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Examining the Influence of Content Quality, Self-Efficacy, And Accessibility on AI Technology Acceptance

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Abstract: Artificial intelligence (AI) is a field of scientific and technological innovation focused on producing technology capable of doing activities that used to require human intelligence. Students' adoption of AI, however, is dependent upon several variables that affect their acceptance and perception. Therefore, this study has proposed a conceptual model using an enhanced Technology Acceptance Model (TAM) to investigate the influence of content quality, self-efficacy, and accessibility on AI technology acceptance among university students. To validate this model, data from 450 students would be required using a structured questionnaire. The findings will assist in AI-integrated learning and adoption in educational institutions.

Keywords: AI Technology Acceptance, Content Quality, Self-Efficacy, Accessibility, Perceived Usefulness, Perceived Ease of Use.



Introduction

Artificial intelligence (AI) is a vast branch of computer science concerned with developing intelligent computers capable of doing tasks that typically need human intelligence. Siri, Alexa, self-driving cars, robot advisors, talking bots, and email spam filters are examples of AI (Stanford Encyclopedia of Philosophy, 2020). Artificial Intelligence (AI) has been transforming various industries, and education is no exception. AI has the potential to revolutionize the way we learn and teach, making it more personalized, engaging, and efficient (Alneyadi et al., 2023, Qureshi et al., 2025).

Currently, AI has become a vital part of the virtual world. Unquestionably, AI plays an important role in general education and higher education (Edtech, 2020). AI in education refers to the use of artificial intelligence technologies, such as machine learning and natural language processing, to enhance the learning experience (Alneyadi et al., 2023). AI revolutionizes education by enhancing learning experiences through personalized learning, reshaping teaching methodologies, and optimizing administrative processes (Ayorinde, et. al., 2024, Egieya, et. al., 2024).

Artificial intelligence has become a remarkable force that is changing the way we work, learn, and explore the world around us (Oluniyo, 2020). Dealing with the impact of AI on learning and teaching in higher education, it is evident that AI will impact higher education in many ways and mainly in two focal areas: enrollment and curriculum (Taneri, 2020).

AI adoption in higher education institutions has emerged as a topic of substantial interest, with researchers investigating its implications on various facets of the educational landscape (Amin et al., 2025; Upadhyaya and Rimzim, 2025). A synthesis of recent studies underscores the multifaceted impact of AI integration, revealing both significant and insignificant findings (Bahroun et al., 2023). AI adoption has caught scholars' attention over the past few decades, specifically among higher educational institutions. An investigation by Wang (2021) believed that AI adoption among higher education leaders improves efficiencies and amplifies data-informed decision-making. There are also various divides among user types regarding adopting AI tools. For example, females self-report having less knowledge about AI than males (McGrath et al., 2023, Bibi et al., 2025).

Conceptual Framework

In education, AI is used to automate tasks such as grading, providing real-time feedback, and customizing learning experiences to suit individual students' needs. AI-powered systems can analyze vast amounts of data to offer personalized learning pathways, ensuring students receive content matching their pace and learning style. Education is continually evolving, driven significantly by technological advancements (Amin et al., 2025; Upadhyaya and Rimzim, 2025). Among these, Artificial Intelligence (AI) has emerged as a transformative force, reshaping learning experiences and pedagogical approaches. However, despite its benefits, the integration and acceptance of AI in educational systems remain limited. Understanding the factors influencing AI acceptance is crucial, especially for educators and students facing adoption challenges. This study examines content quality, self-efficacy, and accessibility as external factors affecting AI acceptance, framed by the Technology Acceptance Model (TAM). Given the increasing prevalence of AI-driven tools—such as adaptive learning platforms and automated grading systems—understanding what promotes or hinders their adoption is essential (Na et al., 2022).

While extensive research has explored AI's potential in education, fewer studies have focused on how external factors impact acceptance. By addressing this gap, this research aims to provide insights that enhance AI's practical application in education. User acceptance is vital for the effectiveness of AI



tools. If students perceive AI-generated content as low-quality, lack confidence (low self-efficacy) in using AI technologies, or find these tools inaccessible, adoption rates will suffer.

