The Influence of Digital Literacy on Learning Resilience with Learning Motivation as a Moderating Variable

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Abstract. This research seeks to examine the significant effect of digital literacy on learning resilience, with learning motivation serving as a moderating variable. Data collection was conducted using a questionnaire, and quantitative analysis through multiple linear regression was used for data analysis. Respondents' levels of agreement with the statements or questions were measured using a Likert scale. Additionally, the validity and reliability of the questionnaire were assessed with the help of the PLS-SEM application, along with tests for normality, heteroscedasticity, and multicollinearity. The results indicate that digital literacy influences learning resilience, with learning motivation playing a moderating role. Strategies for improving learning resilience and student motivation through digital literacy are also explored.

Keywords: Digital literacy, Learning Resilience , Learning Motivation

1 Introduction

In essence, when engaging in any activity, individuals require knowledge, skills, proficiency, and expertise, all of which are integral to the learning process. However, various issues can arise that significantly impact the learning process. These issues can stem from internal factors, other people, or the environment in which the individual is learning. Such problems are also encountered by students in the accounting education program, especially with the presence of six (6) KKNI assignments that students must complete, whether they are individual or group tasks. These assignments vary widely, including tasks such as solving problems, giving presentations, and creating written works such as papers, scientific articles, book reports, mini-research projects, and other projects. If students lack learning resilience, they may feel bored and lose motivation to engage in the learning process, ultimately resulting in outcomes that fall short of expectations. This situation leads to a decrease in students' ability to adapt to the demands of their coursework.

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Students who encounter numerous challenges in their learning process at the university level may become discouraged, disheartened, and devastated when faced with low academic performance. This is particularly concerning given that the learning process they undergo is not brief. Students require both mental and physical resilience in their studies (Gilhooly, 2003). Those with high learning resilience in the courses they take will remain steadfast in facing any challenges that arise during the learning process.

Based on observations and interviews conducted with the accounting program, many students expressed concerns about their courses and reported a decline in motivation due to the large number of assignments they were given. The Financial Management course equips learners equipped with the understanding and abilities to make investment decisions and identify appropriate funding sources for companies to maximize their value. Through a combination of various teaching methods, such as traditional classroom lectures, case studies, and reading textbooks and other materials, students are expected to gain a comprehensive understanding of both the theory and practice of financial management. Therefore, it is crucial for accounting education students to have strong learning resilience, especially in the Financial Management course.

As Beetham & Sharpe (2013) argue, the integration of digital literacy within pedagogy is essential for students to navigate the challenges of 21st-century learning environments, enhancing their ability to engage with and critically analyze digital resources. Moreover, a person who understands digital literacy is someone who can access, identify, manage, analyze, and evaluate digital resources. According to Rosen, Brignall & Van Valey (2005), internet communication tools are increasingly shaping social interactions, which in turn affect students' ability to engage in collaborative learning and use digital learning resources effectively. As Hargittai & Hinnant (2008) point out, digital inequalities can affect students' access to and use of technology, which may impact their ability to fully engage with digital learning resources. Similarly, Prensky (2001) suggests that the divide between digital natives and digital immigrants influences how students interact with and learn from digital resources, with younger generations typically being more comfortable and effective in navigating digital environments. Therefore, it is essential for every student to recognize that digital literacy is crucial and necessary in the current era, and each individual must take responsibility for how to use technology appropriately.

There are eight components of digital literacy:

1. Functional skills and beyond: This component involves the ability to use information technology.
2. Creativity: This involves creative thinking in utilizing ICT to build knowledge.
3. Collaboration: This refers to the process of building knowledge through discussion and exchanging ideas in digital spaces.
4. Communication: This involves the ability to listen, understand, and convey ideas.
5. The ability to find and select information: This involves selecting relevant information.
6. Critical thinking and evaluation: This involves thinking critically and evaluating information.

7. Cultural and social understanding: This refers to understanding social and cultural contexts.
8. E-safety: This involves ensuring safety in the digital environment (Hague & Payton, 2010).

