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Analysis of Communication Technology Usage Experiences in Online Learning Among Universitas Terbuka Students

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Abstract

The advancements in digital communication technology have driven a shift toward online learning in higher education, including at Universitas Terbuka (UT), which utilizes digital media for academic activities. This study aims to analyze students' technology acceptance levels, motives for using digital media, and the quality of their digital communication. A quantitative approach was employed to examine the Technology Acceptance Model (TAM), Uses and Gratifications (U&G), and Computer-Mediated Communication (CMC). Data were collected via a survey of 40 students at Universitas Terbuka in the Communication Science program, Class of 2023 using Likert-scale questionnaires and analyzed with SPSS software. The results indicate mean scores of 3.76 (high) for TAM, 3.70 (high) for U&G, and 3.55 (moderate) for CMC. The findings of this study indicate that the quality of student digital communication is not yet fully optimal, although they demonstrate a high level of technology acceptance and actively use digital media for learning. The study concludes that improving digital communication quality is essential to support the effectiveness of online learning.

Keywords: *Communication Technology, Computer Mediated Communication, Online Learning, Technology Acceptance Model, and Uses & Gratifications.*

INTRODUCTION

Communication technology has envolved into digital communication technology and expanded into various sector, including education. Education worldwide has seen a increase in the use of digital communication technology after the COVID-19 pandemic, including in Indonesia. The pandemic has pushed education in Indonesia to transform by adopting online learning systems. Universitas Terbuka, as a higher education institution providing distance learning, had already implemented online learning systems, and during the COVID-19 pandemic, it further strengthened existing learning systems.

After the COVID-19 pandemic, people have become more accustomed to digital communication technology. This is evident in 2024 data from *Badan Pusat Statistik* Indonesia (BPS), which recorded that 72.78% of the Indonesian population had internet access. The 2024 data represents a 3.57% increase from the previous year, which was recorded at 69.21% in 2023 [1]. The increase in internet users is inseparable from the development of mobile phone technology, which makes it easier for users to access various media. The increasing number of mobile phone users will affect the number of internet users. Furthermore, APJII recorded that the number of internet users in 2026

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reached 235 million people with a penetration rate of 81.72%, an increase of 1.06% compared to the previous year [2]. High internet penetration shows that digital technology has become an important part of various community activities, including in the field of education.

Education is no longer limited to conventional media, but now utilizes modern media from various digital platforms [3]. The use of digital communication technology in online learning has become an essential part of the higher education process. For example, Universitas Terbuka uses an online learning system utilizing various platforms, such as a Learning Management System (LMS), Microsoft Teams, Google Meet, WhatsApp, and Zoom Meeting to support flexible and adaptive learning. However, even though various digital learning platforms are available and widely used, students' experiences utilizing these technologies vary. This difference in experience arises from differences in individual user perceptions, such as perceptions of ease of use and perceived benefits. These differences in perceptions can become barriers to online learning. Rahmawati and Narsa (2019) explain that perceived ease of use is important in fostering, while perceived usefulness (benefits obtained) influences the user's attitude towards the benefits felt during the learning process [3]. Teachers, in responding to the perception of technology-based learning with Computer Mediated Communication hereinafter referred to as CMC, need to create strategies to overcome differences in students' technological skills so that the learning process proceeds and remains effecvtive [4].

Extensive research has been conducted on online learning. For example, Handayani et al. (2022) study of student interest in online learning showed that there is still variation in student interest due to the learning experience gained [5]. Student interest is also influenced by communication in understanding the material presented during online learning [6]. Nowadays, the use of technology in learning also plays a role in areas such as student motivation. Technology, such as digital communication and the use of AI, can help build student knowledge based on content while honing higher-order to thinking skills like to interpret, synthesize data and analyze data, and can influence shifts in learning patterns [7], [8]. Learning using technology becomes attractive to students because of the different visuals and the entertainment factor that influences motivation. Entertainment is the highest factor influencing learning motivation through CMC, with a theoretical approach using the Uses and Gratifications hereinafter referred to as U&G and Technology Acceptance Model hereinafter referred to as TAM, which produces a guide for developers to design learning with more attractive features in business planning [9].

