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AI Anxiety and Future Employment Anxiety among University Students

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Abstract

Background: The rapid evolution of artificial intelligence (AI) has revolutionized the global labor market, raising questions about job security and the future of professions. Students preparing to enter the labor market might feel even greater anxiety about job replacement and the insecurity of future employment.

Purpose: The objective of the study was to investigate the connection between AI anxiety and future employment anxiety in university students and whether this relationship varied depending on gender and academic major.

Method: The cross-sectional correlational study was used. The study involved 281 university students in Islamabad. The collected data covered a demographic information sheet, the Artificial Intelligence Anxiety Scale (AIAS), and the Future Employment Anxiety Scale (FEAS). Descriptive statistics, reliability analysis, Pearson correlation, independent-samples t-tests, and regression analysis were used in SPSS.

Findings and Results: The results showed that there was a significant positive correlation between AI anxiety and future employment anxiety. Regression analysis found that future employment anxiety was strongly predicted by AI anxiety and explained 22% of the variance. There were little or no gender and disciplinary differences between them, and these were not statistically significant.

Conclusion: It implies that anxiety about artificial intelligence is an essential factor that likely affects university students' fear of future jobs. Possibly through education and career-oriented interventions, AI anxiety can be addressed to reduce work-related stressors on websites and to better equip students to work in an AI-driven workforce.

Keywords. Artificial Intelligence, AI Anxiety, Employment Anxiety, University Students

Introduction and Background

Artificial intelligence (AI), a rapidly advancing branch of computer science, is designed to create systems capable of performing tasks that typically require human intelligence. Its ability to process vast amounts of information efficiently and perform tasks faster than humans has led to widespread adoption across industries. However, alongside these benefits, AI has also generated growing concerns regarding job displacement and workforce transformation (Chen et al., 2025). The rapid integration of AI into the employment sector has significantly influenced how university students perceive and plan their future careers, contributing to increased levels of anxiety about employment prospects (Ucar et al., 2025).

AI anxiety is a psychological state characterized by worry, fear, or apprehension about interactions with AI and its potential impact on individuals' skills, careers, and social environments (Wang & Wang, 2019). Similarly, future employment anxiety is defined as a persistent concern about

one's ability to secure, maintain, or adapt to future employment opportunities in an increasingly competitive and technologically driven labor market (Liu et al., 2025). Although AI has the potential to enhance productivity and economic growth, many individuals remain concerned about its implications for job security and occupational stability (Brynjolfsson & McAfee, 2014). In this context, the term "AI anxiety" has been used to describe feelings of fear and unease related to the perceived loss of control over technological systems and the uncertainty they create (Johnson & Verdicchio, 2017).

Johnson and Verdicchio (2017) further conceptualize AI anxiety as a social phenomenon reflecting fears of being replaced by intelligent technologies. The increasing automation and computerization of work processes are expected to transform job structures, with some occupations being replaced and others substantially modified. Empirical evidence supports these concerns. For instance, Tuncal and Ceken (2025) examined AI anxiety and perceived future employment among aviation students and found that different dimensions of AI anxiety, such as learning anxiety and sociotechnical blindness, had distinct effects on students' perceptions of their future job prospects, indicating that AI-related fears meaningfully contribute to future employment anxiety. In contrast, Li, Ouyang, and Lin (2025) reported that university students with greater understanding of and more positive attitudes toward AI experienced lower anxiety about their future employment.

From a theoretical perspective, Technology Anxiety Theory, also known as technophobia, explains technology-related anxiety as the fear, apprehension, or discomfort individuals experience when interacting with technological systems (Wilson et al., 2022). In parallel, Career Construction Theory (Savickas, 2002, 2013) posits that individuals actively construct their careers by integrating their skills, experiences, and values into a coherent and meaningful vocational path. Within the context of AI-driven labor market changes, concerns about job displacement and skill obsolescence may disrupt this career construction process and intensify future employment anxiety. Together, these theoretical perspectives suggest that AI anxiety represents both the emotional response to technological change and a cognitive threat to individuals' career development, thereby increasing concerns about future employment (Savickas, 2002, 2013).

