

Teachers' Acceptance of Artificial Intelligence (AI) for Learning in Melawi Regency

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Abstract: The rapid advancement of digital technologies has brought a range of innovations to education, including the use of Artificial Intelligence (AI) as a tool to support teaching and learning. This study analyzes teachers' acceptance of AI for learning in Melawi Regency using the Technology Acceptance Model (TAM). A quantitative descriptive survey design was employed with 115 teachers from primary, junior secondary, and senior secondary schools selected through convenience sampling. Data were collected using a five-point Likert questionnaire that measured four constructs: Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Toward Using (ATU), and Behavioral Intention (BI). Descriptive statistics and Pearson correlations were computed using SPSS 26. The findings show a high level of acceptance, with an overall mean score of 4.06. PU obtained the highest mean (4.14), followed by PEOU (4.04), BI (4.03), and ATU (4.01). A strong positive correlation was found between PU and BI ($r = 0.83$; $p < .01$), indicating that higher perceived usefulness is associated with stronger intentions to use AI in teaching. The study concludes that teachers in Melawi are conceptually ready to integrate AI despite infrastructural limitations. The results have implications for policy and practice, particularly the need for systematic AI literacy training, improved digital infrastructure, and supportive school policies to ensure that teachers' positive intentions can be translated into sustainable classroom practice.

Keyword: AI; Teacher acceptance; Technology Acceptance Model

Introduction

The advancement of digital technology has substantially transformed many aspects of human life, especially education. AI is increasingly used to support learning by improving instructional management, automating assessment, and enabling more personalized learning experiences (Luckin et al., 2022; Salas-Pilco et al., 2022). When used appropriately, AI can function not only as an administrative tool but also as a pedagogical partner that helps teachers design learning activities that are more effective, innovative, and responsive to students' needs.

However, the success of AI implementation in education does not depend solely on the availability of the technology. Teachers, as the main users in schools, play a central role in determining whether an innovation is adopted or ignored. Their perceptions of usefulness, ease of use, and relevance strongly influence the integration of digital tools into classroom practice (Cabero-Almenara et al., 2024). Previous studies show that new technologies are more likely to be adopted when users hold positive perceptions of perceived usefulness (PU) and perceived ease of use (PEOU) (Runge et al., 2025). In the school context, this means that teachers' beliefs about how AI supports their work and how manageable it is to operate are critical.

The Technology Acceptance Model (TAM), introduced by Davis (1989), is widely used to explain why individuals accept or reject a technology. TAM proposes four key constructs: Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Toward Using (ATU), and Behavioral Intention (BI). PU and PEOU shape users' attitudes toward a technology, which in turn influence their intention to use it. TAM has been extended and combined with other models, such as the Unified Theory of Acceptance and Use of Technology (UTAUT; Venkatesh et al., 2003), yet it remains a parsimonious and robust framework in educational technology research (Al-Emran et al., 2018; Zhang et al., 2023).

In Indonesia, particularly in regions that are not fully digitized such as Melawi Regency in West Kalimantan, the adoption of AI faces specific challenges. Schools in rural areas often deal with unstable internet connectivity, limited access to digital devices, and few opportunities for AI-related professional development. These structural constraints exist alongside national and local policies that encourage schools to leverage digital technologies to improve learning quality. Empirical evidence on how teachers in such rural contexts perceive and accept AI is still limited, especially at the basic and secondary education levels. This condition is in line with the arguments of Selwyn (2016) and Ertmer and Ottenbreit-Leftwich (2010), who note that barriers to technology adoption are not only technical but also related to digital literacy, beliefs, and institutional support.

Understanding teachers' acceptance of AI in a rural Indonesian regency can therefore deepen theoretical insight into technology acceptance in low-infrastructure contexts and provide practical input for local policy and capacity-building.

Theoretically, this study contributes to the literature on technology acceptance by applying TAM to the use of AI-based tools in basic and secondary education in a rural Indonesian setting. It tests whether the relationships proposed in TAM, particularly between PU and BI, hold in a context where infrastructure is limited. Practically, the findings can guide local government, schools, and technology providers in designing training, policies, and infrastructure support that strengthen teachers' digital readiness.

Based on this background, the study addresses the following research question:

How do teachers in Melawi Regency perceive and accept AI for learning, as explained by the Technology Acceptance Model (TAM)?

