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# The Contribution of Artificial Intelligence Technology to the Learning **Process of Accounting Students in the Digital Era and Learning Ethics**

Lelahester Rina<sup>1</sup>, Lamin Kaira<sup>2</sup>, Gehad Mohammed<sup>3</sup>, Wulan Setyaningsih<sup>4</sup>



- <sup>1</sup>Economics Education, Faculty of Teacher Training and Education, Universitas Kristen Satya Wacana, Salatiga, Indonesia
- <sup>2</sup>Department of Accounting, School of Social Science and Law, Njala University, Bo, Sierra Leone.
- <sup>3</sup>Master in Accounting, MBA Finance, University of Aden Faculty of Administrative Sciences, Aden, Yaman.
- <sup>4</sup>Department of Accounting, faculty of Economics and Business, Muhammadiyah University of Surakarta, Surakarta, Indonesia

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#### ABSTARCT

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Corresponding author; Lelahester Rina

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Artificial Intelligence, Technology Readiness, Accounting Education, Perceived Usefulness, Technology Adoption

Reasearch Type: Colaboration, Observation Objective: This study investigates the contribution of Artificial Intelligence (AI) technology to the learning process of accounting students in Surakarta, focusing on its adoption and associated learning ethics in the digital era.

Methods: A quantitative approach was employed using a questionnaire distributed via Google Forms, targeting accounting students from private and state universities. The analysis utilized SmartPLS 3 for Partial Least Squares Structural Equation Modeling (PLS-SEM).

Findings: The results indicate that Perceived Ease of Use significantly influences AI Technology Adoption, while Technology Readiness positively impacts both Perceived Usefulness and Perceived Ease of Use. However, Technology Readiness shows no significant effect on AI Technology Adoption. This highlights the critical role of ease of use over perceived usefulness in driving technology adoption among students.

Novelty: This research contributes to the existing literature by demonstrating the nuanced relationships between technology readiness, perceived ease of use, and the adoption of AI technologies in accounting education, specifically in a developing context.

Theory and Policy Implications: The findings suggest that educational institutions should focus on enhancing students' technological readiness and simplifying AI interfaces to promote adoption. This has implications for curriculum design and policy formulation aimed at effectively integrating AI technologies into accounting education.

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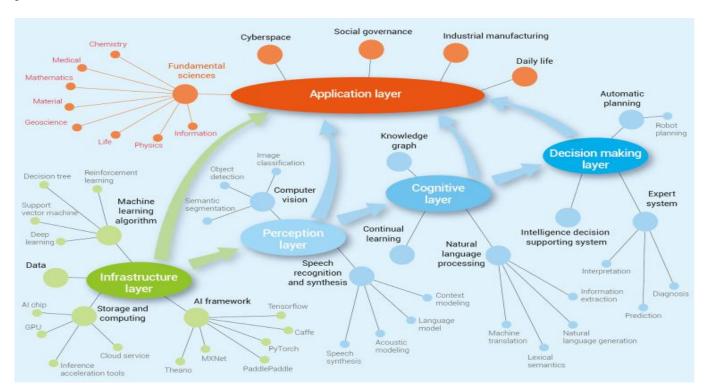
# 1. Introduction

The term "Fourth Industrial Revolution" refers to the profound changes that have occurred in a number of industries in recent decades as a result of technology gains. This period is marked by a transition towards complete automation and digitization in industrial procedures, which has a major effect on company activities (Kadir and Broberg 2020; Kurt 2019). The accounting industry, similar to numerous other industries, is not impervious to these extensive developments. Artificial Intelligence (AI) technology has become a crucial element in the digital transformation of the accounting industry. Al's quick and highly accurate analysis capabilities have become a significant driver for transforming the operational frameworks of accounting processes. The finance and accounting sectors have experienced significant advantages from the utilization of artificial intelligence (AI) tools and methods, namely in the automation of repetitive operations and the improvement of analytical capacities (Ribeiro et al. 2021). The accounting business is well-suited for the adoption of artificial intelligence due to its reliance on structured and repetitive operations, such as bookkeeping, voucher input, and financial statement preparation (Garanina, Ranta, and Dumay 2022; Lin et al. 2022). The automation of these procedures is made possible by new technologies like File Transfer Protocol





