Online Learning Interactions During The Level I Covid-19 Pandemic Community Activity Restriction: What Are The Important Determinants And Complaints?

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Abstract

Restrictions on social distancing during the Covid-19 pandemic, online-based learning is an important aspect to meet the right to learn, avoiding late graduation, continuing education, and getting a job. However, the readiness of students, teachers, and organizational support in online learning is also undergoing a critical transition in adapting to the development of information technology. Using a quantitative approach, this study aims to assess complaints and important determinants of online learning interactions during the implementation of the Covid-19 pandemic level I community activity restriction program in nursing higher education, Indonesia. This research is a descriptive research of correlation in design. The sample of this study was 1148 nursing students at Indonesian universities. Collecting data on organizational support, perceptions of online learning, and information technology skills using an online learning interaction evaluation tool that is distributed electronically to all nursing students in Indonesia. The results showed that organizational support, perception of online learning, and skills in using information technology significantly affected online learning interactions. Students' skills in using information technology make a greater contribution than others. Students complain about the instability of internet network connections during online learning. As the main recommendation, it is suggested to universities that universities make policies to improve skills in using information technology for both lecturers and students that will guide how universities and their stakeholders can serve online learning quality issues through training.

Keywords: students, nursing education, physical distancing, Covid-19.

INTRODUCTION

Covid-19 is an infectious disease caused by the SARS-CoV 2 (more popularly known as Coronavirus). It has global impacts on many countries with a rapid increase in cases. WHO (2020) reported 64,350,473 confirmed cases with 1,494,668 deaths worldwide. Its Case Fatality Rate (CFR) is 4.6%. The confirmed case spread reached at least 70.736 on 2 December 2020. 3.417 patients died of Covid-19, which rapidly spanned, indicating a CFR of 4.8% (Kemenkes RI, 2020). Massive Covid-19 case spread has also implied multiple aspects such as politics, economy, society, culture,

defense and security, employment, work habits (model), working hours reduction, layoffs, and public welfare in Indonesia (Kassegn & Endris, 2021; Grundy-Warr & Lin, 2020; Yue & Xiao-Guang, 2021). Moreover, Covid-19 has specifically reduced students' mobility around the college, changed international students' mobility, and increased social and economic imbalance in various higher education systems (Mok et al., 2020). Due to the preceding danger and impacts, the government applied several programs to restrict community activities, social distance, and excessive-unnecessary meetings. The unpredictable period of Covid-19 also made educational institutions—including nursing colleges—transform their learning activities. Face-to-face (offline) learning changed into online-based learning to fulfill students' right to get a formal lecture. This way, they can still graduate on time, enroll in advanced education, and get ideal jobs. The Ministry of Education and Culture has encouraged all colleges in Indonesia to implement online-based learning to catch up with the current needs and situation. In the era of independent learning and independent education which is currently being intensively implemented, health education services have the authority to regulate and manage everything regarding the quality of education services, including the effectiveness and efficiency of their human resources. This authority and independence have strategic value for nursing higher education institutions to compete in an effort to break the ice and stagnation that has been experienced and surrounded so far in terms of the quality of educational services. However, Indonesia's downturn in the Covid-19 pandemic has brought educational service institutions faced with demands to be able to maintain the results of educational services that have been achieved and prepare competent graduates to be able to compete in the job market but are also faced with the fulfillment of their rights. student learning with the condition of the educational institution being temporarily closed.

