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The Influence of Information Literacy, Technology, And Communication on Improving Digital Competence of Students of STMIK Mardira Indonesia, Bandung City

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Abstract

This study examines the impact of information, technology, and communication literacy on enhancing students' digital competence at STMIK Mardira Indonesia, Bandung City. Rapid technological advancements have transformed numerous facets of life, necessitating the education sector to adapt to enhance the quality of human resources for competition in the digital age. Digital competence is a crucial ability for students navigating the progressively technology-driven workforce. This competency encompasses critical, creative, and ethical comprehension of technology utilization and the capacity to manage information efficiently. Information literacy aids individuals in identifying information requirements, locating, assessing, and utilizing information judiciously. Simultaneously, technology and communication promote digital competencies by granting access to diverse resources and enhancing the capacity to disseminate knowledge efficiently. This study employs a quantitative methodology utilizing a saturation sampling technique, wherein the complete population of 46 individuals served as the research sample. Data analysis was conducted employing multiple regression procedures, utilizing validity, reliability, and hypothesis testing as statistical analytic tools. The study indicated that technology and communication significantly enhance pupils' digital competency. Students with proficient access to technology and strong communication skills are more capable of enhancing their digital competence. Nonetheless, the study's findings indicated that information literacy did not significantly enhance students' digital competence. This study indicates that while information literacy is a crucial component of higher education, technological and communicative aspects are more influential in developing students' digital competence in the contemporary digital landscape. Consequently, universities must prioritize enhancing technology and communication competencies within the curriculum and educational programs to better prepare students for the digital workforce. Despite the lack of noteworthy findings regarding information literacy in this study, educational institutions must continue to promote awareness of their value as a component of 21st-century abilities. The findings of this study are anticipated to serve as a reference for policymakers in formulating more effective ways to enhance students' digital competency, hence augmenting the competitiveness of graduates in the progressively competitive landscape of globalization.

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Introduction

Technological improvements influence multiple industries, especially education, which is vital for enhancing the quality of human resources to compete globally. Higher education institutions must adjust to these developments as digital proficiency becomes essential for students to compete in a workforce increasingly shaped by technology. This competency encompasses critical, creative, and ethical comprehension in the utilization of technology. (Stofkova, Poliakova, Stofkova, Malega, Krejnus, Binasova & Daneshjo, 2022; Muammar, Hashim & Panthakkan, 2023)

In the age of digital transformation, students must acquire the requisite abilities to traverse the expansive and swiftly changing technical landscape. Digital competence encompasses proficiency in utilizing digital tools and the ability to assess, manage, and ethically employ information. As artificial intelligence, big data, and cloud computing advance, students must possess a robust foundation in digital skills to remain pertinent in the contemporary workforce. Consequently, incorporating digital competence into the higher education curriculum is vital for equipping students for future professions. (Nikou, De Reuver & Mahboob Kanafi, 2022; Park, Kim & Park, 2021; Chohan & Hu, 2022)

Information literacy plays a significant role in developing digital competence. It recognizes when information is needed and how to find, evaluate, and use it effectively. This skill is particularly crucial in higher education, where students must navigate various sources of information, differentiate between credible and unreliable sources, and synthesize information to produce high-quality academic work. Without adequate

information literacy skills, students may struggle to discern factual information from misinformation, hindering their academic and professional growth. As digital technology continues to evolve, fostering information literacy skills among students is imperative to ensure they become responsible digital citizens.