(FTP) and Electronic Data Interface (EDI), freeing accountants to concentrate on value-added work (Coderre 2008). Furthermore, AI has been included into a number of accounting software programs, including Booke.ai, Vic.ai, and Docyt.ai Norzelan (2024), which automate financial reporting, invoice management, and transaction coding, among other activities. Notwithstanding these progressions, numerous accounting students encounter difficulties in efficiently incorporating new technologies into their educational procedures.



Source Image; (Xu and Liu 2021)

Figure 1. AI framework knowledge graph

Over the past ten years, advancements in AI-driven applications have revolutionized various industries, including the realm of accounting education (Xu and Liu 2021). Platforms like TensorFlow and PyTorch simplify algorithm creation, enabling users to concentrate on model building without requiring extensive computing expertise. Future themes encompass the advancement of super-scale models to facilitate comprehensive analysis, the establishment of standardized APIs to facilitate seamless integration across platforms, and the optimization of operators to enhance cost efficiency. Utilizing AI in accounting education has the capacity to enhance learning interaction and curriculum relevance, albeit encountering obstacles in faculty training and efficient technology integration.

Within the realm of education, namely in the field of accounting, there is a notable problem with students' preparedness to embrace artificial intelligence technologies. Despite the fact that accounting students demonstrate interest in and awareness of new technology, as indicated. Research, there is a noticeable disparity between their knowledge and the industry's requirements (Jackling and Calero 2006; Syamimi et al. 2021; Watty, McKay, and Ngo 2016). For example, the majority of accounting students in industrial cities like Batam are mostly acquainted with tools such as ChatGPT, but they lack a complete understanding of other pertinent AI applications in accounting (Gumasing and Niro 2023). This occurrence prompts crucial inquiries regarding how educational institutions might effectively equip students to confront these issues (Shea et al. 2012). While the accounting profession is becoming more and more dependent on modern technologies for



day-to-day operations, university accounting programs often fail to include key topics related to AI technology in their curricula. This disparity results in a lack of information that could potentially harm graduates' ability to compete in the job market (Darling-Hammond 2007). Hence, it is crucial to examine the determinants that impact the acceptance of AI technology among accounting students to assure their sufficient readiness for the requirements of the digital age.

According to Beukes et al. (2018) Diffusion of Innovation theory, accounting students' adoption of AI technology is a phenomenon that should be understood. The five types of adopters included in this theory innovators, early adopters, early majority, late majority, and laggards help to explain how new ideas are embraced within civilizations. Accounting students in surakarta are typically considered laggards in this respect, as they possess very limited understanding of the current industrial technologies. In addition, the propensity of students to adopt AI technologies is highly influenced by characteristics such as relative advantage, compatibility, and complexity (Beukes et al. 2018). Hence, it is vital to possess a comprehensive comprehension of these aspects in order to formulate tactics that can augment technology preparedness among accounting students (Howieson 2003). However, current literature indicates a disparity between theory and practice in the sector, as numerous studies do not thoroughly explain the elements that affect the adoption of artificial intelligence in accounting education (Han et al. 2023).

When one considers earlier studies that produce inconsistent findings about the use of AI technology within accounting students, the urgency of this research becomes even more apparent (Bond et al. 2024). Chang and Chen (2021) discovered that technology readiness had a beneficial impact on the adoption of AI. Nugroho (2015) observed the opposite, suggesting that accounting students in Indonesia may not have fully embraced technology ready yet. The difference in findings could be attributed to differences in the settings of the studies, the methods used to gather data, and the early level of technological integration in Indonesia (van de 2016). This study seeks to address this disparity by comprehensively studying the factors that influence the adoption of AI technology among accounting students. This study will offer more detailed insights into the relationship between technology readiness and acceptability in the accounting education environment by employing the Technology Readiness and acceptability Model (McNamara, 2024). Comprehending this knowledge is crucial for creating suggestions to design curriculum that are more pertinent and aligned with the current demands of the industry.