Online-based learning management requires organizational support, and the ability to use mobile devices such as laptops, computers, tablets, smartphones, and Android phones that can be used to access learning topics or information resources anywhere and anytime online. The use of multimedia technology can empower the educational process by increasing the interaction between teachers, students, and learning tools as well as innovative ways to make learning more dynamic, durable, and more applicable in the world outside the classroom (Almara'beh et al., 2015). Information and technology have sophisticatedly evolved. Both accommodate and promote online learning. Web-based platforms and internet-based learning management systems might assist the learning. Many platforms such as Zoom, Google Meet, and Microsoft Teams can be easily used to escalate students' participation and classroom dynamics (Heggart & Yoo, 2018). However, the learning transformation into an online-based system has not yet been fully understood, specifically by those in nursing colleges. Technical issues such as skill in information technology (IT) adaptation, organizational support, device compatibility, and bandwidth availability become serious development barriers. It is not easy to execute some progress; success also depends on teachers or trainers who have the proper capability, knowledge, and competence to carry out online learning. Several necessary competencies to teach effectively in online learning are skills in pedagogy, content creation, design, technology, organizational management, and social communication (Albrahim, 2020). The success of online learning development and implementation cannot be separated from the multiple influencing factors. Technology-based learning designs, online tools, and student characteristics are notable predictors of learning outcomes in blended learning (Kintu et al., 2017). Online learning patterns on nursing campuses were still rarely implemented before the pandemic. As a result, administrators were unprepared when Covid-19 spread and forced changes to the learning system. In fact, online learning is a non-negotiable fixed condition these days. It requires the readiness of students and teachers, qualified technology such as electronic devices, and internet networks (Sanoto, 2021).

The adoption and utilization of e-learning facilities have not been carried out by lecturers optimally. This situation is influenced by user attitudes, inadequate internet facilities, and insufficient user training (Eze et al., 2018). The

quality of online learning implementation as an alternative to providing information to assist lecturers in the teaching and learning process is still low. Therefore, the success of online learning requires a mature strategy and a more active approach—which must be included in the school curriculum (Agarwal & Kaushik, 2020). In addition, the willingness, skills, and use of technology by educators to change teaching styles and methods using e-learning must also be evaluated and improved. Some influencing factors on the motivation of lecturers to use online learning are knowledge, perceptions, and skills (Mohamad et al., 2015). The quality of online learning interactions between teachers and students influences many factors. One of them, Kumar et al., (2021), explained that this activity is intertwined with educational institutions' best quality e-learning content.

Several studies have tested, analyzed, and dissected the phenomenon of education during the Covid-19 period. In addition, they are not comprehensive enough and focus on research on student learning outcomes. Based on the problems above, a study that focuses on online-based learning processes is needed that to meet the rights of students. Applying a quantitative approach, this study aims to assess complaints and important determinants of online learning interactions during the implementation of the Covid-19 pandemic level I community activity restriction program in nursing higher education, Indonesia. More specifically, this study aims to answer the following questions:

Research question

1. Taken together, is there a significant effect of organizational support, perceptions of online learning, and skills in using information technology on online-based learning interactions?
2. Partially, is there a significant influence between organizational support and the quality of online-based learning interactions?
3. What are the determinants of online-based learning interactions among organizational support, perceptions of online learning, and skills in using information technology?
4. What are the important determinants and complaints in online-based learning?

METHOD

Research Design and Participant Selection
A descriptive cross-sectional survey was used to explore the online learning interactions of Indonesian nursing students regarding organizational support, perceptions of online learning, and skills in using information technology. Using an online survey, the researcher surveyed nursing students who are actively enrolled in public and private educational institutions throughout Indonesia. Prospective participants were recruited from social media and any online groups related to Indonesian nursing students for four months. The survey is anonymous and self-administered; Invitation messages for research are sent to social media sites containing links. The inclusion criteria for this study were nursing students who were actively enrolled in public educational institutions and private educational institutions agreeing to participate in this study. The online survey measures online learning interactions about organizational support, perceptions of online learning, and skills in using information technology. The survey was piloted among a small sample of Indonesian nursing students to repeat the procedure and the questionnaire.