Apart from information literacy, technology and communication also significantly contribute to digital competence. Technology provides students with various tools and platforms that enhance learning, collaboration, and productivity. From e-learning systems to cloud-based applications, technology facilitates the seamless exchange of knowledge and resources among students and educators. Additionally, technological proficiency allows students to adapt to new digital tools, increasing their efficiency and competitiveness in the job market. (Sá, Santos, Serpa & Miguel Ferreira, 2021; García-Vandewalle García, García-Carmona, Trujillo Torres & Moya Fernández, 2023; Livingstone, Mascheroni & Stoilova, 2023)

Communication is another essential component of digital competence. Effective digital communication involves technical proficiency and the ability to convey and manage information responsibly in the digital era. With the increasing use of social media, online forums, and collaborative platforms, students must develop strong digital communication skills to engage effectively in academic and professional settings. Clear and ethical communication in digital environments ensures students can work collaboratively while upholding academic integrity and professionalism.

This research aims to understand and analyze how information literacy, technology, and communication improve digital competence among students at STMIK Mardira Indonesia in Bandung. By examining these factors, the study provides insights into the key determinants of digital

competence and offers recommendations for enhancing digital literacy among students.

The study population consists of 46 students from STMIK Mardira, Indonesia. The research employs a saturated sampling technique, in which the entire population is used as the sample, resulting in 46 participants. A quantitative research approach is utilized, with multiple regression analysis as the primary statistical method. Additionally, validity and reliability tests and hypothesis testing are conducted to ensure the accuracy and consistency of the findings. (Cabezas-González, Casillas-Martín & García-Peñalvo, 2021; Cabero-Almenara, Gutiérrez-Castillo, Guillén-Gámez & Gaete-Bravo, 2023)

Zhao, Y., Sánchez Gómez, M. C., Pinto Llorente, A. M., & Zhao, L. (2021)

The study's results indicate that technology and communication positively influence digital competence among students, emphasizing the importance of these two factors in fostering digital literacy. Students with access to modern technology and engaging in effective digital communication tend to develop stronger digital competencies, making them more adept at navigating digital environments. Conversely, the study finds that information literacy does not significantly impact digital competence, suggesting that while information literacy is important, other factors may play a more dominant role in shaping students' digital skills.

These findings highlight the need for higher education institutions to focus on enhancing students' technological and communication skills to improve their digital competence. Incorporating advanced technological tools into the learning process and providing students with opportunities

to develop digital communication skills can contribute to a more digitally competent student body.

Furthermore, while information literacy may not directly impact digital competence, it should not be overlooked. Institutions should continue emphasizing developing critical thinking and information evaluation skills to ensure students can effectively navigate the digital landscape. Educators and policymakers must work together to design curricula integrating technology and communication training while reinforcing the importance of information literacy.

In conclusion, digital competence is a vital skill that students must develop to succeed in an increasingly digitalized world. This study underscores the significance of technology and communication in enhancing digital competence while highlighting the potential limitations of information literacy. Future research could explore additional factors influencing digital competence, such as digital ethics, online collaboration, and adaptability to emerging technologies. By fostering digital competence among students, higher education institutions can better prepare them for the challenges and opportunities of the modern workforce.

Research Method

This study uses a quantitative approach to analyze the influence of information, technology, and communication literacy on improving the digital competence of STMIK Mardira Indonesia students in Bandung City. The quantitative research method was chosen because it allows for measuring the relationship between the variables studied objectively and systematically.

This study's population was 46 STMIK Mardira Indonesia students. The sampling technique used was saturated sampling, where the entire population was used as a research sample. Thus, the number of participants in this study was 46.

The primary data used in this study was obtained through questionnaires distributed to respondents. This questionnaire consists of several statements that measure the variables of information, technology, communication literacy, and digital competence. Before data collection, validity and reliability tests were carried out to ensure that the research instruments used met the requirements of reliability and validity.

Data analysis was conducted using multiple regression analysis to determine the simultaneous and partial effects of the independent variables (information, technology, and communication literacy) on the dependent variable (digital competence). Hypothesis testing was carried out to test whether each independent variable significantly improved students' digital competence. This study used statistical software to process data and obtain accurate and systematic analysis results.

