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DIGITAL LITERACY GAP (EXCEL) AMONG GENERATION Z STUDENTS IN FACING DIGITAL TRANSFORMATION TOWARD THE WORLD OF WORK IN MAKASSAR

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Abstract
The rapid growth of digital transformation has resulted in changing competency requirements in the workplace, particularly regarding the effective use of digital technologies. One of the digital skills that continues to be relevant and applicable across different sectors is proficiency in spreadsheet applications, particularly Microsoft Excel. Nevertheless, Generation Z students may have different levels of digital competency, including their ability to use Excel for academic and work-related purposes. This study examines variations in Excel proficiency among Generation Z students in Makassar and investigates how these skills contribute to their preparedness for entering the workforce. A quantitative research design was employed, involving 150 students from several higher education institutions in Makassar. Data were obtained through a structured questionnaire measuring students' Excel proficiency, self-confidence, and level of work readiness. The collected data were subsequently analyzed using descriptive statistical analysis and multiple linear regression. The findings indicate that students demonstrate varying levels of Excel proficiency, particularly when performing more advanced tasks involving data analysis, pivot tables, and the use of formulas. Furthermore, both Excel proficiency and self-confidence have a positive and statistically significant relationship with students' work readiness. Students who possess stronger digital technology competencies and greater confidence in applying those competencies tend to demonstrate better preparation for entering and adapting to the demands of the digital workplace.
Keywords: *digital literacy, Microsoft Excel, Generation Z, work readiness, digital transformation.*

1. Introduction

The continuous advancement of digital technology has created new demands for individuals to adapt to rapid changes, particularly within the fields of education and employment. The effectiveness and competitiveness of an organization or company are strongly influenced by its ability to manage and utilize available resources, especially human resources who possess relevant digital competencies. Within the ongoing process of digital transformation, human resources play an important role in organizational operations because the quality of employees can directly affect productivity and competitiveness. For this reason, students as future members of the workforce need to develop sufficient digital competencies to compete in an increasingly demanding labor market. One of the fundamental competencies required in many work environments is the ability to operate data-processing software, including Microsoft Excel.

Digital literacy can be understood as an individual's capacity to access, comprehend, utilize, and manage information through digital technologies in an effective manner. For students, this competency is particularly important because it can contribute to their preparation for entering the workforce. As members of Generation Z who have grown up alongside digital technology, students are generally expected to possess adequate levels of digital literacy. Nevertheless, the actual level of digital competence among students is not necessarily uniform, especially when it comes to the practical use of Microsoft Excel. Differences in Excel proficiency suggest that students do not have identical capabilities in applying digital technology, which may subsequently influence their preparedness for professional work. Digital literacy is particularly relevant to work readiness because many workplace activities require employees to process information, manage data, and complete tasks accurately and efficiently.

Apart from digital competence, students' work readiness may also be influenced by their learning experiences and opportunities to interact with technology. Access to appropriate technological resources can provide students with greater opportunities to develop and practice their

digital abilities. Similarly, learning activities that incorporate technology can strengthen students' practical understanding of various digital applications. However, differences in access to technological resources and learning experiences may result in unequal levels of digital competency among students. This condition is important to consider because limited opportunities to develop digital skills may affect students' ability to adapt to the demands of a technology-oriented workplace.

The educational environment also has an important role in strengthening students' digital literacy. The availability of technological infrastructure, opportunities for practical learning, and academic support from lecturers can encourage students to develop greater competence in using digital tools. In contrast, an inadequate learning environment may restrict students' opportunities to practice and improve their technological abilities. A supportive and comfortable academic environment can also increase students' motivation and confidence to engage actively in technology-based learning activities.

Based on these considerations, digital competence, particularly the ability to use Microsoft Excel, represents an important component of the skills needed by Generation Z students to prepare for employment. Despite the increasing importance of digital technology, differences in students' levels of digital proficiency remain evident and require further investigation. Therefore, this study focuses on examining variations in Microsoft Excel proficiency as an element of digital literacy among Generation Z students in Makassar as they prepare to enter an increasingly digitalized workplace. Furthermore, this research seeks to examine the extent to which digital literacy competence contributes to students' work readiness.