Research Instrument
Research data was collected using an online learning interaction evaluation tool developed by the researcher. Using a combination of open-ended questions and a Likert scale. The online learning interaction evaluation tool is an evaluation tool designed to measure three aspects, including (1) organizational support with Cronbach's alpha internal consistency reliability of 0.957, (2) online learning perception with Cronbach's alpha internal consistency reliability of 0.950, and (3) skills using information technology with Cronbach's alpha internal consistency reliability of 0.956. The scoring system for favored questions uses the following criteria: 6 for 'strongly agree', 5 for 'agree', 4 for 'undecided/disagree or disagree', 3

for 'disagree', 2 for 'disagree', and 1 for 'strongly disagree'.

Statistical Test

Standard deviation, mean, median, and interquartile range were used to describe continuous variables and percentages for categorical variables. Pearson's exact Chi-square test for categorical variables and a one-way ANOVA for continuous variables were used to assess baseline characteristics. A classical assumption test (multicollinearity, heteroscedasticity, and normality) was performed to develop the results of the regression equation. The statistical test used to analyze the interaction of online learning about organizational support, perceptions of online learning, and skills in the use of information technology are multiple linear regression with a significance level of 95%.

Ethical Considerations

Respondents were provided with information that all observations were kept confidential and only used for scientific purposes to fulfill ethical considerations. Participation was voluntary, and there were no penalties for not participating. This study was approved by Komite Etik (Ethics Committee) of the Faculty of Health Sciences, Universitas Muhammadiyah Magelang, Indonesia (113-KEPK). Any participation is voluntary, and the respondents are kept confidential. A detailed description of the methodology of expectation, anonymity, and confidentiality was discussed in the written agreement.

RESULTS

Demographic Characteristics

Table 1 shows the basic characteristics of respondents, including gender, education, age, online learning experience, and educational institution background. Of the 1252 subjects who filled out the online questionnaire, 1148 (91.7%) subjects had completed the survey. 104 (8.3%) subjects were eliminated because their responses were incomplete and did not meet the criteria. Therefore, there were eventually only 1148 nursing students who participated in the survey. General information distribution includes: 88,7% are female: the average age is 21,15±3,69 (17-26 years); 53% are at diploma III; 57,1% are from private educational institutions; more-than-two-year experience has an average of 2,09±0,84; 34.5% of students complained that the stability of the internet network connection was less stable, and 10.7% complained that the stability of the internet network connection was unstable.

Table 1. Demographic characteristics (n=1148)

Information	Item	Quantity	Percentage
Gender	Male	130	11,3
	Female	1018	88,7
	Average±SD	21,15±3,69	
	17-26 years	1115	97,1
Age (years)	27-36 years	24	2,1
	37-46 years	9	0,8
Education Level	Diploma III	608	53
	Diploma IV	120	10,4
	Bachelor of Nursing	396	34,5
	Master of Nursing	21	1,8
	Doctorate of Nursing	3	0,3
Educational institution background	State/Public	493	42,9
	Private	655	57,1
Experience of online learning	Average±SD	2,09±0,84	
	< 1 year	365	31,8
	1-2 year(s)	319	27,8

	> 2 years	464	40,4
Internet connection stability on online	Stable	629	54,8
learning	Less stable	396	34,5
	Not stable	123	10,7

SD: standard deviation

Differences in the learning interaction quality based on demographic characteristics

The results of the one-way ANOVA test are presented in Table 2. It points out that differences appeared due to education levels on the quality of online-based learning interactions (p=0.001). Meanwhile, age, gender, educational institution background, and online learning experience do not indicate any difference or gap.