The rapid growth of AI is reshaping job requirements and intensifying uncertainty about future career opportunities. University students, who are in a critical transitional phase as they prepare to enter the workforce, may be particularly vulnerable to these concerns. Anxiety about AI's impact on employment opportunities may heighten their concerns about career stability and employability. Despite the increasing relevance of this issue, limited empirical research has specifically examined how AI-related anxiety contributes to future employment anxiety among university students. Therefore, the present study aims to investigate the relationship between AI anxiety and future employment anxiety, thereby contributing to a better understanding of how emerging technologies shape students' psychological responses to career uncertainty.

Research Question

The research question was formulated based on the SPIDER frame work.

What is the relationship between AI anxiety and future employment anxiety among university students?

Objectives

1. To investigate the relationship between AI anxiety and future employment anxiety in university students.
2. To examine the impact of AI anxiety on future employment anxiety among university students.
3. To examine whether the relationship between AI anxiety and future employment anxiety differs by gender.

4. To examine whether the relationship between AI anxiety and future employment anxiety differs across various disciplines.

Hypothesis

1. There are significant demographic-based differences (gender and department) in AI anxiety and future employment anxiety among university students.
2. AI anxiety positively predicts future employment anxiety in university students.

Methodology

Study Design

The current study was based on a descriptive cross-sectional research design.

Sample

The recruited participants were mainly university students from Islamabad, both male and female, with an age range of adults (18 years and above), as defined by WHO (2016). The total sample comprised of 281 participants. Individuals with any physical disability and mental illness were excluded from the study. Individuals under 18 were also excluded because they did not meet the age criterion. Furthermore, participants who had refused to provide informed consent were also excluded.

Instruments

This section presents a complete set of measures, along with multiple sets, included in this research to collect data for each variable. It contains a consent form, a demographic sheet, and two self-report questionnaires, the AI Anxiety Scale and the Future Employment Anxiety Scale.

The self-formulated demographic data sheet was utilized to assess the participant's age, gender, institution, department, semester, educational level, semester, etc.

Artificial Intelligence Anxiety Scale (AIAS)

The Artificial Intelligence Anxiety Scale (AIAS) was developed by Wang in 2019. AIAS has 21-items designed to measure AI anxiety. The respondent's responses were scored on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). The 21-items of the scale form a reliable composite measure (Cronbach's α = .964). The scale has four subscales (Learning Anxiety, AI configuration, Job Replacement, Sociotechnical Blindness) and demonstrates excellent internal consistency of subscales, α values range from .917 to .974 (Wang, 2019).

Future Employment Anxiety Scale (FEAS)

The Future Employment Anxiety Scale (FEAS) was developed by Wang et al. (2025)**.** It consists of 17-items designed to measure Future Employment anxiety. The respondent's responses were scored on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The scale has four subscales (Personal Ability, Knowledge Application, Career Replaceability, Social Relations) and demonstrates excellent internal consistency of subscales, α values range from .955 to .971 (Wang et al. 2025)**.**

Procedure

Participants were informed about the study and provided consent before completing a questionnaire containing demographic items, the AI Anxiety Scale, and the Future Employment Anxiety Scale. Data was gathered either in classrooms or online, ensured anonymity, and were entered into SPSS for screening and statistical analysis.

Result

This chapter sought to examine the connections between AI anxiety and Future Employment anxiety among university students. The study employed analytical methods: Cronbach's alpha to evaluate scale reliability, correlation analysis to assess relations between variables, regression analysis, and an independent-samples t-test to identify gender-based and discipline-based differences.

