficient 0.202 and value of significance 0.084). *Secondly*, in simultaneous test, technology facility, system quality and information quality positively and significantly impact on student learning satisfaction (having more value of F_{test} 47.115 than F_{table} 2.660 and value of significance 0.000). It means that the more technology facility, system quality and information quality are well done, the higher student learning satisfaction increases. *Thirdly*, the contribution of technology facility, system quality and information quality to determine student learning satisfaction is 44.5% categorized as moderate determination coefficient, whereas 55.5% of student learning satisfaction is impacted by other variables.

6. Recommendation

Based on the conclusions, this research recommends two suggestions. *Firstly*, this research recommends for Institute of Business and Informatics Kesatuan to intensively and continually improve the information technology management based on technology facility, system quality and information quality as important variables that impact on student learning satisfaction. *Secondly*, this research recommends for the next research to particularly retest the impact of system quality on student learning satisfaction, because result of this research indicates that system quality does not positively and significantly impact on student learning satisfaction. Furthermore, the next research can focus on identifying other variables of information technology management and testing their impacts on student learning satisfaction, because result of this research indicates the most impacts of student learning satisfaction stemming from other variables.

Acknowledgement

The researchers would like to express deep gratitude to all civitas academica of Institute of Business and Informatics Kesatuan that fluently supported the completion of this field work research. The researchers would also thank to the Head of Directorate of Research and Community Service at Institute of Business and Informatics Kesatuan that facilitated the funding and the implementation of this field work research.

References

- [1] Al-Hakim, Latif. Information Quality Management: Theory and Applications. Hershey PA, USA: Idea Group Publishing, 2007.

- [2] Almaiah, M. A., Al-Khasawneh, A., & Althunibat, A. (2020). Exploring the Critical Challenges and Factors Influencing the E-learning System Usage during COVID-19 Pandemic. *Education and Information Technologies*, 25(6), 5261-5280. <https://doi.org/10.1007/s10639-020-10219-y>.
- [3] Al-Mamary, Yaser Hasan; Shamsuddin, Alina & Aziati, Nor. (2014). The Relationship between System Quality, Information Quality, and Organizational Performance. *International Journal of Knowledge and Research in Management & E-Commerce*, 4(3), 7-10.
- [4] Barnes, Stuart J. & Vidgen, Richard T. (2002). An Integrative Approach to the Assessment of E-Commerce Quality. *Journal of Electronic Commerce Research*, 3(3), 114-127. <http://www.jecr.org/node/271>.
- [5] Cahyani, Nani; Effendy, Marwan & Seran, Gotfridus Goris. (2021). Influence of Advertisement and Selling Promotion on Buying Decision. *International Journal of Sciences: Basic and Applied Research (IJSBAR)*, 60(5), 14-25. <https://gssrr.org/index.php/JournalOfBasicAndApplied/article/view/13584>.
- [6] Cidral, Wilmar Audye; Oliveira, Tiago; Di Felice, Massimo & Aparicio, Manuela. (2018). E-learning Success Determinants: Brazilian Empirical Study. *Computers & Education*, 122, 273-290. <https://doi.org/10.1016/j.compedu.2017.12.001>.
- [7] DeLone, W. H. & McLean, E. R. (1992). Information System Success: The Quest for the Dependent Variable. *Information Systems Research*, 3, 60-95. <http://dx.doi.org/10.1287/isre.3.1.60>.
- [8] Gable, Guy G.; Sedera, Darshana & Chan, Taizan. (2008). Re-conceptualizing Information System Success: The IS-Impact Measurement Model. *Journal of the Association for Information Systems*, 9(7), 377-408. DOI: 10.17705/1jais.00164. <https://aisel.aisnet.org/jais/vol9/iss7/18>.
- [9] Ghozali, Imam. *Aplikasi Analisis Multivariative dengan Program IBM SPSS 21 Update PLS Regresi*. Semarang: Badan Penerbit Universitas Diponegoro, 2013.
- [10] Hair, Joseph F.; Black, Bill; Black, William C.; Babin, Barry J. & Anderson, Rolph E. *Multivariative Data Analysis: A Global Perspective*. Global Edition. 7th Edition. Harlow, England: Pearson Education Limited, 2010.
- [11] Harimurti, Agung; Djunaedi, Achmad & Kumorotomo, Wahyudi. (2015). Model Manajemen Informasi Untuk Mewujudkan Konsep Connected Government Di Pemda DIY. *Jurnal Penelitian dan Pengembangan Komunikasi dan Informatika*, 6(1), 17-34.
- [12] Heo, J. & Han, S. (2021). The Mediating Effect of Literacy of LMS between Self-Evaluation Online Teaching Effectiveness and Self-Directed Learning Readiness. *Education and Information Technologies*, 26(5), 6097-6108. <https://doi.org/10.1007/s10639-021-10590-4>.

