

THE ROLE OF DIGITAL LITERACY AND DIGITAL INNOVATION IN IMPROVING THE PERFORMANCE OF STATE UNIVERSITIES WITH LEGAL ENTITIES (PTNBH) IN MALANG CITY

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ABSTRACT

This study aims to explore the effect of digital literacy and digital innovation on the performance of State Universities with Legal Entities (PTNBH) in Malang City. This research is explanatory with a quantitative approach, using the survey method. The research population includes State Universities with Legal Entities (PTNBH) in Malang City, including Universitas Brawijaya and Universitas Negeri Malang. This population includes education staff and lecturers totaling 6231 respondents. Using the Finite Population Correction Factor (FPC) formula at a 5% significance level, 100 respondents were sampled. Data collection was done through questionnaires, and data analysis using path analysis with the smartpls application. The results of this study indicate that the implementation of digital literacy, digital innovation, and the performance of State Universities with Legal Entities (PTNBH) in Malang City has been going well. In particular, digital literacy does not have a significant influence on the performance of State Universities with Legal Entities (PTNBH), while digital innovation has a significant influence on the performance of State Universities with Legal Entities (PTNBH). In addition, digital innovation acts as a mediator between digital literacy and the performance of State Universities with Legal Entities (PTNBH) in Malang City.

KEYWORDS

Digital Literacy, Digital Innovation, Higher Education Performance

INTRODUCTION

Digital literacy and digital innovation are two important aspects that can improve the performance of public universities. Public universities need to develop digital literacy and digital innovation on an ongoing basis in order to remain relevant and competitive in the digital era. Digital literacy is the ability to use, understand, and utilize digital technology. Digital literacy is important for public universities because it can improve the performance of public universities in various aspects, firstly, graduation rates; digital literacy can help students to access and understand learning materials better. This can improve student motivation and learning outcomes, thereby increasing graduation rates (Huang, et.al., 2023). Second; Student satisfaction; Students who have high digital literacy tend to be more satisfied with their learning experience. This is because they can be more involved in the learning process and more easily get the information they need (Khalid, et.al. 2019).

Third, Research activities; Digital literacy can help students and researchers to conduct research more effectively. This is because they can access research information and resources more easily, and can better use digital research software and tools (Jasin, et.al. 2024). *Fourth*, Support to Society; digital literacy can help public universities to provide better support to society (Khalid, et.al. 2019). This is because public universities can use digital technology to provide education, training and information services to the community more widely and efficiently.

Furthermore, digital innovation is the application of digital technology to create something new or improve something that already exists. Digital innovation is important for public universities because it can improve the performance of public universities in various aspects, including; *first*, Curriculum; Digital innovation can help public universities to develop a curriculum that is more relevant to the needs of industry and society. This is because public universities can use digital technology to provide a more interactive and engaging learning experience for students (Hund, et.al., 2021).

Second, Administration; digital innovation can help public universities to improve administrative efficiency. This is because public universities can use digital technology to automate administrative processes, such as student registration, tuition payment, and data management. *Third*, services; digital innovation can help public universities to provide better services to students, staff, and the community. This is because public universities can use digital technology to provide services that are more accessible, fast, and efficient (Indrajita, et.al., 2021).

Digital literacy and digital innovation are two important aspects that can improve the performance of incorporated state universities. State universities with legal entities (PTNBH) in Malang City need to develop digital literacy and digital innovation on an ongoing basis in order to remain relevant and competitive in the digital era.

RESEARCH METHODS

Research Design

This research adopts a quantitative approach with a survey research method. The main focus of this research is on relational aspects, the depth of which is the relationship between variables, leading to the formulation of various hypotheses. The following is a conceptual framework design in the context of this research.

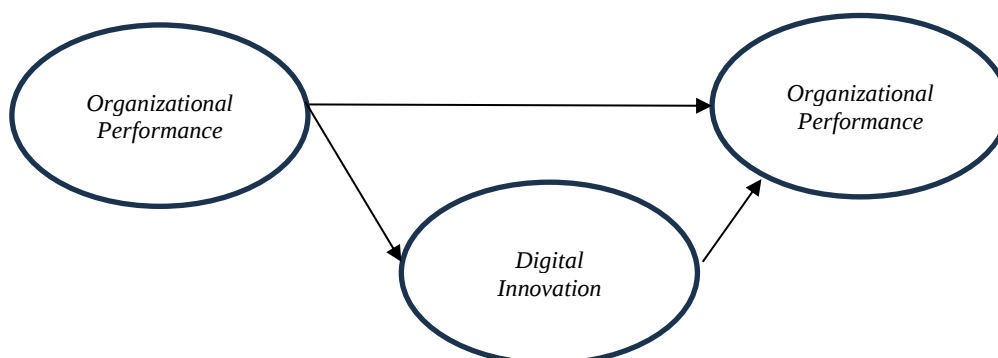


Figure 1. Research Conceptual Framework

For this reason, this research formulates the following hypothesis:

- a. Hypothesis 1 : *Digital literacy has a significant effect on organizational digital innovation*
- b. Hypothesis 2 : *Digital innovation has a significant effect on organizational performance*
- c. Hypothesis 3 : *Digital literacy has a significant effect on organizational performance through digital innovation.*

Population and Data Collection

Within the scope of this research, the population in focus involves lecturers, education staff, and students from State Universities with Legal Entities (PTNBH), namely Brawijaya University with a total of 62,733 people and State University of Malang (UM) with a total of 39,421 people. The sample size determination was carried out using the *Finite Population Correction Factor* (FPC) formula, which is useful for calculating the sample size by considering the population proportion (p), the level of precision (e), and the desired level of confidence (Z). The following is the Finite Population Correction (FPC) formula with an alpha of 5 percent:

$$n = \frac{\left[\frac{Z^2 p(1-p)}{e^2} \right]}{\left[1 + \left(\frac{Z^2 p(1-p)}{e^2 N} \right) \right]} \quad n = \frac{\left[\frac{1,96^2 \times 0,5(1-0,5)}{0,1^2} \right]}{\left[1 + \left(\frac{1,96^2 \times 0,5(1-0,5)}{0,1^2 \times 62.733} \right) \right]} \quad n = \frac{96.04}{1.0015} = 95.893$$

Description

n = number of samples

z = *confidence level* (α)

p = *population proportion*

e = *margin of error*

N = total population

From the results of calculations using the formula above, the number of samples for this study was 96 respondents. However, for practicality, the total sample was rounded up to 100 respondents.

The type of data used in this study is primary data, which is information collected based on respondents' answers from distributing questionnaires. The endogenous latent variables in this study are digital literacy and digital innovation, while the exogenous latent variable is organizational performance. The following is the operationalization of each variable:

Table 1. Operational research variables

Latent Variable	Indicator	Item	Statement
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Digital Literacy (X) Gilster (1997); Hague and Payton in Nugroho (2020); Bawden in Nurjanah (2017)	Internet Searching	X2	I found out about academic information immediately after searching for it on the internet.
		X5	I will search the internet to identify terms that I do not understand.
	Hypertextual Navigation	X4	I am an expert when it comes to internet skills for academic purposes
	Content Evaluation	X1	I forward or share research results/news that is going viral
	Knowledge Assembly	X3	I refer to <i>online</i> materials for academic purposes/tridharma of higher education tasks
		X6	I write or share on the internet about something (information or such) that is proven to be true (research results) and not just following trends
Digital Innovation (Z) Khin and Ho (2018); Setiadi in Avriyanti (2022)	Quality	Z1	My college has services that use quality technology compared to other colleges.
	Feature	Z2	My college has service features that use good technology
	Application	Z3	My campus has applications to support the learning process, research, and other administrative activities.
	Digital Solution	Z4	My campus has a <i>website</i> that displays informative information.
Organization Performance (Y) Olaru <i>et al.</i> (2014); Martin G. Wolf (2014)	Financial	Y1	My college increases funding sources beyond the main source of funding
		Y2	My college is making changes to the existing financial regulatory system in each work unit for the better.
		Y3	My college improves financial transparency and accountability
		Y4	My college conducts financial services to <i>stakeholders</i>
	Client Satisfaction	Y5	My college is improving student satisfaction
		Y6	My college has decreased student complaints
		Y7	My college is increasing the number of new student applicants
	Internal Process	Y8	My college increases cooperation with national and international <i>stakeholders</i>
		Y9	My college increases the number of new product and service innovations produced
		Y10	My college increased the average GPA of students
		Y11	My university accelerates the average time to complete the study period
		Y12	My college does a good job of maintaining and upgrading facilities and infrastructure
		Y13	My college produces information technology
		Y14	My college has increased employee, lecturer and student satisfaction levels
		Y15	My college improves the quality of human resources with further studies and training/education

Measurement

All items in the research constructs were measured using five-point Likert scale questions, with answers ranging from 1 (strongly disagree) to 5 (strongly agree). Furthermore, instrument tests were carried out, including validity and reliability, by distributing questionnaires to 30 respondents outside the sample who were still part of the population. The validity test in this study was conducted using SmartPLS 3 software. The validity test process consists of two parts, namely convergent validity test and discriminant validity test.

Data Analysis Technique

In processing the data in this study, Structural Equation Modeling (SEM) analysis was used. In general, the method and analysis function in SEM - PLS consists of two stages of model evaluation, namely outer model and inner model analysis. This process is then continued with hypothesis testing through the bootstrapping method, as explained by Hardisman (2020). Outer model analysis in SEM - PLS aims to evaluate the validity and reliability of research instruments in measuring latent variables. At this stage, convergent validity, discriminant validity, and reliability are examined. Meanwhile, inner model analysis is a step to test the model or hypothesis, also known as structural analysis. The main parameters assessed in hypothesis testing or structural analysis include the R-Square value and significance (T statistic and p value). In addition, it can also be evaluated using the effect size f-Square (F^2) and Q^2 .