Table 1

Frequencies and Percentage of Demographic characteristics of the participants (N=281)

Variables	*Category*	*f*	%
Age	18-25	267	94.3
	26-32	8	2.8
	33-40	6	2.1
Gender	Male	121	56.5
	Female	160	42.8
Family System	Nuclear	183	64.7
	Joint	98	34.6
Education	BS	274	96.8
	MS/MPhil	5	1.8
	PhD	2	.7
Department	Social Sciences	136	48.4
	Engineering	145	51.6
AI Usage	Daily	215	76.0
	Rarely	25	8.8
	Weekly	41	14.5

Note: f=Frequency; %=Percentage

Table 1 illustrates the descriptive statistics of the participants (N=281). 94% were from the age range of 18-25, 2,8% were from 26-32 and 2.1 % from 33-40 age range. The sample was consisted of 56.5% males and 42.8% females. 64.7% were from the nuclear family system, and 34.6 were from the joint family system. Participants from BS were 96.8%, MS/MPhil 1.8%, and PhD were.7%. For the type of marriage, 33.40% sample were from love marriages and 64.60% were from arranged marriages. Furthermore, 48.4% of the sample was from the Social Sciences and 51.6% from the Engineering department. AI usage was also measured on a daily (76%), rarely (8.8%), and weekly (14.5%) basis.

Table 02

Psychometric characteristics of Scales (N=281)

	k	*α*	M	(SD)	Range		Skewness		Kurtosis	
					Actual	Potential	Statistic	Std. Error	Statistic	Std. Error
AI Anxiety	21	.92	85.22	22.51	21-147	21-147	-.38	.14	.47	.29
Learning Anxiety	8	.91	26.73	10.16	8-56	8-56	.32	.14	.21	.29
Job Replacement Anxiety	6	.88	27.52	8.78	6-42	6-42	-.37	.14	-.48	.29
Sociotechnical Blindness	4	.85	18.82	5.65	4-28	4-28	-.51	.14	-.11	.29

AI Configuration	3	.86	12.14	4.66	3-21	3-21	-.16	.14	-.71	.29
Future Employment Anxiety	17	.87	51.85	11.54	17-87	17-85	-.06	.14	.88	.29
Personal Ability	5	.77	15.48	4.79	5-27	5-30	.05	.14	-.05	.29
Knowledge Application	4	.79	13.38	3.52	4-20	4-20	-.05	.14	-.24	.29
Career Replaceability	4	.75	12.09	3.49	4-20	4-20	-.05	.14	-.05	.29
Social Relations	4	.79	10.88	3.43	4-20	4-20	.009	.14	.11	.29

Table 2 illustrates the psychometric characteristics of the scales, including the reliability matrix and comprehensive descriptive statistics. The Cronbach alpha reliability was calculated for the AI and FEA scales. The reliability analysis indicates robust reliability for all scales, with Cronbach's alpha exceeding 0.7. The alpha values indicated that the scales are suitable for use in the current study. Additionally, the table provides the mean, Standard Deviation, and range for each scale. To assess the normality of the constructs and their items, skewness and kurtosis were evaluated with an expected range of -2 to +2. The values in the table indicate the normal distribution (see table 02 for more details).

Table 03

Inter-scale correlation among AI Anxiety and Future Employment Anxiety (N=281)

Variables	1	2	3	4	5	6	7	8	9	10
1. AI Anxiety	-	.71**	.82**	.81**	.76**	.47**	.37**	.33**	.41**	.31**
2. Learning Anxiety		-	.27**	.32**	.36**	.29**	.23**	.11*	.22**	.30**
3. Job Replacement Anxiety			-	.74**	.60**	.40**	.32**	.31**	.37**	.19**
4. Sociotechnical Blindness				-	.62**	.37**	.28**	.36**	.34**	.13*
5. AI Configuration					-	.46**	.33**	.32**	.40**	.34**
6. Future Employment Anxiety						-	.83**	.65**	.78**	.74**
7. Personal Ability							-	.39**	.49**	.50**
8. Knowledge Application								-	.39**	.23**
9. Career Replaceability									-	.53**
10. Social Relations										-

*Note. * p<0.05, **p<0.01*

Table 3 revealed a significant relationship among the variables. AI Anxiety and Future Employment Anxiety showed a significant positive correlation (r=.471, p<.01), suggesting that higher AI anxiety levels correspond with higher levels of future employment anxiety. Similarly, a significant correlation was found between the sub-scales of AI Anxiety and Future Employment (p<0.01) (see table 03 for more details).