Online learning is not only about student interest but also user perceptions of the ease and usefulness of technology, and this has developed into a research topic in online learning. For example, research TAM to analyze the acceptance of online learning, and the results is perceptions of the ease and usefulness of technology influence user acceptance [10], [11]. Furthermore, there is another study about using digital learning media using the theory of U&G and the results is indicate that students search the

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information and laerning used digital media for learning satification needs [11], [12]. The integration of digital technology in learning is also effective in increasing engagement and performance in distance learning [13]. In general, technology can help humans, including assisting in communication, such as the use of digital humanizing companies to conduct organizational communication and in student discussions in class [14], [15].

Online learning is also researched based on the effectiveness of communication in online learning through the perspective of CMC, which accentuates the quality and interaction in digital media in information change [16][17]. In addition, integrating CMC and Chinese as a Foreign Language (CFL) can also provide benefits in learning, especially foreign language learning [18].

The research mentioned above is previous research that has been conducted on education and technology, which focuses on CMC. There is research on distance education and technology [13], but it has not yet addressed user perceptions. Junghyun's research combines CMC, TAM, and U&G to examine student motivation in the context of feature developer business planning [9]. Therefore, this study integrates all three, namely the TA), U&G, and CMC are three main indicators to provide a more comprehensive picture of students' experiences in using digital communication technology, specifically for students who are studying in distance education.

Integration TAM, U&G, and CMC to understand the relationship between technology acceptance, media use motives, and the quality of digital communication in online learning. This integration is important because it can give a more comprehensive understanding to students' experiences in utilizing digital communication technology. TAM can explain students' acceptance of technology based on their perceptions of the ease and usefulness of the technology [3]. U&G can explain that users actively choose media to fulfill their needs for information, learning, and social interaction [12]. Meanwhile, CMC can be used to understand the quality of communication that occurs through digital media, including interaction, responsiveness, and the exchange of academic information [17]. Therefore, this research is expected to provide a different contribution compared to previous research through a more comprehensive approach.

This study is crucial because the increasingly widespread development of online learning demands a deeper understanding of how students embrace technology, use digital media, and build communication within the learning process. This understanding is necessary to identify aspects that still need improvement to ensure a more effective and interactive online learning process. This study aims to analyze the level of acceptance of communication technology, motives for using digital media, and the quality of digital communication of students of Universitas Terbuka in the Communication Science Study Program class of 2023, and can contribute to research in higher education, specifically in effectiveness of digital learning. The students of Universitas Terbuka in the Communication Science Study Program class of 2023, were chosen as research subjects because their learning process has utilized digital communication technology as the main

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means of academic activities.

METHOD

This study used a quantitative approach to observe yhe phenomenon objectively and concretely, and it can be measured through numerical data processed using statistical procedures [19]. The results are presented using a design of descriptive research to describe how many of technology acceptance, motives for media use, and the quality of students' digital communication without examining causal relationships between variables. Data collection was conducted through a survey method using an online questionnaire distributed to research respondents. In this study, a survey method is used to get direct data from repondents regarding their experiences in using digital communication technology in the online learning process. This study focuses on measuring social phenomena based on empirical data that can be observed and analyzed systematically.

A population is the entirety of subjects or objects that possess certain characteristics and are the target of the research [20]. The population in this study was the 2023 intake of students in the Communication Studies Program, Universitas Terbuka, while the sample comprises a subset of this population that has the relevant charateristics [20]. Sample selection was conducted using purposive sampling, involving the establishment of criteria aligned with the research objectives. The purposive sampling technique was employed to gather data from respondents familiar with using technology for online learning and those who understood the benefits of technology in communication. Using this technique to select the sample facilitated data collection that directly targeted the research topic. This study uses 40 respondents a sample who met the criteria for active users of digital communication technology in online learning. Sampling in quantitative research aims to obtain respondents who align with the research characteristics so that the resulting data is representative of the phenomenon being studied [19].

