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Comprehensive Study of Factors Affecting e-Learning Participant Satisfaction: A Study on Online Pendidikan Profesi Guru at Ibn Khaldun Bogor University

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A B S T R A C T

E-learning has evolved from being optional to indispensable in contemporary education due to advancements in technology and the evolving educational landscape. The growth trajectory of e-learning is poised to accelerate further, with projections indicating a user base of approximately 21.6 million by 2029. This study examines the environmental factors of e-learning that influence participant satisfaction in the Pendidikan Profesi Guru (PPG) Program at Ibn Khaldun University Bogor which is held via e-learning, currently conducted with 147 respondents. This research employed a quantitative method with nine variables, including one dependent variable, participant satisfaction in e-learning, and eight independent variables representing factors affecting satisfaction. Data were analysed using Partial Least Squares (PLS) and multiple linear regression analysis. The study found that all independent variables positively influence participant satisfaction in e-learning, with 4 variables significantly affecting satisfaction: e-learning flexibility, technology quality, internet quality, and interaction in the e-learning environment. The implications of this study extend beyond the PPG Program, suggesting relevance to other educational and training initiatives conducted via e-learning. Researchers propose further exploration of additional influencing factors to enhance the comprehensiveness of future studies. In conclusion, as e-learning continues to gain prominence, addressing the identified environmental factors becomes crucial for institutions striving to deliver high-quality educational experiences. By adapting to these insights, educational providers can better meet the diverse needs of learners in the digital era, thereby fostering an inclusive and effective learning environment conducive to enhanced participant satisfaction and educational outcomes.

1. INTRODUCTION

The Coronavirus Pandemic in 2019 has changed many activities carried out by humans around the world, including Indonesia. Any activity that requires physical contact is severely restricted, including in the aspect of education. The Indonesian government has begun to change the learning pattern from elementary school to university level from the conventional face-to-face learning pattern to distance learning using the internet or online learning. (Suhandiah et al., 2022).

E-learning is a learning method that uses digital technology, or in general it is often referred to as learning using the internet. (Stefanovic et al., 2011).(Marinoni et al., 2020), According to UNESCO data, 185 countries were forced to adopt e-learning due to the COVID-19 pandemic. This has raised global concerns about the impact of e-learning implementation on the relationship between instructors and learners (Tetteh et al., 2023). E-learning is no longer just an option in the learning process but has become a necessity with the current development of technology.

The growth rate of e-learning in Indonesia is rapidly grow. Based on website (Statista.com, 2024), By 2029, the number of e-learning users in Indonesia is expected to reach 21.6 million.

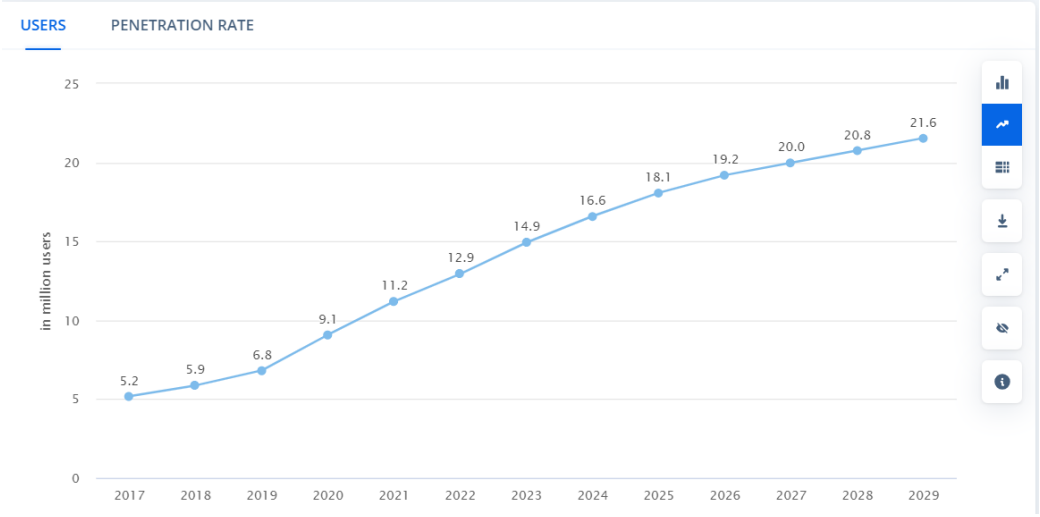

Figure 1. Graph of e-learning user growth in Indonesia from 2017 to 2029
Source: statista.com, 2024

