PREDICTORS OF ARTIFICIAL INTELLIGENCE ANXIETY AMONG UNIVERSITY STUDENTS

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ABSTRACT
Artificial intelligence anxiety that is an emerging issue, which is actually discomfort or fear toward artificial intelligence systems. The study aims at examining the predictors of artificial intelligence anxiety i.e. positive attitude toward artificial intelligence and negative attitude toward artificial intelligence. This research focuses on the psychological impact of artificial intelligence on university students. The data were collected and examined using statistical analysis. The study was based on cross-sectional survey research design. Participants comprised of 300 university students across Pakistan. Data were collected using convenient sampling technique. Two self-report measures including the General Attitude Towards Artificial Intelligence Scale (Schepman & Rodway, 2020) and Artificial intelligence scale (Terzi, 2020) were used. Psychometric properties and simple linear regression analysis were applied for testing the hypothesis. The findings revealed that positive attitude toward artificial intelligence reduces artificial intelligence anxiety whereas negative attitude toward artificial intelligence increases artificial intelligence anxiety.

INTRODUCTION

Artificial intelligence has developed quickly from a concept of the future to an important part of our daily lives. Defined as the technology that enables computers and machines to simulate human learning, comprehension, problem solving, decision making, creativity and autonomy. Artificial intelligence is integrated in different institutions or areas including the health sector, finance, education and entertainment. Artificial intelligence (AI) has rapidly influenced every aspect of our life, from increased uses in healthcare and education. Even though there are numerous advantages to modern technologies, some people, especially university students, are concerned and anxious about them. Since these young adults will deal with AI in various forms as members of the workforce in the future, it is critical to understand what causes anxiety related to AI. Studies have indicated that the attitude that university students have towards AI is the main element that cause artificial intelligence anxiety (Almaiah et al., 2022; Uçar et al., 2024).

A student's attitude whether positive or negative, play an important role in mental health and overall well-being (Ahmed, 2024; Rimsha, 2024). Those who have a favorable attitude toward AI have lower level of anxiety. Students who believe AI is a threat or has the potential to displace human workers can experience increased anxiety. Misconceptions regarding artificial intelligence (AI), such as the idea that it will completely replace human intelligence. We can build our positive attitude through education and exposure to Artificial intelligence and this can also reduce fear. Due to the increase presence of Artificial Intelligence, there is a gap in understanding the factors that can contribute to AI anxiety,

how these factors influence your attitude toward AI. AI Anxiety occur due to some misconceptions and fear of unknown. If students have a positive attitude toward AI, they may be more confident and also engage in AI technologies. Those who have a negative attitude feel anxious about AI and less engage in AI technologies (Yigit & Acikgoz, 2024).

People may have anxiety over their data being accessed or misused, which can heighten worries about their online security and privacy. In order to foster user confidence in their interactions with AI systems and to establish trust in these systems, these issues must be resolved. This study attempts to identify the factors that contribute to artificial intelligence anxiety, by identifying the factors such as demographic differences, AI literacy and general attitudes toward artificial intelligence. Knowing and understanding these indicators will benefit policy makers, educators and tech developers. This study will advance a thorough comprehension of the psychological elements that can also cause AI anxiety. The study attempts to support the responsible integration of AI into society, ensuring that AI is beneficial and its risks can be managed (Chen et al., 2024).

Anxiety related to artificial intelligence (AI) is a complicated phenomenon that has been examined from a number of angles. The primary theoretical frameworks that aid in explaining the causes and characteristics of AI anxiety are summarized here. The hypothesis offers a deeper comprehension of the acquisition and maintenance of fear and anxiety associated with intellect. According to the hypothesis, there are a number of ways to induce intellectual stress, including direct knowledge of intelligence and indirect impacts like media and social media messaging. According to the hypothesis, there are distinct categories of AI anxiety, and these categories are impacted by a range of issues, including perceived risks to one's job, privacy, and personal freedom (Li & Huang, 2020).

A study by Kim et al. (2023) found that a positive attitude toward AI was associated with lower levels of AI anxiety, suggesting that a favorable view of AI can reduce the concerns about its impact. Research conducted by Wang and Wang (2019) discovered that individuals who have a positive attitude toward AI were less likely to fear AI's potential negative consequences, such as job displacement. Positive attitude toward AI was linked to lower levels of anxiety or fear about AI and its impact on society by Kwak et al. (2022). Kyung and Kwon (2022) found that a positive attitude toward AI was also associated with higher levels of trust in AI technologies, which in turn reduced AI anxiety.