Data collection was carried out using a survey method. Survey method used questionnaires by Google forms. The questionnaire was prepared based on the theoretical basis of the TAM, U&G, and CMC used in this study. The technology acceptance variable is measured through the indicators of perceived usefulness and ease of use. The need for information, learning, and social interaction is used as a measured variable of media usage motive, while the digital communication quality variable is measured through aspects of interaction, responsiveness, and the quality of information exchange. The unit of analysis is individual students of the Communication Studies Program, Universitas Terbuka, class of 2023, who use digital communication technology in online learning.

The collected data were then coded and processed using IBM SPSS Statistics. The analysis of the data used descriptive statistics to show the characteristics of the data and the tendencies of respondents' responses. Descriptive analysis included frequency distribution, percentage, average value (mean), and standard deviation [19]. Interpretation

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of the results based on the Likert scale categories, such as low if 1.00–2.33, moderate if 2.34–3.66, and high if 3.67–5.00. First, the research instrument was validated using item-total correlation and tested for reliability using Cronbach's Alpha. After that, the data were analyzed. An instrument is declared valid if the correlation coefficient value meets the established criterias, and if Cronbach's Alpha value ≥ 0.70, then an instrument is declared reliable [20] .

RESULTS AND DISCUSSION

1. RESULTS

This study involved 40 respondents from Universitas Terbuka student in the Communication Science Study Program, class of 2023. In Figure 1, the gender of the respondents was dominated by women at 87.5%, or as many as 35 people, while men were 12.5%, or as many as 5 people.

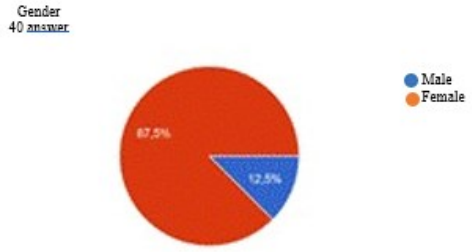


Figure 1. Respondent Gender Diagram
(source: Researcher's Analysis Results)

Respondents were also divided by age group. The minimum age range for respondents was 18 to 26 years old. 18 years old is the lowest age, and 26 years old is the highest age. The following diagram illustrates the age range of respondents.

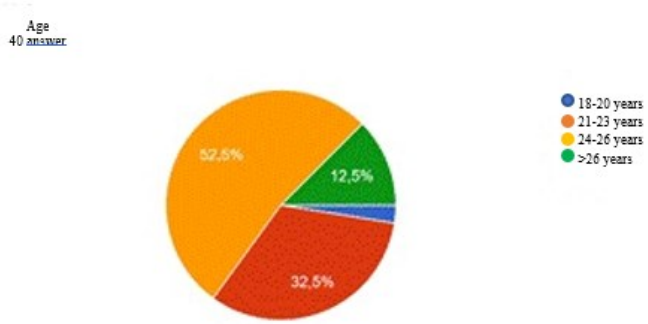


Figure 2. Respondent Age Diagram
(source: Researcher's Analysis Results)

In Figure 2, based on the age of the respondents, the majority were in the 24–26 years range at 52.5% or 21 people, followed by 21–23 years old at 32.5% or 13 people, 12.5% or 5 people aged over 26 years old, and 2.5% or 1 person aged 18–20 years old. This

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condition indicates that the respondents are dominated by the young adult age group who are familiar with the use of digital technology.