The main aim of this study is to examine the factors that impact the adoption of AI technology among accounting students. The objective of this study is to offer significant insights to educators and policymakers in order to assist them in developing enhanced curricula and training programs. This project aims to make a substantial contribution to improving the quality of accounting education by examining how factors including technology readiness, perceived ease of use, and perceived usefulness influence students' aspirations to embrace AI technology. Furthermore, the results of this study can guide the creation of more extensive educational policies that are in line with the needs of the industry, guaranteeing that graduates are better equipped and applicable to the demands presented by the ever-changing digital environment.

# 2. Method

A Google Forms-distributed questionnaire is used in this study's quantitative research design (S. Ong et al. 2022). Links to the questionnaires were disseminated via social media sites including WhatsApp and Instagram (Ahmed and Msughter 2022; Al-Shaikh 2023). The sampling technique employed is purposive sampling, which involves selecting individuals based on specific criteria (Al-Shaikh et al. 2023). Participants meet two requirements: (a) they have finished the Accounting Information Systems course; and (b) they are presently enrolled in Surakarta to pursue a Bachelor of Accounting degree. By establishing these criteria, we can ensure that the respondents have a comprehensive awareness of how technology is applied in accounting. This, in turn, makes the sample more representative of the whole population. Following the gathering of data, SmartPLS 3 will be used for the analysis, employing a partial least squares structural equation modeling (PLS-



SEM) methodology. The validity and reliability of the outer model will be evaluated using Cronbach's alpha, outer loadings, and the average variance extracted (AVE) method (Hair et al., 2014). The strength and caliber of the final structural model will then be determined by analyzing the inner model using predictive relevance (Q2), effect size, goodness of fit, path parameters, and coefficient of determination (R2) (Chin, 1998). This method is considered reliable in social research since it successfully clarifies intricate interactions among variables.

# 3. Result and Discution

With a total sample size of 248 students drawn from both private and state colleges in Surakarta, the descriptive statistics provide a thorough picture of the respondents taking part in this study. Private university students are overrepresented in this sample; of the total respondents, 30.24% are form private universities and 18.15% are from state universities.

Table. 1.

Characteristic	Frequency	Percentage	
University Type			
Universitas Swasta	75	30.24%	
Universitas Negeri	45	18.15%	
Current Semester			
01-Mar	25	10.08%	
04-Jun	78	31.45%	
>7	145	58.87%	
Experience as Accountant			
Yes	138	55.64%	
No	110	44.36%	
Total Sample	248	100%	

Regarding the present semester, a significant proportion of respondents (58.87%) are in their seventh semester or beyond, indicating that the majority of participants are advanced students with extensive academic experience and a deep understanding of how technology is applied in accounting. In addition, 31.45% of the participants are currently in the fourth to sixth semester, whilst just 10.08% are in the first to third semester. This distribution emphasizes the concentration on higher-level students who are more inclined to comprehend pertinent concepts within the framework of this research.

In terms of work experience as accountants, 55.64% of the respondents indicated that they have practical experience in the accounting sector, while 44.36% do not. The significant percentage of participants with professional expertise enhances their understanding of how technology is applied in accounting procedures.

These descriptive statistics offer vital insights into the features of the sample, which can be used to help further analysis in this study. The varied university affiliations, current semester, and work experience of the respondents contribute to the significance and practicality of the research findings on the use of AI technology among accounting students.

Table 2. AVE, Cronbach Alpha, and Composite Reliability Values

Construct	Cronbach's Alpha AV		Composite Reliability
AI Technology Adoption	0.790	0.730	0.885





Perceived Ease of Use	0.610	0.870	0.905
Perceived Usefulness	0.605	0.865	0.902
Technology Readiness	0.620	0.940	0.910

Source: Data Analysis using SmartPLS (2024)

Convergent validity is assessed through the Average Variance Extracted (AVE) values for each relationship between constructs in the model. An AVE value of at least 0.50 indicates an adequate level of validity. The analysis results show that all variables have AVE values above 0.50, demonstrating satisfactory convergent validity.

