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| RESEARCH ARTICLE

Attitudes Toward AI, AI Self-Efficacy, and AI Adoption: A Survey of Media Students in Afghanistan and Pakistan

Hyunjin Seo[1]✉, Azhar Iqbal[2], and Shanawer Rafique[3]
[1]Oscar Stauffer Professor & Associate Dean, William Allen White School of Journalism and Mass Communications, University of Kansas, Lawrence, Kansas, USA
[2]Ph.D. Student, William Allen White School of Journalism and Mass Communications, University of Kansas, Lawrence, Kansas, USA
[3]Senior Officer, University of Management and Technology, Lahore, Pakistan
Corresponding Author: Hyunjin Seo, hseo@ku.edu

| ABSTRACT
We conducted an online survey with undergraduate students in Afghanistan and Pakistan, two neighboring countries in South Asia, to examine their perspectives and attitudes toward generative artificial intelligence (AI). In particular, we analyzed their self-efficacy regarding learning about AI, experiences with AI tools, and intention to adopt AI in their learning and daily lives. University students in Afghanistan and Pakistan demonstrated mixed attitudes toward AI, simultaneously expressing both optimism and concern regarding AI-related technology. While students from both countries exhibited many similarities, their attitudes were interestingly different regarding the benefits and threats of AI. Our research also identified factors affecting AI self-efficacy and intention to learn about AI among Pakistani and Afghan students. This research helps fill a gap in the field of communication and media that lacks empirical studies on Pakistan and Afghanistan youth attitudes toward generative AI and related issues in the Global South in general.

| KEYWORDS

Afghanistan, Pakistan, artificial intelligence, Global South, AI adoption, AI self-efficacy

| ARTICLE INFORMATION

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1. Introduction

Artificial intelligence (AI) includes technologies that enable computers and machines to simulate human learning, comprehension, problem-solving, decision-making, creativity, and autonomy (Baek & Kim, 2023; OECD, 2019; Lang, 2024; Stryker & Kavlakoglu, 2024). According to a recent report by IBM, the global AI adoption rate was 35% as of 2022 (IBM, 2022). In many parts of the world, AI has been ingrained into people's daily lifestyles—from using applications on mobile phones to public security measures on the streets. AI-enhanced tools have been increasingly deployed in healthcare, finance, public safety, and manufacturing (Eastwood, 2024; McElheran et al., 2024; OECD, 2019). With the growing use of AI in many sectors of society, people have expressed optimism about AI's potential but also concerns about AI, including privacy violations and other potential harms (Kennedy et al., 2023; Lang, 2024; Rainie et al., 2022).

These mixed reactions toward AI are also common in higher education (Chen et al., 2020; Huang, 2023; Lang, 2024; Pillai et al., 2024; Singer, 2023; Zawacki-Richter et al., 2019). For example, the introduction of ChatGPT in 2022 has prompted both excitement and concern regarding its potential to transform, positively or negatively, the ways people learn or work (Kennedy et al., 2023; Rainie et al., 2022). In recent years, many universities have started offering workshops to help faculty and students better understand how ChatGPT and other generative AI applications might affect student learning and research activities (Lang, 2024; Singer, 2023).

In discussing generative AI and higher education, current discussions tend to focus on the United States or other higher-income countries (countries mostly in the Global North)[1]. This is concerning, as the AI adoption rate varies significantly across countries, with lower-income countries (countries mostly in the Global South) falling significantly behind (Khan et al., 2024). In particular, there is little empirical research on how students in the Global South perceive opportunities and challenges related to AI. Given this gap, our research analyzes perspectives, attitudes, and behavioral intentions regarding AI among university students in Afghanistan and Pakistan, two neighboring countries in South Asia. Empirical data for this research come from an online survey in summer 2024 of undergraduate students majoring in communication and media in the two countries. Specifically, we examined their familiarity with AI, perceived efficiency of AI, concerns about AI, AI self-efficacy, and intention to learn about AI.

We chose Afghanistan and Pakistan for this research, as the two Global South countries have made strategic initiatives to utilize AI in various sectors of society including higher education (Baqir, 2023; Sabet et al., 2024; Statista, 2024). In addition, while the two countries are similar in terms of geography and culture, they are different in terms of economic and communication infrastructures. These similarities and differences provide helpful contexts for this comparative analysis. Moreover, AI-related research on the two countries is particularly limited, and this is one of the first studies on understandings of AI among university students in Afghanistan and Pakistan. By analyzing perspectives on AI among future leaders in Afghanistan and Pakistan, our research provides scholarly and practical insights into how these two countries might to contribute to AI-related advancements and policies in countries in the South Asian region and the Global South.

2. Literature Review

2.1. Artificial Intelligence (AI) Adoption in the World

As AI has been adopted globally at rapid rates, the impact of AI applications in many aspects of society has been notable (IBM, 2022, 2023; Stryker & Kavlakoglu, 2024). The Global AI Adoption Index 2023 shows that about 42% of enterprise-scale corporations with over 1,000 employees reported having actively deployed AI in their business (IBM, 2023). Additionally, as AI tools have become more accessible and affordable in the past several years, an increasing number of companies have expedited their adoption of and investment in AI (IBM, 2023; Stryker & Kavlakoglu, 2024).

As of 2024, AI is pervasive in people's daily lives (Kennedy et al., 2023; Lang, 2024; Rainie et al., 2022). One of the most well-known uses is through voice assistants such as Siri, Alexa, and Google Home. These applications offer companionship and provide users assistance with day-to-day tasks, with AI-based assistive technology helping people with disabilities to complete daily tasks independently. AI tools are deployed in many sectors including healthcare, finance, public safety, and manufacturing (Kennedy et al., 2023). In particular, the field of communication and media has rapidly adopted AI for content creation and curation (Broussard, 2015; Broussard et al., 2019; Chan-Olmsted, 2019).