A previous study conducted on students in Serbia who took e-learning at 2 universities found that there are 8 factors that will affect student satisfaction. These factors are: prompt response from instructors, instructors' understanding of e-learning, e-learning flexibility, e-learning quality, technology quality, internet quality, task diversity, and interaction in the e-learning environment (Stefanovic et al., 2011).

Instructors play a crucial role in the e-learning process, the factor of quick response by instructors is explained by (Sun et al., 2008), dan (Arbaugh, 2002). Both researchers found in their studies that when instructors provide prompt and repeated responses to participants, the participants' satisfaction levels increase. Additionally, the instructor's understanding of e-

learning plays a role, as the more proficient an instructor is in using technology, the better the experience will be for the program and ultimately the satisfaction of the participants. (Y. Wu et al., 2023).

there is a connection established between them and the instructors and every effort they make in conducting learning is assessed appropriately (Sun et al., 2008). In addition, the interaction factor in the e-learning environment also influences participant satisfaction. In e-learning without significant interaction between the instructor and participants, participants will find it more difficult to concentrate on understanding the material and are easily distracted by the surrounding environment. (Latchem et al., 1994). This research focuses on these factors, whether these factors influence participant satisfaction in e-learning.

What sets this research apart from others is that the respondents are e-learning participants who are teachers enrolled in the Professional Teacher Education program at Ibn Khaldun University. The most intriguing aspect for both participants and instructors in e-learning classes is the flexibility in location, time, and methodology. (Arbaugh, 2000; Dillon & Gunawardena, 1995). The flexibility of e-learning is an important factor that influences the satisfaction of e-learning participants. Therefore, it was included as a variable in this study. In addition to flexibility, the quality of e-learning should also be considered to enhance participant satisfaction. Creativity in managing the program is a motivation for participants to join the program. (Webster & Hackley, 1997).

The quality of technology will significantly impact participant satisfaction in e-learning. (Piccoli et al., 2001). User-friendly and easy-to-use online learning tools have a positive impact on participant satisfaction. In addition to technology quality, internet quality also significantly influences participant satisfaction. A stable internet connection is essential for both direct and indirect lesson delivery systems, enabling participants to access materials at any time without encountering server connection issues. (Stefanovic et al., 2011).

The diversity factor in assignments needs to be considered to enhance participant satisfaction in e-learning. The use of varied evaluations in the e-learning system will prompt participants to think more dynamically. Unlike research typically conducted on students, teachers who also serve as instructors in e-learning during the Covid-19 pandemic can provide different responses compared to those given by students or learners. This is expected to serve as a foundation for institutions wishing to implement similar programs, prioritizing these influential factors as the main focus in e-learning implementation.

Based on the existing theoretical foundation, the researcher formulated the following hypotheses:

Hypothesis 1: Quick response from instructors will have a positive influence on participant satisfaction with e-learning. Hypothesis 2: Instructor understanding of e-learning will have a positive influence on participant satisfaction with e-learning. Hypothesis 3: Flexibility in e-learning will have a positive influence on participant satisfaction with e-learning. Hypothesis

4: The quality of e-learning will have a positive influence on participant satisfaction with e-learning. Hypothesis 5: The quality of technology will have a positive influence on participant satisfaction with e-learning. Hypothesis 6: Internet quality will have a positive influence on participant satisfaction with e-learning. Hypothesis 7: Diversity in assignments will have a positive influence on participant satisfaction with e-learning. Hypothesis 8: Interaction in the e-learning environment will have a positive influence on participant satisfaction with e-learning.