Greenhow & Lewin (2016) argue that social media is an important tool for enhancing learning resilience by providing students with opportunities for continuous, informal learning and engagement with peers and instructors outside of formal classroom settings.

As Schunk & Zimmerman (2012) argue, motivation plays a central role in self-regulated learning, where students actively manage their learning processes to achieve desired academic outcomes, thus influencing their learning resilience. A person with high learning motivation tends to continuously strive to attain what they desire, even when facing obstacles and difficulties along the way. Nisa & Sujarwo (2020) states that students' learning motivation is the internal drive to succeed, work hard, achieve better learning outcomes, and avoid failure. This drive leads students to increase their confidence and learning activities to achieve better results. In reality, the learning motivation of an individual often fluctuates, sometimes decreasing and at other times increasing.

2 Method

This research is an associative study. Associative research aims to identify the relationship between two or more variables. A quantitative approach is used in this study beca The data collection technique used in this research is a questionnaire. The data analysis technique employed in this study is quantitative analysis, specifically using multiple linear regression. The scale technique applied is the Likert scale, designed to assess the respondents' degree of agreement with a statement or question. The questionnaire developed is then tested for validity and reliability using the PLS-SEM application. Additionally, the research includes tests for normality, heteroscedasticity, and multicollinearity.use the data focuses on numerical values (quantity), and data analysis is conducted using descriptive statistical methods to arrive at research conclusions. The study is developed using a cross-sectional model, where the researcher observes the subjects at a single point in time, simultaneously distributing questionnaires to the research subjects to collect primary data.

The population refers to the general area consisting of subjects or objects that the researcher selects for the study and from which conclusions are drawn, characterized by a set of attributes (Siyoto dan Sodik, 2015). The purpose of defining the population is to determine the size of the sample members and to limit the area of generalization (Ahyar et al, 2020). In this study, the population consists of students from the Accounting Education program. The sample is a subset of the population's elements and characteristics, representing the population through specific steps and procedures (Siyoto dan Sodik, 2015). In this research, the Slovin formula is used to determine the sample size.

3 Results and Discussion

3.1 Model Evaluation

In this research analysis, the Partial Least Squares (PLS) approach is used with the software SmartPLS 3.0. Partial Least Squares (PLS) is a variance-based structural equation modeling (SEM) technique (Hair et al., 2021). PLS does not require specific distribution assumptions for estimating parameters, so parametric techniques for evaluating significance are not necessary. The model evaluation in PLS is conducted through the assessment of the outer model and the inner model. Below is the diagram of the outer model used in this research, utilizing the PLS Algorithm.

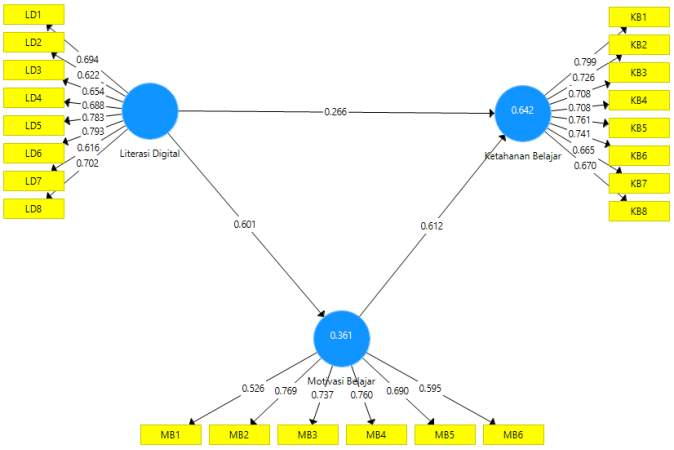

Fig.1. Model Evaluation

3.2 Evaluating the outer model

In the analysis using SmartPLS, there are two criteria for evaluating the outer model: Discriminant Validity and Composite Reliability. The results of the study for the outer model measurement using Composite Reliability are as follows

Table 1. Composite Realibility

	Composite Reliability
Learning Resilience (LR)	0,897
Digital Literacy (DL)	0,882
Learning Motivation (LM)	0,839

In the table above, the Composite Reliability values have exceeded 0.7, indicating that the data used in this study is suitable and has met the assumptions of validity and reliability testing. This means that the constructs being measured, such as Learning Resilience, Digital Literacy, and

Learning Motivation, exhibit strong internal consistency and reliability, ensuring that the measurement model is robust and accurate.