Table 04

Regression analysis of AI Anxiety on Future Employment Anxiety. (N=281)

			95% CI	
Variables	B	*B*	LL	UL
(Constant)	31.27	-	26.578	35.97
AI Anxiety	.241	.471	.188	.295
R2	.22***			

**p<0.05, **p<0.01, ***p< 0.001*

Table 4 indicate that the impact of AI anxiety on Future employment anxiety in students. According to the R2 value, the predictor variable (F=79.46, p<.001) accounted for 22% of the variance in outcome variable. Future employment anxiety was positively predicted by AI anxiety according to the data (p<.001). Unstandardized beta value indicates that if other variables are kept constant, a one-unit increase in AI anxiety will increase Future employment anxiety by (.24) units.

Table 5

Mean scores, standard deviations, and t-values of study variables across gender. (N=281)

	Male (121)		Female (160)				95% CI		*Cohen's*
Variable	*M*	*SD*	*M*	*SD*	*t*	*p*	*LL*	*UL*	*d*
AI Anxiety	80.28	22.79	88.96	21.63	3.25	.00	3.43	13.92	0.39
Learning Anxiety	25.98	10.85	27.30	9.59	1.08	.28	-1.09	3.72	0.13
Job Replacement Anxiety	25.21	8.29	29.26	8.76	3.92	.00	2.02	6.08	0.47
Sociotechnical Blindness	17.93	5.73	19.51	5.51	2.34	.02	0.25	2.91	0.28
AI Configuration	11.16	4.63	12.89	4.57	3.13	.00	0.64	2.82	0.38
Future Employment Anxiety	49.15	12.01	53.89	10.77	3.48	.00	2.05	7.42	0.42
Personal Ability	14.32	4.78	16.36	4.62	3.60	.00	0.92	3.15	0.43
Knowledge Application	12.95	3.81	13.72	3.26	1.82	.07	-0.06	1.60	0.21
Career Replaceability	11.41	3.57	12.61	3.37	2.87	.00	0.37	2.01	0.34
Social Relations	10.46	3.39	11.21	3.45	1.80	.07	-0.07	1.56	0.22

Table 5 compares showed that females rated much higher than males on AI anxiety, job replacement anxiety, sociotechnical blindness, AI configuration concerns, future employment anxiety, personal ability, and career replaceability ($p < .05$), with small-to-moderate effect sizes (Cohen d = 0.28-0.47). There was no statistically relevant gender variance in the anxiety to learn, application of

knowledge, or social relations ($p > .05$). On the whole, these results show that female participants described higher anxiety and professional-related anxiety about AI, whereas gender differences were not salient in the aspects of learning and social dimensions.

Table 6

Mean scores, standard deviations, and t-values of study variables across department. (N=281)

Variable	Social Sciences (136)		Engineering (145)				95% CI		*Cohen's d*
	M	*SD*	*M*	*SD*	*t*	*p*	*LL*	*UL*	
AI Anxiety	83.13	23.92	87.19	20.99	-1.51	.16	-9.34	1.22	.18
Learning Anxiety	26.55	10.02	26.90	10.32	-0.29	.772	-2.74	2.04	0.03
Job Replacement Anxiety	26.51	9.50	28.46	7.97	-1.87	.063	-4.00	0.11	0.22
Sociotechnical Blindness	18.15	6.10	19.46	5.13	-1.96	.051	-2.64	0.01	0.23
AI Configuration	11.91	4.58	12.36	4.76	-0.80	.424	-1.54	0.65	0.10
Future Employment Anxiety	50.69	11.41	52.92	11.60	-1.62	.91	-4.93	.48	.19
Personal Ability	15.51	4.72	15.45	4.86	0.12	.908	-1.06	1.19	0.01
Knowledge Application	12.74	3.34	14.00	3.59	-3.05	.002	-2.08	-0.45	0.37
Career Replaceability	11.46	3.47	12.68	3.43	-2.96	.003	-2.03	-0.41	0.35
Social Relations	10.99	3.28	10.79	3.59	0.47	.641	-0.62	1.00	0.06