2. RESEARCH METHODS

The research was conducted at Ibn Khaldun University in Bogor. In June 2024, the study took place at the university due to its Professional Teacher Education program being conducted online, aligning with the research needs related to e-learning. The total population included 147 individuals from two cohorts of the program across three classes. The researcher employed the Slovin's approach for determining the sample size, which is:

$$n = \frac{N}{1+Ne^2} \quad \text{..... 1}$$

n = sample (responden)
N = Population = 147
e = error = 5% = 0,05

$$n = \frac{147}{1+147\ (0{,}05)^2} \quad \text{..... 1}$$

n = 107,495

n = 108 responden

However, during the study, the respondents obtained constituted the entire population, with total 147 respondents. Based on other theory by (Joe F Hair et al., 2011), The appropriate sample size for Partial Least Squares (PLS) can be determined by multiplying the number of indicators by 5 or having a sample size between 100 and 200 respondents. The number of respondents in this study aligns with these theoretical guidelines.

This research is conducted using a quantitative approach. A quantitative approach views human behavior as predictable within social reality, objective, and measurable contexts. In quantitative research, valid instruments are typically employed, and precise statistical analyses are necessary to ensure the reliability of findings and their alignment with actual circumstances. This study is correlational in nature, aiming to examine relationships between predetermined variables to determine whether they are associated or not. If a relationship exists, the study also seeks to ascertain the strength and direction of that relationship.(Nurlan, 2019)

This study utilizes 9 variables: 1 dependent variable, which is participant satisfaction with e-learning, and 8 independent variables divided into 4 dimensions. The first dimension is the instructor dimension, comprising 2 variables: quick response from instructors and instructor understanding of e-learning. The second dimension is the program dimension, including 2 variables: flexibility in e-learning and quality of e-learning. The third dimension is the technology dimension, consisting of 2 variables: quality of technology and internet quality. The

final dimension is the environment dimension, which consists of variables diversity in assignments and interaction in the e-learning environment. (Stefanovic et al., 2011).

Data was collected using a questionnaire distributed via the Google Forms online application over a period of 2 days from June 20 to June 21, 2024. The instrument prepared was refined into a Likert scale questionnaire ranging from 1 to 6. The Likert scale is a measurement scale used to assess individuals' or groups' perceptions, attitudes, or opinions regarding events or social phenomena. (Anisah & Puspasari, 2024). 1 represents strongly disagree while 6 represents strongly agree. In this study, there is no neutral value within this range. This approach allows respondents to determine whether they lean towards agreement or disagreement. It also helps to prevent respondents from choosing neutral as a quicker response option. (Joseph F Hair et al., 2007).

This study utilizes SmartPLS v. 3.2.9 for statistical analysis. SmartPLS is a useful tool in management science for calculating, creating, and validating models. Many articles employ SmartPLS, and journals accept SmartPLS as a methodology (Shackman, 2013). This model explains causal mechanisms and empirically validates theoretical hypotheses while applying predictive-oriented steps. SmartPLS is a second-generation SEM technique. (Chin, 2010). The available data are analyzed using multiple linear regression with 8 variables (quick response from instructors, instructor understanding of e-learning, flexibility in e-learning, quality of e-learning, quality of technology, internet quality, diversity in assignments, and interaction in the e-learning environment) as regressors, and participant satisfaction with e-learning as the dependent variable (regressand).

3. RESULTS & DISCUSSION

Respondent Data. In this study, demographic data from respondents were obtained as follows:

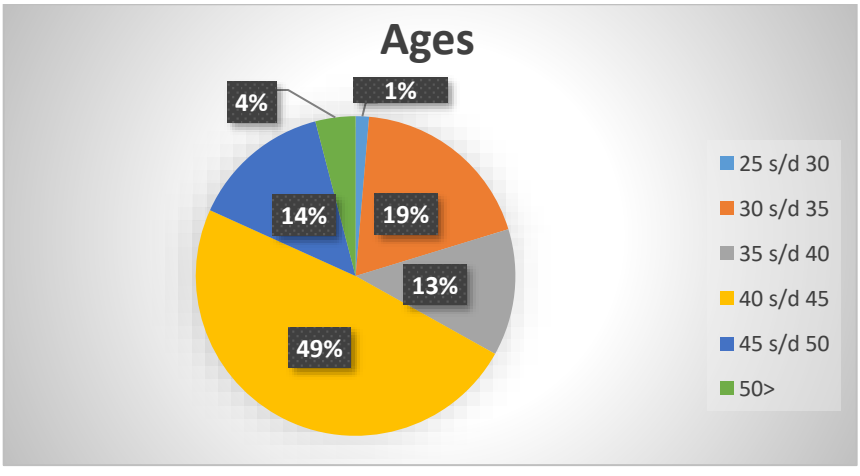

Figure 2. Percentage of respondent ages

Source: Data Processed, 2024

The above figure depicts the ages of respondents who participated in filling out the research questionnaire. Light blue represents the age group 25 to 30 years with 2 respondents, accounting for 1% of the total. Orange represents the age group 30 to 35 years with 28 respondents, comprising 19% of the total. Gray represents the age group 35 to 40 years with 19 respondents, making up 13% of the total. Yellow represents the age group 40 to 45 years with 72 respondents, accounting for 49% of the total. Dark blue represents the age group 45 to 50 years with 21 respondents, comprising 14% of the total. Green represents 6 respondents, accounting for 4% of the total.

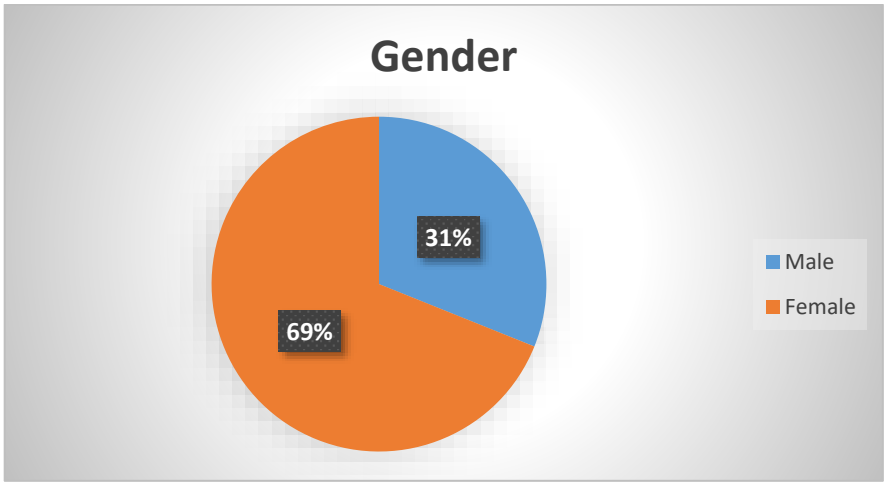

Figure 3. Percentage of Gender

Source: Data Processed, 2024

The figure above depicts the gender distribution of respondents who completed the questionnaire in this study. Orange represents females, with 102 respondents accounting for 69%. Blue represents males, with 46 respondents comprising 31%.

Convergent Validity Test. Convergent validity testing can be conducted in two ways. The first is by calculating the Average Variance Extracted (AVE), and the second is by calculating the loading factor. The purpose of calculating AVE is to measure the value of each variable against itself and other variables. AVE values are considered valid if they are above 0.50. On the other hand, loading factor calculation is used to determine the values produced by each indicator to measure a variable. Loading factors are considered valid if they exceed 0.70.(Lukita & Sudibjo, 2021).

In this study, the results of the AVE validity test are presented in **Table 1**.

Table 1. Validity Test *Average Variance Extracted*

Variable	*Average Variance Extracted*
X1 (Quick response from instructors)	1.000
X2 (Instructor's understanding of e-learning)	0.672
X3 (Flexibility of e-learning)	0.582
X4 (Quality of e-learning)	0.633
X5 (Quality of technology)	0.794
X6 (Quality of internet)	0.720
X7 (Diversity in assignments)	1.000
X8 (Interaction in the e-learning environment)	0.631
Y1 (Participant satisfaction with e-learning)	0.686

Source: Data Processed (2024)

In the AVE validity test, all variables have values above 0.5, indicating that all variables are considered valid. This means that the variables can explain the variance of the statements used to measure them. It signifies that these variables have good internal consistency. Additionally, a high AVE value indicates that the statements consistently reflect the same variable. Valid AVE values provide assurance that the variables measured by this method are statistically acceptable and reliable for further analysis.

