

Perceived usefulness and perceived ease of use toward students' behavioral intention in vocational schools

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Abstrak

Penerimaan teknologi asesmen digital di sekolah menengah kejuruan masih minim kajian empiris dengan temuan yang tidak konsisten lintas konteks. Penelitian ini mengkaji hubungan antara perceived usefulness (PU) dan perceived ease of use (PEOU) dengan behavioral intention (BI) siswa dalam menerima teknologi asesmen digital berdasarkan kerangka Technology Acceptance Model (TAM). Penelitian menggunakan pendekatan kuantitatif dengan desain survei korelasional nonparametrik. Sebanyak 83 siswa program Manajemen Perkantoran dan Layanan Bisnis SMK Wikarya Karanganyar dipilih menggunakan teknik total sampling. Data dikumpulkan melalui kuesioner daring dan dianalisis menggunakan korelasi Spearman's rho setelah uji asumsi menunjukkan pelanggaran linieritas pada salah satu variabel. Hasil penelitian menunjukkan bahwa PU memiliki korelasi positif yang kuat dan signifikan dengan BI ($r_s = 0,769$; $p < 0,001$), demikian pula PEOU ($r_s = 0,656$; $p < 0,001$). Koefisien PU yang lebih tinggi mengindikasikan bahwa persepsi kebermanfaatan fungsional merupakan prediktor niat penerimaan yang lebih kuat dibandingkan kemudahan penggunaan. Temuan ini menegaskan keberlakuan TAM dalam konteks pendidikan kejuruan dan mengimplikasikan bahwa implementasi asesmen digital yang efektif perlu mengutamakan pengembangan sistem yang fungsional sekaligus mudah digunakan oleh siswa.

Kata kunci: *asesmen digital; korelasi nonparametrik; pendidikan kejuruan; technology acceptance model*

Abstract

Digital assessment adoption in vocational secondary education remains empirically underexplored, with inconsistent findings across contexts. This study examines the relationships between perceived usefulness (PU) and perceived ease of use (PEOU) with students' behavioral intention (BI) to accept digital assessment technology, using the Technology Acceptance Model (TAM) as a theoretical framework. A quantitative nonparametric correlational design was employed with 83 students of the Office Management and Business Services program at SMK Wikarya Karanganyar, selected through total population sampling. Data were collected via an online questionnaire and analyzed using Spearman's rho correlation following assumption testing, which

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revealed a linearity violation for one variable. Results indicate that PU has a strong positive and statistically significant correlation with BI ($r_s = .769$, $p < .001$), as does PEOU ($r_s = .656$, $p < .001$). The higher coefficient for PU suggests that perceived functional utility is a stronger predictor of acceptance intention than ease of use in this context. These findings affirm the applicability of TAM in vocational education and imply that effective digital assessment implementation should prioritize systems that are both functionally beneficial and user-friendly for students.

Keywords: digital assessment; nonparametric correlation; technology acceptance model; vocational education

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Introduction

The rapid integration of digital technologies across all societal sectors has fundamentally transformed contemporary education, particularly in the context of Society 5.0, which envisions the harmonious coexistence of human intelligence and advanced technology. Within this paradigm, the development of competent human resources capable of adapting to rapid technological change has become a central mission of educational institutions. Educational quality, in this regard, is contingent upon continuous innovation in curriculum, instructional methods, and assessment practices, as well as the availability of adequate infrastructure, competent educators, and responsive institutional management (Siahaan et al., 2023). Vocational secondary education, in particular, faces heightened expectations to equip students with applied competencies aligned with the demands of the modern workforce, making the adoption of technology-enhanced learning environments both a strategic necessity and a pedagogical imperative.

