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Fear of AI and students' psychological well-being through career anxiety

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Abstract: *The development of artificial intelligence (AI) presents opportunities and concerns for university students, particularly regarding changes in the world of work and emerging competency demands. This study analyzed the relationship between fear of AI and students' psychological well-being through career anxiety. A quantitative correlational design was used. The participants were 428 university students obtained after data cleaning from 446 initial responses. The instruments measured fear of AI, career anxiety, and psychological well-being. Data were analyzed using descriptive statistics, Pearson correlation, regression, and mediation analysis with 5.000 bootstrap resamples. The results showed that fear of AI was positively associated with career anxiety (r = 0,386; p < 0,001), whereas career anxiety was negatively associated with psychological well-being (r = -0,352; p < 0,001). Career anxiety mediated the relationship between fear of AI and psychological well-being, with an indirect effect of -0,175 and 95% CI [-0,259, -0,101]. These findings highlight the importance of understanding fear of AI in students' career development.*

Keywords: *fear of AI; career anxiety; psychological wellbeing; students; artificial intelligence.*

Abstrak: Perkembangan artificial intelligence (AI) menimbulkan peluang sekaligus kekhawatiran bagi mahasiswa, terutama terkait perubahan dunia kerja dan tuntutan kompetensi baru. Penelitian ini bertujuan menganalisis hubungan antara fear of AI dan psychological well-being mahasiswa melalui career anxiety. Penelitian menggunakan pendekatan kuantitatif dengan desain korelasional. Partisipan penelitian adalah 428 mahasiswa yang diperoleh setelah proses data cleaning dari 446 respons awal. Instrumen penelitian meliputi skala fear of AI, career anxiety, dan psychological well-being. Data dianalisis menggunakan statistik deskriptif, korelasi Pearson, regresi, dan analisis mediasi dengan prosedur bootstrap 5.000 resampling. Hasil penelitian menunjukkan bahwa fear of AI berhubungan positif dengan career anxiety (r = 0,386; p < 0,001), sedangkan career anxiety berhubungan negatif dengan psychological well-being (r = -0,352; p < 0,001). Hasil mediasi menunjukkan bahwa career anxiety berperan sebagai mediator dalam hubungan antara fear of AI dan psychological well-being mahasiswa, dengan efek tidak langsung sebesar -0,175 dan 95% CI [-0,259; -0,101]. Temuan ini menegaskan pentingnya memahami ketakutan terhadap AI dalam konteks perkembangan karier mahasiswa.

Kata kunci: fear of AI; kecemasan karir; kesejahteraan psikologis; mahasiswa; kecerdasan buatan.

INTRODUCTION

The development of artificial intelligence (AI) has transformed how university students learn, seek information, complete academic tasks, and prepare for future careers. AI facilitates access to information, idea generation, data processing, and academic productivity (Aryani et al., 2025; Kamilla et al., 2022; Zakiyah et al., 2024). However, AI also raises concerns because it may change skill demands, affect employment opportunities, and increase future uncertainty. The World Economic Forum (2025) reported that technological development, including AI, is a key driver of changes in jobs and skills through 2030. In Indonesia, AI use in higher education is increasingly linked to learning, digital skills, and students' work-readiness, although challenges remain in AI literacy and the adaptation of graduate competencies (Puspa & Suryawidjaja, 2025).

Concern about AI is relevant because university students are preparing to enter a rapidly changing labor market (Uçar et al., 2025; Yaşar & Karagucuk, 2025). Research on artificial intelligence anxiety shows that anxiety toward AI extends beyond technology use to include concerns about employment, new skill demands, and readiness to face AI-driven change (Wang & Wang, 2022). Among students, fear of AI may involve concerns that AI will replace human roles, reduce job opportunities, make skills less relevant, or increase competency demands. Devi et al. (2025) found that fear of AI replacement was associated with career anxiety among students, while Dağ et al., (2026) reported that AI-related anxiety was linked to students' anxiety about obtaining employment.

From a career development perspective, university students are in the exploration stage, when individuals understand themselves, explore options, and build commitment to career directions (Nisa et al., 2025; Super, 1980). At this stage, students consider job choices, competency readiness, and post-graduation opportunities. AI-driven changes in the labor market may intensify uncertainty and relate to career anxiety. Career anxiety refers to anxiety about career choices, preparation, and future career outcomes (Vandana et al., 2025). It may arise when students doubt their abilities, feel unprepared for work, worry about competition, or perceive that they lack adequate professional skills.