Table 2. Differences in The Learning Interaction Quality Based on Age, Gender, Education, Educational Institution Background, And Online Learning Experience

Aspect	Sum of squares	Df	Mean square	F value	p-value
Age					
Learning interaction quality					
Between groups	414.642	2	207.321	2.405	.091
Within groups	98700.285	1145	86.201		
Total	99114.927	1147			
Sex					
Learning interaction quality					
Between groups	478.460	1	478.460	5.559	.119
Within groups	98636.467	1146	86.070		
Total	99114.927	1147			
Education					
Learning interaction quality					
Between groups	1546.953	4	386.738	4.531	.001
Within groups	97567.974	1143	85.361		
Total	99114.927	1147			
Educational institution background					
Learning interaction quality					
Between groups	1682.196	1	1682.196	19.786	.082
Within groups	97432.731	1146	85.020		
Total	99114.927	1147			
Experience of online learning					
Learning interaction quality					
Between groups	262.308	2	131.154	1.519	.219
Within groups	98852.619	1145	86.334		
Total	99114.927	1147			

Df; Degrees of freedom

Table 3 shows that the variable reliability test resulted in an overall correlation score between items of 0.68 (organizational support = 0.592, perception of online learning = 0.654, information technology utilization skills = 0.600, and quality of learning interaction = 0.531). Table 4 presents that the 16 items of questions focused on two subcategories, including commitment and support for infrastructure. The average score measured using a 5-point Likert scale was 3.66 and the correlation between items in this section was

0.59 (Cronbach's alpha 0.957). Table 5 summarizes that the 10 items of questions focused on two subcategories, namely ease, and motivation. The mean score estimated with a 5-point Likert scale was 3.95 and the correlation between items in this section was 0.65 (Cronbach's alpha 0.950).

Table 3 The results of the correlation test among organization support, perception, skills, and quality of interaction variables (5-point Likert scale)

Category	Mean	Variance	SD	Item (n)	Score
Organzation support	58.61	100.870	10.043	16	0.592
Perception	39.52	37.718	6.141	10	0.654
Skills	54.76	77.314	8.793	15	0.600
Interaction quality	59.12	86.484	9.300	16	0.531
Total				57	0.686

Table 4 Correlation test results for each organizational support survey item

	Organizational Support	Mean	SD
1	to develop information technology systems to support online learning.	3.38	0.991
2	to develop an online learning system.	3.58	0.825
3	to develop online learning as "problem solving".	3.74	0.734
4	to improve online learning progress.	3.72	0.759
5	to provide easy access to online learning.	3.71	0.774
6	to explain the online learning system guide.	3.45	0.846
7	to promote their support for online learning organizations.	3.69	0.800
8	to guide the implementation of online learning.	3.70	0.861
9	that online learning system to achieve the university's mission.	3.78	0.740
10	to provide software to support online learning.	3.77	0.743
11	provide hardware to support online learning.	3.71	0.774
12	provide an e-learning learning system to support online learning.	3.45	0.846
13	to provide training on e-learning learning systems.	3.69	0.800
14	allocate funds to support online learning.	3.70	0.861
15	provide subsidized funds for purchasing internet quota packages to support online learning.	3.78	0.740
16	providing internet and/or intranet network facilities to support online learning.	3.77	0.743

Table 5 Correlation test results for each online learning perception survey item

	Perception	Mean	SD
1	The online learning system helps me understand the lecture material in detail.	3.91	0.697
2	With online learning, I obtain knowledge that has not been provided in face-to-face learning.	3.82	0.739
3	With online learning, I get the opportunity to study anywhere and anytime without time limitations.	3.84	0.695
4	I can easily obtain lecture materials through online learning services and access.	4.03	0.756
5	Completing exercises online is merely a waste of my time.	3.97	0.761
6	I don't need to regularly visit learning websites or online learning.	4.03	0.707
7	Anytime I face difficulties working on the questions from lecturers, I look for solutions from internet sources (online).	3.95	0.754
8	Online learning is done solely to get additional value from lecturers.	4.06	0.722
9	I am enthusiastic about participating in online learning because communication between friends and lecturers is closer.	4.02	0.761
10	I think lecturers do not mind if I do not take part in online learning sessions.	3.89	0.803

Table 6 depicts 10 items of questions focused on two sub-categories, including infrastructure support, and the use of raw/software information technology. The average score measured using a 5-point Likert scale was 3.40 and the correlation between items in this section was 0.60 (Cronbach's alpha 0.956). Table 7 demonstrates that 16 items of questions centered in five sub-categories, namely tangible, reliability, responsiveness, assurance, and empathy. The average score evaluated with a 5-point Likert scale was 3.69 and the correlation between items in this section was 0.53 (Cronbach's alpha 0.945).

