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Artificial Intelligence Self-Efficacy and Work Readiness among Final-Year University Students: Implications for Sustainable Workforce Development

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Abstract: The rapid integration of artificial intelligence (AI) into higher education and professional environments has increased the importance of understanding psychological factors associated with graduates' readiness for employment. This study examined the association between Artificial Intelligence Self-Efficacy (AISE) and Work Readiness among final-year students at Universitas Indonesia and explored its implications for sustainable workforce development. A quantitative cross-sectional correlational design was employed involving 115 students selected through purposive sampling. Data were collected using the Artificial Intelligence Self-Efficacy Scale (AISES) and the Work Readiness Scale (WRS) and analyzed using descriptive statistics, Pearson product–moment correlation, and simple linear regression. The results revealed a significant positive association between AISE and Work Readiness ($r = .580$, $p < .001$). AISE explained 33.6% of the variance in Work Readiness ($R^2 = .336$). Although most participants demonstrated high AISE, Work Readiness was predominantly moderate, suggesting that confidence in using AI alone does not fully explain graduates' readiness for employment. These findings indicate that AISE represents an important psychological factor associated with workforce readiness while highlighting the multidimensional nature of Work Readiness. The study extends the application of AISE to workforce readiness and provides practical implications for higher education institutions in preparing graduates for AI-integrated workplaces.

Keywords: Artificial Intelligence; Higher education; Self-Efficacy; Sustainable workforce development; Work readiness

Introduction

The rapid advancement of artificial intelligence (AI) is reshaping both higher education and the contemporary workplace, creating new expectations for graduates entering an increasingly technology-oriented labor market (Angwaomaodoko et al., 2026; Kustiyowati et al., 2025). AI technologies are no longer limited to specialized technical fields but have become integral to a wide range of professional activities, including information analysis, decision support, administrative tasks, and communication processes (Gavrila et al., 2025; Kassa & Worku, 2025; Mardianingsih et al., 2025). As AI becomes embedded in everyday work, graduates are expected not only to possess disciplinary knowledge but also to demonstrate confidence and adaptability in working alongside AI-enabled technologies (Cingillioglu & Schoettner, 2025). Recent global reports emphasize that AI-related competencies are becoming essential employability assets, highlighting the responsibility of higher education institutions to prepare graduates who can respond effectively to technological transformation while contributing to sustainable economic development (Dzikrulloh et al., 2025). This development is closely aligned with the objectives of the United Nations Sustainable Development Goals (SDGs), particularly SDG 4 (Quality Education), which

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promotes future-oriented learning, and SDG 8 (Decent Work and Economic Growth), which emphasizes the development of a competent and resilient workforce (Garcés et al., 2025; Nations, 2015).

An important indicator of graduates' successful transition into employment is work readiness (Putra et al., 2026). Work readiness refers to a multidimensional combination of knowledge, skills, attitudes, and personal attributes that enable individuals to perform effectively and adapt successfully within professional environments. According to Zulmi & Tentama (2024), work readiness encompasses four interrelated dimensions, namely personal characteristics, organisational acumen, work competence, and social intelligence. Individuals with stronger work readiness are generally better prepared to respond to workplace expectations, collaborate with others, and manage occupational challenges, whereas graduates with insufficient readiness often experience greater difficulty during the transition from university to employment (Peersia et al., 2025). Consequently, identifying psychological factors associated with work readiness has become an important concern for both researchers and higher education institutions seeking to improve graduate employability .

Previous research has identified several factors associated with work readiness, including employability skills, career adaptability, digital literacy, work-integrated learning, and self-efficacy (Adegbite, 2024; Suarta et al., 2025). Among these variables, self-efficacy has consistently been recognized as one of the most influential psychological resources because individuals' beliefs about their capabilities shape how they approach challenges, regulate their behavior, sustain motivation, and adapt to unfamiliar situations (Stavropoulou et al., 2025). Consistent with Social Cognitive Theory, empirical evidence indicates that students with stronger self-efficacy generally demonstrate higher levels of work readiness because they are more confident in applying their knowledge and managing workplace demands (Rizal & Guspa, 2023).