With positive developments of AI, however, there are also negative and concerning aspects such as the invasion of people's privacy and the application of AI in warfare and conflicts (Khan et al., 2023). Other concerns related to AI usage include discrimination, bias, oppression, and exclusion exacerbated by AI applications (Garcia, 2022; Khan et al, 2024). When looking at the risks of the increased usage of AI, one must consider not only the populated areas such as cities but also how rural areas would be affected (Garcia, 2022). For example, some nonprofit organizations have raised concerns that investments in AI may come at the cost of reduced educational or healthcare budgets for those in lower socioeconomic backgrounds.

Reflecting on these opportunities and potential threats, public opinion surveys of people in different countries show that they tend to have mixed and ambivalent attitudes toward AI (Kennedy et al., 2023; Rainie et al., 2022). When looking at more significant risks of usage of unregulated AI, there is an emergence of digital neo-colonialism that can result in a possibility of an imbalance of power between the Global South and Global North, where the Global South becomes the "consumers" in the usage of AI to where they have to rely on the Global North (Khan et al., 2024). Despite the risks involved, there are benefits of AI being used in the Global South, such as cybersecurity and education, which can potentially contribute to regional stability. In addition, with policies to create more regulations on how to use AI properly, there is a possibility of positive advancements within the Global South region.

2.2. AI Adoption in Afghanistan and Pakistan

In this study, we examine perspectives related to AI among university students in Pakistan and Afghanistan. Afghanistan and Pakistan are two neighboring countries in South Asia. The two Global South countries are important in the South Asian region and the world for their historical roles and geopolitical aspects (Cole, 2009; Hakimi et al., 2024; Zeb, 2013). The majority of people living in each country are Muslims. Northern regions of Pakistan share the same culture as Afghanistan. Both countries have been intertwined on geopolitical fronts since Pakistan came into existence.

[1] In recent years, the term "Global South" has been criticized, as it is considered to be reinforcing outdated and misleading dichotomies and stereotypes regarding economic, political, and geopolitics (Patrick & Huggins, 2023). However, scholars have widely used the terms Global South and Global North in discussing global inequity in terms of development and economics. In this study, we use the term "Global South" in the context of global disparity in AI adoption. Specifically, the current study examines challenges and opportunities when it comes to the usage of AI within two Global South countries (i.e., Pakistan and Afghanistan).

Despite these connections and similarities, there are major differences between the two countries in terms of technological advancements. These differences stem from political, economic, historical, and social circumstances. Specifically, primarily due to historical instability, Afghanistan is significantly behind Pakistan in the areas of infrastructure, education policies, research, AI adoption readiness, and information technology (Hakimi et al., 2024; UNESCO, 2021). According to the 2023 Government AI Readiness Index (Oxford Insights, 2023), Pakistan's score was 42.2 out of 100 with Afghanistan scoring at 21.27.

Technology is already employed in different sectors of Pakistan and is one of the basic determining factors in the economic growth of Pakistan (Arif, 2019; Khan, 2024; Saeed & Awan, 2020). Digital media usage in Pakistan has been steadily on the rise, and the digital media market is expected to flourish further in the coming years (Statista, 2024). In particular, Pakistan has been investing in the adoption and use of AI in the country in recent years (Asim et al., 2023; Ibanet, 2023; Khan, 2024; Nazir, 2023; Pasha et al., 2022). In 2023, Pakistan's Ministry of IT and Telecom introduced the Draft National AI Policy, which discusses the ethical and responsible use of AI and how to leverage AI when it comes to the economic growth of the country (Ibanet, 2023). This encourages different sectors including education and cybersecurity, to harness the benefits of AI while understanding its potential harms and risks. For education, researchers in Pakistan have been using AI applications at university libraries across Pakistan working to enhance technology literacy and access to library resources, especially among those with disabilities or other historically underserved populations (Asim et al., 2023). In the area of cybersecurity, Pakistan has been implementing AI-enabled cybersecurity to protect children from online violence and abuse (Pasha et al., 2022).

With the growing importance of AI in Pakistan, more and more research studies have examined implications of AI in different fields in the country (e.g., Ahmed et al., 2022; Akram et al., 2024; Jamil, 2020). Several institutions are contributing to the adoption of AI in Pakistan by conducting sessions on the integration of technology in the real world. In particular, universities are offering sessions to help faculty and students better understand how AI-assisted technologies can be used in ethical ways.

In comparison, Afghanistan has limited engagements with AI and emerging technologies due to challenges in education and basic infrastructure (UNESCO, 2021). After the end of the Afghan War in 2021, the country entered a new phase of challenges including economic and humanitarian crises. However, with revitalization efforts of the Afghan higher education system in the past two decades, Afghan science has made significant progress in recent years (Abdulbaqi, 2009; Aggarwal et al., 2023; UNESCO, 2021).

Afghanistan is considered one of the poorest and least developed countries (Cao, 2023). Though the country boasts a high youth population with 63 percent of the total population below 25 or younger (United Nations Population Fund, 2024), there are multiple challenges in harnessing youth populations in competing on technological fronts on the international stage (Hakimi et al., 2024). Through the educated youth of Afghanistan are aware of the basic usage of AI (Fazil et al., 2024), the insufficiency of infrastructure and technical expertise is hindering the adoption of AI and other emerging technologies (Hakimi et al., 2024).