In addition to the AVE validity test, the researcher also calculated the loading factors. The results of this calculation show that out of 38 items, there are four statements that fall below the validity threshold for loading factors, which is 0.70. **Table 2** provides information regarding these invalid statements.

Table 2. Statements/items that are not valid based on the loading factor test

No	*loading factor*	Statements
1	0.673	Compared to face-to-face classroom settings, I feel instructors need to understand web-based learning using technology.
2	0.583	The benefits I gain from participating in e-learning outweigh the losses I have to sacrifice.
3	0.647	Taking e-learning classes enables me to graduate more quickly.
4	0.617	I feel that the quality of the program I am taking is not affected by being conducted online (e-learning).

Source: Data Processed (2024)

The invalid loading factor test indicates that these statements do not have a strong or adequate correlation with their respective variables. Further examination of statements X3.2 and X4.3 suggests inconsistency or mismatch between the statements within the variable. This introduces bias because these statements should consistently reflect the intended variable being measured. As for statement X3.8, it indicates poor statement alignment, possibly due to the program

having a specific timeframe. When a statement implies a quicker timeframe than is actual, it can bias respondent understanding and subsequently affect their attitudes.

Reliability testing. In this study, following the validation testing of the data based on the results obtained from the validity tests, the next step is reliability testing. This aims to assess the quality of the research instrument and ensure its accountability. The purpose of reliability testing is to demonstrate the accuracy, consistency, and precision of the instrument in measuring variables. (Ghozali & Latan, 2015).

In this study, SmartPLS v 3.2.9 was used to measure reliability through composite reliability and Cronbach's alpha calculations. Reliable data is defined as having a composite reliability value above 0.70 and a Cronbach's alpha value above 0.60. (Lukita & Sudibjo, 2021). The results of the test can be seen in **Table 3** below:

Table 3. Reliability Test

Variabel	*Cronbach*	*Composite Reliability*
X1 (Quick response from instructors)	1.000	1.000
X2 (Instructor's understanding of e-learning)	0.833	0.890
X3 (Flexibility of e-learning)	0.895	0.917
X4 (Quality of e-learning)	0.713	0.835
X5 (Quality of technology)	0.913	0.939
X6 (Quality of internet)	0.870	0.911
X7 (Diversity in assignments)	1.000	1.000
X8 (Interaction in the e-learning environment)	0.853	0.895
Y1 (Participant satisfaction with e-learning)	0.942	0.951

Source: Data Processed (2024)

Based on the results from Table 3, it can be observed that the values of each variable in both reliability tests are above 0.70. The high values of Cronbach's alpha reliability test indicate that the items used to measure variables in the study have a high level of consistency. This is crucial to ensure that measurement outcomes are not significantly influenced by random factors. Additionally, high reliability helps ensure that statements are accurately measured and can reflect the intended phenomena or variables under study. Cronbach's alpha test results appear lower compared to the Composite Reliability, which could be due to differences in data structure and the scale used.

Multicollinearity test. Multicollinearity test is a useful test to examine whether there is correlation between variables. Multicollinearity is a common issue encountered in regression analysis, where two or more variables exhibit high correlation with each other. (Stanley et al., 2020). The presence of this phenomenon can have serious implications on the analysis conducted, as it can lead to unreliable regression coefficient estimates, excessively high standard errors, and in some cases, the inability to draw conclusions about relationships between variables. (Ghozali & Latan, 2015) Stating that multicollinearity testing can be performed by calculating the Variance Inflation Factor (VIF). Acceptable values are below five. In this study, multicollinearity testing is presented in the following **Table 4**:

Table 4. Results of Multicollinearity Test

Variable	Y (Participant satisfaction with e-learning)
X1 (Quick response from instructors)	1.868
X2 (Instructor's understanding of e-learning)	3.011
X3 (Flexibility of e-learning)	3.596
X4 (Quality of e-learning)	2.088
X5 (Quality of technology)	3.922
X6 (Quality of internet)	2.759
X7 (Diversity in assignments)	2.917
X8 (Interaction in the e-learning environment)	3.700
Y1 (Participant satisfaction with e-learning)	

Source: Data Processed (2024)

The VIF values for all 8 variables are below 5, indicating that there is no multicollinearity issue in this study. The implication of this finding is that the researcher will have an easier time interpreting the effects of each independent variable on the dependent variable without confusion caused by highly correlated variables. The estimation of regression coefficients also becomes more stable and accurate because the model can clearly distinguish the contributions of each independent variable to the dependent variable.