The continuing digital transformation has also expanded the concept of self-efficacy from a general psychological construct toward technology-specific domains (Safira et al., 2025). Earlier studies have shown that digital self-efficacy contributes positively to employability and digital work readiness by strengthening individuals' confidence in using digital technologies effectively (Suhada et al., 2025). However, most existing studies have focused on conventional digital technologies, such as computers, online learning platforms, and communication applications. The emergence of generative AI has introduced different workplace characteristics that require individuals to interact with adaptive systems, evaluate AI-generated information, and collaborate with intelligent technologies. These developments suggest that confidence in using conventional digital tools may not fully represent individuals' confidence in working with AI-based systems.

To address this issue, Wang & Chuang (2024) introduced the concept of Artificial Intelligence Self-Efficacy (AISE), which refers to individuals' confidence in their ability to understand, utilize, and interact effectively with artificial intelligence technologies. Unlike general digital self-efficacy, AISE specifically reflects confidence in performing tasks that involve intelligent systems characterized by automation, adaptation, and human–AI interaction. Although university students are increasingly familiar with generative AI applications such as ChatGPT and Gemini, greater exposure to these technologies does not necessarily lead to stronger confidence in applying AI within academic and professional contexts . Recent evidence indicates that AI literacy, attitudes toward AI, and prior AI experience contribute differently to the development of AI self-efficacy, suggesting that technology use alone is insufficient to develop confidence in utilizing AI effectively (Bewersdorff et al., 2024; Dang & Nguyen, 2025; Ho & Le, 2026). This phenomenon highlights the importance of examining AISE as a distinct psychological construct relevant to graduates' preparation for future employment.

The potential relationship between AISE and work readiness can be understood through Social Cognitive Theory Stavropoulou et al. (2025), which proposes that efficacy beliefs influence motivation, persistence, behavioral choices, and adaptive responses when individuals encounter new challenges. Students with stronger AISE are more likely to view AI as a tool that supports learning and professional development rather than as a source of uncertainty (Alkhawaja et al., 2025; Lan et al., 2026; Maulana et al., 2025). Such confidence may encourage continuous learning, greater engagement with AI-assisted activities, and more positive adaptation to technology-rich work environments. These characteristics are closely related to several dimensions of work readiness, particularly work competence, organisational adaptation, and personal characteristics.

Despite the growing body of research on AI-related psychological constructs, several important gaps remain. Existing studies have primarily examined AISE in relation to educational outcomes, such as AI adoption, academic engagement, learning experiences, academic stress, and perceptions of job insecurity (Kim & Kim, 2024; Shi et al., 2026). Comparatively fewer

studies have investigated how AI-specific efficacy beliefs are associated with graduates' readiness to enter the workforce, particularly within higher education contexts in developing countries where AI adoption is expanding rapidly. Furthermore, previous work readiness research has predominantly emphasized general self-efficacy, digital literacy, and employability skills, while limited attention has been given to AI-specific efficacy beliefs as a distinct psychological resource supporting workforce readiness (Diana et al., 2025; Karimah et al., 2025).

Therefore, this study examines the association between Artificial Intelligence Self-Efficacy and Work Readiness among final-year students at Universitas Indonesia. The contribution of this study lies in extending the application of Artificial Intelligence Self-Efficacy beyond educational technology contexts to workforce readiness among students preparing to enter AI-integrated workplaces. By providing empirical evidence from an Indonesian higher education context, this study contributes to the growing literature on AI-related psychological competencies and offers practical insights for higher education institutions seeking to strengthen graduates' preparedness for sustainable workforce development.

Method

Research Design and Participants

This study employed a quantitative cross-sectional correlational design to examine the association between Artificial Intelligence Self-Efficacy (AISE) and Work Readiness among final-year university students. A correlational design was considered appropriate because the study aimed to investigate the statistical relationship between the study variables without manipulating participants or research conditions.