Learning assessment constitutes one of the most strategically significant components of the educational process, serving not merely as a tool for measuring student achievement but also as a mechanism for evaluating instructional effectiveness and directing competency development (Azizah & Hidayat, 2024). In line with the evolving demands of 21st-century education, assessment practices are increasingly expected to evaluate complex, multidimensional competencies through diverse, dynamic, and technology-enhanced approaches (Care, 2020). The integration of digital technology into assessment has emerged as a particularly promising avenue for creating more responsive and adaptive learning environments. Digital assessment enables the delivery of immediate, systematic feedback to students, thereby facilitating early identification of learning gaps and timely instructional adjustments (Junaidah et al., 2024). Moreover, digitally adaptive assessment systems are capable of dynamically calibrating content difficulty in accordance with individual student performance, enabling a more personalized and learner-centered evaluation experience (Iqbal et al., 2025). Accordingly, digital assessment is increasingly recognized as a transformative instrument for enhancing educational quality through flexible, data-driven evaluation practices (Islami et al., 2022).

Despite its considerable potential, the successful implementation of digital assessment in practice is not automatic but is substantially mediated by the extent to which users accept and intend to engage with the technology. The Technology Acceptance Model (TAM), originally formulated by Davis (1989) and subsequently validated across diverse technological contexts, provides a robust theoretical framework for explaining user acceptance behaviors. As emphasized by Wicaksono (2022) and corroborated by Syafrizal et al. (2016), TAM is among the most widely applied theoretical models in technology and information science research due to its parsimony and predictive validity. According to TAM, technology acceptance is primarily determined by two cognitive constructs: perceived usefulness (PU), defined as the degree to which an individual believes that using a technology will enhance task performance or effectiveness, and perceived ease

of use (PEOU), defined as the degree to which an individual believes that interacting with a technology will be free of cognitive effort. Together, these constructs shape users' attitudes and, ultimately, their behavioral intention (BI) to use the technology.

A growing body of empirical literature has investigated TAM within educational settings, yielding somewhat inconsistent results. Mailizar et al. (2021) found that neither PU nor PEOU had significant effects on mathematics teachers' behavioral intention to use e-learning during the COVID-19 pandemic, suggesting that prior technological experience may attenuate the influence of these perceptual constructs. In contrast, Siew et al. (2015) reported significant positive effects of both PU and PEOU on university students' intention to use a Learning Management System, though their study was confined to the context of LMS-based online learning and did not address digital assessment specifically. In the vocational education domain, Sawiji (2024) demonstrated significant relationships between PU, PEOU, and teachers' intention to use e-learning platforms, but focused exclusively on educators rather than students. These contextual and participant-specific variations in findings indicate that the TAM relationships are not universally invariant and that student-centered, context-specific investigations remain necessary.

The present study is further motivated by empirical evidence gathered through a preliminary investigation at SMK Wikarya Karanganyar, a vocational high school that has attempted to implement digital assessment across all academic programs, including the Office Management and Business Services (MPLB) program. Data collected from 34 student respondents revealed a nuanced and somewhat ambivalent pattern of technology acceptance: while 55.9% of students expressed willingness to use digital assessment and reported positive perceptions of ease of use, only 41.2% perceived digital assessment as genuinely helpful in understanding learning outcomes, and trust in the accuracy of digital results was strikingly low at 17.6%. Furthermore, 50% of students reported experiencing difficulties in usage, and only 44.1% indicated a willingness to continue using digital assessment in subsequent evaluations. These preliminary findings suggest that although usability perceptions are relatively favorable, students' perceptions of the functional usefulness and reliability of digital assessment systems remain heterogeneous and underdeveloped, pointing to a need for targeted empirical investigation.

Against the backdrop of the identified research gap and the contextual evidence described above, this study addresses two primary research questions: (1) Is there a statistically significant relationship between perceived usefulness and students' behavioral intention to accept digital assessment technology? and (2) Is there a statistically significant relationship between perceived ease of use and students' behavioral intention to accept digital assessment technology? The study's novelty lies in its dual focus on student participants (rather than teachers) in a vocational secondary education context, specifically examining acceptance of digital assessment technology a context that remains underexplored in the existing TAM literature. By situating the analysis within the MPLB program at SMK Wikarya Karanganyar, this study provides contextually grounded evidence that can inform policy and practice in Indonesian vocational education.