Career anxiety may also relate to psychological well-being. In Ryff's perspective, psychological well-being includes self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth (Garcia et al., 2023; Ryff, 1989). Students with stronger psychological well-being tend to interpret challenges and manage pressure more adaptively. Conversely, anxiety about career futures may hinder students from viewing themselves, their life goals, and their future positively. Recent studies show that future career anxiety is associated with university students' psychological well-being (Mukaromah & Sastri, 2025; Qamariyah & Khair, 2024). Other studies also indicate that AI anxiety is related to future career concerns, digital well-being, career adaptability, and career self-efficacy among students (AL-Nasa'h et al., 2026; Duan et al., 2026).

Although research on AI anxiety, career anxiety, and psychological well-being is growing, studies that test career anxiety as a mediator between fear of AI and psychological well-being remain limited, especially among Indonesian university students. Previous studies more often examined AI-related anxiety in relation to attitudes toward AI, career decisions, or upskilling intentions (Devi et al., 2025; Duan et al., 2026). Therefore, this study analyzed the relationship between fear of AI and students' psychological well-being through career anxiety. The hypotheses were: (1) fear of AI is positively associated with career anxiety; (2) career anxiety is negatively associated with psychological well-being; and (3) career anxiety mediates the relationship between fear of AI and psychological well-being.

METHOD

This study employed a quantitative correlational design (Sugiyono, 2022). to examine the relationships among fear of AI, career anxiety, and psychological well-being, and to test career anxiety as a mediator. The study was not intended to draw direct causal conclusions but to explain statistical relationships among variables based on empirical data.

The participants were university students with experience using AI-based technology for academic or self-development purposes. Purposive sampling was used based on the

following criteria: active student status, undergraduate age range, willingness to participate, and experience with AI. Of 446 initial responses, 3 were excluded for not providing consent, and 15 for unusual response patterns or straight-lining. The final data set consisted of 428 students.

The participants were 379 women and 49 men aged 17–25 years (M = 19.93). They were in semesters 2–12 (M = 4.33). A total of 75 students were working on a thesis or final project, while 353 were not. Regarding AI use, 256 students reported frequent use, and 85 reported very frequent use.

The study used three instruments: fear of AI, career anxiety, and psychological well-being scales. All instruments used a five-point Likert scale ranging from 1 = very unsuitable to 5 = very suitable. Variable scores were obtained by summing item responses. Negative psychological well-being items were reverse-scored before analysis.

Fear of AI was measured using a brief adapted scale based on the Artificial Intelligence Anxiety Scale Wang & Wang (2022). The scale consisted of 10 items reflecting concerns about AI, particularly work or career issues, competency adaptation, technology dependence, loss of control, and negative impacts of AI. Career anxiety was measured using the Career Anxiety Scale by Tsai et al., (2017), consisting of 24 items adapted to the Indonesian student context. Psychological well-being was measured using a scale based on Ryff (1989) concept, consisting of 18 items reflecting self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth. The theoretical score ranges are presented in Table 1

Table 1. Theoretical Score Ranges of the Research Instruments

Variable	**Number of Items**	**Response Scale**	**Theoretical Score Range**	**Score Interpretation**
Fear of AI	10	1–5	10–50	Higher scores indicate higher fear of AI
Career anxiety	24	1–5	24–120	Higher scores indicate higher career anxiety
Psychological well-being	18	1–5	18–90	Higher scores indicate higher psychological well-being

The instruments were reviewed by expert judgment, guided by guidance and counseling/psychology experts, to assess construct alignment, clarity of wording, readability, and relevance to Indonesian university students. Internal reliability was analyzed using Cronbach's Alpha. The coefficients were 0.850 for fear of AI, 0,905 for career anxiety, and 0,813 for psychological well-being, indicating adequate internal consistency.

Data were collected online using a questionnaire with informed consent, information on study objectives, data confidentiality, and respondents' right to discontinue participation. Data were analyzed using descriptive statistics, Pearson correlation, regression, and mediation analysis. The indirect effect was tested using 5.000 bootstrap resamples with a 95% confidence interval. Mediation was considered significant when the confidence interval did not include zero.

RESULTS AND DISCUSSION

Description of Students' Fear of AI, Career Anxiety, and Psychological Well-Being

Descriptive analysis was used to describe students' fear of AI, career anxiety, and psychological well-being. Fear of AI scores ranged from 20 to 50 (M = 36,67; SD = 6,17). Career anxiety scores ranged from 27 to 120 (M = 86,31; SD = 12,64). Psychological well-being scores ranged from 42 to 87 (M = 62,23; SD = 8,23).