Participants were recruited using purposive sampling based on predefined inclusion criteria to ensure that all respondents had relevant experiences related to both AI utilization and career preparation. Eligible participants were active diploma (D3) or undergraduate (S1) students at Universitas Indonesia who had completed at least their sixth semester, were between 18 and 25 years of age, had completed or were currently undertaking an internship program, and had used generative artificial intelligence applications, such as ChatGPT or Gemini, within the previous six months.

An a priori power analysis was conducted using G*Power version 3.1 to estimate the minimum sample size required for simple linear regression. Assuming one predictor, an effect size of $f^2 = .10$, a significance level of $\alpha = .05$, and statistical power of .80, the analysis indicated a minimum sample of 81 participants. To improve statistical precision and compensate for potential incomplete responses, a larger sample was targeted. A total of 115 participants met all eligibility criteria and were included in the final analyses.

Instruments

Artificial Intelligence Self-Efficacy Scale

Artificial Intelligence Self-Efficacy was measured using the Artificial Intelligence Self-Efficacy Scale (AISES) developed by (Wang & Chuang, 2024). The instrument assesses individuals' confidence in understanding, using, and interacting with artificial intelligence technologies across four dimensions: assistance, anthropomorphic interaction, comfort with AI, and technological skills. The original scale consists of 22 items measured on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), with higher scores indicating greater levels of AI self-efficacy.

Before the main study, the instrument was translated into Indonesian and underwent cultural adaptation through expert review. A pilot study was subsequently conducted to evaluate its psychometric properties. Reliability analysis demonstrated excellent internal consistency (Cronbach's $\alpha = .924$). Item validity was assessed using corrected item-total correlations. Two items (A15 and A21) did not meet the minimum criterion ($r < .30$) and were therefore removed during the pilot study. Consequently, only the remaining validated items were administered to participants in the main data collection.

Work Readiness Scale

Work Readiness was measured using the Indonesian version of the Work Readiness Scale (WRS) adapted by Dwiratnasari et al. (2026) based on the framework developed (Caballero et al., 2011). The instrument measures four dimensions of work readiness: personal characteristics, organisational acumen, work competence, and social intelligence. The same translation, expert review, pilot testing, and psychometric evaluation procedures were applied before the main study. One item failed to satisfy the minimum validity criterion and was removed following the pilot study. The final version of the instrument demonstrated excellent reliability and was administered to all participants. Responses were rated using a six-point Likert scale ranging from 1 (strongly inappropriate) to 6 (strongly appropriate), with higher scores reflecting greater work readiness.

Research Procedure

The study was conducted in three sequential stages. During the preparation stage, both research instruments were translated, reviewed by experts, and

evaluated through a pilot study to establish their validity and reliability. After satisfactory psychometric properties had been achieved, ethical approval was obtained from the Ethics Committee of the Faculty of Psychology, Universitas Indonesia (Ethical Approval No. 41/FPsi.Komite Etik/PDP.04.00/2026).

The main data collection was conducted online using Google Forms. Participants first received information regarding the study objectives, confidentiality of responses, voluntary participation, and their right to withdraw at any time without consequences. Only participants who provided informed consent were allowed to proceed with the questionnaire. To acknowledge their voluntary participation, several respondents were randomly selected to receive electronic wallet vouchers after data collection had been completed.

All submitted questionnaires were screened according to the predetermined eligibility criteria. Only complete questionnaires from participants who fulfilled all inclusion criteria were retained for statistical analysis. The overall research procedure is summarized in Figure 1.