Research Methods

This study was conducted between September and December 2025 at SMK Wikarya Karanganyar, West Java, Indonesia, focusing on students enrolled in the Office Management and Business Services (MPLB) program during the 2025/2026 academic year. A quantitative approach with a nonparametric correlational survey design was adopted to examine the associations among perceived usefulness (PU), perceived ease of use (PEOU), and behavioral intention (BI) in the context of digital assessment technology acceptance. The research population comprised all Grade X through Grade XII students in the MPLB program, and a total population sampling technique was employed, yielding a final sample of 83 students ($N = 83$). This sampling approach was appropriate given the relatively small population size and the need for comprehensive representativeness across grade levels.

The research instrument consisted of a structured questionnaire developed on the basis of established TAM constructs. Items measuring PU and PEOU were adapted from the original scales proposed by Davis (1989), while items for BI were adapted from Zheng et al. (2025), Das and Datta

(2024), and Hariyanto et al. (2024) to ensure construct relevance in the digital assessment context. Content validity was established through expert review, and construct reliability was assessed using Cronbach's alpha coefficient. The instrument was piloted on 31 Accounting students prior to main data collection. As a result, 17 of the original 18 PU items, 14 of the original 18 PEOU items, and all 9 BI items were retained as valid and reliable; invalid items were removed prior to the main analysis. The final questionnaire was administered online via Google Forms within the predetermined data collection window.

Prior to hypothesis testing, the data were subjected to assumption tests to determine the appropriateness of the statistical method. Normality was evaluated using the Shapiro-Wilk test, and linearity was assessed using the deviation from linearity test. The Shapiro-Wilk results indicated that the data were approximately normally distributed for all variables ($p = .053 > .05$). However, the linearity test revealed that while PU and BI satisfied the linearity assumption ($p = .738 > .05$), the relationship between PEOU and BI was non-linear ($p = .037 < .05$). Because the violation of the linearity assumption precluded the application of Pearson's parametric correlation, Spearman's rho nonparametric correlation analysis was employed for all hypotheses to ensure analytical consistency. All statistical computations were performed using IBM SPSS Statistics Version 22.

Results and Discussion

Research result

Prior to the main data collection, the research instrument was validated using a pilot sample of 31 Accounting students at the same school. The validity analysis assessed corrected item-total correlations, and the reliability of each construct was evaluated using Cronbach's alpha coefficient. As presented in Table 1, the PU scale retained 17 of 18 original items, the PEOU scale retained 14 of 18 original items, and the BI scale retained all 9 items. The Cronbach's alpha values for all three constructs exceeded the recommended threshold of 0.70, confirming adequate internal consistency. Invalid items those with corrected item-total correlations falling below the critical r-value were excluded from subsequent analyses.

Table 1
Instrument Validity and Reliability Summary

Variable	Total Items	Valid Items	Invalid Items	Cronbach's Alpha
Perceived Usefulness (X1)	18	17	1	.852
Perceived Ease of Use (X2)	18	14	4	.879
Behavioral Intention (Y)	9	9	0	.831

Table 2 presents the descriptive statistics for all three research variables. The BI variable had a mean score of 28.83 ($SD = 7.406$), with observed scores ranging from a minimum of 9 to a maximum of 45, indicating moderate to high behavioral intention among the sample. The PU variable yielded a mean score of 56.36 ($SD = 11.325$), with scores ranging from 18 to 85, reflecting considerable variability in students' perceptions of the usefulness of digital assessment. The PEOU variable recorded a mean of 46.70 ($SD = 10.332$), with scores ranging from 14 to 70, suggesting a moderate distribution of ease-of-use perceptions. The relatively high standard deviations across variables indicate that students' perceptions are heterogeneous, which underscores the analytical value of examining these relationships within this specific population.

Table 2
Descriptive Statistics for Research Variables

	Perceived Usefulness	Perceived Ease of Use	Behavioral Intention

N	Valid	83	83	83
	Missing	0	0	0
Mean		56,36	46,70	28,83
Minimum		18	14	9
Maximum		85	70	45
Std. Deviation		11,325	10,332	7,406

Prior to hypothesis testing, the normality and linearity of the data were examined. The Shapiro-Wilk test results indicated that all three variables were approximately normally distributed ($p = .053$, which is marginally above the $.05$ threshold). However, the deviation from linearity test revealed that the relationship between PU (X1) and BI (Y) satisfied the linearity assumption ($p = .738 > .05$), whereas the relationship between PEOU (X2) and BI (Y) did not ($p = .037 < .05$). Given the violation of the linearity assumption for PEOU, it was determined that parametric correlation analysis (Pearson's r) would be inappropriate. Consequently, Spearman's rho correlation analysis was applied uniformly across both hypotheses to maintain analytical consistency and methodological rigor.

