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Factors Influencing Intention to Use Mobile Learning: A Quantitative Study in Higher Education

Baso Intang Sappaile [1], Hendro Sukoco [2]
[1] *Universitas Negeri Makassar, Indonesia*
[2] *Universitas Nahdlatul Ulama Purwokerto, Indonesia*

Corresponding Author: Name, Baso Intang Sappaile E-mail; baso.sappaile@unm.ac.id

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ABSTRACT

In this modern era, the use of technology is increasingly widespread among students at universities. One of them is the increasing use of mobile technology in learning, showing the importance of understanding the factors that influence the intention to use mobile learning among students. The aim of this research is to determine and analyze the factors that influence the intention to use mobile learning among college students. Apart from that, it is also to find out the relationship between the variables studied. This research method uses a quantitative method with a questionnaire as a data collection instrument. The research sample consisted of students at universities who used mobile learning in the learning process. The results of this research indicate that there are several factors that influence the intention to use mobile learning in higher education, including ease of use, perceived benefits, perceptions of usefulness, and social factors. These variables make a significant contribution to the intention to use mobile learning among students. The conclusion of this study confirms that factors such as ease of use, perceived usefulness, perception of usefulness, and social factors play an important role in forming intentions to use mobile learning in higher education environments. The implication of this research is the importance of integrating these factors in the development of effective learning strategies using mobile technology to increase student participation and performance in higher learning. The limitation of this research is that the researcher did not directly conduct research at universities, but by distributing questionnaires to students at universities.

Keywords: *Higher Education, Mobile Learning, Quantitative Studies*

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INTRODUCTION

Higher education is one of the educational institutions that has a strategic role in preparing the young generation to face the demands of the future (Abu Bakar dkk., 2023). In the midst of increasingly rapid technological developments, the use of technology in the educational context has become a necessity. One form of technological innovation that has changed the face of higher education is mobile learning (m-learning) (Bernacki dkk., 2020). Mobile learning refers to the use of mobile devices, such as smartphones and tablets, as tools to support the learning process in higher education (Aceto dkk., 2019). The development of mobile learning is the result of digital transformation that has hit almost all aspects of human life, including education (Alghazzawi dkk., 2021). Mobile devices have become an integral part of students' daily lives, which naturally has implications for the approach to learning in higher education (Alsubaie, 2022). The use of mobile devices in a learning context provides unprecedented flexibility (Bernacki dkk., 2020). Students are no longer tied to a specific classroom or time to access learning materials. They can learn anytime and anywhere, according to their needs and preferences.

Apart from that, mobile learning also opens the door to more interactive and collaborative learning (Chang dkk., 2019). Various mobile learning applications and platforms provide various features, such as learning videos, interactive quizzes, discussion forums, and real-time sharing of learning materials. This allows students to be actively involved in the learning process, collaborate with fellow students, and interact with lecturers or instructors more directly (A'yun dkk., 2022). The use of mobile technology in learning also facilitates the adoption of a situation-based learning approach. By utilizing features such as GPS and sensors in mobile devices, mobile learning applications can provide learning experiences that are related to the context of a particular place and time (Chen, 2019). For example, in history learning, students can use mobile devices to explore historical locations and obtain additional information directly in the field.

However, behind the great potential offered by mobile learning, there are also a number of challenges that need to be overcome. One of them is limited accessibility and infrastructure (Criollo-C dkk., 2021). Even though smartphone use is increasingly widespread among students, there are still some students who do not have adequate access to mobile devices or a stable internet network (Fang dkk., 2021). Apart from that, another challenge is the lack of digital literacy among students. Some students may not be familiar or skilled in using mobile technology for learning purposes, so they require additional support and training from universities (Adeyeye dkk., 2022). In facing these challenges, universities need to take strategic steps to maximize the potential of mobile learning in supporting the learning process. Support from the administration and lecturers is very important in promoting the use of mobile learning among students. Apart from that, providing adequate infrastructure and accessibility is also a key factor for the successful implementation of mobile learning in higher education.