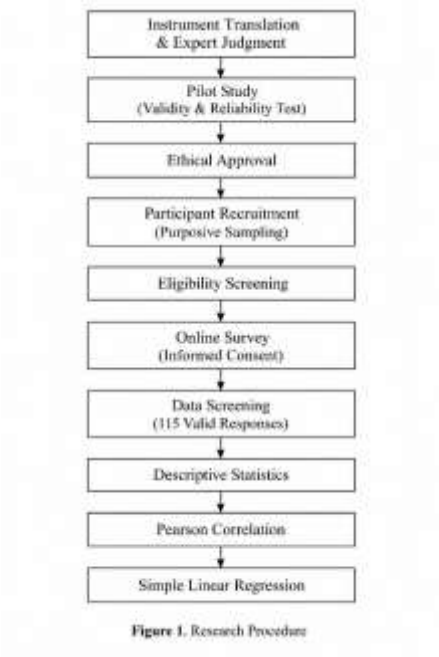


Figure 1. Research procedure

Data Analysis

Data were analyzed using IBM SPSS Statistics. Descriptive statistics were calculated to summarize participant characteristics and the distribution of the study variables. Prior to hypothesis testing, assumption testing was performed to evaluate the suitability of the data for parametric analyses, including the assessment of residual normality and regression assumptions. Although minor deviations from normality were observed, the sample size exceeded the minimum requirement recommended by the Central Limit Theorem, supporting the use of parametric statistical procedures.

Pearson product-moment correlation analysis was conducted to examine the association between Artificial Intelligence Self-Efficacy and Work Readiness. Subsequently, simple linear regression analysis was performed to estimate the proportion of variance in Work Readiness associated with AISE. Statistical significance was determined using a two-tailed significance level of $p < .05$.

Result and Discussion

Levels of Artificial Intelligence Self-Efficacy and Work Readiness

Descriptive statistics were calculated to provide an overview of participants' levels of Artificial Intelligence Self-Efficacy (AISE) and Work Readiness. The results are presented in Table 1.

Table 1. Descriptive statistics of study variables

Variable	Min	Max	Mean	SD
Artificial Intelligence Self Efficacy	40	92	85.30	6.65
Work Readiness	106	263	240.00	15.14

The average AISE score was 85.30 (SD = 6.65), indicating that participants generally reported a high level of confidence in understanding, using, and interacting with artificial intelligence technologies. In comparison, the mean Work Readiness score was 240.00 (SD = 15.14), which, based on the categorization criteria adopted in this study, indicates a moderate level of work readiness. The larger standard deviation observed for Work Readiness indicates greater variability in participants' perceptions of their readiness for employment.

To provide a clearer picture of participant distribution, both variables were further classified into categorical levels. The results are presented in Table 2 and Table 3.

Table 2. Categorization of artificial intelligence self-efficacy

Category	Frequency	Percentage
Low	7	6.1
Moderate	14	12.2
High	94	81.7

Most participants (81.7%) were classified as having high Artificial Intelligence Self-Efficacy, while 12.2% were categorized as moderate and 6.1% as low. This distribution indicates that confidence in using AI

technologies was generally well developed among the participants.

Table 3. Categorization of work readiness

Category	Frequency	Percentage
Low	31	27.0
Moderate	69	60.0
High	15	13.0

A different pattern was observed for Work Readiness. The majority of participants (60.0%) were categorized as having a moderate level of Work Readiness, whereas 27.0% were classified as low and only 13.0% as high. These findings suggest that although participants generally expressed strong confidence in using AI technologies, their overall readiness for workforce entry remained at a moderate level.

This difference highlights that confidence in AI use represents only one component of work readiness. According to Caballero et al. (2011), work readiness comprises multiple dimensions, including personal characteristics, organisational acumen, work competence, and social intelligence. Therefore, students may feel confident in using AI technologies while still perceiving limitations in other competencies required for successful workplace transition, such as communication, professional adaptation, and organisational understanding.

The relatively high level of AISE observed in this study may also reflect participants' previous exposure to AI applications during their academic activities and internship experiences (Karim et al., 2025; Warsihna et al., 2026). Nevertheless, confidence in using AI alone is insufficient to explain graduates' overall readiness for employment because workforce preparation is shaped by broader educational, psychological, and experiential factors. These descriptive findings provide an initial context for understanding the subsequent correlation and regression analyses.