RESULTS AND DISCUSSION

Of the 100 people who filled out the questionnaire, it was found that 86 people, or 86% of the total respondents, were students; 9 people, or 9% of the total respondents, were lecturers, and 5 people, or 5% of the total respondents, were teachers. The results of the questionnaire distribution also showed that all respondents, i.e. all respondents, stated that they were students.

In this study, the variables of Digital Literacy, Digital Innovation, and Organizational Performance variables were assessed using a Likert scale. The lowest score is 1, which means Strongly Disagree, and the highest score is 5, which means Strongly Agree. The following formula can be used to calculate intervals with this scale:

$$\begin{aligned} \text{Interval} &= \frac{(\text{maximum score} - \text{minimum score})}{\text{number of class}} \\ &= \frac{(5 - 1)}{5} = 0.8 \end{aligned}$$

Based on the results of the interval calculation above, the criteria distribution scale can be found as follows:

Table 2. Criterion distribution scale

Interval Scale	Criteria
1.00 – 1.79	Strongly Disagree

1.80 – 2.69	Disagree
2.70 – 3.49	Neutral
3.50 – 4.29	Agree
4.30 – 5.00	Strongly Agree

Table 2 contains the interval scale criteria used to measure each of the measuring items involved in this study. The results of the questionnaire distributed to one hundred respondents from State Universities with Legal Entities (PTNBH) in Malang City show the frequency distribution of respondents' answers for each variable measuring item. The frequency distribution of respondents' answers to each variable measuring item is explained as follows:

Frequency Distribution of *Digital Literacy Variables (X)*

In the *digital literacy* variable (X) there are 6 statement items, the following are the results of the frequency distribution analysis of respondents' answers:

Table 3. Frequency Distribution Table of *Digital Literacy Variables (X)*

Item	Statistical Description	Answer Options					Total	Mean	Criteria
		STS 1	TS 2	N 3	S 4	SS 5			
X1	Frequency	5	16	32	33	14	100	3.35	Neutral
	Percentage	5%	16%	32%	33%	14%	100%		
X2	Frequency	0	3	11	45	41	100	4.24	Agree
	Percentage	0%	3%	11%	45%	42%	100%		
X3	Frequency	0	2	13	47	38	100	4.21	Agree
	Percentage	0%	2%	13%	47%	38%	100%		
X4	Frequency	0	2	30	46	22	100	3.88	Agree
	Percentage	0%	2%	30%	46%	22%	100%		
X5	Frequency	0	0	12	31	57	100	4.45	Strongly Agree
	Percentage	00%	0%	12%	31%	57%	100%		
X6	Frequency	1	4	29	45	21	100	3.81	Agree
	Percentage	1%	4%	29%	45%	21%	100%		

Frequency Distribution of *Digital Innovation Variable (Z)*

In the *digital innovation* variable (Z) there are 4 statement items, the following are the results of the frequency distribution analysis of respondents' answers:

Table 4. Frequency Distribution Table of *Digital Innovation Variable (Z)*

Item	Statistical Description	Answer Options					Total	Mean	Criteria
		STS 1	TS 2	N 3	S 4	SS 5			
Z1	Frequency	0	2	29	46	23	100	3.90	Agree
	Percentage	0%	2%	29%	46%	23%	100%		

Z2	Frequency	0	4	20	53	23	100	3.95	Agree
	Percentage	0%	4%	20%	53%	23%	100%		
Z3	Frequency	0	2	11	46	41	100	4.26	Agree
	Percentage	0%	2%	11%	46%	41%	100%		
Z4	Frequency	1	4	9	54	32	100	4.12	Agree
	Percentage	1%	4%	9%	54%	32%	100%		

Frequency Distribution of Organizational Performance Variables (Y)

In the Organizational Performance variable (Y) there are 15 statement items, the following are the results of the frequency distribution analysis of respondents' answers:

Table 5. Table Frequency Distribution of Organizational Performance Variables (Y)