In Afghanistan, AI's benefits in the healthcare and education sectors are increasingly emphasized (Sabet et al., 2024). Researchers in the country started incorporating AI into health areas including services related to mental health issues that utilized memory cells, the TFIDF (Term Frequency-Inverse Document Frequency) algorithm, and Large Language Models (LLM) (Sabet et al., 2024). The healthcare sector in Afghanistan is using a chatbot to allow more people across the country to access healthcare. In the education sector, universities are recognizing the importance of incorporating AI in student learning and creating opportunities for students to understand the benefits and risks of using AI and how to use AI applications ethically (Kabul University, 2024).

Overall, when looking into the Global South, especially in countries like Pakistan and Afghanistan, there are many factors that AI can benefit the communities within these regions, especially within the education, cybersecurity, and healthcare sectors. However, it is important to understand the barriers of costs, infrastructural challenges, and expertise to deploying AI, as well as policies and laws, to reduce the potential harms of AI.

2.3. Perspectives on AI, AI Self-Efficacy & Intention to Learn about AI

Research has shown that individuals' technology experience, demographic characteristics, and political orientation can affect their attitudes toward AI (Zhang & Dafoe, 2019; Wang et al., 2023). For instance, according to a national survey of U.S. adults by Zhang and Dafoe (2019), socioeconomic status influences people's perspectives and views on AI. In particular, young, wealthy and educated males with higher levels of technology experience demonstrate more positive attitudes toward AI (Zhang & Dafoe, 2019).

Another important characteristic to take into account in understanding individuals' attitudes toward technology is self-efficacy. Self-efficacy refers to an individual's belief in their competence to deal with different situations needed to complete desired tasks (Bandura, 1997). Prior empirical studies on technology adoption showed that self-efficacy is a significant factor in people's decision to adopt and use a certain kind of technology (Hong, 2022; Seo et al., 2014, 2019). There is often a positive correlation between self-efficacy and technology adoption and use; individuals with higher levels of self-efficacy are more likely to adopt technology applications and use them for social activities online (Seo et al., 2014, 2019).

As this study focuses on AI, we focus on self-efficacy regarding AI and define it as an individual's confidence in their ability to learn and use AI (Hong, 2022; Wang et al., 2023). While there is only limited research on AI self-efficacy and adoption of AI for professional activities, a recent study showed that people with higher levels of income and education tend to show higher levels of self-efficacy toward AI (Hong, 2022). Similarly, considering that an individual's prior experience in using a technology application

influences their self-efficacy related to the application (Byars-Winston et a., 2017), their experience or familiarity with AI could be related to their self-efficacy toward AI.

Intention to use AI is associated with AI self-efficacy and experience with AI (Hong, 2022; Roy et al., 2022; Wang et al., 2023). For example, there is a positive relationship between AI self-efficacy and the intention to use or learn about AI (Hong, 2022). That is, individuals who have higher levels of AI self-efficacy tend to show higher levels of intention to use AI. Additionally, those who perceive AI to be easy to use and useful are more likely to demonstrate stronger intentions to use AI. Types of support available can also influence people's intention to learn about AI. For instance, Wang et al.'s study (2023) showed that students who reported more supportive environments exhibited stronger intentions to learn about AI. Similarly, according to Roy et al.'s study of university instructors and students in India (2022), trust in technology is an important factor that affects positive attitudes toward AI adoption.

2.4. Research Questions

The following research questions are examined in this study.

RQ1: What are key similarities and differences between Afghanistan and Pakistani university students majoring in communication and media in terms of attitudes toward AI and perspectives on AI's roles in society?

RQ2: How is university students' AI self-efficacy associated with their familiarity with AI, perceived efficiency of AI, and perceived threat of AI?

RQ3: How is university students' intention to learn about AI associated with their familiarity with AI, perceived efficiency of AI, and perceived threat of AI?

3. Methodology

To answer the research questions, we conducted an online survey with undergraduate students majoring in communication and media in Afghanistan and Pakistan. The Institutional Review Board at the lead author's university approved our research protocols before we started recruiting participants for the survey. As part of a consent process for the study, survey participants were informed of the research objectives and research participants' rights.

Participants in the survey research were recruited through communication and media courses at a leading university in the field each in Afghanistan and Pakistan. Instructors in media and communication courses at the universities announced the research study in classes in person and shared the survey recruitment information via email.

3.1. Survey Questionnaire

Our survey questionnaire was informed by previous studies on AI attitudes and perspectives (Holden & Rada, 2011; Hong, 2022; Kennedy et al., 2023). After developing a set of survey questions, we pretest the survey questionnaire with 10 college students from each university under study. The survey was conducted in English, as students in both universities take courses in English at their university. Our final survey questionnaire included 23 multiple-choice questions and two open-ended questions. Specifically, our survey questionnaire examined AI self-efficacy, intention to use AI, AI familiarity, AI efficiency, perceived threats from AI, and other related aspects. Each item was measured on a scale of 1 (strongly disagree) to 5 (strongly agree) unless otherwise noted.

3.2. Measurement Items

AI Self-Efficacy. We employed a modified technology self-efficacy scale to assess survey respondents' confidence in learning about AI (Holden & Rada, 2011; Hong, 2022). The four items used to measure AI self-efficacy in this research are: (i) *I could complete any desired task using the AI technology if I had a lot of time to complete the task*; (ii) *I could complete any desired task using the AI technology if I had seen someone else using it before trying it myself*; (iii) *I could complete any desired task using the AI technology if I had the manuals for reference*; and (iv) *I could complete any desired task using the AI technology if someone else helped me get started*. According to Cronbach's alpha test, the index based on these four items was reliable (α = .85).