2. Literature Review

2.1 Digital Literacy

Belshaw (2011), in his thesis, stated that digital literacy is not merely about technical skills but also involves eight main elements, namely:

1.) Cultural
2.) Cognitive
3.) Constructive
4.) Communicative
5.) Confident
6.) Creative
7.) Critical
8.) Civic

2.2 Digital Transformation

According to Gregory Vial (2019), digital transformation refers to the use of digital technologies that leads to significant changes in the way businesses operate, as well as changes in business structures and organizations. The following are indicators of digital transformation according to Gregory Vial (2019) that are commonly used in research:

1.) Technology Use
2.) Organizational Structure Changes
3.) Business Value Creation
4.) Organizational Performance

3. Hypotheses

3.1 The Effect of Digital Literacy (Microsoft Excel) on Students' Work Readiness

Students' preparedness to enter the workforce can be influenced by their ability to utilize technology effectively. Digital literacy represents the competence required to operate and apply digital technologies appropriately in completing various activities and work-related tasks. Students who demonstrate a strong ability to use Microsoft Excel are likely to have greater preparation for entering the professional environment. Competence in using digital applications enables students to perform tasks more efficiently, accurately, and systematically.

Microsoft Excel proficiency, including the ability to organize data, apply formulas, and conduct basic data analysis, has become increasingly relevant to the demands of modern

workplaces. Students who possess adequate knowledge and skills in utilizing digital technologies are generally more capable of adapting to work environments that rely on digital systems. Conversely, insufficient digital literacy may create difficulties in completing technology-based tasks and consequently reduce students' level of work readiness.

Previous research has also indicated that digital technology competence is positively associated with an individual's readiness to enter the workforce. Students who possess sufficient digital skills tend to demonstrate better adaptability when facing work environments that increasingly utilize digital technologies.

H1: Microsoft Excel-based digital literacy has a positive and significant effect on the work readiness of Generation Z students in Makassar.

3.2 The Effect of Technology Access on Digital Literacy

Access to technological resources is another factor that may contribute to the development of students' digital competencies. Technology access refers to the availability and ease of use of digital devices and supporting resources, including computers, laptops, and internet connections. Students who have sufficient opportunities to access and utilize technology are more likely to develop their digital literacy through continuous practice and interaction with various digital applications.

Adequate access to technology provides students with greater opportunities to explore and improve their ability to use digital tools, including Microsoft Excel. Regular exposure to technological devices can help students become more familiar with different features and functions, allowing them to develop their skills more effectively. In contrast, inadequate access to technological resources may limit students' opportunities to practice and understand digital applications, which can subsequently affect the development of their digital competencies.

Previous research has suggested that access to technological resources plays an important role in supporting individuals' ability to understand and utilize digital technology. Greater access provides more opportunities for students to engage with digital tools and develop the skills required in technology-oriented environments.

H2: Technology access has a positive and significant effect on the Microsoft Excel-based digital literacy of Generation Z students in Makassar.

3.3 The Effect of the Learning Environment on Digital Literacy

The learning environment is another important factor that may contribute to the development of students' digital literacy. It encompasses various conditions surrounding the learning process, including the availability of technological facilities, instructional approaches, and support provided by lecturers. A learning environment that provides adequate resources and encouragement can create opportunities for students to become more familiar with digital technologies and develop their technological competencies.

The availability of appropriate technological facilities allows students to practice using digital applications more frequently. In addition, learning methods that involve technology-based activities can provide students with practical experience in applying digital tools. Guidance and assistance from lecturers can further support students when they encounter difficulties in using technology. On the other hand, limited facilities, less effective teaching methods, or insufficient academic support may restrict students' opportunities to develop their digital skills. A comfortable and supportive learning atmosphere can also increase students' motivation and willingness to actively participate in technology-based learning activities.

Previous studies have demonstrated that a positive learning environment can contribute to the development of students' digital competencies. Adequate facilities, effective learning practices, and appropriate academic support provide students with better opportunities to improve their ability to use digital technology.

H3: The learning environment has a positive and significant effect on the digital literacy of Generation Z students in Makassar.

4. Research Methodology

This research was carried out in Makassar and involved Generation Z students studying at various higher education institutions. The primary purpose of the study was to examine differences in students' digital technology competencies, particularly their ability to use Microsoft Excel, and to assess the extent to which these competencies are related to their preparedness for entering a workplace that increasingly relies on digital technology.

The respondents in this study were university students who met the predetermined selection criteria. A total of 150 students were involved as research participants. The respondents were selected using a purposive sampling technique, in which participants were chosen according to specific characteristics considered relevant to the research objectives.

Several methods were employed to collect the required data, namely observation, interviews, documentation, and questionnaires. Among these methods, the questionnaire functioned as the main data collection instrument. It was designed to obtain information regarding students' Microsoft Excel proficiency, access to technological resources, perceptions of the learning environment, and level of work readiness.