The specific objectives are: (1) to describe teachers' perceptions of AI's usefulness, ease of use, attitudes, and behavioral intentions; (2) to examine the relationships among these constructs, especially between PU and BI; and (3) to identify contextual implications for AI implementation in rural Indonesian schools.

Methods

Research Type and Design

This study employed a quantitative descriptive approach with a survey design to portray teachers' acceptance of AI for learning based on TAM (Davis, 1989). The model was selected because it clearly explains the interactions among perceived usefulness, perceived ease of use, attitude toward using, and behavioral intention, which align with the aim of identifying key determinants of teachers' acceptance of AI in a context with infrastructure limitations.

Participants and Setting

The population consisted of active teachers at primary, junior secondary, and senior secondary schools in Melawi Regency, West Kalimantan. Melawi was chosen because it represents a rural region where schools often face limitations in digital infrastructure and connectivity, yet are also encouraged to adopt digital innovations. The sample comprised 115 teachers selected using convenience sampling (Etikan et al., 2016). Invitations to participate were distributed via WhatsApp through school principals and teacher groups. Most respondents were between 30 and 45 years old; 65% were female, and around 58% taught in rural areas. In addition, 47% reported unstable school internet connections and 61% had never attended formal AI-related training. These characteristics indicate that the study captures perspectives from teachers who are expected to innovate while dealing with structural constraints.

Instrument

Data were collected using a five-point Likert scale questionnaire (1 = strongly disagree to 5 = strongly agree) that measured the four TAM constructs:

- **Perceived Usefulness (PU)** – 6 items measuring perceived benefits of AI for instructional effectiveness and efficiency.
- **Perceived Ease of Use (PEOU)** – 6 items measuring perceived convenience and simplicity of using AI in teaching.
- **Attitude Toward Using (ATU)** – 4 items measuring positive or negative evaluations of using AI.
- **Behavioral Intention (BI)** – 4 items measuring intentions to use AI in future teaching practices.

Items were adapted from Davis (1989), Venkatesh et al. (2003), and Al-Emran et al. (2018), and then contextualized for Indonesian schools. Content validity was examined by an educational technology expert (PhD) at Universitas Tanjungpura. All items were judged to be relevant, with minor wording revisions for clarity. Reliability testing using Cronbach's alpha produced a coefficient of $\alpha = .91$, which indicates excellent internal consistency (Nunnally, 1978).

Data Collection

Data collection was conducted in September 2025 using a Google Forms questionnaire. The survey link was shared via WhatsApp with school principals and teacher groups across Melawi Regency. Online distribution was chosen to reach teachers in various locations efficiently, considering the geographical spread of the regency. All 115 responses were complete and could be analyzed.

Data Analysis

Data were analyzed using SPSS 26. Descriptive statistics (means and standard deviations) were used to describe the level of PU, PEOU, ATU, and BI. An overall acceptance score was obtained by averaging all items. Pearson correlation analysis was then carried out to examine the relationship between PU and BI, as the key pathway proposed by TAM, as well as to support interpretation of the role of other constructs.

Research Ethics

The study followed ethical principles of educational research. Participation was voluntary and preceded by informed consent. All personal data were kept confidential and used only for academic purposes. No school or individual teacher was identified by name in the report. The research procedures adhered to principles of scientific integrity and professional conduct (Ertmer & Newby, 2013).

Results and Discussion Overview of AI Acceptance

Overall, teachers in Melawi Regency showed a high level of acceptance of AI for learning, with an overall mean score of 4.06 on a five-point scale. At the construct

level, the mean scores were: PU = 4.14, PEOU = 4.04, ATU = 4.01, and BI = 4.03. Pearson correlation analysis indicated a strong positive correlation between PU and BI ($r = 0.83$; $p < .01$), meaning that higher perceived usefulness is associated with stronger intentions to use AI in teaching.