Assumption Testing

Prior to hypothesis testing, assumption tests were conducted to determine whether the data met the requirements for parametric analyses. Normality of the regression residuals was evaluated using the Normal Probability–Probability (P–P) Plot, while the independence of residuals was assessed using the Durbin–Watson statistic. The results are presented in Figure 2.

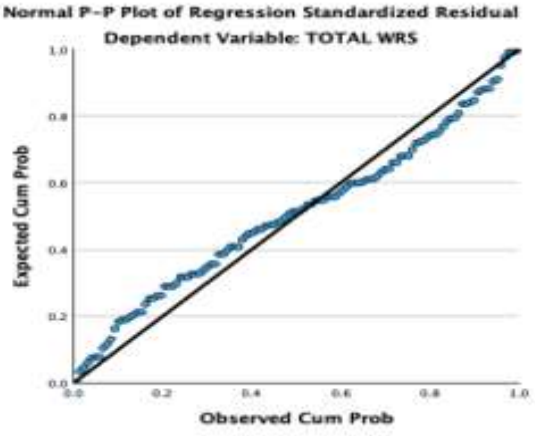


Figure 2. Normal p–p plot of regression standardized residuals

Visual inspection of the Normal P–P Plot showed that the standardized residuals followed the diagonal reference line reasonably well, indicating that the residuals were approximately normally distributed. In addition, the Durbin–Watson statistic was within the acceptable range, suggesting that no substantial autocorrelation was present. These findings indicate that the assumptions required for Pearson correlation and simple linear regression were adequately satisfied.

Association between Artificial Intelligence Self-Efficacy and Work Readiness

A Pearson product–moment correlation analysis was conducted to examine the association between Artificial Intelligence Self-Efficacy and Work Readiness. The results are presented in Table 4.

Table 4. Pearson correlation analysis

Variable	AISE	WRS
Artificial Intelligence Self Efficacy	1	
Work Readiness	.580***	1

The analysis revealed a statistically significant positive association between Artificial Intelligence Self-Efficacy and Work Readiness ($r = .580$, $p < .001$). This result indicates that students with higher confidence in understanding and using AI technologies also tended to report higher levels of work readiness.

The findings are consistent with Social Cognitive Theory Bandura (2000), which proposes that efficacy beliefs influence individuals' motivation, persistence, and adaptive behaviour when responding to environmental challenges. Students who are confident in their ability to use AI are more likely to engage with new technologies, develop problem-solving strategies, and adapt to changing workplace demands (Antony et al., 2025). These characteristics are closely related to

competencies required for successful workforce transition.

The present findings are consistent with previous studies demonstrating the importance of efficacy beliefs in preparing graduates for employment. Rizal & Guspa (2023) reported that students with stronger self-efficacy generally demonstrated higher work readiness because they were more confident in applying their knowledge and addressing workplace challenges. Likewise, Suhada et al. (2025) found that digital self-efficacy contributed positively to work readiness by strengthening confidence in using digital technologies in professional settings. The present study extends these findings by showing that confidence specifically related to artificial intelligence is also associated with students' readiness to enter the workforce.

Another contribution of this study lies in expanding the application of Artificial Intelligence Self-Efficacy beyond educational technology contexts. Previous studies have primarily examined AISE in relation to AI adoption, academic engagement, learning experiences, and job insecurity (Kim & Kim, 2024; Shi et al., 2026). The present findings suggest that AISE is also relevant to graduates' preparation for employment, particularly as AI becomes increasingly integrated into professional environments (Telaumbanua et al., 2025).

Nevertheless, the moderate strength of the correlation indicates that AISE should not be viewed as the only factor associated with Work Readiness. Work readiness is inherently multidimensional and includes competencies beyond technological confidence, such as interpersonal skills, organisational understanding, professional attitudes, and practical work experience. Therefore, strengthening AISE alone may not be sufficient to prepare graduates for successful workforce transition.

Contribution of Artificial Intelligence Self-Efficacy to Work Readiness

To further examine the contribution of Artificial Intelligence Self-Efficacy to Work Readiness, a simple linear regression analysis was performed. The results are presented in Table 5.