Reliability is further tested using Cronbach's alpha and composite reliability. The minimum standard for Cronbach's alpha is 0.60, while composite reliability should be at least 0.70 (Ghozali & Latan, 2015). The analysis results indicate that each variable has Composite Reliability and Cronbach's alpha values exceeding these thresholds. Therefore, this study meets the requirements for reliability testing and can be considered reliable.

Table 3. Predictive Relevance Values (PRV Date)

Dependent Variable	Q <sup>2</sup>	Description
AI Technology Adoption (AI TA)	0.410	Exhibits predictive relevance
Perceived Ease of Use (PEOU)	0.290	Exhibits predictive relevance
Perceived Usefulness (PU)	0.550	Exhibits predictive relevance

Source: Author's Processing 2024

The results in Table 3 indicate that the  $Q^2$  value for the dependent variable AI Technology Adoption (AI TA) is 0.410, while the  $Q^2$  value for Perceived Usefulness (PU) is 0.290, and for Perceived Ease of Use (PEOU), it is 0.550. Since each dependent variable has a  $Q^2$  value greater than zero, it can be concluded that this research model demonstrates predictive relevance.

The findings from Table 4 demonstrate the extent of the associations within the model. The Perceived Ease of Use (PEOU) has a substantial impact ( $f^2 = 0.480$ ) on AI Technology Adoption (AI TA), indicating that the ease of use has a considerable influence on the probability of adopting AI technology. In addition, the Perceived Ease of Use (PEOU) has a modest effect ( $f^2 = 0.190$ ) on Perceived Usefulness (PU), suggesting that it has a moderate influence on how individuals consider the technology to be beneficial.

Table 4. Effect Size (f<sup>2</sup>) Values

Relationship	f <sup>2</sup>	Description
PEOU → AI Technology Adoption (AI TA)	0.480	Large
PEOU → Perceived Usefulness (PU)	0.190	Medium
$PU \rightarrow AI$ Technology Adoption (AI TA)	0.003	Small
Technology Readiness (TR) → AI TA	0.001	Small
$TR \rightarrow PEOU$	0.850	Large
$TR \rightarrow PU$	3.600	Large

Source: Adapted from Author, 2024

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Ease of Use (PEOU) has a modest effect ( $f^2 = 0.190$ ) on Perceived Usefulness (PU), suggesting that it has a moderate influence on how individuals consider the technology to be beneficial.

The impact of Perceived Usefulness (PU) on AI Technology Adoption (AI TA) is quite minor ( $f^2 = 0.003$ ), indicating that although usefulness plays a role, its influence on the actual adoption of AI technology is restricted compared to simplicity of use. The impact of Technology Readiness (TR) on AI Technology Adoption (AI TA) is negligible, as indicated by a very tiny effect size ( $f^2 = 0.001$ ), suggesting that there is little direct influence on the behavior of adopting AI technology.

The Technology Readiness (TR) has a substantial impact ( $f^2 = 0.850$ ) on the perceived simplicity of Use (PEOU), indicating that a higher level of readiness greatly improves the perception of how easy it is to use the technology. Moreover, TR has a significant impact ( $f^2 = 3.600$ ) on the perceived utility (PU), suggesting that readiness greatly improves the perception of usefulness.

In addition to showing that perceived utility and ease of use are strongly impacted by technical readiness, our findings highlight the crucial role that the perceived simplicity of use has in driving the adoption of AI technologies.