By understanding the potential and challenges of using mobile learning in higher education, educational institutions can take concrete steps to make optimal use of this technology to support student-centered learning that is relevant to the demands of the times (Alammary dkk., 2014). Through the proper integration of mobile technology and innovative learning strategies, higher education institutions can create dynamic, interactive, and results-oriented learning environments that will provide long-term benefits for students' academic and professional development.

Literatur of Refiew

Use of Mobile Learning in Higher Education

Higher education is a dynamic and rapidly evolving environment, where technology plays a key role in the transformation of learning (Dakir dkk., 2021). One of the technological innovations that is changing the learning paradigm in higher education is mobile learning (m-learning). Mobile learning refers to the use of mobile devices, such as smartphones and tablets, to support the learning process outside the classroom (Kwok, 2019). This phenomenon has changed the way students access, interact and utilize learning resources (Marcel, 2019). The use of mobile learning in higher education provides greater flexibility in the time and place of learning. Students are no longer limited to certain classrooms or times to access learning materials (Lim dkk., 2020). By using mobile devices, they can access learning materials anytime and anywhere according to their needs (AL-Fayyadh dkk., 2021). This allows for more effective independent learning and adapts to students' individual learning styles.

Mobile learning also allows for more interactive and involved learning (Alturki & Aldraiweesh, 2022). Various mobile learning applications and platforms provide various features, such as learning videos, interactive quizzes, and discussion forums, which allow students to actively participate in the learning process (Motiwalla, 2007). Interaction between students and interaction with lecturers can also be further facilitated through this mobile learning platform, enabling the creation of a dynamic learning community outside the classroom (Farmer dkk., 2019). Apart from that, mobile learning also supports a situation-based learning approach. By utilizing GPS features and sensors in mobile devices, mobile learning applications can provide learning experiences related to the context of a particular place and time. For example, in history learning, students can use mobile devices to explore historical locations and obtain additional information directly in the field.

However, even though it has great potential, the use of mobile learning in higher education is also faced with several challenges. One of them is limited accessibility and infrastructure (V. Kumar & Nanda, 2019). Even though smartphone use is increasingly widespread among students, there are still some students who do not have adequate access to mobile devices or a stable internet network. Apart from that, another challenge is the lack of digital literacy among students. Some students may not be familiar or skilled in using mobile technology for learning purposes, so they require additional support and training from universities (Oyewole dkk., 2023). Nevertheless, the

development of mobile learning continues to progress rapidly, with an increase in the number of applications and platforms available, as well as increasingly widespread adoption in various educational institutions. The use of mobile learning in higher education has opened up new opportunities to improve the quality of learning, increase student engagement, and prepare them to face the challenges and opportunities in this digital era. By understanding the potential and challenges of using mobile learning, universities can take strategic steps to maximize the benefits of this technology in supporting student-centered learning and relevant to the demands of the times.

Mobile learning in learning

Mobile learning (m-learning) is a learning approach that uses mobile devices, such as smartphones, tablets, or laptops, as the main tool for accessing, interacting, and consuming learning material (Innocenti dkk., 2019). The concept of mobile learning changes the traditional learning paradigm by allowing access to learning materials flexibly, anytime and anywhere according to user needs. Mobile learning (m-learning) has become an integral part of the modern educational landscape, expanding the learning space beyond the boundaries of a specific class and time. With advances in technology and widespread penetration of mobile devices such as smartphones and tablets, mobile learning has changed the way students learn and interact with learning materials. This approach offers a number of significant benefits in a learning context, including flexibility, accessibility, interactivity and relevance.