This study is critical, as it tackles barriers to AI adoption that, if unaddressed, could impede progress in educational integration. Findings could guide AI developers in improving content quality and inform better training programs for educators, enhancing their confidence in using AI tools. Additionally, understanding accessibility is critical, especially in regions with limited technological resources, aligning with global goals for inclusive and equitable quality education (SDG 4).

Research Aim and Research Questions

The purpose this study is to conceptualize a model using an enhanced Technology Acceptance Model (TAM) to investigate the influence of content quality, self-efficacy, and accessibility on AI technology acceptance among students at the university level. It will employ a quantitative research design to examine the influence of content quality, self-efficacy, and accessibility on the acceptance of AI technologies in education. The quantitative approach is well-suited for this study as it allows for measuring the relationships between these external factors and AI acceptance through statistical analysis. This approach also enables the generalization of findings across larger populations, enhancing the study's reliability and validity.

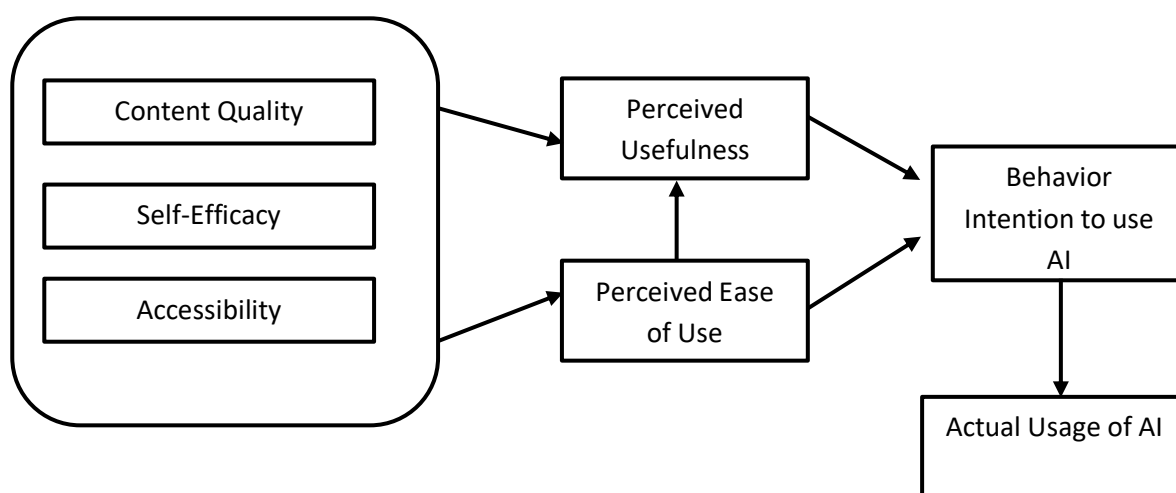
Research Results

Based on the recent literature, a conceptual model has been proposed (Figure 1). It utilizes the content quality, self-efficacy and accessibility influencing through students' perceived ease of use and usefulness and ultimately shaping their intention to adopt AI technologies. This research study will use a descriptive research design. This design will enable the collection of quantifiable data from a large group of participants to describe the current state of AI technology acceptance in education and examine how factors such as content quality, self-efficacy, and accessibility influence this acceptance. Using this approach, the study will explore relationships between these external factors and the acceptance of AI tools in educational environments. It will provide a comprehensive overview of the participants' perceptions and experiences in interacting with AI technologies.

The target population for this study will consist of students enrolled in the BS Artificial Intelligence (AI) programs at three public sector universities in Islamabad. These students are directly involved with AI technologies as part of their academic curriculum, offering a relevant and focused group for examining how content quality, self-efficacy, and accessibility influence the acceptance of AI in education.

Figure 1

Conceptual model utilising content quality, self-efficacy and accessibility influencing through students' perceived ease of use and usefulness and ultimately shaping their intention to adopt AI technologies



Source: author (s) own development

Conclusions

This study has proposed a conceptual model using an enhanced Technology Acceptance Model (TAM) to investigate the influence of content quality, self-efficacy, and accessibility on AI technology acceptance among students at the university level. To validate this model, data of 450 students would be required using a structured questionnaire. It will provide a comprehensive overview of the participants' perceptions and experiences in interacting with AI technologies.

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