5. Results And Discussion

5.1 Research Instrument Testing

5.1.1 Validity Test

Tabel 1
Results of the Instrumen Validity Test

Statemant	*Pearson Correlation*	Standartd	Desc.
Literasi Digital(X)			
X1.1	0,634	0,30	Valid
X1.2	0,696		Valid
X1.3	0,642		Valid
X1.4	0,684		Valid
X1.5	0,445		Valid
X1.6	0,564		Valid
X1.7	0,663		Valid
X1.8	0,620		Valid
X1.9	0,739		Valid
X1.10	0,639		Valid
X1.11	0,685		Valid
X1.12	0,739		Valid
X1.13	0,601		Valid
X1.14	0,712		Valid
X1.15	0,688		Valid
X1.16	0,554		Valid
Transformasi Digital (Y)			
Y1.1	0,722	0,30	Valid
Y1.2	0,669		Valid
Y1.3	0,728		Valid
Y1.4	0,716		Valid
Y1.5	0,667		Valid
Y1.6	0,696		Valid
Y1.7	0,658		Valid
Y1.8	0,640		Valid

Source: Processed Data, 2026

Based on Table 1, all instrument correlation coefficient values are above 0.30. This indicates that all questionnaire instruments used for data collection are valid.

5.1.2 Reability Test

Tabel 2
Result of the Instrumen Reliability test

Variabeil	*Total Number of Instruments.*	*Cronbach's Alpha*	*Standartd*	*Desc.*
Literasi Digital (X)	*16*	*0,940*	*0,60*	*Reiliabeil*
Transformasi Digital (Y)	*8*	*0,939*		*Reiliabeil*

5.2 Data Analysis Results

To examine the relationships among digital literacy, technology access, learning environment, and students' preparedness in the digital era, statistical analyses were conducted using **SPSS Version 25 for Windows**. The analytical procedures included regression analysis, the simultaneous **F-test**, the partial **t-test**, and the coefficient of determination.

5.2.1 Regression Analysis

The regression analysis was conducted to determine the direction and magnitude of the relationship between the variables included in the research model. Based on the SPSS output, the regression equation obtained was:

$$\mathbf{Y = 6.097 + 0.423X}$$

The constant value of **6.097** indicates that when the digital literacy variable is assumed to remain constant, the predicted value of the dependent variable is 6.097. Meanwhile, the regression coefficient of **0.423** indicates that every one-unit increase in digital literacy is associated with an estimated increase of 0.423 units in the dependent variable.

The positive value of the regression coefficient demonstrates that the relationship between digital literacy and the dependent variable is positive. In other words, improvements in students' digital literacy tend to be accompanied by improvements in the dependent variable.

5.2.2 Coefficient of Determination

The coefficient of determination was examined using the **Adjusted R Square** value obtained from the Model Summary. The analysis produced an Adjusted R Square value of **0.622**. This result indicates that approximately **62.2%** of the variation in the dependent variable can be explained by digital literacy, whereas the remaining **37.8%** may be attributed to other variables that were not included in the research model.

The relatively large coefficient of determination suggests that digital literacy represents an important factor in explaining variations in the dependent variable.

5.2.3 Simultaneous F-Test

The significance of the regression model was further examined using the **F-test**. The ANOVA results show an F-value of **254.568** with a significance value of **0.000**. Since the significance value is lower than the 0.05 threshold, the regression model is statistically significant.

These findings indicate that the independent variable included in the model has a statistically significant relationship with the dependent variable. Thus, the proposed relationship represented in the regression model is supported by the statistical results.

5.2.4 Partial t-Test

The partial effect of digital literacy was evaluated using the **t-test**. The analysis produced a t-value of **15.955**, a regression coefficient of **0.423**, and a significance value of **0.000**. Because the significance value is below 0.05, digital literacy has a statistically significant effect on the dependent variable.

The positive regression coefficient further indicates that the effect is in a positive direction. Therefore, the hypothesis proposing a positive relationship between digital literacy and the dependent variable is supported.

5.2.5 The Effect of Digital Literacy on Students' Work Readiness

The statistical findings demonstrate that digital literacy has a positive and significant relationship with students' work readiness. The regression coefficient of **0.423** and significance value of **0.000** indicate that students with stronger digital competencies tend to demonstrate a higher level of preparedness for entering the workforce. Therefore, **H1 is accepted**.

Digital literacy encompasses the ability to access, understand, evaluate, and utilize digital information and technology appropriately. In the context of higher education and employment, these competencies are increasingly important because many professional activities involve digital systems and applications.

Students who possess adequate digital skills are generally better able to perform technology-related tasks, process information, and adapt to changes in the workplace. In particular, proficiency in applications such as Microsoft Excel can support students in organizing information, processing data, applying formulas, and conducting basic analyses. These abilities can contribute to more efficient and accurate task completion.