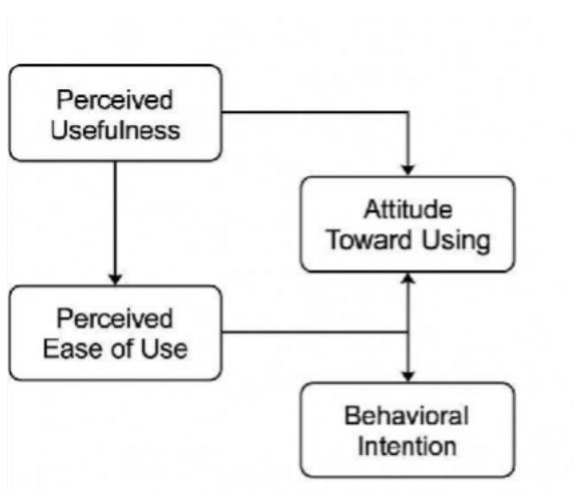
These findings suggest that, despite limitations in infrastructure, teachers in Melawi conceptually and effectively accept AI as a tool that can support their professional work. This pattern is consistent with TAM's proposition that usefulness and ease of use are central determinants of technology acceptance (Davis, 1989; Venkatesh et al., 2003; Al-Emran et al., 2018).

Table 1. provides a descriptive summary of the TAM constructs.

No	construct	Description	Nilai Rata-rata
1	Perceived Usefulness (PU)	Belief that AI is beneficial and effective for learning	4,14
2	Perceived Ease of Use (PEOU)	Belief that AI is beneficial and effective for learning	4,04
3	Attitude Toward Using (ATU)	Positive disposition and openness to AI	4,01
4	Behavioral Intention (BI)	Intention and plans to use AI	4,03

Source: Author's calculation (2025).

Figure 1. AI Acceptance Framework based on TAM



Adapted from Davis (1989).

Perceived Usefulness (PU)

The PU mean of 4.14 indicates that teachers strongly believe AI can support learning by helping them prepare teaching materials, provide feedback more quickly, and manage routine tasks. AI is perceived as useful for increasing efficiency and improving the quality of learning, for example through automatic question generation, language support, or examples that enrich classroom explanations.

This finding is in line with Runge et al. (2025), who reported that perceived usefulness is a strong predictor of pre-service teachers' intention to use AI, and with Cabero-Almenara et al. (2024), who found that usefulness is a key determinant of behavioral intention in digital education contexts. In a rural context such as Melawi, high PU is particularly important because it shows that teachers see AI as a tool to address constraints such as limited time, large class sizes, and restricted access to learning resources.

From a theoretical perspective, this strengthens TAM's assumption that performance-related beliefs are central to technology acceptance (Davis, 1989). In low-resource settings, AI's perceived contribution to effectiveness and efficiency may be even more salient, as teachers look for tools that help them "do more with less."

Perceived Ease of Use (PEOU)

The mean PEOU score of 4.04 suggests that teachers perceive AI tools as relatively easy to use. Many respondents reported that AI applications like ChatGPT, Gemini, and Canva AI can be accessed via smartphones, which are widely used, even where school computers are limited. Teachers feel they can learn how to use AI through tutorials, peer sharing, and trial-and-error.

This result supports previous studies showing that ease of use encourages technology adoption because it reduces the perceived effort needed to learn a new system (Al-Emran et al., 2018; Ng & Liu, 2022). In TAM, PEOU is assumed to influence PU and ATU.

The combination of high PU and high PEOU in this study indicates that teachers do not regard AI as an additional technical burden but as a manageable tool that can be integrated into their daily practice.

Attitude Toward Using (ATU)

The ATU mean of 4.01 reflects positive attitudes and openness to using AI in learning. Teachers express curiosity and enthusiasm to explore AI as a learning aid, even if their direct experience of using AI in class is still limited. Many see AI as an opportunity to enrich learning media and encourage student creativity.

These findings are consistent with Ng and Liu (2022), who showed that positive attitudes act as an important intermediary between perceived usefulness and behavioral intention. In Melawi, positive attitudes arise even though infrastructure and policy support are still being developed. This suggests that cognitive and affective

readiness among teachers is relatively high and could be strengthened further through suitable professional development.

Behavioral Intention (BI)

The BI mean of 4.03 indicates that teachers have strong intentions to use AI in the future. Many respondents reported that they plan to use AI for lesson planning, material development, language support, or formative assessment when conditions allow. This aligns with UTAUT (Venkatesh et al., 2003), which emphasizes the role of performance expectancy, effort expectancy, and facilitating conditions in shaping behavioral intention.