For interpretation, mean scores were compared with the theoretical range and midpoint of each scale. The theoretical ranges were 10–50 for fear of AI (midpoint = 30), 24–120 for career anxiety (midpoint = 72), and 18–90 for psychological well-being (midpoint = 54). Thus, fear of AI and career anxiety were above the theoretical midpoint, while psychological well-being was in the upper-middle position.

Table 2. Descriptive Statistics of the Research Variables

Variable	Theoretical Range	Theoretical Midpoint	Empirical Range	M	SD	Score Position Interpretation
Fear of AI	10–50	30	20–50	36,67	6,17	Above the theoretical midpoint
Career anxiety	24–120	72	27–120	86,31	12,64	Above the theoretical midpoint
Psychological well-being	18–90	54	42–87	62,23	8,23	Upper-middle

These findings indicate that concerns about AI and career anxiety were fairly evident among students. Fear of AI in this study refers to concerns about AI development, including the possible replacement of human work roles, changing competency demands, technology dependence, loss of control, and negative impacts on future work. This aligns with (Devi et al., (2025), who found that fear of AI replacement was associated with students' career anxiety, and with AL-Nasa'h et al., (2026), who found that AI anxiety was associated with future career concerns and digital well-being.

The mean career anxiety score above the theoretical midpoint indicates that career anxiety is an important issue for students. From the perspective of Konadi et al., (2025); Super (1980), students are in the career exploration stage, when they begin to understand themselves, explore work options, and build commitment to future careers. AI makes this process more complex because students must recognize their interests and competencies while adapting to changing job structures and new skill requirements.

Meanwhile, psychological well-being in the upper-middle position indicates that students still had relatively adequate psychological capacity. However, this does not mean that they were free from psychological pressure. According to Garcia et al., (2023); Ryff (1989), psychological well-being includes self-acceptance, positive relations, autonomy, environmental mastery, purpose in life, and personal growth. Thus, students showed fairly adequate well-being despite concerns about AI and career anxiety.

Relationships among Fear of AI, Career Anxiety, and Psychological Well-Being

Pearson correlation analysis examined the relationships among fear of AI, career anxiety, and psychological well-being. Fear of AI was positively and significantly associated with career anxiety ($r = 0,386$; $p < 0,001$), indicating a moderate relationship. Fear of AI was negatively and significantly associated with psychological well-being ($r = -0,162$; $p < 0,001$), indicating a weak relationship. Career anxiety was negatively and significantly associated with psychological well-being ($r = -0,352$; $p < 0,001$), indicating a moderate relationship. Thus, higher fear of AI was associated with higher career anxiety, while higher career anxiety was associated with lower psychological well-being.

Table 3. Correlations among the Research Variables

Variabel	1	2	3
1. *Fear of AI*	1		
2. *Career anxiety*	0,386***	1	
3. *Psychological well-being*	-0,162***	-0,352***	1

Information: ***p < 0,001.
Interpretation of relationship strength: fear of AI–career anxiety = positive moderate; fear of AI–psychological well-being = negative weak; career anxiety–psychological well-being = negative moderate.

These findings show that fear of AI is more strongly associated with career anxiety than directly with psychological well-being. Students who perceive AI as a threat to job opportunities, competency relevance, or work stability tend to report higher career anxiety. This supports Devi et al., (2025), who found that fear of AI replacement was associated with

students' career anxiety. Based on Super's (1980) model, this relationship is understandable because students are in the career exploration stage, when perceived threats to future work may increase uncertainty and career anxiety.

The negative relationship between career anxiety and psychological well-being indicates that career anxiety is important for students' well-being. This finding supports previous studies showing that future career anxiety is associated with students' psychological well-being (Mukaromah & Sastri, 2025; Xu et al., 2023). Career anxiety may disrupt aspects of psychological well-being, especially purpose in life, environmental mastery, autonomy, and personal growth (Garcia et al., 2023; Ryff, 1989). Students who feel anxious about their careers may find it harder to build clear life goals, manage academic and career demands, and view change as an opportunity for growth.

The weak negative relationship between fear of AI and psychological well-being suggests that fear of AI may not directly affect well-being. The relationship may become more meaningful when students interpret AI as a threat to their career future. This aligns with Duan et al., (2026), who showed that AI anxiety relates to career decisions through psychological mechanisms such as career adaptability and career self-efficacy. Therefore, students' responses to AI should be understood within the context of career development and readiness for labor-market change.