Item	Statistical Description	Answer Options					Total	Mean	Criteria
		STS 1	TS 2	N 3	S 4	SS 5			
Y1	Frequency	2	4	49	36	9	100	3.46	Neutral
	Percentage	2%	4%	49%	36%	9%	100%		
Y2	Frequency	3	5	43	37	12	100	3.50	Agree
	Percentage	3%	5%	43%	37%	12%	100%		
Y3	Frequency	7	3	45	32	13	100	3.41	Neutral
	Percentage	7%	3%	45%	32%	13%	100%		
Y4	Frequency	3	5	50	32	10	100	3.41	Neutral
	Percentage	3%	5%	50%	32%	10%	100%		
Y5	Frequency	4	5	17	51	23	100	3.84	Agree
	Percentage	4%	5%	17%	51%	23%	100%		
Y6	Frequency	3	12	33	40	12	100	3.46	Neutral
	Percentage	3%	12%	33%	40%	12%	100%		
Y7	Frequency	0	3	10	44	43	100	4.27	Agree
	Percentage	0%	3%	10%	44%	43%	100%		
Y8	Frequency	1	1	13	38	47	100	4.29	Agree
	Percentage	1%	1%	13%	38%	47%	100%		
Y9	Frequency	2	1	28	44	25	100	3.89	Agree
	Percentage	2%	1%	28%	44%	25%	100%		
Y10	Frequency	2	6	40	40	12	100	3.54	Agree

	Percentage	2%	6%	40%	40%	12%	100%		
Y11	Frequency	1	0	31	51	17	100	3.83	Agree
	Percentage	1%	0%	31%	51%	17%	100%		
Y12	Frequency	4	6	18	53	19	100	3.77	Agree
	Percentage	4%	6%	18%	53%	19%	100%		
Y13	Frequency	0	2	20	55	23	100	3.99	Agree
	Percentage	0%	2%	20%	55%	23%	100%		
Y14	Frequency	2	3	35	44	16	100	3.69	Agree
	Percentage	22%	3%	35%	44%	16%	100%		
Y15	Frequency	2	1	22	53	22	100	3.92	Agree
	Percentage	2%	1%	22%	53%	22%	100%		

Structural Equation Modeling Analysis - Partial Least Square

Outer Model (Measurement Model)

The measurement model is used to evaluate the relationship between construct variables and latent variables. Validity and reliability tests are two methods used to assess external models (Syahrir et al., 2020). Convergent and discriminant validity tests were conducted using SmartPLS 3 software in this study. The convergent test results show that there are two invalid variable measuring items, namely item X5 and item X6, based on the outer loadings value which is less than 0.5. Therefore, improvements were made to the two items. Furthermore, the discriminant validity test shows that the cross loading value of the measuring items is greater on their respective latent variables than the cross loading value on other latent variables, indicating that the measuring items in this study can be considered valid. In addition, the instrument reliability test results show that the Cronbach's alpha and composite reliability values on each variable exceed 0.7. This confirms that this research instrument can be considered reliable.

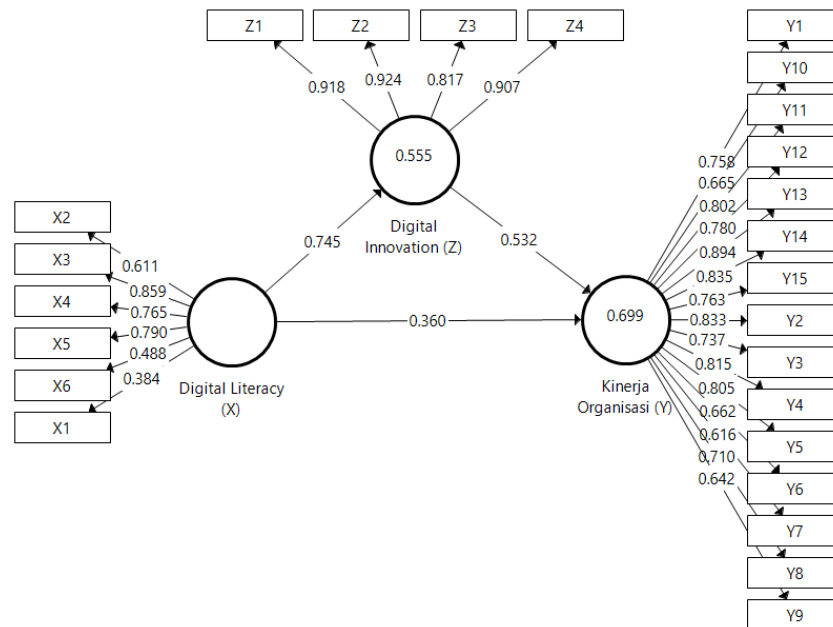


Figure 2. Outer Model

Inner Model (Structural Model)

The analysis stage called the inner model aims to examine and predict the collinearity relationship between constructs and the predictive ability of the model. The coefficient of determination (R-Square) and sequentially validated redundancy used to measure the predictive ability of the model (Syahrir et al., 2020). The results of the R-Square test in this study are as follows:

Table 6. Determinant Coefficient Results

	<i>R-Square</i>	<i>Adjusted R-Square</i>
<i>Digital Innovation (Z)</i>	0.089	0.080
<i>Organization Performance (Y)</i>	0.577	0.569

Based on table 6, it is known that the *R-Square* value on the *digital innovation* variable (Z) is 0.089, which means that the *digital literacy* variable (X) affects *digital innovation* by 8.9%. While the *R-Square* value on the *organizational performance* variable is 0.577, which means that the *digital literacy* and *digital innovation* variables simultaneously affect *organizational performance* by 57.7%.