Table 6 compares Social Science and Engineering students across two variables for the AI scale. Social Science scored an average of 83.13 (SD=23.92), while Engineering had a higher mean of 87.19. However, the t-test result ($t = -1.51$, $p = .16$) shows a difference between the two groups with a small-to-moderate effect size (.18), indicating limited practical significance.

Future Employment Anxiety Scale Social Science scored an average of 50.69 (SD=11.41), while Engineering had a higher mean of 87.19 (SD=11.41). However, the t-test result ($t = -1.62$, $p = .91$) shows no difference between the two groups, with a small to moderate effect size (.18), indicating limited practical significance.

Discussion

The current research involved 281 higher education students, with the majority aged 18-25, corresponding to the early adulthood stage, characterized by career exploration and increased awareness of future job uncertainty. The majority of participants were enrolled in undergraduate programs, with an almost equal representation across the disciplines of Social Sciences and Engineering. A considerable percentage of students reported using AI daily, indicating they are often

exposed to AI technologies. This demographic profile is especially pertinent because younger university students who actively use AI are more likely to be aware of AI-inflicted workforce changes. According to previous studies, repeated exposure to emerging technologies can enhance perceived opportunities and perceived threats, therefore, increasing anxiety over future job opportunities (Klimova & Pikhart, 2025). The population characteristics of the sample, thus, constitute a valuable background for interpreting AI-associated anxiety and its psychological implications.

The findings showed that there was a moderate positive correlation between AI anxiety and future employment anxiety among with sub scales, which is statistically significant. This means that those students with increased levels of anxiety about artificial intelligence also have higher levels of concern about their employment opportunities in the future.

This result is consistent with the findings of Ucar, Capuk, and Yigit (2024), who reported that a large proportion of university students show a significant positive association between AI anxiety and unemployment anxiety. Their findings revealed that existing automation fears and job displacement increase uncertainty about employability, in line with prior results. In a comparable study, Taskin, Comlekci, and Sen (2025) observed that AI-based anxiety was highly correlated with career-related awareness and occupational sustainability among students in translator education. Their analysis also emphasized that professional role-perceived threats of AI were a direct contributor to increased employment-related anxieties, which also solidifies the findings of the current study.

Also, Wang and Wu (2025) examined employment anxiety among university students, focusing on the information cocoon effect and the changing environment driven by technological change. They claimed that exposure to technology-based narratives in the labor market increased students' anxiety about employment security. Although they have captivated themes beyond AI anxiety per se, their results substantiate the hypothesis that technological uncertainty (especially when assumed to be uncontrollable) is a psychological stressor that increases employment anxiety. On the one hand, these studies support the current results and improve the thesis that AI anxiety is an essential psychological predictor of future employment anxiety among university students.

The correlation between AI anxiety and future employment anxiety varies by gender. The mean score of females in both AI anxiety and future employment anxiety was higher than that of males, but the difference was not found to be significant, which means gender did not significantly mediate the relationship between the two variables.

This observation is partly consistent with Sallam et al. (2025), who examined levels of fear of generative AI among students in health sciences across various nations. Although their research revealed that female students had a somewhat higher anxiety level, they highlighted that gender disparities were context-specific and usually minor in scale, which implies that AI anxiety disappears as an entity and becomes omnipresent. Equally, Murakami and Inagaki (2025) found that first-year university students have experienced AI anxiety, irrespective of gender, especially when AI was incorporated into academic and professional skill development. They show that their findings point to similar results: children should be exposed to AI challenges as early as possible, regardless of gender.

