

Analysis of Digital Technology Acceptance in Supporting Community Digital Literacy Using the Technology Acceptance Model in Balikpapan City

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Abstract

Digital technology has become an essential part of modern society, providing easier access to information, communication, education, and public services. Despite the rapid growth in digital technology adoption, differences in individuals' digital literacy remain a significant challenge, particularly in their ability to search, evaluate, and utilize digital information effectively. Understanding the factors influencing digital literacy is therefore essential for developing effective digital transformation strategies. This study aims to analyse the influence of digital technology acceptance on community digital literacy in Balikpapan City by applying the Technology Acceptance Model (TAM). Specifically, the study examines the effects of Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) on Digital Literacy (DL). A quantitative research design was employed using an online questionnaire distributed through Google Forms. A total of 105 valid responses were collected from residents of Balikpapan City. The collected data were analysed using descriptive statistics, validity and reliability tests, and multiple linear regression analysis. The findings reveal that both Perceived Usefulness and Perceived Ease of Use have positive and statistically significant effects on Digital Literacy. The regression analysis indicates that the proposed model explains 76.0% of the variance in digital literacy ($R^2 = 0.760$). Furthermore, Perceived Ease of Use demonstrates a stronger influence than Perceived Usefulness, suggesting that technologies that are easy to understand and operate encourage greater engagement with digital platforms and contribute more effectively to improving digital literacy. This study provides empirical evidence supporting the applicability of the Technology Acceptance Model in explaining community digital literacy. The findings offer practical implications for local governments, educational institutions, and policymakers in designing digital literacy programs by emphasizing not only the usefulness of digital technologies but also their accessibility and ease of use.

Keywords: *Technology Acceptance Model, Perceived Usefulness, Perceived Ease of Use, Digital Literacy, Social Media, Balikpapan City.*

1. Introduction

Digital transformation has significantly changed the way people communicate, access information, conduct business activities, and obtain public services. The widespread use of smartphones, social media platforms, and internet-based applications has increased public dependence on digital technology in everyday life. Along with these developments, digital literacy has become an essential competency that enables individuals to identify information needs, search for reliable information, critically evaluate digital content, and utilize digital resources responsibly [1], [2].

Indonesia has experienced rapid growth in internet users and digital technology adoption over the past decade. Nevertheless, increased access to technology does not necessarily indicate that individuals possess adequate digital literacy. Many users actively utilize digital platforms for communication and entertainment but still encounter difficulties in evaluating information credibility, identifying misinformation, and making informed decisions based on digital content [3], [4]. These conditions indicate that technology adoption alone is insufficient without corresponding improvements in digital literacy.

The Technology Acceptance Model (TAM) has been widely recognized as one of the most influential theoretical frameworks for explaining individuals' acceptance and use of information technology. According to TAM, users' behavioral acceptance of technology is primarily determined by two constructs: Perceived Usefulness (PU), which reflects the degree to which individuals believe that technology enhances their performance, and Perceived Ease of Use (PEOU), which refers to the extent to which technology is perceived as effortless to learn and operate [6]. Previous studies have consistently demonstrated that these constructs significantly influence users' willingness to adopt digital technologies across various contexts, including education, digital banking, mobile applications, and public services [5], [6], [7]. Several previous studies have examined technology acceptance using the Technology Acceptance Model. Agustian et al. [3] reported that Perceived Usefulness, Perceived Ease of Use, and Digital Literacy positively influence the adoption of Artificial Intelligence among university students. Similarly, Malik et al. [5] found that both TAM constructs significantly affect user acceptance of digital public service applications. Hidayat and Kharismaputra [4] also confirmed that users are more likely to adopt digital systems when they perceive them as

useful and easy to use. Furthermore, Desmaryani et al. [2] demonstrated that technology acceptance, supported by government initiatives, contributes significantly to improving digital literacy within communities.

Although numerous studies have investigated technology acceptance in educational institutions, digital banking, mobile applications, and electronic government services, limited research has specifically explored the relationship between technology acceptance and community digital literacy at the municipal level, particularly in Balikpapan City. Most existing studies emphasize technology adoption as the primary outcome, whereas digital literacy has received relatively limited attention as a dependent variable [1], [5]. This gap highlights the need for empirical research investigating how technology acceptance contributes to strengthening digital literacy among urban communities.