Then Q-Square is a test conducted to assess predictive relevance. If the Q-Square value > then it shows that the predictive relevance model is accurate for certain constructs. To obtain the Q-Square value in the *SmartPLS* software, it can be obtained from the Blindfolding value.

Table 7. Q-Square Test Results

	SSO	SSE	$Q^2 (=1-SSE/SSO)$
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Digital Literacy (X)	600.000	600.000	
Digital Innovation (Z)	400.000	377.064	0.057
Organization Performance (Y)	1500.000	1082.126	0.279

Based on table 7, it is known that the cross validated redundancy value (Q^2) for the digital innovation variable (Y) is 0.057 and the cross validated redundancy value (Q^2) is 0.279. This value is greater than zero, so it can be said that the model has predictive relevance for each of these constructs.

Hypothesis Testing

Hypothesis testing in SEM-PLS using SmartPLS software is done by bootstrapping, then looking at the original sample value, t-statistic, and p-values on the path coefficients. Meanwhile, to see the specific indirect effect can be seen in the specific indirect effects.

In this study, the t-table value used is 1.96 and for p-values <0.05 so that if the t-statistic value is greater than 1.96 and the p-value <0.05 , the result is that the variable has a significant influence on other variables. Meanwhile, if the t-statistic value < 1.96 and the p-value > 0.05 , the result is that the variable does not have a significant effect on other variables.

The original sample value is to see the positive or negative effect of a variable on other variables. If the original sample value is positive, then the result is that the variable has a significant positive effect and vice versa if the original sample value is negative, then the effect given is also negative.

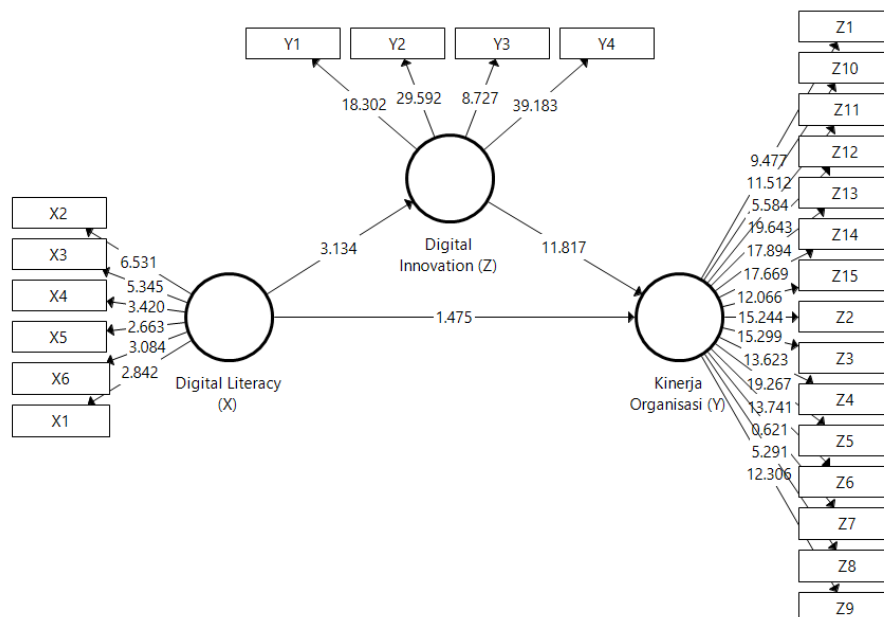


Figure 3. Hypothesis Test Results

Table 8. Hypothesis Test Results

	Original Sample (O)	T Statistic	P Values
DL(X) → KO(Y)	0.152	1.475	0.141
DI (Z) → KO (Y)	0.701	11.817	0.000
DL(X) → DI(Z)	0.298	3.134	0.002
DL(X) → DI(Z) → KO(Y)	0.209	3.155	0.002

Description:

DL : Digital Innovation

AT : Digital Literacy

KO : Organizational Performance

Table 8 shows three direct effect paths: digital literacy on organizational performance, digital innovation on organizational performance, and digital literacy on digital innovation. One indirect effect path is digital literacy on organizational performance through innovation. Furthermore, the results of hypothesis testing will be discussed as follows:

a. Direct Effect

- *Digital Literacy (X) on Organizational Performance (Y)*
Based on the hypothesis test results in Table 8, it is known that the *digital literacy* variable on organizational performance has a *t-statistic* value of 1.475. Meanwhile, the *p-value* is 0.141, and the *original sample* value is 0.152. This shows that *digital literacy* does not have a significant effect on organizational performance. This is because the *t-statistic* is smaller than the *t-table* of 1.96 and the *p-value* has a value greater than the significance value of 5% (0.05).
- *Digital Innovation (Z) on Organizational Performance (Y)*
Based on the hypothesis test results in Table 8, it is known that *digital innovation* on organizational performance has a *t-statistic* value of 11.817. Meanwhile, the *p-value* is 0.000 and the *original sample* value is 0.701. This shows that *digital innovation* has a significant positive effect on organizational performance. This is because the *t-statistic* value is greater than the *t-table* of 1.96 and the *p-value* is less than the significance value of 5% (0.05) and for the *original sample* value is positive.
- *Digital Literacy (X) to Digital Innovation (Z)*
Based on the hypothesis test results in table 8, it is known that the *digital literacy* variable on *digital innovation* has a *t-statistic* value of 3.134. Meanwhile, the *p-value* is 0.002, and the *original sample* value is 0.298. This shows that *digital literacy* has a significant positive effect on *digital innovation*. This is because the *t-statistic* value is greater than the *t-table* of 1.96 and the *p-value* is less than the significance value of 5% (0.05) and the *original sample* value is positive.

b. Indirect Effect

- *Digital Literacy (X) on Organizational Performance (Z) through Digital Innovation (Y)*

Based on the results of hypothesis testing in table 8, it is known that the *digital literacy* variable on organizational performance has an indirect effect through *digital innovation* with a *t-statistic* value of 2.396 and a *p-value* of 0.017 and an *original sample* value of 0.185. This shows that *digital literacy* on organizational performance through *digital innovation* has a significant positive effect.

Discussion

Digital Literacy, Digital Innovation and Performance of State Universities with Legal Entities (PTNBH) in Malang City

a. Description of Digital Literacy of State Universities with Legal Entities (PTNBH) in Malang City

The ability to understand and use information from various sources available through digital media is called digital literacy (Gilster, 1997). This ability allows a person to process various messages and information, and communicate well with others (Ministry of Education and Culture, 2017). The results showed that students, lecturers, and employees of State Universities with Legal Entities (PTNBH) in Malang City use digital media. Measurement of digital literacy in State Universities with Legal Entities (PTNBH) in Malang City can be seen from the indicators formulated by Gilster (1997), namely internet searching, hypertextual navigation, content evaluation and knowledge assembly.

Internet searching is the ability to use the internet for various purposes using search engines on the internet. Based on the frequency distribution of respondents' answers, in general, lecturers, education staff and students of State Universities with Legal Entities (PTNBH) in Malang City have the ability to do activities on the internet, especially in using search engines.

Hypertextual navigation is the ability to understand how the internet works and the characteristics of web pages. Based on the results of the frequency distribution of respondents' answers, it is known that lecturers, education staff, and students of State Universities with Legal Entities (PTNBH) in Malang City generally understand how the internet works and the characteristics of the website.

Content evaluation is the ability to critically assess information found in digital media to identify the validity and completeness of data. Based on the results of the frequency distribution of respondents' answers, it is known that lecturers, education staff and students have the ability to assess information from digital media by conducting background information searches first before sharing information or research results that are viral or being discussed. The ability to assess information content in the current era is certainly very important, considering that at this time, anyone can spread information that is not necessarily true. (Rahmadhany et al., 2021).. For the dissemination of false information, more through social media, which based on the answers of respondents, lecturers, education staff, and students of State Universities with Legal Entities (PTNBH) in Malang City generally use social media as a source of information.

Knowledge assembly is the ability to process the information obtained and then share it again with the public as an opinion or opinion. Based on the results of the distribution of respondents' answers, it is known that in general lecturers,

education staff, and students of State Universities with Legal Entities (PTNBH) in Malang City already have this ability. This refers to the answers of respondents who make online material a reference in doing assignments and conducting discussions on certain topics in online media.

b. Description of Digital Innovation of State Universities with Legal Entities (PTNBH) in Malang City

Digital innovation is the process of making something new by combining and exploiting digital and physical parts (Hund et al., 2021). The digital innovation measuring indicators created by Khin and Ho (2018) can be used to find out how digital innovation is in the State Universities with Legal Entities (PTNBH) in Malang City. The results show that students, teachers, and lecturers agree that the digital innovation of State Universities with Legal Entities (PTNBH) in Malang City is quite good.

In relation to the quality of service technology, respondents agreed that State Universities with Legal Entities (PTNBH) in Malang City can compete with other universities. In terms of service features, respondents generally stated that the applications supporting learning and other administrative activities were quite good. Finally, the State Universities with Legal Entities (PTNBH) in Malang City have websites that contain useful information.

c. Description of the Performance of State Universities with Legal Entities (PTNBH) in Malang City

Organizational performance is the result or achievement achieved by an organization as a result of implementing programs or policies using available resources to achieve organizational goals. Olaru et al. (2014) created four indicators that can be used to measure the performance of State Universities with Legal Entities (PTNBH) in Malang City: finance, customer satisfaction, human resources, and internal processes.