Additionally, Almaiah et al. (2022) reviewed the AI anxiety and computer anxiety in e-learning settings and concluded that there were specific gender differences, but they did not affect the overall anxiety levels and the learning results of students significantly. The authors present the argument that the decay of gender differences in technology-related anxiety has decreased with increased digital exposure. Combining these studies with existing results, this paper indicates that workers fear AI and that the potential effects on job-related anxiety are similar across genders, thereby implying that AI-related anxieties are widespread and institutionalized within higher education.

It was hypothesized that AI anxiety would be positively correlated with future employment anxiety among university students. This hypothesis was confirmed by regression analysis, which showed that AI anxiety was strongly predictive of future employment anxiety and accounted for 22%

of the variance in the outcome variable. This shows that AI anxiety is not only related to, but also plays a significant role in students' concerns about their future profession.

This finding aligns with other research by Morales-Garcia et al. (2025), who found that anxiety about AI use was a significant problem affecting students' reliance on AI and perceived competence, which ultimately determined their future employability. According to their findings, students who are not confident in their ability to handle AI-related requirements are more likely to feel anxious about their future careers. Equally, Lin and Chen (2024) found that students' responses to AI-based educational applications were intertwined with academic emotions such as anxiety and uncertainty. Students who viewed AI as a threat rather than a supportive factor experienced greater stress and worry about how they would be perceived as future career-ready.

Also, in a mini-review on AI and academic well-being, Klimova and Pikhart (2025) found that AI-related anxiety significantly affected students' psychological well-being and career perspectives, and that this effect was moderated by insufficient institutional support and AI literacy levels. Their synthesis confirms the current results by highlighting the fact that AI anxiety is a psychological risk factor that leads to a lack of confidence among students in their future employment opportunities. Collectively, these studies support the predictive value of AI anxiety and confirm the theoretical combination of Technology Anxiety Theory and Career Construction Theory in the present research.

Limitations

The current study has some limitations that should be mentioned despite its contributions. First, the cross-sectional research design does not allow for making causal conclusions about the dependence between AI anxiety and future employment anxiety. Second, the self-report measures were used in data collection and could be subject to social desirability or the subjective view of anxiety. Third, the sample was selected from universities in Islamabad only, which may limit the generalizability of the findings to students in other regions, academic settings, or cultural contexts. Moreover, other factors, such as AI literacy, coping mechanisms, and potential career flexibility, were not examined in this study and may also account for differences in future employment anxiety.

Recommendations

According to the results, the recommendation is to implement AI literacy and career preparedness programs in the academic courses of universities to decrease biases and the fear of artificial intelligence. AI-related job issues must be addressed through career counseling; students need assistance in building adaptive skills to new employment conditions. A longitudinal or mixed-methods research design should be used in the future to better understand causal mechanisms and how AI anxiety can change over time. It is also suggested to expand the sample across regions, disciplines, and educational levels to improve generalizability and comparative understanding.

Implications

The academic, practical, and psychological implications of this study's findings are significant. The study has a scholarly contribution to the evolving literature on AI anxiety, since it empirically relates AI anxiety to future employment anxiety in university students. In practice, the outcomes emphasize the need for institutional interventions that help students become more confident in coping with AI-related career changes. Psychologically, the research highlights the concept of AI anxiety as an essential Aspect of emotional reactions to the stress of a career, with the initial psychological and educational intervention that should be implemented to encourage career flexibility and mental health.

Conclusion

The current research argues that AI anxiety is highly correlated with and predicts future anxiety in employment among higher education students. The results indicate that increased anxiety about

artificial intelligence and employment displacement leads to greater uncertainty and stress about future career prospects. There was limited gender and disciplinary disparity, suggesting that students across disciplines generally face AI-related employment issues. In general, the article underscores the importance of examining AI anxiety in institutions of higher learning so that students' psychological well-being can be supported and their career development structured in a positive way in a world that has become increasingly AI-driven in the labor market.

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