Table 3 presents the results of the Spearman's rho correlation analysis for the relationship between perceived usefulness (X1) and behavioral intention (Y). The analysis yielded a correlation coefficient of $r_s = .769$, with a two-tailed significance value of $p = .000$. Since $p < .001$, the null hypothesis (H0: there is no significant relationship between PU and BI) was rejected, and the alternative hypothesis (H1: there is a significant positive relationship between PU and BI) was accepted. According to Sugiyono's (2015) criteria for correlation magnitude classification, a coefficient of $.769$ falls within the strong correlation range. This finding indicates that students who perceive digital assessment technology as more functionally useful are substantially more likely to express a strong behavioral intention to adopt and engage with such technology.

Table 3
Spearman rho Analysis Result for Variable (X₁) Perceived Usefulness & (Y) Behavioral Intention

		Perceived Usefulness	Behavioral Intention
Spearman's rho	Perceived Usefulness	Correlation Coefficient	1,000
		Sig. (2-tailed)	,769**
		N	,000
	Behavioral Intention	Correlation Coefficient	,769**
		Sig. (2-tailed)	1,000
		N	,000

Table 4 presents the Spearman's rho correlation results for the relationship between perceived ease of use (X2) and behavioral intention (Y). The analysis yielded a correlation coefficient of $r_s = .656$, with a two-tailed significance value of $p = .000$. Since $p < .001$, the null hypothesis (H0: there is no significant relationship between PEOU and BI) was rejected, and the alternative hypothesis (H2: there is a significant positive relationship between PEOU and BI) was accepted. According to Sugiyono's (2015) classification, a coefficient of $.656$ also represents a strong correlation. This result indicates that students who find digital assessment technology easier to use are more inclined to express a positive intention to adopt it.

Table 4
Spearman rho Analysis Result for Variable (X₂) Perceived Ease of Use & (Y) Behavioral Intention

			Perceived Ease of Use	Behavioral Intention
Spearman's rho	Perceived Ease of Use	Correlation Coefficient	1,000	,656**
		Sig. (2-tailed)	.	,000
		N	83	83
	Behavioral Intention	Correlation Coefficient	,656**	1,000
		Sig. (2-tailed)	,000	.
		N	83	83

Discussion

The findings of this study provide empirical support for both hypotheses, confirming that PU and PEOU are each positively and significantly associated with students' behavioral intention to use digital assessment technology. These results are consistent with the foundational tenets of the Technology Acceptance Model (Davis, 1989) and contribute to the growing body of evidence affirming TAM's explanatory power across diverse educational contexts.

The strong positive correlation between PU and BI ($r_s = .769$) is particularly noteworthy and aligns with prior research in digitalized learning environments. Siew et al. (2015) and Sawiji (2024) similarly reported significant relationships between perceived usefulness and behavioral intention in the contexts of LMS use and e-learning adoption, respectively. Within the specific setting of this study, the high correlation between PU and BI may be attributable to the applied, competency-oriented nature of vocational education. MPLB students at SMK Wikarya Karanganyar are typically motivated by pragmatic, career-relevant learning outcomes. When digital assessment is perceived as a tool that streamlines evaluation processes, delivers faster feedback, and produces clearly interpretable results, its alignment with students' functional learning goals is high—thereby driving stronger acceptance intentions. This contextual alignment between the perceived utility of digital assessment and the competency-development imperatives of vocational education represents a key explanatory factor that distinguishes this study from prior investigations conducted in general or higher education settings.