Study has shown that people's attitude towards AI can have serious consequences to AI anxiety. Individuals who build more negative attitude towards AI are more likely to go through or experience AI anxiety. This is because a negative attitude is lead to worry, fear and concerns about the risks of AI. For Instance, Individuals who believes that AI will replace their jobs in future like a human worker in their company or industry where they work may feel uneasy or anxious about future of their career because of AI. Likewise, individuals who think that AI observes their personal privacy may feel more insecure or anxious about the potential consequences (Stănescu & Romașcanu, 2024).

Our attitudes towards artificial intelligence and our worries about technology are more relevant than ever in the modern world. This study shows the relationship between attitude towards artificial intelligence among urban millennial. A quantitative research method was employed, utilizing the General Attitude Towards Artificial Intelligence Scale and the Attitude to Abbreviated Technology Anxiety Scale. A sample of 150 responses from IT professionals and educators in metropolitan areas, was collected and analyzed. The findings revealed that there was no significant relationship between positive and negative attitude towards AI technology anxiety among urban millennial. An interesting observation was made regarding age groups within the urban millennial demographics. While there is no significant difference in attitude towards AI and Technology Anxiety between younger (25-30 years old) participants, it was noted that technology Anxiety levels were slightly higher among individuals aged between 32-35 than 25-30 (Erebak & Turgut, 2021).

Anxiety related to AI often stems from misconceptions or fears of the unknown. Due to the increasing presence of AI, students have fear and anxiety, whether the work done by AI will be right or wrong. By increasing AI literacy, individuals can better understand AI's role in society, which can help alleviate anxiety. You can lessen your anxiety by gaining more knowledge about artificial intelligence. By finding out what causes AI anxiety, we can develop ways to teach students about AI and help them feel more positive about it. This research expands the literature on AI anxiety. If students have a positive attitude towards AI, they may be confident about it. But if they have a negative attitude, they may feel scared. Knowing about AI can help students make informed decisions (Zhan et al., 2024). As Artificial intelligence (AI) becomes increasingly prevalent, this study investigates the factors contributing to university student's anxiety related to AI. Those who have a limited information about AI, leading to some misconception about AI. Some students also perceive AI as a threat to their future, career because there is a rapid change in AI that cannot be predicted it also leads to AI Anxiety. This study explores how student's understanding of AI, AI Literacy and their attitude towards AI influence their levels of AI anxiety. By fostering AI literacy and promoting positive attitudes towards AI, educators and policy makers can work to reduce AI anxiety and promote a more positive relationship between students and AI (Fast & Horvitz, 2017, February).

Hypotheses

1. Positive attitude towards artificial intelligence is likely to negatively predict artificial intelligence anxiety.
2. Negative attitude towards artificial intelligence is likely to positively predicts artificial intelligence anxiety.

METHOD
Research Design
The present study was based on "cross-sectional design" of survey research. Data were collected from different subgroups of students. Questionnaires were distributed among students by the researchers.

Sample
In this study data was collected from 300 university students. Equal number of male and female students participated in this study. Convenient sampling technique was used to collect the data. We used a convenient sampling method, which means we selected participants based on their availability and willingness to participate We used convenience sampling which involves selecting participants who are easily accessible and willing to participate and available at the time of data collection. This method is useful for quickly gathering data from a specific group.

Instruments
General Attitude Toward Artificial Intelligence Scale (Schepman & Rodway, 2020) was used to measure the positive and negative attitude towards artificial intelligence. This scale is consisted of 32 items. It is comprised of two subscales have equal number of items are included in the subscales. The scores of positive attitudes towards AI ranges from 16 to 80 and likewise in the negative attitudes towards AI. The response format used a 5-point Likert-type scale including Strongly Disagree=1 to Strongly Agree=5. Both of the subscales have high internal consistency including positive attitude toward AI =.088 and negative attitude towards AI =0.82.the scale is a valid measure of general attitude towards artificial intelligence. Artificial Intelligence Anxiety Scale (Terzi, 2020) was used to measure artificial intelligence anxiety. This scale consists of 21 items with four dimensions. The scores range from 21 to 147. The high low scores were used to measure intensity of AI anxiety among students. The reliability of AI anxiety is $\alpha=0.96$ which shows high internal consistency. The scale is valid and reliable measure of AI anxiety.

Procedure
In the present study, the data was collected from university students. Firstly, we consulted with concerned authorities and got permission from them, and then the data were collected from the students in working hours. The participants were informed about the research purpose and also asked them if they are willing to participate in the research

and fill the questionnaires, and made them sign the informed consent. It was also mentioned that the data being collected from them was for research purposes, and their information would remain confidential. The researcher handled all the queries of the participant before, after, and during the data

collection. After the data collection, the researcher thanked the participants that they had given their valuable time to fill out the questionnaire.