- [13] Indriani, Mirna & Adryan, Reza. (2009). Kualitas Sistem Informasi dan Kepuasan Pengguna Sistem Informasi Perguruan Tinggi Universitas Syiah Kuala. *Jurnal Telaah & Riset Akuntansi*, 2(1), 79-92. <http://jurnal.unsyiah.ac.id/TRA/article/view/316>.
- [14] Ishak. (2008). *Pengelolaan Perpustakaan Berbasis Teknologi Informasi*. Pustaka: Jurnal Studi Perpustakaan dan Informasi, 4(2), 87-93.
- [15] Jogiyanto, HM. *Sistem Teknologi Informasi, Pendekatan Terintegrasi: Konsep Dasar, Teknologi, Aplikasi, Pengembangan dan Pengelolaan*. Edisi II. Yogyakarta: CV. Andi Offset, 2005.
- [16] Jogiyanto, HM. *Sistem Informasi Keperilakuan*. Yogyakarta: CV. Andi Offset, 2007.
- [17] Kumar, S. Pavan. (2021). Impact of Online Learning Readiness on Students Satisfaction in Higher Educational Institutions. *Journal of Engineering Education Transformations*, 34(Special Issue), 64-70. <https://doi.org/10.16920/jeet/2021/v34i0/157107>.
- [18] Laumer, Sven; Maier, Christian & Weitzel, Tim. (2017). Information Quality, User Satisfaction, and the Manifestation of Workarounds: A Qualitative and Quantitative Study of Enterprise Content Management System Users. *European Journal of Information Systems*, 26(4), 333-360. <https://doi.org/10.1057/s41303-016-0029-7>.
- [19] Machado-Da-Silva, Fabio Nazareno; Meirelles, Fernando De Souza; Filenga, Douglas & Filho, Marino Brugnolo. (2014). Student Satisfaction Process in Virtual Learning System: Considerations Based in Information and Service Quality from Brazil's Experience. *Turkish Online Journal of Distance Education*, 15(3), 122-142. <https://doi.org/10.17718/tojde.52605>.
- [20] Martin, E. Wainright, (Editor). *Managing Information Technology: What Managers Need to Know*. 3rd Edition. New Jersey: Pearson Education International, 1999.
- [21] Naiboho, Rahmat Sulaeman. (2017). Peranan dan Perencanaan Teknologi Informasi Dalam Perusahaan. *Jurnal Warta*, 52, <https://doi.org/10.46576/wdw.v0i52.253>.
- [22] Palmer, Jonathan W. (2002). Web Site Usability, Design, and Performance Metrics. *Information System Research*, 13(2), 151-167. DOI: 10.1287/isre.13.2.151.88.
- [23] Rabiman, R., Nurtanto, M. & Kholifah, N. (2020). Design and Development e-Learning System by Learning Management System (LMS) in Vocational Education. *Online Submission*, 9(1), 1059-1063.
- [24] Riduwan. *Skala Pengukuran Variabel-variabel Penelitian*. Cetakan ke-12. Bandung: Penerbit Alfabeta, 2018.
- [25] Sambo, U., Bello, M. A. & Sule, B. (2021). Impacts of COVID-19 on Policy of Tertiary Education in Nigeria: The Case of Professional Diploma in Education Students of Federal College of Education.

American Journal of Education and Learning, 6(1), 28-42. <https://doi.org/10.20448/804.6.1.28.42>.

[26] Seddon, P. B. & Kiew, M. Y. (1994). A Partial Test and Development of the DeLone and cLean Model of IS Success, in DeGross, J.I, Huff, S.L and Munro, M.C. Edition. Proceedings of the Fifteenth International Conference on Information System, Vancouver: Canada, pp. 99-110.

[27] Sugiyono. Metode Penelitian Kuantitatif, Kualitatif dan Kombinasi (Mixed Methods). Bandung: Penerbit Alfabeta, 2018.