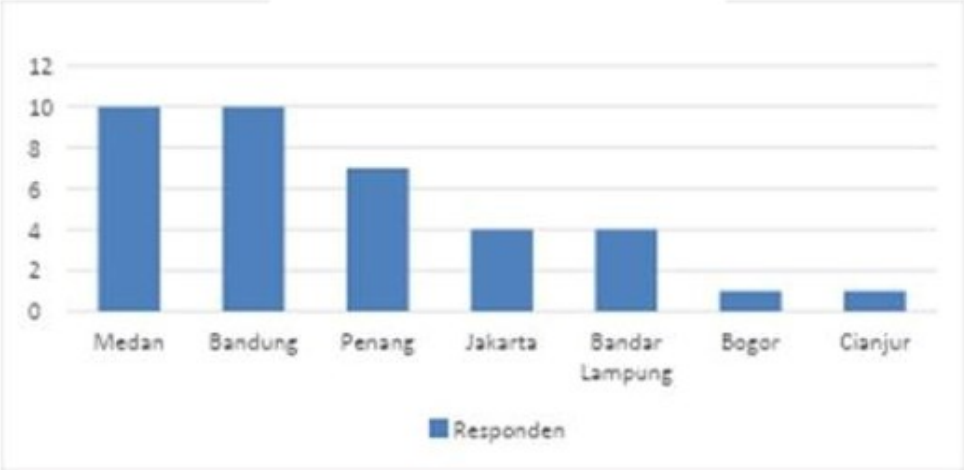


Figure 3. Respondent Domicile Diagram

(source: Researcher's Analysis Results)

In Figure 3, based on domicile, respondents came from various regions. Respondents domiciled in Medan and Bandung each accounted for 25%. Respondents domiciled in Penang accounted for 17.5%. Furthermore, respondents domiciled in Jakarta and Bandar Lampung each accounted for 10%. Respondents domiciled in Bogor and Cianjur each accounted for 2.5%. This indicates a fairly diverse distribution of respondents, although still dominated by two main regions: Medan and Bandung.

Table 1. Learning Platforms Used by Respondents

Learning Platform	Number of Respondents (People)	Percentage (%)
Open University LMS	23	57,5
Microsoft Teams	11	27,5
Zoom Meeting/Google Meet	3	7,5
Other	3	7,5
Total	**40**	**100**

Source: Processed Primary Data, 2026 (Researcher's Anlaysis Results).

Based on Table 1, 57.5% of respondents, used the Universitas Terbuka LMS. Microsoft Teams was used by 27.5% of respondents. Zoom Meeting/Google Meet and other platforms were each used by 7.5% of respondents.

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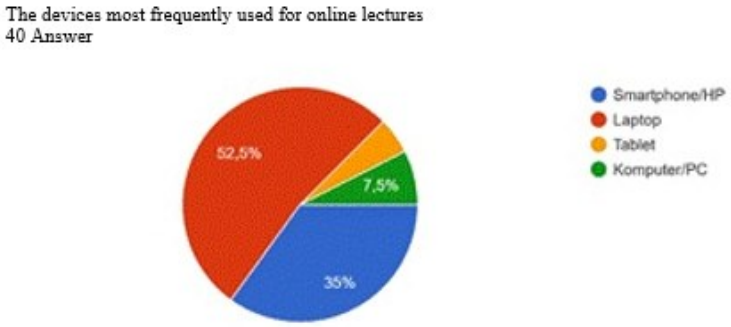


Figure 5. Diagram of Devices Used by Respondents
(source: Researcher's Analysis Results)

In Figure 5, the device most frequently used by respondents was a laptop, at 52.5%, or 21 respondents. Smartphones were used by 35% of respondents, or 14 respondents. Computers/PCs were used by 7.5% of respondents, or 3 respondents, and tablets by 5% of respondents, or 2 respondents.

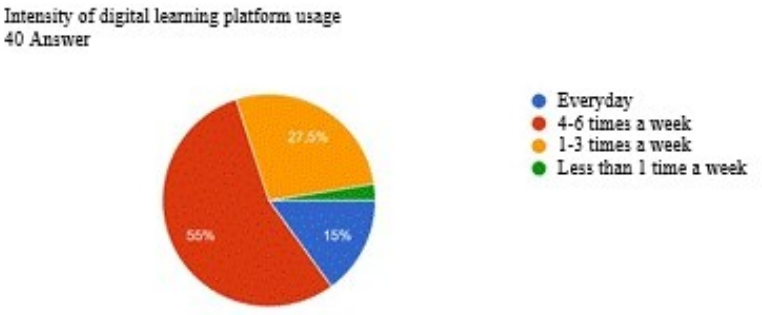


Figure 6. Diagram of Learning Platform Usage Intensity
(source: Researcher's Analysis Results)

Figure 6 shows that 55% of respondents (22 people) use the learning platform 4–6 times a week. 27.5% of respondents (11 people) use the learning platform 1–3 times a week. 15% of respondents (6 people) use the learning platform daily, while 2.5% of respondents (1 person) use the learning platform less than once a week. Based on the survey, these findings indicate that, overall, the level of technology usage by student for digital learning is high.