Therefore, this study aims to analyze the influence of Perceived Usefulness and Perceived Ease of Use on Digital Literacy among residents of Balikpapan City using the Technology Acceptance Model. By focusing on community-level digital technology users, this study extends previous TAM research beyond organizational and educational settings. The findings are expected to contribute to the literature on technology acceptance and digital literacy while providing practical recommendations for local governments, educational institutions, and policymakers in developing digital literacy initiatives that promote the effective and responsible use of digital technology.

2. Theoretical Basic

2.1. Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) is one of the most widely used theoretical frameworks for explaining users' acceptance and adoption of information technology. The model proposes that individuals' intention to use technology is primarily influenced by two key constructs: **Perceived Usefulness (PU)** and **Perceived Ease of Use (PEOU)**. Perceived Usefulness refers to the degree to which an individual believes that using a particular technology will improve performance, while Perceived Ease of Use reflects the extent to which an individual believes that using the technology requires minimal effort.

Since its introduction, TAM has been extensively applied in various research contexts, including mobile applications, digital banking, e-government services, artificial intelligence, and educational technologies. Previous studies have consistently demonstrated that users are more likely to adopt digital technologies when they perceive them as useful and easy to operate [5], [6], [7]. Therefore, TAM provides an appropriate theoretical foundation for investigating the acceptance of digital technology in supporting community digital literacy.

2.2. Perceived Usefulness

Perceived Usefulness (PU) refers to an individual's belief that using digital technology enhances the effectiveness and efficiency of accomplishing daily activities. Technologies perceived as useful encourage users to perform information-related tasks more effectively, including accessing, searching, organizing, and utilizing digital information [1].

Previous studies have shown that Perceived Usefulness significantly influences technology adoption across various digital environments. Agustian et al. [3] found that users are more likely to adopt artificial intelligence technologies when they perceive clear benefits for learning and academic activities. Similarly, Ramadhan et al. [2] reported that perceived usefulness positively affects the actual use of mobile banking applications. These findings indicate that users who recognize the benefits of digital technology are more motivated to integrate it into their daily activities, thereby supporting the development of digital literacy.

2.3. Perceived Ease of Use

Perceived Ease of Use (PEOU) is defined as the extent to which an individual believes that digital technology is easy to learn, understand, and operate without requiring excessive effort. [1]. Technologies with intuitive interfaces and user-friendly features encourage individuals to interact with digital platforms more confidently and efficiently.

Several previous studies have confirmed the importance of Perceived Ease of Use in technology acceptance. Malik et al. [5] demonstrated that ease of use significantly influences users' acceptance of digital public service applications. Likewise, Hidayat and Kharismaputra [4] reported that users are more willing to adopt digital information systems when they perceive them as easy to use. Therefore, improving system usability is expected to encourage broader technology adoption and strengthen users' digital competencies.

2.4. Digital Literacy

Digital literacy refers to an individual's ability to effectively access, understand, evaluate, create, and communicate information using digital technologies. It encompasses not only technical skills in operating digital devices but also cognitive and social competencies required to critically assess information, distinguish credible sources from misinformation, and utilize digital resources responsibly and ethically [3], [8]. In today's digital era, digital literacy has become an essential competency that enables individuals to actively participate in education, employment, business, and social interactions.

The rapid advancement of information and communication technologies has transformed the way people obtain knowledge and communicate with others. Social media platforms, search engines, online learning systems, and digital public services have become integral parts of daily life. However, the increasing availability of digital technologies does not necessarily guarantee that individuals possess adequate digital literacy. Many users are able to access digital platforms but still experience difficulties in evaluating the credibility of online information, identifying misinformation, protecting personal data, and making informed decisions based on digital content [3]. Therefore, strengthening digital literacy is essential to ensure that technology is utilized effectively and responsibly.

Several studies have emphasized that digital literacy is closely associated with technology acceptance. Individuals who perceive digital technologies as useful and easy to use are generally more motivated to explore digital platforms, seek information, and develop their digital

competencies. Desmaryani et al. [2] found that technology acceptance, combined with institutional and governmental support, significantly contributes to improving digital literacy within communities. Similarly, Agustian et al. [3] reported that digital literacy positively supports the adoption of emerging technologies by enabling users to understand and maximize the benefits of digital systems.