Intention to Learn about AI. In examining survey respondents' intentions to use and learn about AI, we used five items adjusted from previous research (Kennedy et al., 2023). The items included in our survey were: (i) *I will continue to acquire AI-related information*; (ii) *I prefer to use the most advanced AI technology available*; (iii) *I will keep myself updated with the latest AI applications*; (iv) *I intend to use AI to assist with my learning*; and (v) *I will continue to learn AI*. Cronbach's alpha test showed that the index variable was reliable (α = .91).

AI Familiarity. Four questions were utilized to assess survey respondents' familiarity and experience with AI (Kennedy et al., 2023; Hong, 2022; Rainie et al., 2022). The four items were: (i) *Overall, I am familiar with AI technologies*; (ii) *I know how to use AI applications to create images*; (iii) *I can use AI-assisted voice recognition software to search for information*; and (iv) *I am able to use online AI translation tools*. According to Cronbach's alpha test, the index variable was reliable (α = .82).

AI Efficiency & AI Threats. Informed by previous research on AI (Kennedy et al., 2023; Hong, 2022; Rainie et al., 2022), our survey questionnaire included a set of questions related to attitudes toward AI. Items related to perceived efficiency of AI were: (i) *AI offers convenience and saves time*; (ii) *AI improves decision-making processes*; (iii) *AI increases efficiency and accuracy*; (iv) *AI leads to cost savings*; (v) *AI creates new job opportunities*; and (vi) *AI helps solve complex problems*. According to Cronbach's alpha test, the index variable for AI efficacy was reliable (α = .87). In addition, the following six items were used to measure survey

respondents' perspectives on threats posed by AI: (i) *AI creates unintended consequences*; (ii) *Increased adoption of AI in society leads to job displacement*; (iii) *Increased adoption of AI in society creates problems in privacy*; (iv) *AI is used for malicious purposes*; (v) *AI causes errors and mistakes*; and (vi) *AI perpetuates biases and discrimination*. Cronbach's alpha test showed that the index variable related to AI threats was reliable (α = .83).

Demographics and Open-ended Questions. Several demographic questions were included toward the end of the survey questionnaire. These questions examined gender, race/ethnicity, age, and year in the school of each survey respondent. In addition, our survey questionnaire included two open-ended questions: (i) *What excites you the most about AI?* (ii) *What concerns you the most about AI?*

4. Results

In total, 473 university students (216 from Afghanistan and 257 from Pakistan) participated in our survey research in Spring 2024. Table 1 summarizes demographic characteristics of the Afghanistan and Pakistani survey respondents.

4.1. RQ1: Attitudes Toward AI

Our first research question was related to Afghanistan and Pakistani university students' attitudes toward AI and perspectives on AI's roles in society. In particular, we examined whether there were any statistically significant differences between the two sides in these areas. Analysis of variance (ANOVA) tests were used to examine this question.

There were statistically significant differences between Afghanistan and Pakistani students regarding perceived familiarity with AI (F = 4.15, p < .05). Pakistani students demonstrated a higher level of familiarity with AI (M = 3.25, SD = .94) than Afghanistan students (M = 3.03, SD = .95). However, no statistically significant differences were found between the two groups when it comes to AI self-efficacy (F = 2.36, p = 1.25). Afghanistan students (M = 3.24, SD = 1.13) and Pakistani students (M = 3.43, SD = .99) showed similar levels of efficacy regarding using and learning about AI. In addition, no significant differences were found between the two groups in terms of intention to learn about AI (F = .60, p = .43). Both Afghanistan (M = 3.69, SD = 1.09) and Pakistani students (M = 3.59, SD = .96) demonstrated high levels of intention to learn about AI.

When it comes to perceived threats from AI, Pakistani students (M = 3.32, SD = .83) showed higher levels of concern when compared with Afghanistan students (M = 3.11, SD = .96). The difference between the two groups was statistically significant (F = 3.99, p < 05). In comparison, there was no statistically significant differences between the two sides in terms of perceived AI efficiency (F = .06, p = .79). Both Afghanistan (M = 3.51, SD = 1.05) and Pakistani students (M = 3.49, SD = .86) were modestly positive about efficiency of AI.

In addition to responses to close-ended questions in the survey, participants' answers to open-ended questions provide valuable insights into their attitudes toward AI. In answering the first open-ended question (*What excites you the most about AI?*), participants most often highlighted themes of (i) efficiency, (ii) learning, and (iii) information. Under efficiency, common responses included "solving my problems," "time saving," and "making life super easy." In regards to learning, participants mentioned, "helping me learn" and "facilitating my academic learning." Regarding information, participants cited benefits such as "valuable information" "in-depth knowledge," and "accurate information" that they gain through AI applications.

In response to the second open-ended question (*What concerns you the most about AI?*), participants mentioned concerns about (i) privacy and security, (ii) misinformation, and (iii) job displacement. Participants' comments related to privacy and security included "invasion of privacy," "data breach," "data hacking," and "all private details available online." When it comes to misinformation, participants expressed worry about "inaccurate information," "fake information believed to be true by users," and "easy to manipulate information." Concerns about job displacement were also prominent with increased adoption of AI in workplaces. In this area, participants mentioned "AI will replace the human workforce," "Day by day AI advances, and the world will prefer it over humans," and "It decreases job opportunities."

4.2. RQ2: Relationships of AI Self-Efficacy with AI Familiarity, Efficiency, and Threat

Our second research question asked how students' AI self-efficacy is associated with their familiarity with AI, perceived efficiency of AI, and perceived threat of AI. We conducted regression analyses to examine this research question.

Afghanistan survey data showed statistically significant effects of students' attitudes toward AI on their AI self-efficacy (ΔR^2. = .48, F = 25.28, p < .001). Specifically, perceived AI efficiency was positively associated with AI self-efficacy (β = .62, t = 6.66, p < .001). However, neither the relationship between familiarity with AI and AI self-efficacy (β = .13, t = 1.57, p = .12) nor the relationship between perceived threats of AI and AI self-efficacy (β = .08, t = .85, p = .39) was statistically significant.