The study results show that technology and communication have a positive and significant influence on improving students' digital competence. This condition indicates that students with suitable access to and understanding of technology and who can communicate effectively in a digital environment tend to have a higher level of digital competence. Conversely, information literacy does not significantly influence improving digital competence. This finding shows that although students have the ability to recognize, evaluate, and use information, this factor has not had

enough impact on improving digital competence without being supported by good mastery of technology and communication skills.

Thus, this study concludes that in an effort to improve students' digital competence, higher education institutions need to emphasize more aspects of mastery of technology and communication skills and continue to develop information literacy skills that support the optimal use of technology.

Results and Discussion

The validity test is employed to assess each variable utilized in this investigation. The validity test encompasses the information literacy variable with eight statements, the technology variable with eight statements, the communication variable with 7 statements, and the digital competence variable with seven statements, all presented in a questionnaire administered to 46 respondents as part of the research process. The outcomes of the reliability assessment for the information literacy variable, technology variable, communication variable, and digital competence variable are as follows:

Table 1. Assessment of Validity and Reliability

No	Information Literacy	Technology	Communication	Digital Competence
1	0,451	0,785	0,804	0,845
2	0,832	0,896	0,511	0,832
3	0,804	0,842	0,833	0,825
4	0,817	0,815	0,837	0,815
5	0,872	0,870	0,801	0,774
6	0,886	0,817	0,770	0,754

7	0,599	0,812	0,734	0,658
8	0,873	0,803		
Cronbach's Alpha	0,907	0,933	0,869	0,896

Table 1 displays the findings of the Assessment of Validity and Reliability for the variables Information Literacy, Technology, Communication, and Digital Competence, assessed by eight and seven indicators, respectively. The validity value of each indicator signifies the correlation between the question item and the construct being assessed; a more excellent validity value indicates a stronger relationship between the indicator and the primary variable.

The measurement tools for the four variables in this investigation are deemed valid and reliable. Several indicators exhibit diminished validity values, which may be addressed in subsequent research by either adjusting the inquiries or reassessing their pertinence to the primary variables.

Furthermore, a high degree of reliability signifies that the instrument employed has strong internal consistency, hence ensuring the dependability of the results received. Consequently, the assessment scale employed in this study has fulfilled the criteria necessary to reliably assess Information Literacy, Technology, and Communication concerning enhancing Digital Competence among students at STMIK Mardira Indonesia.

Technological advancements have significantly influenced numerous facets of life, particularly in education. Institutions must furnish students with essential digital competencies in the digital age to enable their competitiveness in an increasingly digitized workforce. Digital competency

encompasses technical proficiency in operating technological equipment and critical, creative, and ethical comprehension in successfully utilizing technology and information management.

This study aims to assess the impact of information, technology, and communication literacy on enhancing the digital competency of students at STMIK Mardira Indonesia, Bandung City. It employs a quantitative methodology, including a population of 46 individuals, who also serve as research samples due to the application of saturated sampling procedures. This study used multiple regression analysis as the statistical instrument, incorporating validity, reliability, and hypothesis testing.

The study's results indicate that technology and communication positively enhance students' digital competence. This condition suggests that kids with greater exposure to and proficiency in technology possess a higher degree of digital competence. Advancing technology offers numerous benefits for pupils in information access, communication, and digital data management skill enhancement. Advancements in technology enable students to search for, process, and share information quickly. Integrating technology in education enhances students' proficiency with digital devices and equips them to navigate obstacles in a technology-driven workforce.

Moreover, communication significantly contributes to enhancing pupils' digital competency. The capacity to interact via several technological platforms is crucial in the digital realm. Students possessing strong communication abilities are generally more adaptable to technology and utilize it to enhance their proficiency. In both written and verbal, proficient communication facilitates student collaboration in a digital

context, enhances information-sharing efficiency, and improves data comprehension and interpretation.