The strong correlation between PU and BI ($r = 0.83$; $p < .01$) shows that perceived usefulness is a particularly decisive factor in determining teachers' intention to adopt AI. This suggests that efforts to promote AI use in schools should clearly demonstrate practical benefits that are directly relevant to teachers' daily tasks.

Integrated Theoretical Interpretation

Overall, the results confirm TAM's central proposition that PU and PEOU influence ATU and BI, with PU playing a key role in predicting BI. The pattern of high PU, PEOU, ATU, and BI demonstrates that teachers in Melawi are psychologically ready to adopt AI, even though infrastructure and training remain uneven.

In theoretical terms, this study extends the application of TAM to a rural Indonesian regency where digital infrastructure is still developing. It shows a configuration of "high acceptance–low infrastructure," which suggests that future models of technology acceptance should incorporate contextual variables such as infrastructural support, school leadership, and local policies. These contextual factors help explain the potential gap between intention and actual use, particularly in rural and remote settings (Selwyn, 2016; Ertmer & Ottenbreit-Leftwich, 2010).

Practical Implications

The findings carry several practical implications:

1. **AI literacy and digital pedagogy training.** Teachers need structured training that covers not only technical aspects but also pedagogical strategies, ethics, and assessment using AI. Practice-based workshops that guide teachers to design and try AI-supported lesson plans can help translate positive intentions into real classroom implementation.
2. **Improving infrastructure and access.** Local governments and schools need to prioritize improvements in internet connectivity and the provision of devices, particularly for rural schools. Collaboration with telecommunications providers and community stakeholders may help expand access.

3. **Supportive school policies and culture.** Schools can create policies that encourage experimentation with AI, peer mentoring, and sharing of teaching resources. Communities of practice among teachers can foster reflective dialogue about both the benefits and challenges of AI.
4. **Alignment with national digital transformation agendas.** The results can inform national and provincial initiatives to integrate AI into curricula and teacher competencies, ensuring that rural regions like Melawi are not left behind in digital transformation efforts.

Conclusion

Based on data from 115 teachers in Melawi Regency, this study concludes that teachers' acceptance of AI for learning is at a high level, with an overall mean acceptance score of 4.06. All four TAM constructs—Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Toward Using (ATU), and Behavioral Intention (BI)—obtained high mean scores, with PU being the highest (4.14).

The very strong positive correlation between PU and BI ($r = 0.83$; $p < .01$) indicates that perceived usefulness is a critical factor influencing teachers' intention to adopt AI in their teaching. PEOU and ATU also contribute by shaping positive perceptions and attitudes that support the development of behavioral intentions. Theoretically, the study confirms that TAM remains a relevant and robust framework for understanding technology acceptance in rural, low-infrastructure contexts. It suggests that psychological readiness and positive beliefs about AI can coexist with infrastructural limitations, and that future models should more explicitly incorporate contextual variables such as connectivity, leadership support, and school culture.

Practically, the findings underline the importance of: (1) continuous AI literacy and digital pedagogy training, (2) improvement of internet access and provision of devices in schools, and (3) supportive policies that foster collaboration among teachers and institutions. Strengthening these enabling conditions will help ensure that teachers' positive intentions can be translated into sustainable classroom practice and contribute to reducing digital inequalities between urban and rural regions in Indonesia.

This study has several limitations. It relies on self-report survey data and uses convenience sampling within a single regency, which may limit generalizability. Future research could employ mixed methods, combining surveys, interviews, and classroom observations, to obtain a more comprehensive picture of how teachers actually use AI in practice. Comparative studies between provinces, or between urban and rural regions, would also enrich understanding of the role of context in AI acceptance.

Acknowledgments

The author would like to express sincere appreciation to the Master's Program in Educational Technology, Faculty of Teacher Training and Education, Universitas Tanjungpura, for academic guidance and support. Gratitude is also extended to the school principals in Melawi Regency who facilitated the distribution of the questionnaire, as well as to all teacher respondents at the primary, junior secondary, and senior secondary levels who generously shared their time and perspectives. The constructive feedback from the educational technology expert who reviewed the instrument is also gratefully acknowledged. It is hoped that the findings of this study will contribute to the development of technology-informed educational policy and practice in Indonesia.

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