According to (Troussas dkk., 2020), in the study entitled Collaboration and fuzzy-modeled personalization for mobile game-based learning in higher education, it states that incorporating personalization and collaboration in mobile game-based learning can further assist students in higher education towards advancing their knowledge level. Second, according to (Chavoshi & Hamidi, 2019), the research title Social, individual, technological and pedagogical factors influencing mobile learning acceptance in higher education: A case from Iran. The results of his research stated that The results demonstrate that the selection of mobile devices as an educational strategy is depended on the combination of pedagogical, technological, social and individual factors. These results show that perceived usefulness is the most effective factor in acceptance of m-learning in Iran. Also, due to the cultural and social structure of Iran, personal innovativeness has no impact on acceptance of m-learning. Third, according to (J. A. Kumar & Bervell, 2019), the research title Google Classroom for mobile learning in higher education: Modelling the initial perceptions of students. The results of his research stated that revealed important significant non-linear relationships between Hedonic Motivation and Habit with the rest of the UTAUT2 factors within the model. Students' positive intentions to accept Google Classroom were anchored on Habit, Hedonic Motivation and Performance Expectancy.

The aim of using mobile learning in higher education is to create a more inclusive, interactive, relevant and effective learning environment for students. By utilizing mobile technology, universities aim to increase the accessibility of education by reaching more

people globally. Through mobile learning, students can access learning materials from anywhere, at any time, without being limited by physical or geographic boundaries, opening up opportunities for individuals from various backgrounds and locations to gain access to quality education. In addition, another goal is to facilitate more effective independent learning. Students can study independently, repeat material, or explore additional topics according to their own level of understanding. Mobile learning also aims to encourage student involvement and participation in learning by providing various interactive features, such as learning videos, quizzes, discussion forums and simulations.

RESEARCH METHODOLOGY

The research method used in this research is a quantitative method (Coorey dkk., 2018). Research data was obtained from the results of filling out questionnaires by students at universities as well as a data collection instrument. The questionnaire was created via Google Form. The questionnaire contains statements that will be answered by students at the university. When making this statement, it must be in accordance with the provisions for making a good and correct questionnaire. The quantitative research method used in this study aims to identify factors that influence the intention to use mobile learning in higher education in a systematic and measurable manner (Kang dkk., 2020). A quantitative approach was chosen to allow in-depth statistical analysis of the relationships between the variables studied. This research method consists of research design stages, sample selection, development of data collection instruments, data collection, data analysis, and interpretation of results.

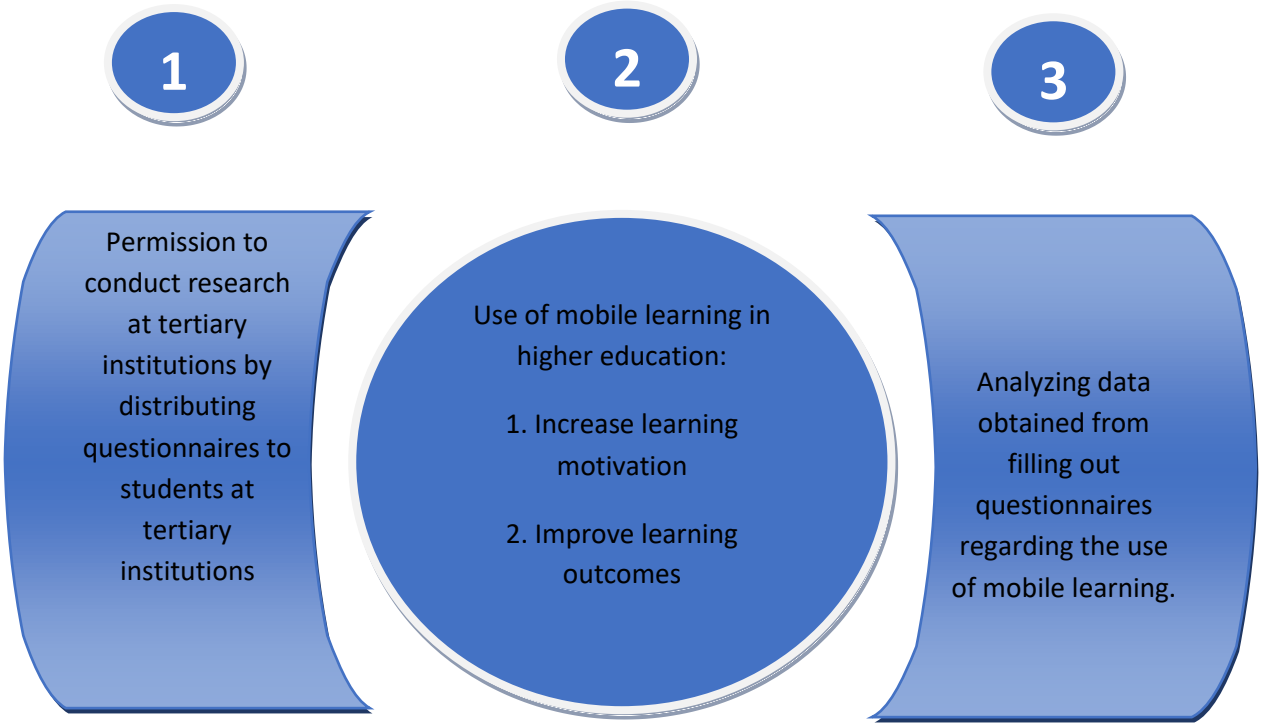
The stages in this research are first, in the research design stage, the researcher formulates the research objectives, research questions, and hypotheses to be tested. The aim of this research is to identify factors that influence the intention to use mobile learning in higher education. The research questions focused on variables that are considered important in the context of using mobile technology for learning. Research hypotheses are proposed based on related literature and relevant theories, which will then be tested statistically in data analysis. Second, sample selection was carried out taking into account the characteristics of the target population. The sample for this research will consist of students from several universities who use mobile learning in the learning process. Sampling was carried out randomly to ensure the representativeness and generalisability of the research results.