Our analysis of Pakistani data also showed statistically significant effects of students' attitudes toward AI on their AI self-efficacy (ΔR^2. = .43 F = 45.55, p < .001). AI self-efficacy had statistically significant positive relationships with both AI familiarity (β = .42, t = 6.82, p < .001) and perceived efficiency of AI (β = .36, t = 5.76, p < .001). However, there was no statistically significant relationship with perceived threats of AI (β = .04, t = .72, p = .47) and AI self-efficacy.

4.3. RQ3: Relationships of Intention to Learn AI with AI Familiarity, Efficiency, and Threat

Our third research question examined how is students' intention to learn about AI is associated with their familiarity with AI, perceived efficiency of AI, and perceived threat of AI. Our analysis of Afghanistan data yielded statistically significant effects of students' attitudes toward AI on their intention to learn about AI (ΔR^2. = .31, F = 35.73, p < .001). Specifically, AI familiarity (β = .19, t = 3.25, p < .01) and perceived efficiency of AI (β = .46, t = 7.75, p < .001) were positively associated with intention to learn about AI. However, there was no statistically significant negative relationship between survey respondents' perceived threats of AI and their intention to learn about AI (β = -.04, t = -64, p = .52).

Similar patterns were found in the survey data from Pakistan. There were statistically significant effects of students' attitudes toward AI on their intention to learn about AI (ΔR^2. = .39, F = 35.76, p < .001). Intention to learn about AI had statistically significant positive relationships with AI familiarity (β = .15, t = 2.28, p < .05) and perceived efficiency of AI (β = .55, t = 8.16, p < .001). However, there was no statistically significant negative relationship between participants' perceived threats of AI and their intention to learn about AI (β = -.003, t = -.04, p = .96).

5. Conclusion

Based on a survey of university students majoring in communication and media in Pakistan and Afghanistan, this study identified key similarities and differences between the two groups in terms of attitudes and behavioral intentions related to AI. This research helps address the lack of empirical studies on perspectives toward AI among university students majoring in communication and media, who represent the future workforce in the field. Such empirical data are particularly limited regarding Pakistan and Afghanistan specifically and the Global South in general. Results from this study provide scholarly and practical implications in the areas of communication and media, higher education, and technology, as discussed below.

5.1. Scholarly and Practical Implications

Despite recent calls for more attention to understanding communication and media aspects related to the Global South, empirical studies in this area are still lacking (Ashwell & Croucher, 2018). Our study of Pakistan and Afghanistan, two geopolitically important countries in South Asia, contributes to enhancing understandings of how the future workforce in the field of communication and media in the two Global South countries feel about AI and what factors affect their self-efficacy related to AI and intention to learn about AI.

According to our survey, university students in Pakistan were more familiar with AI than their Afghan counterparts. This difference seems natural in that AI has been more widely adopted in Pakistan than in Afghanistan. As of 2023, Pakistan's Government AI Readiness Index score was 42.2 out of 100, as compared with 21.27 for Afghanistan (Oxford Insights, 2023). Moreover, due to decades of instability, Afghanistan has been behind Pakistan in terms of infrastructure, education, and research (UNESCO, 2021). Although Afghanistan has made important progress in science and technology in recent years, building on two decades of investment in its education system, the country continues to struggle with ongoing instability and inadequate infrastructure (Hakimi et al., 2024). These may explain why Afghan students are less familiar with AI than Pakistani students.

Results from the survey show that, compared with university students in Afghanistan, Pakistani students are more concerned about potential threats posed by AI. This difference may reflect the fact that Pakistani students are more familiar with potential risks of AI as well as its benefits. In addition, there have been more workshops at the university level in Pakistan related to generative AI, which in turn may have helped students better understand consequences of malicious uses of AI and inaccurate information produced by AI-enhanced sites. Pakistani participants' responses to an open-ended question in the survey (i.e., *What concerns you the most about AI?*) provide helpful insights in this. They mentioned breach of privacy and data security, misinformation and disinformation, and job displacement as major concerns about AI.

This research advances understandings of factors influencing self-efficacy toward AI and intention to learn about AI. Our findings show that those with higher levels of familiarity with AI are more likely to demonstrate higher levels of AI self-efficacy. This was the case for both Pakistani and Afghan data. In this study, AI self-efficacy was defined as people's confidence in their ability to complete tasks using AI technology (Bandura, 1997; Hong, 2022; Wang et al., 2023). AI self-efficacy was measured by

four items (Hong, 2022; Wang et al., 2023): (i) *I could complete any desired task using the AI technology if I had a lot of time to complete the task*; (ii) *I could complete any desired task using the AI technology if I had seen someone else using it before trying it myself*; (iii) *I could complete any desired task using the AI technology if I had the manuals for reference*; and (iv) *I could complete any desired task using the AI technology if someone else helped me get started*. It is understandable that those who feel more familiar with AI feel more confident in completing tasks using AI technology. Among survey responses from Pakistan, the perceived efficiency of AI was also positively associated with AI self-efficacy. These findings are aligned with past studies on self-efficacy related to technology (Davis et al., 1989; Hong, 2022; Seo et al., 2014, 2019). When individuals perceive AI applications as user-friendly, familiar, or efficient, they are more likely to feel confident in using those applications. Moreover, the results are consistent with prior research showing that students develop more favorable attitudes toward AI as they engage with it over time (Li, 2023).