The Role of Career Anxiety as a Mediator in the Relationship between Fear of AI and Psychological Well-Being

Regression analysis showed that fear of AI significantly predicted career anxiety (B = 0,790; β = 0,386; p < 0,001; R^2 = 0,149). Career anxiety negatively and significantly predicted psychological well-being (B = -0,221; β = -0,340; p < 0,001). After career anxiety was included in the model, the direct effect of fear of AI on psychological well-being was not significant (B = -0,041; β = -0,031; p = 0,527).

Table 4. RegressionResults in the Mediation Model

Path	B	β	p	R^2	Description
Fear of AI → Career anxiety	0,790	0,386	< 0,001	0,149	Significant
Career anxiety → Psychological well-being	-0,221	-0,340	< 0,001	—	Significant
Fear of AI → Psychological well-being after the mediator was entered	-0,041	-0,031	.527	—	Nonsignificant

The indirect effect test using 5.000 bootstrap resamples showed that career anxiety mediated the relationship between fear of AI and psychological well-being, with an indirect effect of -0,175 (95% CI: [-0,259, -0,101]). Because the confidence interval did not include zero, the mediation effect was significant.

Table 5. Bootstrap Mediation Test Results

Mediation Path	Indirect Effect	95% CI	Description
Fear of AI → Career anxiety → Psychological well-being	-0,175	[-0,259; -0,101]	Significant

This finding indicates that the relationship between fear of AI and psychological well-being is explained more by career anxiety than by a direct relationship. In this model, fear of AI becomes psychologically meaningful when students interpret it as a threat to future careers, including changes in competencies, job opportunities, and the possible replacement of human roles by AI. This aligns with Devi et al., (2025), who showed that career anxiety may function as a psychological mechanism linking fear of AI replacement with students' responses to labor-market change.

In line with Super's (1980) theory, this finding can be understood in terms of students' career exploration stage. At this stage, students seek to understand themselves, explore career options, and develop career directions. AI may increase uncertainty because students need to reassess the relevance of their competencies, job opportunities, and career preparation strategies. This uncertainty may strengthen career anxiety, which is then related to psychological well-being.

Career anxiety may relate to psychological well-being because it involves purpose in life,

environmental mastery, autonomy, and personal growth (Garcia et al., 2023; Ryff, 1989). Students with career anxiety may struggle to set clear life directions, manage academic and career demands, and trust their capacity to develop. Thus, this study positions career anxiety as a psychological mechanism linking fear of AI and psychological well-being. Practically, the findings emphasize the need for higher education career services that address not only technical readiness but also AI literacy, career adaptability, career self-efficacy, and career anxiety management.

CONCLUSION AND SUGGESTIONS

The findings showed that fear of AI was positively and significantly associated with students' career anxiety. Students with a higher fear of artificial intelligence reported higher career anxiety. Career anxiety was also negatively and significantly associated with psychological well-being, indicating that students with higher career anxiety tended to report lower psychological well-being.

The main finding shows that career anxiety mediated the relationship between fear of AI and psychological well-being. After career anxiety was included as a mediator, fear of AI no longer had a significant direct relationship with psychological well-being. Thus, the relationship between fear of AI and psychological well-being was mainly explained through increased career anxiety. This finding emphasizes that students' psychological experience of AI development should be understood through the career context, not merely as a technological issue.

Higher education institutions need to develop career guidance services responsive to AI development. Career services should not focus only on job information, CV preparation, or interview simulations, but should also help students understand labor-market change realistically, recognize career anxiety, and develop adaptive self-development strategies. Programs may strengthen AI literacy, career readiness, adaptability, and anxiety management in facing future work.

This study has several limitations. First, the correlational quantitative design prevents direct causal conclusions. Second, data were collected via an online self-report questionnaire, which may have introduced subjective bias. Third, the respondents were predominantly women. Fourth, the study used a brief, adapted fear-of-AI scale, limiting detailed discussion of the dominant AI-fear dimensions.

Future research should expand the sample across universities and fields of study, compare students by discipline, semester level, or AI use intensity, and apply mixed-methods to more deeply explore students' experiences. Variables such as AI literacy, career adaptability, career decision self-efficacy, social support, and coping strategy may also be added to provide a more comprehensive understanding of career readiness and psychological well-being in the AI era.

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