Third, the development of data collection instruments was carried out through the construction of valid and reliable questionnaires. The questionnaire was designed to measure the variables studied, including intention to use mobile learning and the factors that influence it, such as ease of use, perceived usefulness, perception of usefulness, and social factors. The validity of the questionnaire will be tested through content validity tests and empirical validity tests, while its reliability will be tested using internal reliability tests such as Cronbach's alpha. Fourth, data collection was carried out by distributing questionnaires to respondents who were students from various study

programs and semester levels at several universities. Data collection is carried out online or through face-to-face interviews depending on respondents' preferences and availability.

Then fifth, data analysis is carried out using appropriate statistical techniques, such as linear regression, to identify the factors that most influence the intention to use mobile learning. Linear regression analysis is used to measure the linear relationship between independent variables (influencing factors) and dependent variables (intention to use). Apart from that, descriptive analysis techniques are also used to present sample characteristics and variable distribution. Finally, the results of data analysis will be interpreted to summarize research findings and draw relevant conclusions. Interpretation of the results will involve comparing the proposed hypotheses with empirical findings, as well as discussing the implications of these findings in the context of learning in higher education. The practical and theoretical implications of this research will also be discussed to provide deeper insight into the factors that influence the intention to use mobile learning in higher education.

The flow of this research can be seen in the chart below:



The quantitative research method used in this study is considered good and appropriate because it provides a systematic, objective and measurable approach in

identifying factors that influence the intention to use mobile learning in higher education.

RESULT AND DISCUSSION

Mobile learning (m-learning) has become a popular alternative in higher education because of its flexibility in providing access to learning anywhere and anytime via mobile devices such as smartphones and tablets. Factors that influence the intention to use mobile learning in higher education can be divided into several aspects, including technological factors, individual factors, institutional factors, and environmental factors. Technological factors are one of the important factors that influence the intention to use mobile learning in higher education (Suartama dkk., 2019). The availability of adequate technological infrastructure, such as a stable internet connection and sophisticated mobile devices, can increase users' interest and ability to use mobile learning effectively. Apart from that, the development of innovative and user-friendly mobile learning applications can also influence usage intentions, because users tend to be more interested in using platforms that are easy to access and use.