Model fit test. The coefficient of determination, commonly known as R-squared, is a statistical measure widely used to evaluate the fit of a regression model. This measure represents the proportion of variance in the dependent variable that can be explained by the independent variables in the model.(Bewick et al., 2015). In this study, the obtained R-squared is 0.816 for R-squared and 0.805 for adjusted R-squared.

There are three categories of classification for R-squared values: strong, moderate, and weak. (Joe F Hair et al., 2011). An R-squared value of 0.75 falls into the strong category, an R-squared value of 0.50 falls into the moderate category, and an R-squared value of 0.25 falls into the weak category. (Joe F Hair et al., 2011). Based on Table 4, it can be concluded that in this study, the R-squared value falls into the strong category. This means that participant satisfaction with e-learning is significantly influenced by the eight variables examined, accounting for 80%. However, there is still 20% of the influence that can be explored beyond the scope of this study.

Hypothesis testing. Hypothesis testing is conducted by examining the magnitude of path coefficients produced. Through path analysis, researchers can test direct and indirect relationships among variables in the research model. In SmartPLS, hypothesis testing is performed by looking at the path coefficient values. If the coefficient value is below 0, the hypothesis is considered rejected; conversely, if the coefficient value is above 0, the hypothesis is accepted. (Ghozali & Latan, 2015). If P Values < 0.05, it can be considered statistically significant. If P Values > 0.05, it can be considered not statistically significant. (Joe F Hair et al., 2011). The hypothesis testing in this research shown in **table 5** below:

Table 5. Hypothesis Testing Table

Path	Hypothesis	Koefisien	Result
X1 >> Y1	Quick response from instructors will have a positive influence on participant satisfaction with e-learning.	0.285	Hypothesis accepted, not statistically significant.
X2 >> Y1	Instructor's understanding of e-learning will have a positive influence on participant satisfaction with e-learning.	0.313	Hypothesis accepted, not statistically significant.
X3 >> Y1	Flexibility in e-learning will have a positive influence on participant satisfaction with e-learning.	0.042	Hypothesis accepted, statistically significant.
X4 >> Y1	The quality of e-learning will have a positive influence on participant satisfaction with e-learning.	0.740	Hypothesis accepted, not statistically significant.
X5 >> Y1	The quality of technology will have a positive influence on participant satisfaction with e-learning.	0.038	Hypothesis accepted, statistically significant.
X6 >> Y1	The quality of the internet will have a positive influence on participant satisfaction with e-learning.	0.003	Hypothesis accepted, statistically significant.
X7 >> Y1	Variety in assignments will have a positive influence on participant satisfaction with e-learning.	0.865	Hypothesis accepted, not statistically significant.
X8 >> Y1	Interaction in the e-learning environment will have a positive influence on participant satisfaction with e-learning..	0.000	Hypothesis accepted, statistically significant.

Source: Data Processed (2024)

Quick response from instructors will have a positive influence on participant satisfaction with e-learning. In the hypothesis testing results shown in Table 5, it is evident that quick response from instructors positively impacts participant satisfaction with e-learning but is not statistically significant. This is indicated by the coefficient value of 0.285. This variable arises from the tendency of distance learners (e-learning participants) to await responses from facilitators before continuing their learning processes, making quick instructor response a significant factor in the learning experience. (Islam & Azad, 2015). However, upon closer examination of the teacher professional education program, the program already has a well-structured schedule. Therefore, even without prompt responses from instructors outside of program hours, classes will proceed as planned. In addition to the structured nature of the program, the fact that participants are teachers themselves could also explain why quick responses from instructors do not significantly affect participant satisfaction with e-learning. Teachers are expected to excel in their field, demonstrate professionalism, ethics, and commitment to their duties, possess skills, and be motivated to strive for excellence. (Sutiono, 2021). This allows teachers, who are participants in e-learning, to remain motivated in attending distance learning classes even without prompt responses from instructors. However, prompt responses from instructors still play a significant role, especially during the program's duration.