The validity of the variables used in each questionnaire item is tested to ensure accurate measurement of the variables. The research instrument consisted of three variables: TAM, U&G, and CMC, which are measured through several statement items based on the indicators of each variable. The technology acceptance variable is measured through the indicators of perceived usefulness and ease of use. The need for information, learning, and social interaction is used as a measured variable of media usage motive, while the digital communication quality variable is measured through aspects of interaction, responsiveness, and the quality of information exchange. The SPSS program

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is used to test the validity of all the statement items using Pearson Correlation. The testing criteria applied is that if the calculated *r* value exceeds the *r* table value of 0.312, the statement item is deemed valid. The validity test results for each variable are presented in the table below, in table 2.

Table 2. Results of the Validity Test of the TAM Variable (X1)

Item	r count	*Say.*	Information
X1(1)	0,871	0	Valid
X1(2)	0,871	0	Valid
X1(3)	0,819	0	Valid
X1(4)	0,746	0	Valid
X1(5)	0,762	0	Valid
X1(6)	0,432	0,005	Valid

(source: Researcher's Analysis Results)

Table 3. Results of the Validity Test of the U&G Variable (X2)

Item	r count	*Say.*	Information
X2(1)	0,836	0	Valid
X2(2)	0,581	0	Valid
X2(3)	0,836	0	Valid
X2(4)	0,835	0	Valid
X2(5)	0,758	0	Valid
X2(6)	0,749	0	Valid

(source: Researcher's Analysis Results)

Table 4. Results of the Validity Test of the CMC Variable (X3)

Item	r count	*Say.*	Information
X3(1)	0,686	0	Valid
X3(2)	0,715	0	Valid
X3(3)	0,552	0	Valid
X3(4)	0,757	0	Valid
X3(5)	0,737	0	Valid

(source: Researcher's Analysis Results)

In this study, a reliability test was also conducted to assess the consistency of the

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questionnaire instruments for the TAM, U&G, and CMC variables. Testing was conducted using Cronbach's Alpha with the SPSS program. An instrument is considered reliable if the Cronbach's Alpha value exceeds 0.70. In this study, all variables achieved Cronbach's Alpha value above 0.70, indicating that research instrument possesses a good level of consistency and is deemed suitable for further analysis.

Table 5. Results of the Research Instrument Reliability Test

Variables	*Cronbach's Alpha*	Information
TAM (X1)	0,808	Reliable
U&G (X2)	0,812	Reliable
CMC (X3)	0,817	Reliable

(source: Researcher's Analysis Results)

The description of the research variables was conducted to provide a general overview of the level of technology acceptance, motives for media use, and the quality of digital communication based on respondents' answers. This description was obtained from the average value (*mean*) and standard deviation of the data processing results using IBM SPSS Statistics. Interpretation of results used a five-level Likert scale category with a range of 3.67–5.00 (high), 2.34–3.66 (moderate), and 1.00–2.33 (low). These categories are used as a basis to describe the response tendencies of the respondents regarding the variables TAM, U&G, and CMC. Thus, the average value obtained can provide information regarding the level of technology acceptance, motives for media use, and the quality of digital communication perceived by respondents. The measurement results for the three research variables in Table 6.