When it comes to the intention to learn about and use AI, familiarity with AI and perceived efficiency of AI were positively associated with the intention to learn about AI in both Pakistani and Afghan groups. In this study, intention to use and learn about AI was measured by five items: (i) *I will continue to acquire AI-related information*; (ii) *I prefer to use the most advanced AI technology available*; (iii) *I will keep myself updated with the latest AI applications*; (iv) *I intend to use AI to assist with my learning*; and (v) *I will continue to learn AI*. This finding—those who are more familiar with AI and have more positive assessments about AI efficiency show higher intentions to learn about and use AI—aligns with previous research on technology learning (Dekkal et al., 2023). It should be noted that there was no statically significant difference between Pakistani and Afghan students in terms of their intention to learn about AI. Both groups demonstrated relative intentions to learn about and use AI (mean score of 3.69 out of 5 for Afghan students; mean score of 3.59 out of 5 for Pakistani students). As AI becomes increasingly integrated in both countries (IBM, 2023), university students may recognize the importance of gaining experience with AI applications to be successful in their academic pursuits and future careers.

Given the strong intentions to learn about AI among university students majoring in communication and media in Afghanistan and Pakistan as well as growing importance of AI in the communication field, it is important for relevant university programs in these countries to help students develop both theoretical knowledge and practical skills related to AI. This underscores the need for instructors to gain a deeper understanding of AI so that they can facilitate thoughtful, meaningful, and nuanced class discussions about AI. Universities should enhance faculty training opportunities in this area (Li, 2023; Meng & Sumettikoon, 2022; Yilmaz & Yilmaz, 2023). In addition, international academic associations such as the International Communication Association could act as hubs for information and networking, supporting curriculum development in the area of AI and communication and facilitating resource and information sharing among instructors across the globe. Efforts such as this should center the interests and needs of instructors and students in communication and media programs around the world and ensure the systematic inclusion of voices from countries in the Global South.

5.2. Limitations and Future Research

Future research studies should consider the following areas. Including countries in different geographic regions of the Global South would help develop a more holistic understanding of AI attitudes among college students in the Global South. In doing so, including a greater number of countries with varying AI adoption levels would be useful in comparing and contrasting AI attitudes and behavioral intentions among college students in countries with different levels of AI adoption. In addition, it would be beneficial to analyze differences between undergraduate and graduate students to develop more nuanced understandings and recommendations for each group. Finally, it would be helpful to compare responses from university students with those from other young or older adults.

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ORCID iD (if any): 0000-0002-3312-8794
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References

[1] Abdulbaqi, M. (2009). Higher education in Afghanistan. *Policy perspectives*, *6*(2), 99–117.
[2] Aggarwal, D., Sharma, D., & Saxena, A. B. (2023). Exploring the Role of Artificial Intelligence for Augmentation of Adaptable Sustainable Education. *Asian Journal of Advanced Research and Reports, 17*(11), 179-184.
[3] Ahmed, Z., Bhinder, K. K., Tariq, A., Tahir, M. J., Mehmood, Q., Tabassum, M. S., Malik, M., Aslam, S., Asghar, M. S., & Yousaf, Z. (2022). Knowledge, attitude, and practice of artificial intelligence among doctors and medical students in Pakistan: A cross-sectional online survey. *Annals of Medicine and Surgery*, *76*, Article e103493.
[4] Akram, M., Wahab, N., Naz, M., Din, A. L., Javed, I., Manzoor, A., & Nazir, S. (2024). Transforming healthcare with artificial intelligence In Pakistan. *Migration Letters*, *21*(S9), 752–758.
[5] Arif, S. (2019). Emerging Trends of Artificial Intelligence in South Asia and its Implications for Pakistan. *NUST Journal of International Peace and Stability*. https://doi.org/10.37540/njips.v2i2.31

[6] Ashwell, D., & Croucher, S. (2018, November 20). Communication and the Global South. *Oxford Research Encyclopedia of Communication*. Retrieved 31 Oct. 2024, from https://oxfordre.com/communication/view/10.1093/acrefore/9780190228613.001.0001/acrefore-9780190228613-e-649.

[7] Asim, M., Arif, M., Rafiq, M., & Ahmad, R. (2023). Investigating applications of Artificial Intelligence in university libraries of Pakistan: An empirical study. *The Journal of Academic Librarianship*, *49*(6), 102803. https://doi.org/10.1016/j.acalib.2023.102803

[8] Baek, T. H., & Kim, M. (2023). Is ChatGPT scary good? How user motivations affect creepiness and trust in generative artificial intelligence. *Telematics and Informatics*, *83*, 102030. https://doi.org/10.1016/j.tele.2023.102030

[9] Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.

[10] Baqir Sajjad Syed. (2023, November 25). *Pakistan calls for "binding" framework on ethical AI use*. DAWN.COM; DAWN.COM. https://www.dawn.com/news/1792350#:~:text=He%20explained%20that%20Pakistan

[11] Broussard, M. (2015). Artificial intelligence for investigative reporting: Using an expert system to enhance journalists' ability to discover original public affairs stories. *Digital Journalism*, *3*(6): 814 – 831. https://doi.org/10.1080/21670811.2014.985497

[12] Broussard, M., Diakopoulos, N., Guzman, A.L., Abebe, R., Dupagne, M., & Chuan, C.H. (2019). Artificial intelligence and journalism. *Journalism and Mass Communication Quarterly*, *96*(3), 673–95. https://doi-org.www2.lib.ku.edu/10.1177/1077699019859901

[13] Byars-Winston, A., Diestelmann, J., Savoy, J. N., & Hoyt, W. T. (2017). Unique effects and moderators of effects of sources on self-efficacy: A model-based meta-analysis. *Journal of Counseling Psychology*, *64*(6), 645.