Understanding of e-learning by instructors will have a positive influence on participants' satisfaction with e-learning. In this study, it was found that instructors' understanding of e-learning positively influences participants' satisfaction with e-learning, but this influence is not statistically significant, as shown in Table 5 with a coefficient value of 0.313. This variable arises from technology anxiety during the e-learning process in various countries, which significantly impacts the satisfaction of e-learning participants. (Sun et al., 2008). Referring to this, it is important for an instructor to understand and appreciate the e-learning process, as this can greatly help participants alleviate technology anxiety. However, in this study, the participants are teachers who have become accustomed to conducting classes online due to the demands arising from the pandemic. This could be a trigger why instructors' understanding of e-learning does not significantly contribute to participants' satisfaction. Participants have become accustomed to this method, thus any lingering technology anxiety is minimal and does not greatly affect their satisfaction. The instructors' understanding of e-learning ultimately contributes to participants' comfort in engaging with the e-learning process because instructors comprehend and are enthusiastic about it. Therefore, when issues arise during the process, they are less likely to impede the learning experience significantly.

Flexibility in e-learning will have a positive impact on participant satisfaction. In this study, it was found that flexibility in e-learning significantly influences participant satisfaction, as indicated in Table 6 with a coefficient of 0.042. As the field of education evolves dynamically, the emergence of e-learning has become prominent for offering versatile and easily accessible knowledge approaches. One of the key aspects that distinguishes e-learning from traditional face-to-face learning is its flexibility, which significantly affects the learning experience and outcomes for e-learning participants. (Faisal et al., 2015) believe that e-learning has eliminated the constraints of time and space that were once characteristic of traditional learning activities. The ability to access learning materials and engage in learning at one's own pace and convenience has become a major attraction for many individuals. (Kemp & Grieve, 2014).

This flexibility is highly beneficial for participants who are busy and need the ability to balance work, family, and education commitments. In this study, the respondents are teachers who are professionals with multiple responsibilities in their work. Considering their productive age, where time often overlaps between work, family, and studies, it is very likely that flexibility is a significant factor in this research. Flexibility in e-learning helps participants better manage their time between their studies and other responsibilities outside the program they are enrolled in.

Quality of e-learning will positively influence participant satisfaction with e-learning. In this study, it was found that the quality of e-learning will have a positive but not significant influence on participant satisfaction with e-learning, as evidenced by a coefficient value of 0.740 in Table 6. In previous discussions, e-learning indeed provides a solution with its flexibility to meet the needs of diverse schedules for participants who are part of modern

learning. However, the success of an e-learning program also depends on the quality of instructional design and delivery of the learning process. (Hou et al., 2022). This research was conducted in the Teacher Professional Education Program (PPG), which aims to produce professional teachers. (Eliza et al., 2022). This is the reason why this variable does not significantly influence. This condition arises because the program focuses on producing teachers as professionals, so participants prioritize passing to obtain teaching certification rather than focusing on knowledge development. This impacts learning, which is not focused on knowledge transfer, resulting in participants' highest satisfaction being in teaching certification rather than in the knowledge transfer process of e-learning.

The quality of technology will have a significant positive effect on participant satisfaction in e-learning. In this study, it was found that the quality of technology will significantly influence participant satisfaction in e-learning, with a coefficient value of 0.038. The ease of conducting distance learning processes with existing technology forms the basis of this variable. (Pérez-Pérez et al., 2020). In addition to flexibility, accessibility for participants will also be a factor influencing satisfaction in e-learning. (Sun et al., 2008). This variable explains that technology that is easy to access and use by participants is a crucial factor in the e-learning process. Looking at the respondents' demographics, it can be seen that the majority are over 40 years old, where ease of access to various activities becomes a priority in achieving satisfaction, including in terms of technology.