The significant positive relationship between PEOU and BI ($r_s = .656$) is equally theoretically coherent and practically meaningful. In the TAM framework, ease of use is understood to reduce the cognitive and operational barriers associated with technology adoption (Davis, 1989). For vocational secondary school students, whose technological proficiencies may vary considerably across grade levels and prior educational experiences, ease of use serves as a critical facilitating condition for technology acceptance. This finding resonates with those of Kalayou et al. (2020) and Humida et al. (2022), who demonstrated that PEOU is significantly associated with behavioral intention in the adoption of digital health and e-learning systems, respectively. In the present context, digital assessment systems that offer intuitive interfaces, clear navigational structures, and straightforward procedural instructions are likely to reduce students' apprehension and lower the threshold for voluntary engagement with the technology.

Notably, the correlation coefficient for PU ($r_s = .769$) is meaningfully higher than that for PEOU ($r_s = .656$), suggesting that students' perceptions of the functional utility of digital assessment are a somewhat stronger predictor of their intention to adopt it than their perceptions of ease of use. This differential is theoretically consistent with TAM's proposition that usefulness exerts a stronger direct influence on behavioral intention than ease of use, which is posited to influence intention partly through its effect on perceived usefulness (Davis, 1989). In the vocational education context, where learning and assessment are closely linked to employability and skill demonstration, students may place greater weight on whether a technology genuinely supports their educational goals than on whether it is simply easy to operate. This pattern implies that efforts to improve digital assessment

adoption should foreground the functional relevance and demonstrable learning benefits of these systems, in addition to ensuring usability.

The findings diverge from those reported by Mailizar et al. (2021), who found no significant relationships between PU, PEOU, and behavioral intention among university mathematics teachers with prior e-learning experience during the COVID-19 pandemic. This discrepancy is interpretable through the lens of user experience and contextual familiarity: highly experienced users may have developed internalized attitudes toward technology that are no longer substantially influenced by perceived usefulness or ease of use, as these perceptions become less salient when technology use is routinized or mandated. In contrast, the vocational high school students in the present study may represent a population at an earlier stage of technology adoption, where perceptual constructs remain potent drivers of behavioral intention. This interpretation underscores the importance of participant characteristics and adoption context in moderating TAM relationships.

Conclusion

This study examined the relationships between perceived usefulness (PU), perceived ease of use (PEOU), and behavioral intention (BI) in the context of digital assessment technology acceptance among vocational high school students. Employing a quantitative nonparametric correlational design with a sample of 83 MPLB students at SMK Wikarya Karanganyar, the study found that both PU and PEOU are strongly and positively correlated with BI ($r_s = .769$ and $r_s = .656$, respectively; $p < .001$ for both). The stronger association of PU with BI, compared to PEOU, suggests that perceived functional utility plays a predominant role in shaping students' technology acceptance intentions within the vocational education context. These findings carry important theoretical and practical implications. Theoretically, the study confirms the applicability of the TAM framework in the vocational secondary education domain, specifically in the context of digital assessment a relatively underexplored area in the existing literature. Practically, the results suggest that the successful integration of digital assessment in vocational schools requires deliberate attention to both the functional design and the usability of assessment systems. Educators and institutional administrators should prioritize the development and selection of digital assessment platforms that deliver meaningful, contextually relevant feedback aligned with vocational competency outcomes, while also ensuring that interfaces are intuitive and accessible to students with varying levels of technological proficiency. Training programs, orientation sessions, and ongoing technical support may further enhance students' familiarity and confidence with digital assessment tools, thereby strengthening acceptance intentions over time. This study is subject to several limitations that should be acknowledged. First, the analysis was confined to the two core TAM constructs, excluding potentially relevant variables such as social influence, facilitating conditions, and subjective norms. Second, the sample was drawn exclusively from a single vocational high school in Karanganyar, limiting the generalizability of the findings to other institutional contexts. Third, the reliance on self-reported questionnaire data introduces the possibility of common method bias and social desirability effects. Finally, the use of nonparametric correlational analysis, while methodologically appropriate given the violation of linearity assumptions, precludes causal inference. Future research is encouraged to incorporate extended TAM frameworks, include larger and more diverse samples across multiple vocational schools and regions, and employ structural equation modeling or longitudinal designs to establish causal relationships and track changes in technology acceptance over time.

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