Table 6 Correlation test results for each survey item of information technology skills

	Skills	Mean	SD
1	to use a computer in online teaching and teaching processes.	3.64	0.756
2	to take advantage of the internet and/or intranet facilities available in online learning.	3.66	0.725
3	to use multimedia in the online teaching and learning process.	3.66	0.716
4	to access learning materials in the online teaching and learning process.	3.73	0.742
5	to ccess e-learning in the online teaching and learning process.	3.25	0.973
6	to use social media in the online teaching and learning process.	3.57	0.785
7	to use the zoom and google meet applications in the online teaching and learning process.	3.76	0.702

8	to use video conferences in online learning.	3.55	0.757
9	to take advantage of learning resources from videos from the internet (online).	3.68	0.756
10	to find e-book learning resources from the internet (online).	3.72	0.699
11	to find e-journal learning resources from the internet (online).	3.68	0.714
12	to find e-library learning resources from the internet (online).	3.73	0.709
13	to take advantage of learning resources from website applications from the internet (online).	3.59	0.744
14	to find e-modules from the internet (online).	3.76	0.701
15	to access lecture material from the internet (online).	3.77	0.675

Table 7 Correlation test results for each item of the online learning interaction quality survey

	learning Interaction	Mean	SD
1	to use interactive media for online learning	3.16	0.920
2	difficulty accessing and connecting to the internet network during online learning	3.69	0.754
3	selection of various online learning media	3.70	0.796
4	skills in delivering lecture material well in online learning	3.51	0.810
5	reliability in managing classes during online learning	3.62	0.820
6	the reliability in using learning media during online learning	3.76	0.744
7	degree of responsiveness in responding to student questions/problems during online learning	3.49	0.851
8	skills in adapting from conventional learning to online learning	3.87	0.731
9	skills in providing feedback and student questions and comments during online learning	3.83	0.808
10	objectivity in evaluation during online learning	3.78	0.701
11	mastery of the materials taught during the online learning process	3.65	0.819
12	quality of teaching/teaching materials presented during online learning	3.81	0.721
13	skills in using online learning media	3.72	0.712
14	skills motivate students during online learning.	3.78	0.678

| 15 | understand student difficulties in the online learning process. | 3.90 | 0.712 |
| 16 | pay attention to students during online learning. | 3.85 | 0.938 |

Quality determinants of the online-based learning interaction

The results of the assumption test analysis point out that the data are normally distributed (p=0.206). Multicollinearity is not found (organizational support, tolerance value = 0.444; Variation Inflation Factor (VIF) = 2.254, perception of online learning, tolerance value = 0.510; VIF = 1.9622, and skills in using information technology, tolerance value = 0.480; VIF = 2.082). Heteroscedasticity is also not found (organizational support, p = 0.120; perception of online learning, p = 0.146; skills in using information technology, p = 0.156). The results of multiple linear regression are presented in Table 8, showing the model equation $Y=5,388+ 0,151X1 + 0,321X2+0,588X3+e$. Simultaneously, the three factors, namely organizational support, perception of online learning, and skills in using information technology, affect the quality of online-based learning interaction with an effective contribution of 69.7% (R2=0.697). Other variables outside the applied model explain the rest (30.3%). Every 1% increase in three factors can escalate the variation in the quality of online-based learning interaction by 69.7% with other variables outside the controlled model.