In terms of finance, State Universities with Legal Entities (PTNBH) in Malang City have improved the financial regulatory system, increased financial transparency and accountability, improved financial services to stakeholders, and increased funding sources outside the main source of funds. This is known from the answers of respondents who agree. From the point of view of customer satisfaction, State Universities with Legal Entities (PTNBH) in Malang City have tried to increase student satisfaction and reduce student complaints. From the point of view of human resources and internal processes, State Universities with Legal Entities (PTNBH) in Malang City have also achieved a good level of success.

The Effect of Digital Literacy on the Performance of State Universities with Legal Entities (PTNBH) in Malang City

Organizations are groups of people arranged systematically within a certain scope to achieve common goals. Lecturers, teachers, and education personnel are human resources in educational organizations. Thus, efforts to improve the performance of lecturers and education personnel at State Universities with Legal Entities (PTNBH) in Malang City are focused on abilities, employee placement, clear authority, clear

responsibilities, trust in lecturers and education personnel, support, leadership and motivation (Fithriyyah, 2021).

Of these factors, digital literacy is one of the factors that affect the performance of human resources in higher education institutions, namely in terms of ability. In the end, if employee performance is good, organizational performance will also be good, because employees are the motor of the company. In the context of education, Rifki et al. (2023) said that digital literacy has an impact on lecturer performance because it allows lecturers to use technology to make learning more interactive. Dharma's research (2022) also found that digital literacy has a significant impact on lecturer performance. According to him, digital literacy is very important for teachers because it can help them achieve educational goals by implementing learning that is realized through teacher performance. In addition, research conducted by Zakiyah & Sayekti (2022) found that digital literacy affects lecturer performance because lecturers who have good digital literacy skills will be able to integrate various information with technology, which allows them to carry out a more integrated and effective learning process, which in turn can improve the performance of higher education organizations.

Contrary to previous studies, this study examines the direct influence between digital literacy variables on organizational performance. However, based on the results of hypothesis testing conducted by bootstrapping data to determine the original sample value, t-statistic, and p-value on the path coefficient, it was found that digital literacy **did not have a significant effect** on the performance of State Universities with Legal Entities (PTNBH) in Malang City.

Judging from the amount of digital media use in State Universities with Legal Entities (PTNBH) in Malang City, everyone out of 100 people surveyed uses digital media as a source of information and also uses various types of social media. However, based on the results of testing the effect of digital literacy on the performance of State Universities with Legal Entities (PTNBH) in Malang City, there is no direct relationship between digital literacy and academic performance.

The results of this study are in line with research conducted by Razak et al. (2023), who found that employees' digital literacy partially had no effect on their performance at Universitas Muhammadiyah Luwuk. This study also emphasizes that digital literacy for employees is very important because we are entering an era of digital transformation that is closely related to web management. Research by Lestari et al. (2020) is also in line with these findings. At the Faculty of Education, Universitas Muhammadiyah Jakarta, it is known that digital literacy does not affect the quality of academic services. Organizational performance consists of the quality of academic services provided by education personnel.

When comparing the studies in education that produced significant and non-significant findings, there are several things that distinguish the two studies regarding the subject of the research. In the former, significant research concentrated on the performance of teachers or educators (teachers) in terms of the learning process. In contrast, the non-

significant research concentrated on the performance of employees or employees in the field of education (education personnel), whose responsibility is to offer services to students as customers and other stakeholders.

Four perspectives can be used when assessing the performance of higher education institutions. These are the financial perspective relating to the financial management of higher education institutions; the customer perspective relating to the educational services provided to students; the internal business process perspective relating to the delivery of learning and administrative support; and the learning and growth perspective relating to the higher education organizational environment (Ceha et al., 2013). Thus, evaluating the performance of State Universities with Legal Entities (PTNBH) in Malang City involves the performance of lecturers and education personnel who provide services with a focus on customer satisfaction.

The Effect of Digital Innovation on the Performance of Legalized State Universities (PTNBH) in Malang City

Digital innovation is the process of making many new things by combining digital technology to generate added value (Hund et al., 2021). Innovative companies and organizations will win the competition. It is possible that competition and innovation are intertwined. Almost all organizations pursue product, service, and digital innovation (Wijaya et al., 2019). Digital innovation improves efficiency, better customer experience, speed of organizational development, better collaboration, cost reduction, competitive advantage, and flexibility and agility (Teguh et al., 2022).

This shows that digital innovation can improve company performance. This is in accordance with the research results, which are based on the results of hypothesis testing conducted by bootstrapping data to determine the initial sample value, t-statistic value, and p-value through the path coefficient. This study shows that digital innovation has a significant positive impact on the performance of State Universities with Legal Entities (PTNBH) in Malang City. This shows that digital innovation can improve the performance of PTNBH in Malang City. In line with research conducted by Mayasari (2023), innovation helps school performance. In an organizational context, innovation can be defined as a restructuring carried out by an organization in a process or the adoption of digital technology in organizational management. Improving company performance can be achieved through the development of new products and services that are of high quality and meet customer needs well. Highly innovative organizations show that they have the ability to develop and adapt to the times to compete with their competitors. Therefore, utilizing digital innovation and potential can facilitate activities and provide significant benefits.