In the context of this study, digital literacy is defined as the community's ability to search, evaluate, understand, and utilize digital information effectively through various digital platforms, particularly social media and internet-based applications. This construct serves as the dependent variable because the study seeks to examine whether the acceptance of digital technology, represented by **Perceived Usefulness** and **Perceived Ease of Use**, contributes to improving digital literacy among residents of Balikpapan City. It is expected that individuals who perceive digital technology as beneficial and easy to operate will demonstrate higher levels of digital literacy and become more capable of using digital information for learning, communication, and everyday decision-making.

2.5. Research Framework

Based on the Technology Acceptance Model, this study proposes that **Perceived Usefulness** and **Perceived Ease of Use** positively influence **Digital Literacy** among the community of Balikpapan City. Individuals who perceive digital technology as beneficial and easy to use are expected to demonstrate higher levels of digital literacy, particularly in searching, evaluating, and utilizing digital information effectively.

The conceptual framework of this study consists of two independent variables, namely **Perceived Usefulness (PU)** and **Perceived Ease of Use (PEOU)**, and one dependent variable, **Digital Literacy (DL)**.

H1: Perceived Usefulness has a positive and significant effect on Digital Literacy.

H2: Perceived Ease of Use has a positive and significant effect on Digital Literacy.

3. Research Method

3.1. Research Design

This study employed a quantitative research approach to examine the influence of digital technology acceptance on community digital literacy using the Technology Acceptance Model (TAM). The study investigated two independent variables, namely Perceived Usefulness (PU) and Perceived Ease of Use (PEOU), while Digital Literacy (DL) served as the dependent variable. A quantitative approach was selected because it enables the statistical measurement of relationships among variables and provides empirical evidence for hypothesis testing.

3.2. Population and Sample

The research was conducted in Balikpapan City, Indonesia. The target population consisted of residents who actively use digital technologies, particularly social media and internet-based applications. Respondents were selected using a purposive sampling technique based on the following criteria: (1) residing in Balikpapan City, (2) actively using digital technology or social media, and (3) being at least 17 years old. A total of 105 valid responses were collected and included in the final analysis.

3.3. Data Collection

Primary data were collected through an online questionnaire developed using Google Forms. The questionnaire consisted of two sections. The first section gathered respondents' demographic information, including gender, educational background, occupation, and average daily duration of social media usage. The second section measured the research variables using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

The measurement instrument consisted of sixteen indicators, including five items measuring Perceived Usefulness, five items measuring Perceived Ease of Use, and six items measuring Digital Literacy. The questionnaire items were adapted from previous studies related to the Technology Acceptance Model and digital literacy.

3.4. Data Analysis

The collected data were analyzed using SPSS statistical software. Descriptive statistics were first employed to summarize respondents' demographic characteristics and responses to each questionnaire item. Instrument validity was evaluated using the Pearson Product-Moment Correlation, while reliability was assessed using Cronbach's Alpha. A Cronbach's Alpha value greater than 0.70 indicated acceptable internal consistency.

Multiple Linear Regression Analysis was then conducted to examine the effects of Perceived Usefulness and Perceived Ease of Use on Digital Literacy. The regression model is expressed as follows:

$$DL = \beta_0 + \beta_1 PU + \beta_2 PEOU + \varepsilon \quad (1)$$

where DL represents Digital Literacy, PU represents Perceived Usefulness, PEOU represents Perceived Ease of Use, β_0 is the constant, β_1 and β_2 are the regression coefficients, and ε is the error term.

The significance of the regression model was evaluated using the F-test, while the significance of each independent variable was examined using the t-test at a significance level of 0.05. In addition, the coefficient of determination (R^2) was calculated to determine the proportion of variance in Digital Literacy explained by the independent variables.

4. Results and Discussion

4.1. Respondent Characteristics

A total of **105 respondents** participated in this study. Table 1 summarizes the demographic characteristics of the respondents.