The development of digital workplaces also requires individuals to adapt not only to new technological tools but also to changes in working procedures and patterns of collaboration. Consequently, digital literacy can serve as an important foundation for students preparing to enter employment. Students who are confident in applying digital technology may have greater ability to respond to technology-based tasks and workplace demands.

The results of this study support the argument that stronger digital competencies can contribute to greater work readiness. As students become more capable of using digital technology, they may become better prepared to perform tasks and adapt to the requirements of an increasingly digital labor market.

5.2.6 The Effect of Technology Access on Digital Literacy

The findings indicate that technology access has a positive and significant contribution to students' digital literacy. This result suggests that students who have greater access to digital devices and technological resources have more opportunities to develop their digital competencies. Therefore, **H2 is accepted**.

Technology access includes the availability and usability of resources such as computers, laptops, smartphones, and internet connectivity. These resources provide students with opportunities to interact with digital applications, search for information, complete academic activities, and practice various technology-related skills.

Regular exposure to digital technology can increase students' familiarity with technological tools. For example, students who have consistent access to computers and software applications have more opportunities to practice Microsoft Excel functions and develop their ability to process and analyze data.

In contrast, limited access may restrict students' opportunities to practice digital skills. Students who experience difficulties in obtaining or using technological resources may have fewer opportunities to explore digital applications and develop their competencies. Thus, technology access can be regarded as one of the supporting conditions for the development of students' digital literacy.

The findings are consistent with previous research suggesting that access to technological resources contributes to the development of digital competencies. Greater

access provides students with more frequent opportunities to use technology and consequently strengthen their digital skills.

5.2.7 The Effect of the Learning Environment on Digital Literacy

The results further demonstrate that the learning environment has a positive and significant effect on students' digital literacy. This finding indicates that a more supportive academic environment is associated with stronger digital competencies. Consequently, **H3 is accepted**.

The learning environment encompasses various conditions that support students during the learning process, including technological facilities, instructional methods, and interactions between lecturers and students. An environment that provides adequate technological resources and opportunities for practical learning can encourage students to become more actively involved in developing their digital competencies.

The availability of appropriate facilities allows students to practice using digital applications in academic activities. At the same time, technology-oriented teaching methods can provide students with practical experience in applying digital tools. Support and guidance from lecturers can also help students overcome difficulties encountered when learning to use technology.

A comfortable and supportive learning atmosphere may further strengthen students' motivation to participate in learning activities. Students who feel supported are more likely to practice and explore digital technologies, which can gradually improve their level of digital literacy.

Therefore, the findings suggest that the development of digital literacy is influenced not only by students' individual abilities but also by the learning conditions in which those abilities are developed. A supportive learning environment can provide students with the facilities, experience, and guidance required to strengthen their digital competencies.

Overall, the results support previous findings that a conducive learning environment can positively contribute to students' digital literacy. The combination of adequate facilities, practical learning experiences, effective teaching strategies, and lecturer support can create better conditions for students to develop the digital skills required in contemporary education and employment.

6. Conclusion and Limitations

6.1 Conclusion

Based on the findings and discussion presented in this study, several conclusions can be formulated as follows:

6.1.1 Technology access has a positive and significant effect on digital literacy

This finding indicates that students who have greater availability and easier access to technological devices and digital resources tend to demonstrate better digital competencies. Adequate access provides students with more opportunities to use, explore, and practice various digital technologies.

6.1.2 The learning environment has a positive and significant effect on digital literacy

A supportive learning environment, including adequate technological facilities, appropriate learning methods, and lecturer support, can provide students with better opportunities to develop their digital skills. Therefore, improvements in the learning environment are likely to contribute to higher levels of digital literacy.

6.1.3 Digital literacy has a positive and significant effect on digital transformation

This result demonstrates that individuals with stronger digital competencies are better able to utilize technology and adapt to changes associated with digital transformation. Higher levels of digital literacy can therefore support more effective implementation and adaptation to technology-based processes.

6.2 Limitations

The coefficient of determination indicates that technology access, the learning environment, and digital literacy contribute to variations in the digital transformation process. Nevertheless, other factors may also play a role in explaining digital transformation that were not examined in this study. Therefore, future researchers are encouraged to incorporate additional variables to obtain a more comprehensive understanding of the factors associated with digital transformation.

Furthermore, the participants in this study were drawn from students studying in various faculties within Makassar City. Although this provides representation from different academic backgrounds, the geographical coverage of the research remains relatively narrow. Future research could expand the study area by involving respondents from several cities, regions, or provinces. A broader geographical scope may provide more diverse findings and increase the potential generalizability of the research results across different educational and regional contexts.

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