Individual factors also play an important role in determining the intention to use mobile learning in higher education. Individual characteristics such as technological ability, perceived usefulness, perceived ease of use, and learning motivation can influence the intention to use mobile learning (Atkinson & Lim, 2013). For example, students who believe that the use of mobile learning can improve their academic performance tend to have higher intentions to use it. In addition, the level of technological proficiency and comfort in using mobile devices can also influence the intention to use mobile learning (Kaliisa dkk., 2019). Apart from individual factors, institutional factors also play a role in influencing the intention to use mobile learning in higher education. Support and promotion from institutions for the use of mobile learning can increase users' interest and intention to adopt it (Al-Najjar & Pradhan, 2021). This can be done through providing training and technical support for users, integrating mobile learning in the curriculum, as well as providing incentives or rewards for users who are active in using the mobile learning platform. In addition, institutional policies regarding the use of mobile devices in the learning environment can also influence intentions to use mobile learning.

Environmental factors also have an influence in determining the intention to use mobile learning in higher education. The social, cultural and economic environment can influence users' perceptions and attitudes towards mobile learning. For example, in an environment that encourages the use of technology in education, students tend to have a higher intention to use mobile learning. In addition, economic factors such as the accessibility of mobile devices and the cost of internet access can also influence the intention to use mobile learning (Alasmari & Zhang, 2019). Apart from these factors, interactions between factors can also influence the intention to use mobile learning in higher education. For example, technological factors may influence perceived ease of

use, which in turn may influence usage intentions. Likewise, institutional factors can influence the perception of the benefits of using mobile learning.

In developing strategies to increase the use of mobile learning in higher education, it is important to pay attention to the factors that influence the intention to use it. Steps such as improving technology infrastructure, providing training and support for users, integrating mobile learning in the curriculum (Gregersen-Hermans, 2021), and creating an environment that supports the use of technology in learning can help increase the intention to use mobile learning in higher education. Apart from that, further research is also needed to understand in more depth the interaction between factors and their influence on the intention to use mobile learning in higher education. By paying attention to these factors, it is hoped that the use of mobile learning in higher education can continue to develop and provide maximum benefits for the learning process.

Table 1: Results of filling out the questionnaire by students in higher education regarding the use of mobile learning.

NO	**Statement**	**Assessment Category**			
		SA	A	D	SD
1	I feel that the use of mobile learning will make it easier for students to access learning materials.	25%	75%		
2	I feel that the use of mobile learning will improve the efficiency and way students learn.	25%	75%		
3	I feel that mobile learning can help me achieve my academic goals in college.	50%	50%		
4	I feel happy and knowledgeable when using mobile technology for learning in college.	25%	75%		
5	I feel that mobile learning can increase student involvement in being active in learning.	25%	75%		
6	I feel I have enough knowledge about how to use mobile applications for learning.	25%	75%		
7	I feel that mobile learning can increase collaboration between students in learning.	75%	25%		
8	I feel that mobile learning provides flexibility in learning time.	25%	75%		
9	I feel that the use of mobile learning will increase students' understanding of the material they will study.	25%	75%		
10	I feel I have sufficient access to a mobile device to use mobile learning.	50%	50%		
11	I feel that mobile learning can help me overcome learning obstacles.	25%	75%		
12	I feel that using mobile learning will increase	25%	75%		

	my motivation to learn.		
13	I believe that mobile learning can help me prepare myself for a future career.	25%	75%
14	I feel that there is a need for sufficient social support in using mobile learning.	50%	50%
15	I feel that the use of mobile learning suits the learning styles of students in the modern era.	25%	75%

Information:
SA= Strongly agree
A= Agree
D= Disagree
SD= Strongly disagree

Based on the results of the assessment of the questionnaire in the form of a questionnaire that was given to students, on average the students gave a positive response to the questionnaire. In the questionnaire there are four assessment categories, namely strongly agree, agree, disagree and strongly disagree. After the data was processed, the highest questionnaire assessment result was 75% in the category of strongly agree and agree. The second assessment received the highest response with the strongly agree category of 50% and 50% agree. Further assessments will be detailed below. The first statement is I feel that the use of mobile learning will make it easier for students to access learning materials received responses in the categories of strongly agree 25% and agree 75%. Second statement I feel that the use of mobile learning will improve the efficiency and way students learn received responses in the categories of strongly agree 25% and agree 75%. Third statement I feel that mobile learning can help me achieve my academic goals in college received responses in the categories of strongly agree 50% and agree 50%. Fourth statement I feel happy and knowledgeable when using mobile technology for learning in college received responses in the categories of strongly agree 25% and agree 75%. Fifth statement I feel that mobile learning can increase student involvement in being active in learning received responses in the categories of strongly agree 25% and agree 75%.