Table 1: Respondent Characteristics

Characteristic	Category	Frequency	Percentage (%)
Gender	Male	62	59.0
	Female	43	41.0
Education	Senior High School/Vocational School	56	53.3
	Bachelor's Degree	41	39.0
	Diploma	1	1.0
	Master's Degree	1	1.0
	Others	6	5.7
Occupation	Student	69	65.7
	Private Employee	7	6.7
	Civil Servant	5	4.8
	Entrepreneur	2	1.9
	Others	22	21.0
Daily Social Media Usage	< 1 hour	10	9.5
	1–3 hours	34	32.4
	3–5 hours	41	39.0
	> 5 hours	20	19.0

The results indicate that most respondents were male (59.0%), while female respondents accounted for 41.0%. The majority had completed senior high school or vocational education (53.3%), followed by bachelor's degree holders (39.0%). Most respondents were students (65.7%), reflecting the high participation of younger generations who actively engage with digital technologies. Regarding digital technology usage, 39.0% of respondents reported using social media for three to five hours per day, indicating that digital platforms have become an integral part of their daily activities.

4.2. Discussion

The findings demonstrate that **Perceived Usefulness** significantly influences community digital literacy. Individuals who perceive digital technologies as beneficial are more likely to utilize digital platforms for searching, evaluating, and applying information effectively. These findings are consistent with Agustian et al. [3], who reported that perceived usefulness positively supports the adoption of artificial intelligence in educational settings. Similarly, Hidayat and Kharismaputra [4] concluded that users are more likely to adopt digital systems when they recognize the practical benefits provided by the technology.

Table 2: Descriptive Statistics

Variable	Mean	Standard Deviation
PU1	4.67	0.85
PU2	4.45	0.82
PU3	4.53	0.81
PU4	4.56	0.81
PU5	4.58	0.79
PEOU1	4.65	0.82
PEOU2	4.49	0.86
PEOU3	4.62	0.85
PEOU4	4.54	0.84
PEOU5	4.52	0.86
DL1	4.63	0.81
DL2	4.53	0.82
DL3	4.60	0.82
DL4	4.59	0.79
DL5	4.54	0.80
DL6	4.60	0.73

Overall, all variables achieved mean scores above 4.45, indicating that respondents generally agreed with the questionnaire statements. The highest mean score was observed for **PU1 (4.67)**, suggesting that respondents perceived digital technology as highly beneficial in supporting their daily activities. Similarly, **PEOU1 (4.65)** and **DL1 (4.63)** also obtained high mean values, indicating positive perceptions regarding the ease of technology use and digital literacy.

4.3. Validity and Reliability Analysis

The validity of the research instrument was assessed using the Pearson Product-Moment Correlation. All questionnaire items demonstrated significant positive correlations with their respective total scores ($p < 0.001$). The correlation coefficients ranged from **0.727 to 0.942**, indicating that every measurement item met the validity requirements.

Reliability testing was conducted using Cronbach's Alpha. The results are presented in Table 3.

Table 3: Reliability Test Results

Variable	Number of Items	Cronbach's Alpha	Interpretation
Perceived Usefulness	5	0.940	Excellent
Perceived Ease of Use	5	0.960	Excellent
Digital Literacy	6	0.960	Excellent

The Cronbach's Alpha values for all constructs exceeded the recommended threshold of 0.70, indicating excellent internal consistency. Therefore, the research instrument is considered both valid and reliable for further statistical analysis.

4.4. Multiple Linear Regression Analysis

Multiple Linear Regression Analysis was performed to investigate the effects of Perceived Usefulness and Perceived Ease of Use on Digital Literacy.

The regression model produced a correlation coefficient (R) of **0.870**, indicating a strong relationship between the independent variables and Digital Literacy. The coefficient of determination ($R^2 = 0.760$) indicates that **76.0%** of the variation in Digital Literacy can be explained by Perceived Usefulness and Perceived Ease of Use, while the remaining **24.0%** is influenced by other factors outside the scope of this study.

The ANOVA results confirmed that the regression model was statistically significant ($F = 161.32$, $p < 0.001$), demonstrating that the independent variables simultaneously affect Digital Literacy.

The regression coefficients are presented in Table 4.