Table 5. Simple linear regression analysis predicting work readiness

Predictor	B	SE	β	t	p
Constant	128.081	14.919	–	8.585	< .001
AISE	1.320	.174	.580	7.565	< .001

The regression model was statistically significant ($F(1, 113) = 57.23$, $p < .001$). Artificial Intelligence Self-Efficacy was positively associated with Work Readiness ($B = 1.32$, $\beta = .58$, $t = 7.57$, $p < .001$). The model explained 33.6% of the variance in Work Readiness ($R^2 = .336$), indicating that AISE represented an important factor associated with students' perceived readiness for employment.

The findings further support Social Cognitive Theory, which emphasizes that efficacy beliefs influence how individuals respond to challenges and adapt to unfamiliar situations (Bandura, 2000). Students with stronger AISE are more likely to approach AI-related tasks with confidence, engage in continuous learning, and adapt more effectively to AI-integrated work environments. These characteristics are likely to support graduates as they prepare for workplace demands that increasingly involve collaboration with intelligent technologies.

However, AISE explained only part of the variability in Work Readiness. Approximately 66.4% of the variance remained associated with other factors not included in the present model. Previous studies have identified career adaptability, employability skills, work experience, professional identity, career motivation, and social support as additional contributors to work readiness (Caballero et al., 2011; Putra & Idrus, 2026; Suarta et al., 2025). These findings suggest that work readiness should be viewed as a multidimensional outcome influenced by multiple personal and contextual factors rather than by AI-related confidence alone.

The present study contributes to the growing literature by extending the application of Artificial Intelligence Self-Efficacy to the context of workforce readiness among final-year university students. From a practical perspective, the findings suggest that higher education institutions should complement AI literacy initiatives with learning experiences that strengthen students' confidence in applying AI responsibly and effectively in professional contexts. Integrating AI-supported problem solving, ethical AI practices, and authentic workplace learning into university curricula may better prepare graduates for increasingly AI-integrated workplaces while supporting sustainable workforce development (Arini et al., 2025; UNESCO, 2023).

Conclusion

This study examined the association between Artificial Intelligence Self-Efficacy (AISE) and Work Readiness among final-year students at Universitas Indonesia. The findings demonstrated a significant positive association between the two variables, indicating that students with greater confidence in understanding, using, and interacting with artificial

intelligence technologies also tended to report higher levels of work readiness. Regression analysis further showed that AISE accounted for 33.6% of the variance in Work Readiness, suggesting that AI-related confidence represents an important psychological factor associated with graduates' readiness for workforce entry. However, the remaining unexplained variance indicates that work readiness is influenced by additional personal, educational, and contextual factors beyond AISE. The findings extend current understanding of Artificial Intelligence Self-Efficacy by demonstrating its relevance beyond educational technology adoption to workforce readiness within an Indonesian higher education context. From a practical perspective, universities may strengthen students' readiness for AI-integrated workplaces by embedding AI-supported problem solving, ethical AI use, and authentic workplace learning experiences into career preparation and internship-related programs. Such initiatives may help prepare graduates for evolving workplace demands while supporting sustainable workforce development. Future research is encouraged to include additional predictors of Work Readiness, such as career adaptability, employability skills, professional identity, and career motivation, to provide a more comprehensive explanation of graduates' workforce readiness. Longitudinal studies involving students from different universities and academic disciplines are also recommended to examine how Artificial Intelligence Self-Efficacy develops over time and relates to graduates' transition into employment.

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Author Contributions
Conceptualization, A.E., R.M.A.S., and D.W.; methodology, A.E. and R.M.A.S.; validation, R.M.A.S. and D.W.; formal analysis, A.E.; investigation, A.E.; data curation, A.E.; writing—original draft preparation, A.E.; writing—review and editing, R.M.A.S. and D.W.; supervision, R.M.A.S.; project administration, A.E. All authors have read and agreed to the published version of the manuscript.

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Conflicts of Interest
The authors declare no conflict of interest.

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