Partially, organizational support, perceptions of online learning, and skills in using information technology affect the quality of online-based learning interaction. All three contribute effectively (skills, p=0.012, R^2=44.5%; perception, p= 0.024, R^2=14.1%; and organizational support, p=0.028, R^2=11,1%). The skill factor for the use of information technology provides an effective contribution of 44.5%, perception of 14.1%, and organizational support of 11.1%. The factor of skills in using information technology contributes most effective than the other two factors. Every 1% increase can escalate the variation in the quality of online-based learning interaction by 44.5% with the perceived factors and organizational support controlled. Thus, organizational support, perception of online learning, and skills in using information technology are important determinants that affect the quality of online-based learning interactions.

Table 8. Multiple Linear Regression Test Results

Regression Test	Regression Coefficient	t count	Significance
Regression Coefficient X_1 (organizational support)	0,151	6,669	0.028
Regression Coefficient X_2 (perception of online learning)	0,321	9,313	0.024
Regression Coefficient X_3 (skills in using information technology)	0,588	23,675	0.012
Constant	5,388	4,973	0.000
R	0,835		
R^2	0,697		
F	10,768		

DISCUSSION

Differences in the learning interaction quality based on demographic characteristics

The study results indicate a significant difference due to education levels in the online-based learning interaction quality. This finding might be assumed to be related to people's ability to carry out a task well if they have adequate knowledge and skills based on their educational

backgrounds. A fine (or high) educational background allows people to be mature in the learning process. They will more easily understand the importance of learning, train themselves to learn independently, and adapt to their environment to establish optimal quality of learning interaction. To create effective online learning interactions, they want independence and do not want to be treated like children. If students are placed in an accommodative and appreciative learning ecosystem, they will also be motivated to learn with pleasure and appreciation. Their participation will be maximized, which then affects interactions, both with lecturers and fellow students. The results are also in accordance with several other studies. Previous findings reported that education level significantly influences the quality of online learning in the higher education sector during the pandemic (Elumalai et al., 2019; Yu, 2021). Another finding, reports that the higher the level of education, the more likely it is to have stronger personality traits. Education level and strong personality traits such as sociability, awareness, and openness to new experiences affect online learning outcomes during the Covid-19 pandemic. To improve interpersonal interaction and encourage online learning is the focus on how to design online learning and how to improve the quality and dynamics of online content (Yu, 2021). In addition, if students are led to a learning environment that makes them independent, they are motivated to interact in the learning process with a sense of comfort and responsibility—especially in browsing the internet. This finding is in line with previous results from other studies, explaining that online-based learning at the university level provides students with free time to study and motivates them to do their work without the help of others, typically in browsing the internet (Salamat et al., 2018). In this study, age, gender, educational institution background, and experience of online learning do not significantly impact the quality of online learning interaction (simply no difference). It is in line with several other studies. In some studies, age is not a significant factor influencing the implementation of e-learning, however, the three critical factors for successful use of online learning are low complexity,

authenticity and technical support (Fleming et al., 2017). Another finding reported that during the Covid-19 pandemic, parents generally have negative beliefs about the value and benefits of online learning and prefer traditional learning in an early childhood environment. They tend to refuse online learning for three main reasons, such as their lack of time and professional knowledge in supporting children's online learning, lack of online learning, and inadequate self-regulation of children (Gudea, 2008a). However, other findings show the opposite results. A study demonstrated that younger age, experience, and male (sex) are the most important indicators influencing e-learning (Zalat et al., 2021). Gender and educational institution background were not found to affect online learning significantly. This finding follows several other studies. Previous results indicate that gender and institutional status do not affect online learning readiness (Ranganathan et al., 2021). The results of this study found that there was no difference in the online learning experience on the quality of online learning interactions. This finding is in accordance with several other studies. Experience with e-learning does not significantly impact e-learning implementation (Aldowah et al., 2017; Bressler et al., 2006; Slamet et al., 2021). However, other findings show the opposite results, that students' e-learning experience is significantly correlated with the learning process. It indirectly affects learning outcomes. Positive online learning experiences regarding the availability of electronic research, ease of internet connection, and negative experiences of unavailable technical support affect online learning practices (Ali, Khalil, and El-Sharkawy 2020; Azis, Suharyati, and Susanti 2019; Hixon et al. 2016). Another finding, reports that background, experience, collaboration, interaction, and student autonomy have a positive effect on student satisfaction and academic achievement in using online learning platforms (Abuhassna et al., 2020). The results of this survey show that students' online learning experiences during the Covid-19 pandemic differ significantly throughout the school year (Yan et al., 2020).