Table 5. Coefficient of Determination (R<sup>2</sup>) Values

Dependent Variable	R <sup>2</sup>	Adjusted R <sup>2</sup>	Description
AI Technology Adoption (TA)	0.550	0.540	Very Good
Perceived Ease of Use (PEOU)	0.460	0.455	Very Good
Perceived Usefulness (PU)	0.910	0.908	Very Good

Source: Adapted from SmartPLS Data Analysis (2024)

The R2 values for the dependent variables analyzed are shown in the table above. The adjusted R² value for AI Technology Adoption (TA) is 0.540, which means that 54.0% of the variability in AI Technology Adoption can be explained by Technology Readiness (TR), perceived usefulness (PU), and perceived ease of use (PEOU). The remaining 46.0% variability is influenced by factors not considered in this study. For Perceived Ease of Use (PEOU), the adjusted R² value is 0.455, indicating that 45.5% of PEOU variability can be explained by Technology Readiness (TR), while the remaining 54.5% is influenced by unidentified factors. Regarding Perceived Usefulness (PU), the adjusted R² value is 0.908, indicating that 90.8% of PU variation can be explained by Technology Readiness (TR) and Perceived Ease of Use (PEOU), while the remaining 9.2% is influenced by factors not examined in this study. These findings emphasize the importance of Technology Readiness and perceived simplicity and usefulness of AI technologies in influencing their adoption among consumers.

Table 6. Path Coefficient Testing Results

Hypothesis	Sample (0)	Sample Mean	STDEV	T Statistics	P Values	Conclusion
$H^1$ : TR → AI- TA $H^2$ : PU → AI- TA $H^3$ : PEOU → AI- TA $H^4$ : PEOU → PU $H^5$ : TR → PU	-0.032 0.094 0.680 0.184 0.813	-0.046 0.114 0.676 0.183 0.815	0.137 0.156 0.072 0.051 0.045	0.236 0.504 9.513 3.637 18.253	0.814 0.436 0.000 0.000 0.000	Not Supported Supported Supported Supported Supported Supported
H6 (TR $\rightarrow$ PEOU)	0.671	0.674	0.051	13.128	0.000	Supported

Source: Adapted from SmartPLS Data Analysis (2024)

Important information about the connections between the model's variables can be gleaned from the examination of path coefficients. Hypothesis 1 states that there is a relationship between Technology Readiness (TR) & AI Technology Adoption (AI TA). The analysis shows that this association has a negative





coefficient of -0.032, a T statistic of 0.236, and a p-value of 0.814. These results indicate that there is no support for this hypothesis. This indicates that the level of readiness in technology does not have a substantial impact on the adoption of AI technology.

Hypothesis 2 states that there is a positive relationship between Perceived Usefulness (PU) and AI Technology Adoption. This relationship is quantified by a coefficient of 0.094. Nevertheless, the T statistic of 0.504 and the p-value of 0.436 provide support for this link, although it indicates a feeble impact. Hypothesis 3 demonstrates that the perceived ease of use (PEOU) has a significant and favorable impact on the adoption of AI technology, as indicated by a coefficient of 0.680. This hypothesis is confirmed by the T statistical of 9.513 and the p-value of 0.000, underscoring the significance of user-friendliness in the adoption of new technologies.

Hypothesis 4 suggests that the Perceived Ease of Use (PEOU) has a considerable impact on the Perceived Usefulness (PU), as evidenced by the coefficient of 0.184 and a statistically significant T statistic of 3.637, with a p-value of 0.000. Therefore, the hypothesis is supported. Hypothesis 5 states that Technology Readiness has a significant impact on Perceived Usefulness. The coefficient for this relationship is 0.813, the T statistic is 18.253, and the p-value is 0.000. These results provide strong evidence in favor of supporting this hypothesis.

Finally, Hypothesis 6 demonstrates that Technology Readiness has a substantial and positive influence on Perceived Ease of Use. The coefficient value is 0.671, the T statistic is 13.128, and the p-value is 0.000. These results provide strong support for this hypothesis. In summary, our findings highlight the important roles of perceived ease of use and technical preparedness in shaping technology adoption and perceptions of utility.