Nonetheless, the findings of this study indicate that information literacy does not significantly enhance students' digital competence. This discovery is noteworthy as information literacy is crucial in enhancing digital competence. Information literacy encompasses identifying information requirements and assessing and utilizing information efficiently. A potential explanation for this outcome is that contemporary students have been exposed to digital material from a young age, which may lead them to be unaware of their utilization of information literacy skills in digital endeavors. Consequently, students may cultivate these skills inadvertently, resulting in a diminished influence on digital competence within this study.

An alternative explanation for this result is that students may depend more on technology for information retrieval and management rather than on advanced information literacy skills. In the contemporary digital age, numerous technologies have facilitated the retrieval and management of information, leading students to depend increasingly on digital tools like search engines, note-taking applications, and data management software rather than conventional information literacy abilities.

The findings of this study hold significant significance for the field of education, particularly for universities in developing a curriculum that aligns more closely with students' requirements in the digital age. Universities must prioritize enhancing technology and communication in education, as these elements significantly contribute to students' digital competence. By enhancing technology integration in education and preparing students with proficient communication skills in a digital

context, universities may better educate students to confront the difficulties of an increasingly digitalized workforce.

Despite the lack of significant impact of information literacy in this study, colleges must recognize its value in higher education. Despite the lack of immediate visibility, information literacy constitutes a crucial foundation for the judicious and efficient utilization of technology. Consequently, colleges can incorporate information literacy with a technology-oriented methodology, including using data analysis software, instruction in reputable digital information sources, and enhancing students' comprehension of ethics around digital information usage.

Furthermore, this study's findings indicate that students presently depend more on technology to enhance their digital proficiency. Consequently, institutions must guarantee that students have sufficient access to technology and the necessary training to utilize technology effectively. Enhancing students' digital competence can be achieved by offering cutting-edge technological facilities, including advanced computer laboratories, access to industry-standard software, and instruction in applying the latest technologies across many academic disciplines.

In the professional realm, digital competence is a primary determinant of an individual's success in overcoming occupational problems. Consequently, this study's findings may serve as a reference for the industrial sector in recognizing the significance of technology and communication in enhancing employees' digital competence. Organizations can institute training that emphasizes enhancing technological and communication competencies for their employees, thereby equipping them to adapt to transformations in an increasingly digitalized workplace.

This study's results offer significant insights into the aspects that affect enhancing students' digital competence. Recognizing that technology and communication positively impact digital competence enables universities to formulate more effective strategies for building technology-oriented curricula and pedagogical approaches. Despite the lack of a significant impact on information literacy in this study, institutions must enhance students' information literacy competencies through more innovative and technology-driven methodologies.

Future studies may investigate the association between information literacy and digital competence by examining additional variables that could influence this relationship. Moreover, additional research may investigate how students employ technology to enhance their digital competence in greater detail and determine the most efficient pedagogical approaches for cultivating digital abilities in this rapidly changing landscape.

Conclusion

This study concludes that technology advancements significantly enhance students' digital competency, particularly at institutions like STMIK Mardira Indonesia. Digital competence is essential in a progressively digitalized workforce, encompassing the capacity for critical, creative, and ethical thinking in technology utilization. The study's results, derived from quantitative approaches employing multiple regression analysis, indicate that technology and communication significantly enhance students' digital competence. This indicates that access to technology and proficiency in digital communication are crucial for developing superior digital skills.

Nonetheless, a notable discovery from this study is that information literacy does not significantly enhance students' digital competence. This study reveals that technology and communication elements significantly outweigh information literacy in influencing students' digital competence despite the latter's recognized importance in identifying, assessing, and utilizing information successfully. Consequently, colleges must prioritize enhancing technology and communication in the curriculum and educational programs to elevate students' digital proficiency effectively. Furthermore, despite the lack of significant impact of information literacy in this study, educational institutions must promote a more profound comprehension of information to facilitate learning in the digital age. The findings of this study may serve as a reference for policymakers in education when formulating policies to enhance students' digital competencies, thus better equipping them to confront problems in an increasingly digitalized workforce.

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