3.2 Feasibility Testing

Feasibility testing involves evaluating the research data to determine if it is suitable for proceeding to the data analysis stage and if it effectively represents the research objectives.

3.2.1. Validity Testing

The output of this research can be seen in the table below:

Table 2. Outer Loading

	Learning Resilience (KB)	Digital Literacy (LD)	Learning Motivation (MB)
LR 1	0,799		
LR 2	0,726		
LR 3	0,708		
LR 4	0,708		
LR 5	0,761		
LR 6	0,741		
LR 7	0,665		
LR 8	0,670		
DL1		0,694	
DL 2		0,622	
DL 3		0,654	
DL 4		0,688	
DL 5		0,783	
DL 6		0,793	
DL 7		0,616	
DL 8		0,702	
LM1			0,526
LM 2			0,769
LM 3			0,737
LM 4			0,760
LM 5			0,690
LM 6			0,595

The validity testing for reflective indicators, which involves correlating item scores with construct scores, yielded positive results with values exceeding 0.5. This indicates that all statements or questions in the research are considered valid and reliable.

3.2.1. Reliability Testing

Reliability testing is a test that looks at repeated data observations that occur in research. A good research is when it passes reliability testing. Good reliability testing data is a Cronbach alpha value > 0.6.

Table 3. Outer Loading

	Cronbach's Alpha
Learning Resilience (LR)	0,869
Digital Literacy (DL)	0,846
Learning Motivation (LM)	0,769

In the table above, all variables passed the reliability test because the Cronbach alpha value was > 0.6. All variables are above 0.6.

3.3. Classic Assumption Test (Multicollinearity Test)

The multicollinearity results in this study can be seen in the table below:

Table 4. *Colinearity Statistic*

	VIF	Result
LR 1	2,177	No Multicollinearity Detected
LR 2	1,923	No Multicollinearity Detected
LR 3	1,831	No Multicollinearity Detected
LR 4	1,696	No Multicollinearity Detected
LR 5	1,994	No Multicollinearity Detected
LR 6	1,834	No Multicollinearity Detected
LR 7	1,583	No Multicollinearity Detected
LR 8	1,488	No Multicollinearity Detected
DL1	1,696	No Multicollinearity Detected
DL 2	1,410	No Multicollinearity Detected
DL 3	1,498	No Multicollinearity Detected
DL 4	1,672	No Multicollinearity Detected
DL 5	2,196	No Multicollinearity Detected
DL 6	2,183	No Multicollinearity Detected
DL 7	1,469	No Multicollinearity Detected
DL 8	1,716	No Multicollinearity Detected
LM1	1,417	No Multicollinearity Detected

LM 2	1,830	No Multicollinearity Detected
LM 3	1,537	No Multicollinearity Detected
LM 4	1,815	No Multicollinearity Detected
LM 5	1,725	No Multicollinearity Detected
LM 6	1,549	No Multicollinearity Detected

It is evident that this study, as a whole, there is no multicollinearity in the indicators because the VIF value is < 10. So it can be concluded that all constructs in this study between the variables Digital Literacy, Learning Motivation and Learning Resilience do not occur multicollinearity.

3.4. Test Inner Model

Table 5 R Square

	R Square	R Square Adjusted
Learning Resilience (LR)	0,642	0,637
Learning Motivation (LM)	0,361	0,357

The interpretation of R Square in the table above is:

1. According to the R Square value, the learning resilience variable is 0.642. This indicates that the latent variables of learning motivation and digital literacy can explain or predict 64.2% of learning resilience, while the remaining 35.8% is accounted for by other variables not covered in this research.
2. The R Square value for the learning motivation variable is 0.361, indicating that the digital literacy latent variable can explain or predict 36.1% of learning motivation. The remaining 63.9% is attributed to other variables not addressed in this research..