Determinants of the online-based learning interaction

The results of this study indicate that simultaneously, organizational support, perceptions of online learning, and skills in using information technology affect the online-based learning interaction quality. It might be assumed that these findings are influenced by individual student factors such as skills and perceptions and external factors (such as organizational support in online learning policies). The quality of online-based learning interactions may be related to the accumulation of three interrelated elements: skills, perceptions, and organizational support. If the three elements are in optimal condition, they can increase the motivation of educators and students. This way, optimal online-based learning interactions will also be created. The study results are in accordance with several other studies. Previous findings reported that the critical success factors for web-based learning are perceptions (learners and educators), extrinsic motivation (online learning support by educational institutions), intrinsic motivation, and attitudes (Kira & Saade, 2006). These factors are beneficial to be used to understand online learning better. Another study explained that influencing factors include internal factors (low teacher self-efficacy and teacher perceptions) and external factors (infrastructure support and inadequate technology tools) (Shonta & Bynum, 2018). However, other findings show the opposite result. Emotional involvement, teacher effectiveness, student quality, and technology reliability are the determining factors that affect the success of online teaching (Gudea, 2008). In addition to the technical and pedagogical dimensions, the success of supporting students in an online learning environment is that the teacher pays attention to the social and affective dimensions (Lemay et al., 2021a). The key factor for designing the quality of web-based learning interactions is Social interaction, for building group culture and exchanging experiences (Reneland-Forsman & Ahlbäck, 2007).

Skills in using information technology in online-based learning interaction quality

Partially, student skills in using information technology influence and contribute effectively to the quality of online learning interaction quality. This finding is supported by several other studies. A study reported that the IT aspect that is designed, developed, and utilized according to the goals and characteristics of an institution would improve learning quality (Sutisnawati et al., 2021). Lecturers and students must have adequate technological and communication competencies to improve the quality of their learning ecosystem (Kołodziejczak & Roszak, 2017). Another finding explained that the use of information technology helps teachers and students obtain the latest information and knowledge so that learning becomes more efficient (Kaushik, 2011). Students who have appropriate digital skills are the dominant variables that affect the quality of virtual colleges' teaching and learning process (Cervero et al., 2020). Another finding, reported that the most serious challenges affecting the adoption of e-learning are limited information and communication technology skills, and insufficient time for online interaction (Mutisya & Makokha, 2016). There is a significant relationship between students' technology skills in using digital tools, utilization of database resources, and browsing network information on the Web on student learning behavior (Rafi et al., 2019). Computer-based technology capabilities affect student engagement (Schindler et al., 2017).

Students' perception of online-based learning interaction quality

Based on the research results, the perception of online learning has a partial effect on the quality of online learning interactions. This finding is in line with previous studies, pointing out that students' perceptions significantly affect the quality of e-learning in higher education during the pandemic (Elumalai et al., 2019). Positive perceptions correlate with acceptance and improvement in online learning quality (Khan et al., 2021). However, other findings show the opposite results. A study stated that students were dissatisfied with the experience and effectiveness of online learning (Mok et al., 2021). However, in other references, the differences are inconsistent. One study found no

statistical difference between online and face-to-face learning. Medical students consider online learning to be less effective (Agarwal & Kaushik, 2020). Another finding, it was reported that faculty and students agreed that online learning was beneficial during the Covid-19 pandemic and as a temporary alternative to face-to-face learning. It was further explained that the challenges of online learning lie in adapting to online education, especially for deaf and deaf students, lack of interaction and motivation, technical and Internet problems, data privacy, and security. They also agreed on the advantages of online learning. The benefits are mainly self-study, low cost, convenience, and flexibility (Almahasees et al., 2021). In online learning, students perceive traditional face-to-face classes as less effective, but they are satisfied with online learning, especially the quick feedback by the instructor, interaction among students, and effective assignment design. (Mutisya & Makokha, 2016).