[14] Cao, T. (2023). An analysis of Afghanistan's postwar condition and how to use AI technology to address it. *American Journal of Trade and Policy*, *10*(1), 7–14.

[15] Chan-Olmsted, S. M. (2019). A review of artificial intelligence adoptions in the media industry. *International Journal on Media Management*, *21*(3-4), 193–215. https://doi.org/10.1080/14241277.2019.1695619

[16] Chen, L., Chen, P., & Lin, Z. (2020). Artificial intelligence in education: A review. *IEEE Access, 8*, 75264-75278.

[17] Cole, J. (2009). Pakistan and Afghanistan: Beyond the Taliban. *Political Science Quarterly*, *124*(2), 221-249.

[18] Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. Management Science, 35(8), 982–1003. doi:10.1287/mnsc.35.8.982

[19] Dekkal, M., Arcand, M., Prom Tep, S., Rajaobelina, L., & Ricard, L. (2023). Factors affecting user trust and intention in adopting chatbots: the moderating role of technology anxiety in insurtech. *Journal of Financial Services Marketing*. https://doi.org/10.1057/s41264-023-00230-y

[20] Eastwood, B. (2024, February 7). The who, what, and where of AI adoption in America. MIT Management School. Retrieved from https://mitsloan.mit.edu/ideas-made-to-matter/who-what-and-where-ai-adoption-america#:~:text=Just%206%25%20of%20U.S.%20companies,%2C%20San%20Antonio%2C%20and%20Nashville.

[21] Khan, F. A., Li, G., Khan, A. N., Khan, Q. W., Hadjouni, M., & Elmannai, H. (2023). AI-Driven Counter-Terrorism: Enhancing Global Security Through Advanced Predictive Analytics. *IEEE Access*, *11*, 135864–135879. https://doi.org/10.1109/access.2023.3336811

[22] Fazil, A. W., Hakimi, M., Shahidzay, A. K., & Hasas, A. (2024). Exploring the broad impact of AI technologies on student engagement and academic performance in university settings in Afghanistan. *Journal of Artificial Intelligence and Digital Business*, *2*(2), 56–63.

[23] Fryer, L. K., Nakao, K., & Thompson, A. (2019). Chatbot learning partners: Connecting learning experiences, interest and competence. *Computers in Human Behavior, 93*, 279–289.

[24] Garcia, E. V. (2022). The Technological Leap of AI and the Global South: Deepening Asymmetries and the Future of International Security. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.4304540

[25] Hakimi, M., Bahraam, H., Shahidzay, A. K., & Sadaat, S. N. (2024). Examining the developing influence of emerging technologies in the media sector of Afghanistan. *Studies in Media, Journalism and Communications*, *1*(1), 1–12.

[26] Holden, H., & Rada, R. (2011). Understanding the influence of perceived usability and technology self-efficacy on teachers' technology acceptance. *Journal of Research on Technology in Education, 43*(4), 343–367. doi:10.1080/15391523.2011.10782576

[27] Hong, J. W. (2022). I was born to love AI: the influence of social status on AI self-efficacy and intentions to use AI. *International Journal of Communication*, *16*, 20.

[28] Huang, K. (2023, January 16). Alarmed by A.I. chatbots, universities start revamping how they teach. *The New York Times*. https://www.nytimes.com/2023/01/16/technology/chatgpt-artificial-intelligence-universities.html

[29] Ibanet.org (2023). *Pakistan's Draft National AI Policy: fostering responsible adoption and economic transformation*. https://www.ibanet.org/Pakistan-draft-national-ai-policy-fostering-responsible-adoption#:~:text=In%20May%202023%2C%20Pakistan

[30] IBM (2022) IBM global AI adoption index 2022. https://www.ibm.com/downloads/documents/us-en/107a02e94a48f5c1

[31] IBM (2023). *IMB Global AI Adoption Index—Enterprise Report*.

[32] Jamil, S. (2021). Artificial intelligence and journalistic practice: The crossroads of obstacles and opportunities for the Pakistani journalists. *Journalism Practice*, *15*(10), 1400–1422. https://doi.org/10.1080/17512786.2020.1788412

[33] Kabul University (2024). *View of Exploring the Broad Impact of AI Technologies on Student Engagement and Academic Performance in University Settings in Afghanistan*, 2024).

[34] Katchapakirin, K., Anutariya, C., & Supnithi, T. (2022). ScratchThAI: A conversation- based learning support framework for computational thinking development. *Education and Information Technologies, 27*(6), 8533–8560.

[35] Kennedy, B., Tyson, A., & Saks, E. (2023). *Public awareness of artificial intelligence in everyday activities*. Pew Research Center: Washington, D.C.

[36] Khan, G. A. (2024, January 16). 'AI could be a game changer for Pakistan's industries'. *The Express Tribune*. https://tribune.com.pk/story/2453388/ai-could-be-a-game-changer-for-pakistans-industries

[37] Khan, M. S., Umer, H., & Faruqe, F. (2024). Artificial intelligence for low income countries. *Nature, 11*, 1422.

[38] Lang, J. M. (2024, February 29). The case for slow-walking our use of generative AI. *The Chronicle of Higher Education*. Retrieved from https://www.chronicle.com/article/the-case-for-slow-walking-our-use-of-generative-ai

[39] Lee, Y. F., Hwang, G. J., & Chen, P. Y. (2022). Impacts of an AI-based chat bot on college students' after-class review, academic performance, self-efficacy, learning attitude, and motivation. *Educational Technology Research & Development, 70*(5), 1843–1865.