RESULTS

Table 1: Psychometric Properties for Scales

Scales	M	SD	Range	Cronbach's α
Positive Attitude Towards AI scale	46.08	8.778	26-74	.74
Negative Attitude Towards AI scale	52.68	9.488	25-80	.83
AI Anxiety Scale	86.96	18.69	30-133	.87

Note: AI = Artificial Intelligence

Table 1 shows the psychometric properties of the scales used in the present study. The Cronbach's α value for Artificial Intelligence Anxiety is .872 (>.80) which indicates high internal consistency. The Cronbach's α value for Positive Attitude Toward Artificial

Intelligence is.749 (>.70) which shows satisfactory internal consistency. The Cronbach's α value of negative Attitude Toward Artificial Intelligence and Artificial Intelligence Anxiety is .831, .816 (>.80) which indicate higher level of internal consistency

Table 2: Regression Coefficient of Positive Attitude towards Artificial Intelligence on Artificial Intelligence Anxiety

Variables	B	B	SE
Constant	102.60**		5.71
Positive Attitude towards Artificial Intelligence	-.34**	-.15*	.12
R^2	.02		

**p <.01, **p <.05.

Table 2 shows the impact of positive attitude toward artificial intelligence on artificial intelligence anxiety among university students. The R^2 value of .02 revealed that the predictor variable explained 2% variance

in the outcome variable with $F_{(1, 298)}$ = 7.77, p <.01. The findings revealed that positive attitude toward artificial intelligence negatively predicted artificial intelligence anxiety (β = -.15, p < .01).

Table 3: Regression Coefficient of Negative Attitude towards Artificial Intelligence on Artificial Intelligence Anxiety

Variables	B	β	SE
Constant	38.24**		5.39
Negative Attitude toward Artificial Intelligence	.92**	.46**	.10
R^2	.22		

**p <.01.

Table 3 shows the impact of negative attitude towards artificial intelligence on artificial intelligence anxiety among university students. The R^2 value of .22 revealed that the predictor variable explained 22% variance in the outcome variable with $F_{(1, 298)}$ = 84.20, p <.001. The findings revealed that negative attitude towards artificial intelligence positively predicted artificial intelligence anxiety (β = .46, p < .001).

DISCUSSION

This study aimed to identify the predictors of artificial intelligence anxiety among university students. The sample consisted of 300 participants. A questionnaire consisting of three valid and highly reliable instruments were used to collect the data, General Attitude Towards Artificial Intelligence Scale and Artificial intelligence scale.

The first hypothesis "Positive attitude towards artificial intelligence is likely to negatively predict artificial intelligence anxiety" supported in the present study. By developing positive attitude towards AI help us to lessen AI anxiety. Students feel

anxious about using AI when they consider AI as a beneficial and useful tool. The findings are also consistent with the previous studies as a research by Kim and Lee (2024) indicated that positive attitude toward AI lessen AI anxiety. Similarly, it was found that participants who have positive attitudes toward AI experienced lesser level of AI anxiety and were more inclination to engage in activities related to AI (Hung et al., 2020).

The second hypothesis showed that "Negative attitude towards artificial intelligence is likely to positively predicts artificial intelligence anxiety". The findings are also supported in the present study. Students with a negative attitude towards AI tend to less likely to use artificial intelligence tools and feel more anxious about AI. If a student develops fear and anxiety about artificial intelligence, it influences not only their lives but also their career and society at large. The results are in line with the previous studies as, Kim et al. (2023). Another study showed that individuals with negative attitudes toward AI had higher levels of AI anxiety and were less likely to engage in AI-related activities.

Conclusion

The present study investigated the factors that predict artificial intelligence (AI) anxiety among university students. The main aim of this research is to find out why some students feel anxious or fearful about AI and how their understanding related to AI influences their concerns. The findings revealed that students who had a little knowledge about AI and who had a little exposure to its applications were more likely to experience high levels of anxiety. Fear of job displacement, some ethical concerns and misconceptions about Artificial intelligence were also the factors that contribute to their anxiety. Similarly, students who had more exposure to AI technologies and had a positive attitude toward technological advancements showed lower levels of anxiety. These findings underline the significance of addressing the root cause of AI anxiety, particularly in educational settings. Universities have a crucial role in fostering open discussions about AI and its societal implications. Such initiatives can assist students in overcoming their fears,

dispelling misconceptions and enhancing their understanding of AI, which can positively impact various aspects of their lives and career.

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