Organizational support in online-based learning interaction quality

Organizational support influences the quality of online learning interactions. A study reported that administrative and institutional support is positively related to the quality of online learning (Elumalai et al., 2019; Maheshwari, 2021). These findings are in accordance with several other studies. Organizational support has a positive influence on the management of organizational learning systems. The same thing plays an important role in increasing the support for learning system management (Tian et al., 2018; Zheng et al., 2018). The improvement of online learning system services must depart from management or organizational support (AlMulhem, 2020). Another finding suggests that in order for organizations to have a positive impact on learning, they must pay attention to three main factors namely providing high-quality relevant development programs; ensuring that learning content is aligned with the organization's strategy; and ensuring senior management commitment (Lancaster & Di Milia, 2014). Namun demikian, temuan lain menunjukkan hasil yang berlawanan. Untuk mencapai kepuasan peserta didik, institusi harus berusaha untuk memberikan konten e-learning

dengan kualitas terbaik (Kumar et al., 2021). Dukungan yang dirasakan dari administrator dan rekan kerja pasca pelatihan tidak begitu berpengaruh terhadap peserta pelatihan yang menunjukkan dampak pembelajaran yang lebih tinggi (Futris et al., 2015).

Complaints in online-based learning

Hasil penelitian menunjukkan bahwa mahasiswa mengeluh stabilitas koneksi jaringan internet kurang stabil pada pembelajaran online. Temuan ini dapat diduga terkait dengan sistem jaringan internet dalam e-learning belum memenuhi kapasitas yang dibutuhkan, dan adaptasi teknologi dalam pembelajaran online. Temuan ini sesuai dengan beberapa penelitian lain. Mahasiswa kedokteran di Filipina dalam beradaptasi dengan pembelajaran online adalah kesulitan menyesuaikan gaya belajar, harus melakukan tanggung jawab di rumah, dan komunikasi yang buruk antara pendidik dan peserta didik (Baticulon et al., 2021). Temuan lainnya, dilaporkan bahwa hambatan untuk pembelajaran online sepenuhnya tidak hanya tantangan teknologi dan instruksional, tetapi juga tantangan sosial dan afektif isolasi dan jarak sosial (Lemay et al., 2021).

This study has identified several important determinants and barriers that affect the quality of online learning interactions. However, it has some limitations. First, due to the online survey features, some data may be missing or omitted—resulting in incomplete data collection and affecting the results of analyses. Second, compared to previous studies, this study involved all nursing students from public and private educational institutions with a certain online learning system, history of online training, and online learning facilities. These aspects are not yet recorded and dissected in this study, so the researchers cannot determine their association or correlation to obtain optimal results. As a result, we are unable to analyze the long-term predictors of online learning in nursing students in Indonesia. However, this study has some strengths: the large sample size and inclusion of students from various regions.

CONCLUSION

This online survey concludes that education level, organizational support, perception of

online learning, and skills in using technology are important determinants of the quality of online learning interactions. Collectively and in part, organizational support, perceived online learning, and technology utilization skills contribute effectively to the quality of online learning interactions. Information technology utilization skills have the biggest contribution compared to organizational supporting factors, and perceptions of online learning. Students complain about the instability of internet network connections during online learning. These findings, if confirmed in a prospective study during the Covid-19 pandemic, will raise important organizational policy considerations in improving the quality of online learning. Further research with mixed and multivariable methods will be able to describe the variables that most contribute to the quality of online learning interactions.

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