Table 6. Results of Measurement of Research Variables

Variables	Mean	Std. Deviation	Category
TAM	3,76	0,749	High
U&G	3,70	0,761	High
CMC	3,55	0,799	Currently

(source: Researcher's Analysis Results)

Based on Table 6, the TAM variable is considered into high, with an average value of 3.76. The U&G is also considered highly variable, obtaining an average value of 3.70. Meanwhile, the CMC variable is considered moderate, obtaining an average value of 3.55. These results indicate that technology acceptance and media usage motives are in the high category, while the quality of digital communication remains in the moderate category.

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2. DISCUSSION

a. Level of Acceptance of Communication Technology (Technology Acceptance Model/ TAM)

The findings of the study show that the variables in the TAM were categorized as high, with an average score of 3.76. This finding indicates that students have a good level of acceptance of digital communication technology used in online learning. The high TAM value indicates that students consider digital learning technology easy to use and that it provides benefits in supporting academic activities. The highest indicator value is found in X1.3 at 3.92, indicating that students are able to adapt quickly to the use of digital learning technology. Conversely, indicator X1.6 obtained the lowest score of 3.62, indicating that some students still believe that technology has not fully increased learning effectiveness optimally.

The findings are in accordance with the TAM developed by Davis, Bagozzi, and Warshaw, which explains that technology acceptance is influenced by perceived usefulness and perceived ease of use [10]. The higher a user's perception of the benefits and ease of use of technology, the greater their tendency to accept and utilize it in their daily activities. This study indicate that students have experienced the benefits of technology in supporting the learning process and have not experienced significant difficulties in using it. These are in line with the research of Fecira and Abdullah about intention to use the system, which positive influenced by perceived usefulness and perceived ease of use [10]. Research by Latifah et al. also showed that perceived usefulness, perceived ease of use, and user attitudes influenced students' acceptance of online learning [21]. These similar findings suggest that the success of digital learning implementation is strongly influenced by the technology's ability to provide tangible benefits and convenience for users. Therefore, the high level of technology acceptance among the 2023 intake of students in the Communication Studies Program at Universitas Terbuka. This indicates that digital communication technology has been accepted as a primary tool supporting the online learning process.

b. Motives for Using Digital Media (Uses and Gratifications/ U&G)

The results of the study show that the variable U&G obtained an average score of 3.70, categorized as high. This result indicates that students actively utilize digital media to meet academic needs during the online learning process. The use of digital media is driven by the need to obtain information, access learning materials, increase learning flexibility, and support communication in academic activities. The highest indicator is X2.2 at 3.88, indicating that flexibility is the main reason students use digital learning media. Conversely, indicators X2.4 and X2.6 obtained the lowest scores of 3.60, indicating that the level of student satisfaction with the experience of using digital media can still be improved.

The findings are in accordance with the Uses and Gratifications theory, which

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explains that media users are active in selecting media they deem capable of meeting their needs and providing certain satisfactions [12]. Students not only use digital media because of its availability, but also because it can provide benefits that align with their academic needs. The flexibility of access, which allows students to learn anytime and anywhere, is one of the main reasons for using digital media in online learning.

The results of this study are supported by Jin's study, which found that the use of digital learning platforms is associated with user satisfaction, usage intensity, and improved student learning outcomes [12]. Research by Pattiselanno et al. also showed that students utilize digital media to meet their information and learning needs according to their academic interests [11]. Furthermore, research by Lova found that students gave positive assessments of online learning, despite still facing obstacles such as limited internet connection, data quota costs, and the need to improve information technology skills [22]. These findings indicate that the use of digital media in learning is influenced not only by functional benefits, but also by the experience and level of satisfaction felt by users during the learning process.

c. Digital Communication Quality (Computer Mediated Communication/ CMC)

The results of the study show that the variable Computer Mediated Communication (CMC) obtained an average score of 3.55, categorized as moderate. These results indicate that the quality of digital communication in online learning is not yet fully optimal. Although the academic communication process has taken place through various digital media, the effectiveness of the interactions formed is still at a moderate level. The highest indicator is X3.4 at 3.72, indicating that digital communication media is able to support academic interactions quite well. In addition, indicator X3.5 obtained a score of 3.70, indicating that students feel quite comfortable communicating online. However, indicator X3.3 obtained the lowest score of 3.25, indicating that responsiveness in digital communication is still an aspect that needs to be improved.