Quality of internet connection will have a positive impact on participant satisfaction in e-learning. This study found that internet quality significantly influences participant satisfaction with a coefficient value of 0.003. A reliable internet connection ensures participants can access materials anytime without issues (Stefanovic et al., 2011). One of the challenges in conducting e-learning or using networks for any activity is technical issues that cause us to disconnect from the network. Technical problems that frequently occur can lead to frustration for participants. With good resources such as good internet quality and good administrative support, it will significantly impact participant satisfaction. Participants who can continue to interact with instructors during e-learning without network interruptions will enhance their satisfaction. (Volery & Lord, 2000).

Diversity in assignments will have a positive influence on e-learning participant satisfaction. This research found that diversity in assignments had an insignificant positive influence on e-learning participant satisfaction. (Thurmond et al., 2002) In their research, they found that diversity in assignments and class discussions will impact e-learning satisfaction. Various methods can be used to evaluate participants, preventing them from getting bored with the same tasks. Additionally, it fosters a sense of connection between participants and instructors, ensuring that their learning efforts are duly recognized. (Sun et al., 2008). However, this can be contradictory to the participants' flexibility in engaging in e-learning. Participants may feel burdened by assignments that extend beyond the program hours. This indirectly diminishes the flexibility advantage, which is a significant factor influencing satisfaction. This contradiction explains why the coefficient value for this variable is higher compared to others.

Interaction in the e-learning environment will have a positive impact on participant satisfaction with e-learning. This study found that interaction in the e-learning environment significantly influences participant satisfaction. Previous research supports this finding, indicating that interactive instructional design is essential for the success of e-learning and has a positive impact on participant satisfaction. (Jiang & Ting, 1998; J. Wu et al., 2006). In e-learning, if the environment is not engaging, it can be challenging for participants to stay focused because they can easily get distracted by their surroundings, given that e-learning can take place anywhere and anytime. Therefore, prominent interaction is needed to create subconscious concentration during the e-learning process. In this program, it is easy to facilitate such interactions because the learning process emphasizes teaching practice, fostering two-way interactions that ultimately create an engaging e-learning environment.

4. CONCLUSION & SUGGESTION

Based on the discussion presented, the conclusions drawn regarding the factors affecting participant satisfaction in e-learning are as follows: Fast response from instructors has a positive but not significant impact on participant satisfaction in e-learning. Instructor understanding of e-learning has a positive but not significant impact on participant satisfaction in e-learning. E-learning flexibility has a significant positive impact on participant satisfaction in e-learning. E-learning quality has a positive but not significant impact on participant satisfaction in e-learning. Technology quality has a significant positive impact on participant satisfaction in e-learning. Internet quality has a significant positive impact on participant satisfaction in e-learning. Assignment diversity has a positive but not significant impact on participant satisfaction in e-learning. Interaction in the e-learning environment has a significant positive impact on participant satisfaction in e-learning.

Based on the goodness-of-fit test conducted, the variables examined in this study only explain about 80% of participant satisfaction in e-learning. There remains 20% of unexplored variables related to participant satisfaction in e-learning. Additionally, this study only sampled respondents from one profession, namely teachers. Further research across different industries is needed to obtain more comprehensive results regarding the factors influencing participant satisfaction in e-learning.

Referring to the background of this study, which discusses the continuous growth of e-learning users, the researcher recommends conducting similar studies in different industries in the future. This is necessary to gain different perspectives from various industries. The human resource development needs vary across different industries, and research in diverse sectors will undoubtedly yield varied insights because respondents will have different motivations for engaging in e-learning. Furthermore, the researcher suggests that relevant institutions focus on the four variables that significantly influence participant satisfaction in this study. These include enhancing e-learning flexibility, maintaining quality technology and internet access, and fostering interactive environments in e-learning settings. It is hoped that these efforts will

significantly enhance participant satisfaction in e-learning programs.

In addition, the researcher also recommends that institutions continue to pay attention to and further enhance the four variables that did not significantly influence participant satisfaction. This is because these variables will support other factors in creating participant satisfaction in e-learning. Quick response and instructor understanding of e-learning should still be prioritized because instructor interactions during e-learning processes moderate overall participant experience. If instructors cannot effectively fulfill these roles, it will impact other variables. Additionally, improving e-learning quality is crucial to maintaining participant interest in classes, and institutions should reconsider task diversity to ensure it does not contradict e-learning flexibility.

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