Indrajita et al. (2021) found that innovation affects employee performance. Sartika (2016) found that technological innovation greatly affects organizational performance. According to him, the existence of adequate facilities to support organizational performance is the main component that makes the relationship between technological innovation and digital capabilities strong. Innovations greatly help employee performance, according to another study by Dama & Ogi (2018).

State Universities with Legal Entities (PTNBH) in Malang City make digital innovation efforts in improving service performance to stakeholders through the declaration of becoming an Artificial Intelligence and Digital Campus. (Putra, 2023). Digital innovation makes the work process of an organization more effective and efficient. In order to realize this, the State University with Legal Entity (PTNBH) in Malang City issued a digital innovation by adopting digital technology in the form of presenting an NVIDIA DGX A100 supercomputer. This supercomputer is used for students and lecturers to carry out research and publications that require high computing devices. (Editorial, 2023).

Digital innovation improves organizational performance by automating business processes, reducing operational costs, and reducing human error. Technologies such as big data analytics, which allow organizations to collect, analyze, and process data in real time, is one way digital innovation can improve the accuracy of decision-making. In the area of customer service, digital innovations such as chatbots and customer behavior analysis can help companies better understand customer needs and preferences and offer more relevant services to improve customer satisfaction. In addition, technological advancements can improve communication and cooperation within organizations.

One example of the utilization of digital innovation by State Universities with Legal Entities (PTNBH) in Malang City is the transition of managing library exemption letters which were originally done directly, now done online so as to increase time efficiency in taking care of the needs of the libraries of State Universities with Legal Entities (PTNBH) in Malang City.

Overall, the results of the questionnaire show that digital innovation in State Universities with Legal Entities (PTNBH) in Malang City is quite good. This is in accordance with the indicators of measuring digital innovation by Khin and Ho (2018), who said that the quality of digital products, features, applications, and solutions can be measured through digital innovation. Therefore, the development of more digital innovations must continue.

The Effect of Digital Literacy on the Performance of State Universities with Legal Entities (PTNBH) in Malang City through Digital Innovation

Based on the results of hypothesis testing conducted by bootstrapping data to determine the original sample value, t-statistic, and p-value through the path coefficient. According to this study, digital literacy has a significant positive impact on organizational performance at State Universities with Legal Entities (PTNBH) in Malang City. According to hypothesis 1 of the direct effect path, digital literacy is able to mediate the impact between digital literacy and organizational performance. However, the performance of State Universities with Legal Entities (PTNBH) in Malang City is influenced by digital literacy thanks to the mediation of digital innovation.

Velic et al. (2021) state that digital literacy affects digital innovation, so that organizations that are literate in technology will be able to take advantage of digital means to achieve their goals, by making digital innovations that can increase the productivity of organizational performance. This claim is in line with the findings of Khalid et al. (2019), who found that digital literacy can improve organizational performance by gathering more digital resources...

In the context of education, digital literacy refers to an organization's ability to effectively use and apply digital technologies in the education process and academic services. An organization that has good digital literacy has a positive correlation with the organization's ability to adopt the latest technology. This suggests that organizations with good digital literacy tend to have the innovative capabilities needed to adapt to technological advances. Digital literacy is essential for innovation. This ability is the basis for organizations to innovate and innovate. It also enables organizations to solve unanswered problems and run their operations more efficiently.

By using digital tools, an organization can access, sort, use and disseminate new information in an effective and efficient way. This is the role of digital literacy in driving innovation. Using these capabilities, companies can search and develop strategies by using search engines to find information that suits their needs (Jasin et al., 2023).

Thus, State Universities with Legal Entities (PTNBH) in Malang City can improve the ability of lecturers, education personnel, and students in digital literacy, so that they can produce digital innovations in the field of education. Thus, organizational performance will improve.

CONCLUSION

This study aims to determine the effect of digital literacy and digital innovation on the performance of State Universities with Legal Entities (PTNBH) in Malang City. Based on the results of the study, it can be seen that the level of digital literacy, *digital innovation*, and the performance of State Universities with Legal Entities (PTNBH) is good. Then based on hypothesis testing in this study it can be concluded that, *Digital literacy* has no significant effect on the performance of State Universities with Legal Entities (PTNBH) in Malang City, while *Digital innovation* has a significant positive effect on the performance of State Universities with Legal Entities (PTNBH) in Malang City. The next finding shows that *digital literacy* has a significant positive effect on the performance of State Universities with Legal Entities (PTNBH) in Malang City through *digital innovation*. This finding suggests that universities must first design digital skills and innovation for those involved in the organization to improve their performance.

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