[40] Li, K. (2023). Determinants of college students' actual use of AI-based systems: An extension of the technology acceptance model. *Sustainability (Basel, Switzerland)*, *15*(6), 5221. https://doi.org/10.3390/su15065221

[41] McElheran, K., Li, J. F., Brynjolfsson, E., Kroff, Z., Dinlersoz, E., Foster, L. S., & Zolas, N. (2023). *AI Adoption in America: Who, What, and Where* (No. w31788). National Bureau of Economic Research. DOI: 10.3386/w31788

[42] Meng, W., & Sumettikoon, P. (2022). The use of artificial intelligence to enhance teaching effectiveness in vocational education. *Eurasian Journal of Educational Research, 98*, 266-283.

[43] Nazir, S. (2023, November 8). *Unleashing the potential of AI in Pakistan's public sector*. The Diplomate. https://thediplomat.com/2023/11/unleashing-the-potential-of-ai-in-pakistans-public-sector/

[44] OECD (2019). Hello, world: Artificial intelligence and its use in the public sector. OECD working paper. Retrieved from https://www.oecd-ilibrary.org/docserver/726fd39d-en.pdf?expires=1711217177&id=id&accname=guest&checksum=905C48646330B0005A1530344712FE33

[45] Oxford Insights. (2023). *Government AI Readiness Index 2023*. https://oxfordinsights.com/ai-readiness/ai-readiness-index/

[46] Pasha, S. A., Ali, S., & Jeljeli, R. (2022). Artificial Intelligence Implementation to Counteract Cybercrimes Against Children in Pakistan. *Human Arenas*. https://doi.org/10.1007/s42087-022-00312-8

[47] Patrick, S., & Huggins, A. (2023, August 15). *The Term "Global South" Is Surging. It Should Be Retired.* Carnegieendowment.org. https://carnegieendowment.org/posts/2023/08/the-term-global-south-is-surging-it-should-be-retired?lang=en

[48] Pillai, R., Sivathanu, B., Metri, B. & Kaushik, N. (2024). Students' adoption of AI-based teacher bots (T-bots) for learning in higher education. *Information Technology & People*, 37(1), 328 – 35. https://doi.org/10.1108/ITP-02-2021-0152

[49] Rainie, L., Funk, C., Anderson, M., & Tyson, A. (2022). *AI and human enhancement: Americans' openness is tempered by a range of concerns*. Pew Research Center: Washington, D.C.

[50] Roy, R., Babakerkhell, M.D., Mukherjee, S., Pal, D., & Funilkul, S. (2022). Evaluating the intention for the adoption of artificial intelligence-based robots in the university to educate the students. *IEEE Access*, 10(1), 125666 – 125678. http://www.doi.org/10.1109/ACCESS.2022.3225555

[51] Sabet, E., Shafiullah Sadat, S., & Khaliqi, H. A. (2024). AI Based Chatbot: A Case Study Afghanistan HealthcareHealthcareHealthcare Services Mental Health Disorder. *INTERNATIONAL JOURNAL of MULTIDISCIPLINARY RESEARCH and ANALYSIS*, *07*(05). https://doi.org/10.47191/ijmra/v7-i05-28

[52] Saeed, F., & Awan, A. G. (2020). Does technological advancement really affects economic growth of Pakistan. *Global Journal of Management, Social Sciences and Humanities*, *6*(2), 134–156.

[53] Statista (2024). *Digital media-Pakistan*. Retrieved June 20, 2024, from https://www.statista.com/outlook/dmo/digital-media/pakistan

[54] Seo, H., Houston, J. B., Knight, L. T., Kennedy, E., & Inglish, A. (2014). Teens' social media use and collective action. *New Media & Society*, *16*(6), 883-902.

[55] Seo, H., Erba, J., Altschwager, D., & Geana, M. (2019). Evidence-based digital literacy class for low-income African-American older adults. *Journal of Applied Communication Research,* 47(2), 130-152.

[56] Singer, N. (2023, August 24). Despite cheating fears, schools repeal ChatGPT bans. *The New York Times*. https://www.nytimes.com/2023/08/24/business/schools-chatgpt-chatbot-bans.html?searchResultPosition=6

[57] Stryker, C., & Kavlakoglu, E. (2024, August 16). *What is artificial intelligence (AI)?* IBM. https://www.ibm.com/topics/artificial-intelligence

[58] UNESCO. (2021). *A need to protect the gains of Afghan science*. https://www.unesco.org/en/articles/need-protect-gains-afghan-science

[59] United Nations Population Fund. (2024, January 31). *4Ws service mapping of the adolescents and youth programs in Afghanistan - Adolescents and youth working group (AY WG) 2023.* https://tinyurl.com/33u95bj6

[60] Wang, F., King, R. B., Chai, C. S., & Zhou, Y. (2023). University students' intentions to learn artificial intelligence: the roles of supportive environments and expectancy–value beliefs. *International Journal of Educational Technology in Higher Education*, *20*(1), 51.

[61] Yilmaz, R. & Karaoglan Yilmaz, F. G. (2023). The effect of generative artificial intelligence (AI)-based tool use on students' computational thinking skills, programming self-efficacy and motivation. *Computers and Education. Artificial Intelligence*, *4*, 100147. https://doi.org/10.1016/j.caeai.2023.100147

[62] Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education–where are the educators? *International Journal of Educational Technology in Higher Education, 16*(1), 1-27.

[63] Zeb, R. (2013). Pakistan and Afghanistan, 2014 and Beyond: Not Friends, Not Yet Enemies?. *Journal of South Asian Development*, *8*(2), 165-183.

[64] Zhang, B., & Dafoe, A. (2019). *Artificial intelligence: American attitudes and trends*. Oxford, UK: Center for the Governance of AI, Future of Humanity Institute, University of Oxford.