3.5 Testing the hypothesis

The hypothesis testing in this study is conducted by analyzing the inner model, focusing on the total effect that displays the parameter coefficient and the t-statistic value of 1.65 for a sample of 143 respondents. In SmartPLS, statistical testing of each hypothesized relationship is performed using simulation. Here, the bootstrapping method is utilized, as shown in the image below.

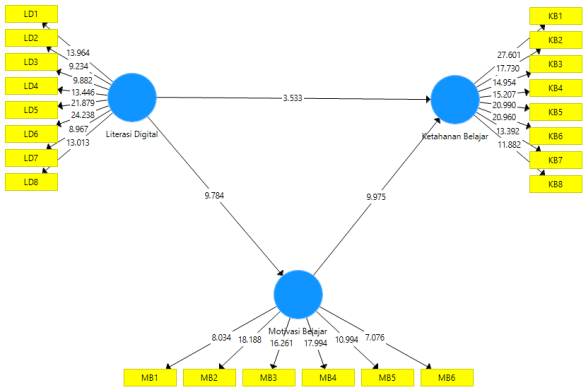

Fig. 2. Analisis Inner Weight

Table 5. Table of Direct Effect Hypothesis Testing Based on Total Effect

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Digital Literacy -> Learning Resilience	0,266	0,267	0,075	3,533	0,000
Digital Literacy -> Learning Motivation	0,601	0,610	0,061	9,784	0,000
Learning Motivation -> Learning Resilience	0,612	0,614	0,061	9,975	0,000

Based on the table above with a statistical T value > 1.65 and a P value with a value < 0.05, the hypothesis decision is as follows:

The Digital Literacy variable has a significant influence on the Learning Resilience variable with a statistical T value of 3.533 > 1.65 and is significant with a P value of 0.000 < 0.05. The magnitude of the direct effect of the variable Digital Literacy -> Learning Resilience is 0.266 or 26.6%. This shows that the Digital Literacy variable has a positive and significant effect on the Learning Resilience variable.

2. The Digital Literacy variable has a significant influence on the Learning Motivation variable with a statistical T value of 9.784 > 1.65 and is significant with a P value of 0.000 < 0.05. The magnitude of the direct influence of the Digital Literacy -> Learning Motivation variable is 0.601 or 60.1%. This shows that the Digital Literacy variable has a positive and significant effect on the Learning Motivation variable.

The Learning Motivation variable has a significant and influential effect on the Learning Resilience variable with a statistical T value of 9.975 > 1.65 and is significant with a P value of 0.000 < 0.05. The magnitude of the direct effect of the variable Digital Literacy -> Learning Resilience is 0.612 or 61.2%. This shows that the Learning Motivation variable has a positive and significant effect on the Learning Resilience variable

Table 6. Indirect Effect Hypothesis Testing Table Based on Indirect Effect

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Digital Literacy -> Learning Motivation -> Learning Resilience	0,368	0,375	0,055	6,667	0,000

As outlined in the table above with a statistical T value > 1.65 and a P Value with a value < 0.05, the indirect influence hypothesis decision is that the Digital Literacy variable has a significant and influential effect on the Learning Resilience variable through Learning Motivation with a statistical T value of 6.667 > 1, 65 and significant with a P value of 0.000 <0.05. The amount of indirect influence on the Digital Literacy -> Learning Motivation -> Learning Resilience variable is 0.368 or 36.8%. This shows that the Digital Literacy variable has a positive and significant effect on the Learning Resilience variable through Learning Motivation.

4 Conclusion

The conclusion of this research indicates that the Digital Literacy variable has a positive and significant impact on the Learning Resilience Variable. It also shows that Digital Literacy positively and significantly influences the Learning Motivation Variable. Moreover, the Learning Motivation variable positively and significantly affects the Learning Resilience Variable. Finally, Digital Literacy has a positive and significant effect on Learning Resilience through its influence on Learning Motivation.

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