The analysis reveals that Technology Readiness (TR) does not significantly influence AI Technology Adoption (AI-TA), with a coefficient of  $\beta$  = -0.032, T = 0.236, and p = 0.814. This finding indicates that despite individuals' readiness in terms of technology, it does not significantly affect their adoption of AI technology in the context of accounting studies. Previous research by Donal Devi Amdanata et al. (2023) supports this conclusion, suggesting that readiness alone may not suffice to drive adoption without sufficient exposure or application-specific experience. This aligns with the Technology Readiness Acceptance Model (TRAM), which posits that even if individuals are technologically prepared, they may still be hindered in adopting innovations if they lack practical experience with them (Lin et al., 2007). Limitations in access and experience using AI technology can present significant barriers to the adoption process, creating a gap between technological readiness and actual implementation in accounting practices.

Although Perceived Usefulness (PU) exhibits a positive relationship with AI Technology Adoption, the analysis indicates that its impact is not statistically significant ( $\beta$  = 0.094, T = 0.504, p = 0.436). This suggests that while students recognize the potential benefits of AI technology in accounting, their perception of its usefulness does not significantly influence their adoption decisions. Similar results have been observed in prior studies (Saragih et al., 2020; Wahyuni et al., 2021), indicating that PU alone may not be a decisive factor in fostering adoption behavior among accounting students. One underlying reason for this phenomenon may be a lack of deep understanding regarding the potential implementation of AI in the accounting sector, which could stem from insufficient education and training on these new technologies. Without a strong understanding of how AI can enhance their efficiency and effectiveness, students are likely to hesitate in adopting these new technologies.

Perceived Ease of Use (PEOU) demonstrates a significant positive impact on AI Technology Adoption, with a coefficient of  $\beta$  = 0.680, T = 9.513, and p = 0.000. This finding underscores the importance of ease of use in the adoption of new technologies. When accounting students in Batam perceive AI technology as easy to use, they are more likely to adopt and apply it in their work. This supports previous research emphasizing that user-friendly interfaces and intuitive interactions are critical factors in promoting technology adoption (Lin et al., 2007). These findings indicate that improving user interfaces and providing adequate training on technology use can significantly enhance the adoption rates of AI technologies among accounting students.

The significant positive relationship between Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) ( $\beta$  = 0.184, T = 3.637, p = 0.000) suggests that when students find AI technology easy to use, they are more likely to perceive it as useful in their accounting tasks. This aligns with the Technology Readiness Acceptance Model (TRAM), which posits that ease of use influences perceptions of usefulness and subsequently affects adoption intentions (Khashan et al. 2024). Therefore, emphasizing the development of intuitive and accessible



technologies for students is essential to ensure they fully comprehend the benefits that can be derived from using them.

The analysis indicates that Technology Readiness (TR) significantly influences Perceived Usefulness (PU) ( $\beta$  = 0.813, T = 18.253, p = 0.000). This result suggests that students with higher technology readiness are more likely to view AI technology as beneficial for improving their performance in accounting tasks. The strong positive influence highlights the importance of preparedness in shaping perceptions of technological benefits, consistent with the findings of (Ganesh Pillai and Bezbaruah 2017; Li et al. 2023). When students feel technologically prepared, they are more likely to explore and leverage new technologies, ultimately enhancing their effectiveness and efficiency in accounting practices (Damerji and Salimi 2021; Kolade et al. 2022).

Technology Readiness (TR) also has a significant positive effect on Perceived Ease of Use (PEOU) ( $\beta$  = 0.671, T = 13.128, p = 0.000). This finding indicates that students who are more technologically ready find AI technology easier to use in accounting contexts. The positive relationship underscores that readiness enhances students' comfort and proficiency in adopting and utilizing AI technologies effectively (Labrague et al. 2023). Thus, improving technological readiness among students should be a primary focus in efforts to increase AI technology adoption in accounting practices (Issa, Jabbouri, and Palmer 2022; Uren and Edwards 2023).

# 4. Conclusion

In summary, the analysis indicates that Perceived Ease of Use is the most significant factor driving AI technology adoption among accounting students, while Technology Readiness has a highly positive impact on both Perceived Usefulness and Perceived Ease of Use. This emphasizes the importance of technological readiness in shaping students' perceptions of new technology. Consequently, educational institutions need to provide adequate training and resources to enhance students' technological readiness so they can more easily adopt innovative technologies in their accounting practices.

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