According to perspective Computer Mediated Communication, the effectiveness of digital communication is influenced by the quality of interaction, speed of response, and the media's ability to support the exchange of information between users [17]. A CMC score in the moderate category indicates that although technology has facilitated communication, the quality of the interactions formed is not yet optimal. This condition can impact student understanding of the material, the effectiveness of information exchange, and student engagement in the online learning process.

The findings of this study are supported by research by Lubis et al., which shows that the use of digital media such as Zoom, Google Meet, WhatsApp, and e-learning can facilitate the rapid and widespread exchange of information [17]. However, the study also identified various obstacles such as network disruptions, learning fatigue, power outages, and limited communication interactions. Research by Widiawati also showed that technical, psychological, environmental, and semantic barriers can impact students'

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understanding of online learning materials [6]. Research by Dirah and Hidayatullah added that the effectiveness of online learning communication is influenced by the quality of the communication media, teaching materials, and learning evaluation processes [16]. Therefore, the quality of digital communication needs to be continuously improved so that the online learning process can be more effective and interactive.

Overall, the study results indicate that acceptance of communication technology and motives for using digital media are high, while the quality of digital communication is moderate. These findings indicate that students are well prepared to accept and utilize digital communication technology to support academic activities. However, the quality of communication formed during online learning has not developed in balance with the level of technology acceptance and digital media use. These results indicate that the success of online learning is determined not only by the acceptance of technology and the use of digital media, but also by the effectiveness of communication between lecturers and students. Therefore, improving the quality of digital communication needs to be a priority in the development of online learning to make the learning process more effective, interactive, and responsive.

CONCLUSION

The results of the study show that the level of acceptance of digital communication technology (Technology Acceptance Model/ TAM), motives for using digital media (Uses and Gratifications/ U&G), and the quality of digital communication (Computer Mediated Communication/ CMC) among the 2023 batch of Communication Science students at the Open University are in different categories. The TAM variable is considered into high, with an average value of 3.76; the U&G is also considered highly variable, obtaining an average value of 3.70; and the CMC variable is considered moderate, obtaining an average value of 3.55. These findings indicate that students have been able to accept and utilize digital communication technology well, but the quality of digital communication formed in the online learning process still needs to be improved.

The conclusion of this study is that the implementation of digital communication technology among students of Universitas Terbuka of the Communication Science Study Program, Class of 2023, falls into the good category, based on findings derived from the Technology Acceptance Model (TAM), Uses and Gratifications(U&G), and Computer Mediated Communication (CMC) frameworks. The TAM variable is in the high category, and the U&G variable is in the high category. These results indicate that students have good technology acceptance and actively use digital media in learning activities. The use of digital media is primarily intended to support academic needs such as access to information, learning flexibility, and completing assignments. Thus, two main aspects—technology acceptance and motives for media use—have been running positively.

The CMC variable falls into the moderate category, indicating that the quality of digital communication in online learning has not yet reached optimal levels. Low levels

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of responsiveness are evident in lecturers and two-way interactions between lecturers and students. Although communication media support learning activities, communication effectiveness is not yet fully consistent. This situation indicates a gap between the high level of technology acceptance and the quality of communication produced in the online learning process.

Based on these findings, improving the quality of online learning needs to focus on academic communication. Lecturers need to increase their responsiveness in providing feedback to students to make learning interactions more effective. Furthermore, the use of communication features on learning platforms needs to be optimized to support more interactive discussions. Strengthening digital literacy is also necessary so that students and lecturers can utilize technology more effectively in the learning process. These efforts are expected to improve the overall quality of academic communication.

Future research is recommended to expand the research variables by adding other factors such as learning satisfaction, internet network quality, or online learning effectiveness. More complex analytical approaches can also be used to gain a deeper understanding of the relationships between variables. Thus, further research can provide a more comprehensive contribution to the development of digital learning in higher education.

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