Next sixth statement I feel I have enough knowledge about how to use mobile applications for learning received responses in the categories of strongly agree 25% and agree 75%. Seventh statement I feel that mobile learning can increase collaboration between students in learning received responses in the categories of strongly agree 75% and agree 25%. Eighth statement I feel that mobile learning provides flexibility in learning time received responses in the categories of strongly agree 25% and agree 75%. Ninth statement I feel that the use of mobile learning will increase students' understanding of the material they will study received responses in the categories of strongly agree 25% and agree 75%. Tenth statement I feel I have sufficient access to a mobile device to use mobile learning received responses in the categories of strongly

agree 50% and agree 50%. Eleventh statement I feel that mobile learning can help me overcome learning obstacles received responses in the categories of strongly agree 25% and agree 75%. Twelfth statement I feel that using mobile learning will increase my motivation to learn received responses in the categories of strongly agree 25% and agree 75%. Thirteenth statement I believe that mobile learning can help me prepare myself for a future career received responses in the categories of strongly agree 25% and agree 75%. Fourteenth statement I feel that there is a need for sufficient social support in using mobile learning received responses in the categories of strongly agree 50% and agree 50%. Fifteenth statement I feel that the use of mobile learning suits the learning styles of students in the modern era received responses in the categories of strongly agree 25% and agree 75%.

The use of mobile learning in learning is done with several steps. Steps in using mobile learning in higher education can help students and educators utilize technology effectively to improve the learning experience. Some of these steps are the first in using mobile learning is to set clear learning goals. This purpose must be in accordance with the curriculum and pay attention to the students' learning needs. By having clear goals, students can focus on relevant material and improve the effectiveness of learning. Second, the selection of the appropriate Mobile Learning platform (Darmaji dkk., 2019). There are various mobile learning platforms available, ranging from specialized learning applications to learning platforms that are integrated with the university system. Platform selection should pay attention to features that suit learning needs, such as ease of access, interactivity, and data security. Third, training and supply for users. It is important for students and educators to get training and supplies on the use of the chosen mobile learning platform. This training can include how to access materials, participate in online discussions, and take advantage of other available features. With a good understanding of mobile learning platforms, users can optimize their learning experience.

Then the fourth is the use of interactive and multimedia content. One of the advantages of mobile learning is its ability to present learning content in various interactive and multimedia formats, such as video, audio, and simulation. This approach can increase students' interest and understanding of the learning material. Therefore, educators need to make good use of these contents in the development of learning materials. The last is to monitor and evaluate the use of Mobile Learning. It is important to continue to monitor and evaluate the use of mobile learning in universities. This can be done through surveys, platform usage data analysis, and feedback from students and educators. By monitoring and evaluating the use of mobile learning regularly, institutions can identify areas that need to be improved and improve the overall learning experience.

CONCLUSION

Based on the results and discussion above, it can be concluded that factors such as ease of use, perceived benefits, perceptions of usefulness, and social factors play an

important role in forming intentions to use mobile learning in the higher education environment. Mobile learning offers great potential in increasing the accessibility, flexibility and interactivity of learning, which are key elements in creating an inclusive and student-oriented learning environment. Therefore, higher education needs to continue to develop strategies and policies that support the adoption of mobile learning. The implication of this research is the importance of integrating these factors in the development of effective learning strategies using mobile technology to increase student participation and performance in higher learning. By understanding the factors that influence mobile learning usage intentions, higher education institutions can develop training programs, increase technology accessibility, and strengthen social support to facilitate wider mobile learning adoption. In addition, the results of this study also provide a strong basis for further research in this field, as well as a sustainable contribution to the development of adaptive and innovative higher education in the future.

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