Table 4: Multiple Linear Regression Results

Variable	B	Beta	t	Sig.	Decision
Constant	0.64	–	2.85	0.005	–
Perceived Usefulness	0.41	0.42	5.09	<0.001	H1 Accepted
Perceived Ease of Use	0.46	0.50	6.09	<0.001	H2 Accepted

The regression equation is expressed as follows:

$$DL = 0.64 + 0.41(PU) + 0.46(PEOU) \quad (2)$$

The findings indicate that both Perceived Usefulness and Perceived Ease of Use have positive and statistically significant effects on Digital Literacy. Furthermore, Perceived Ease of Use exhibits a stronger influence than Perceived Usefulness, as indicated by its higher standardized beta coefficient.

4.5. Discussion

The findings demonstrate that **Perceived Usefulness** significantly influences community digital literacy. Individuals who perceive digital technologies as beneficial are more likely to utilize digital platforms for searching, evaluating, and applying information effectively. These findings are consistent with Agustian et al. [3], who reported that perceived usefulness positively supports the adoption of artificial intelligence in educational settings. Similarly, Hidayat and Kharismaputra [4] concluded that users are more likely to adopt digital systems when they recognize the practical benefits provided by the technology.

The results also reveal that **Perceived Ease of Use** has a significant positive effect on Digital Literacy and represents the strongest predictor in the proposed model. This finding suggests that technologies that are easy to understand and operate encourage users to interact more frequently with digital platforms, ultimately improving their ability to access and evaluate digital information. This result supports the findings of Malik et al. [5] and Ramadhan et al. [1] who found that ease of use plays a crucial role in increasing users' acceptance of digital applications.

The coefficient of determination ($R^2 = 0.760$) indicates that the Technology Acceptance Model successfully explains a substantial proportion of the variation in community digital literacy. This finding is in line with Desmaryani et al. [2], who emphasized that technology acceptance contributes significantly to strengthening digital literacy when supported by appropriate digital environments and institutional initiatives.

Overall, the findings confirm that both Perceived Usefulness and Perceived Ease of Use are important determinants of digital literacy among the community of Balikpapan City. The study extends previous TAM research by positioning Digital Literacy as the dependent variable rather than technology adoption. Consequently, the findings provide valuable insights for local governments, educational institutions, and policymakers in designing digital literacy programs that emphasize not only the availability of digital technologies but also their usefulness, accessibility, and ease of use.

Overall, all variables achieved mean scores above 4.45, indicating that respondents generally agreed with the questionnaire statements. The highest mean score was observed for **PU1 (4.67)**, suggesting that respondents perceived digital technology as highly beneficial in supporting their daily activities. Similarly, **PEOU1 (4.65)** and **DL1 (4.63)** also obtained high mean values, indicating positive perceptions regarding the ease of technology use and digital literacy.

5. Conclusion

This study analyzed the influence of digital technology acceptance on community digital literacy in Balikpapan City using the Technology Acceptance Model (TAM). Based on data collected from 105 respondents and analyzed using multiple linear regression, the findings indicate that both **Perceived Usefulness (PU)** and **Perceived Ease of Use (PEOU)** have positive and statistically significant effects on **Digital Literacy (DL)**. The regression model explains **76.0%** of the variance in digital literacy ($R^2 = 0.760$), demonstrating that the Technology Acceptance Model provides a strong framework for explaining how technology acceptance contributes to improving digital literacy among community members.

Among the two independent variables, **Perceived Ease of Use** was found to have the strongest influence on Digital Literacy, suggesting that technologies that are simple, accessible, and user-friendly encourage individuals to interact more effectively with digital platforms. Meanwhile, **Perceived Usefulness** also plays an important role by motivating users to utilize digital technologies for accessing, evaluating, and applying digital information in their daily activities.

The findings of this study contribute to the existing literature by extending the application of the Technology Acceptance Model beyond technology adoption and emphasizing its role in explaining community digital literacy. From a practical perspective, the results provide valuable insights for local governments, educational institutions, and policymakers in designing digital literacy programs that prioritize not only the availability of digital technologies but also their usability and ease of use. Such initiatives are expected to encourage more effective, responsible, and sustainable use of digital technologies within the community.

Future research is recommended to include a larger and more diverse sample from different regions to improve the generalizability of the findings. In addition, future studies may incorporate other variables, such as **digital skills, trust, perceived risk, social influence, or facilitating conditions**, to obtain a more comprehensive understanding of the factors influencing community digital literacy.

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