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Original Article (Quantified)

The impact of artificial intelligence and smart learning on strategic thinking and performance with the moderating role of personal morality (Case study: Management students)

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Abstract

The main objective of the present study was to measure the effect of the use of artificial intelligence and smart learning on strategic thinking skills and academic performance of management students with the moderating role of individual ethics. The paradigm of the present study was positivism, its approach was quantitative, and its method was descriptive-survey. The statistical population of management students at Tehran University of Research Sciences was 10,000 students, of which 374 students were selected as a sample by cluster random method. The results obtained show that the use of artificial intelligence tools has a positive effect on strategic thinking (systemic thinking, creative thinking, forward-looking thinking, and critical thinking), smart learning, and academic performance. The mediating role of strategic thinking (critical thinking and forward-looking thinking) was confirmed in the relationship between the use of artificial intelligence and academic performance, as well as in the relationship between smart learning and academic performance. On the other hand, personal ethics, in addition to having a positive effect on smart learning, also has a moderating role in the relationship between smart learning and strategic thinking (systems thinking, critical thinking, and forward-looking thinking). The present study provides insights into the use of artificial intelligence tools in developing strategic thinking skills and performance for the first time, which researchers, managers, students, and organizations can benefit from.

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Extended abstract

Introduction

Strategic thinking skills are now considered as a key cognitive skill of managers in dealing with environmental uncertainties and succeeding in designing effective strategies (Goldman & Casey, 2010; Bonn, 2001). On the other hand, the field of education in recent years has focused on developing essential competencies and practical skills of students (Vázquez-Parra et al., 2024). Students who use artificial intelligence tools have a higher understanding of complex problems (Huang et al., 2022; Lee & Yeo, 2022). Artificial intelligence can improve academic performance through self-directed learning experiences, simplified operations, and targeted support mechanisms (Yu, 2023). In parallel with academic performance; smart learning, as a new approach to the education process, emphasizes active, self-directed, and deep learning using technological tools (Shahzad et al., 2024). The integration of artificial intelligence tools in educational environments plays an important role in transforming the landscape of learning and education (Seifi, E et al., 2024; Pourshahabi, 2023). On the other hand, with the widespread use of artificial intelligence applications in the field of education and research, one of the main concerns is the development of ethical frameworks and ethics-based educational strategies (Ayanwale et al., 2024). A review of previous studies shows that there is a gap in the existence of a study that empirically evaluates the effectiveness of the use of artificial intelligence tools in developing students' strategic thinking skills, taking into account ethical factors. Therefore, based on the gap in studies in the field of: 1. The effect of the use of artificial intelligence and smart learning on the development of strategic thinking skills; 2. The effect of strategic thinking on the development of performance of management students; and 3. The role of personal ethics in the use of artificial intelligence, the main objective of the present study is to determine the effect of the use of artificial intelligence tools and smart learning on strategic thinking and performance of management students with the moderating role of personal ethics.

Theoretical framework

Application of artificial intelligence tools

The use of artificial intelligence tools expresses how students use artificial intelligence-based tools for learning activities, innovation, creativity and experience improvement (Dahri et al., 2024). Improving decision-making and reducing costs are some of the beneficial results of using artificial intelligence tools for managing organizations and businesses. Information quality is also significant in problem solving and satisfaction, attracting students' trust and engaging them with artificial intelligence tools (Almulla, 2024; Dahri et al., 2024). Artificial intelligence as an emerging technology can play an important role in improving students' cognitive skills. Studies show that AI can help enhance critical thinking, problem-solving, and learning in students (Vázquez-Parra et al., 2024).

Smart Learning

Smart learning, as an educational paradigm, leverages advanced technologies such as AI and social media to enhance students' learning experiences and improve learning outcomes (Shahzad et al., 2024). Learning involves acquiring new knowledge or skills, while thinking involves applying that knowledge to make judgments, decisions, or solve problems (Bonn, 2005).

Strategic Thinking

The focus of strategic thinking in this article is on creative thinking, forward-looking thinking, systems thinking, and critical thinking. Creative thinking is the ability to develop new and distinctive concepts by considering other perspectives, challenging standard approaches, and anticipating the potential value of an idea from the outset. This involves imagining new possibilities, seeking alternatives, and breaking free from limiting assumptions

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and beliefs. Forward-looking thinking is a cognitive skill that enables individuals to have a clear sense of purpose and direction. They have the ability to envision a distinct future, even in the face of uncertainty and limited information. These individuals have the ability to see the big picture, visualize the future, and chart a clear path toward a desired outcome (Geier, 2024). Systemic thinking takes a holistic approach to analyzing how the components of a system relate to each other, as well as how systems function over time (Vázquez-Parra et al., 2024). Systemic thinking is an important dimension of strategic thinking for business management and vision (Pisapia et al., 2011; Vázquez-Parra et al., 2024). Critical thinking is the ability to judge what should be done or the ability to believe along with thinking (Facione, 2000).

Academic performance

The use of AI tools, especially those that generate content, such as ChatGPT, has a positive impact on academic performance (Almulla, 2024; Dahri et al., 2024; Shahzad et al., 2024). These tools offer self-directed learning experiences, adaptive assessments, and intelligent instructional systems that cater to the individual needs of students and create a more engaging learning environment.

Personal Ethics

The role of ethically minded students in improving the use of artificial intelligence and reducing its negative consequences is very important, personal ethics can guide students towards the ethical and responsible use of artificial intelligence in education (Elbaz et al., 2024).

Research Methodology

The paradigm of the present study is positivism; the approach is quantitative; and the research strategy is descriptive-survey. Also, the research tools were library studies (extensive search in reliable databases) and questionnaires. The statistical population was 10,000 students of the management department of Tehran University of Science and Research, of which 374 were selected by cluster random sampling. The collected data were first analyzed by SPSS software (IBM SPSS Statistics for Windows, 2019). In the inferential statistics section, the hypotheses were tested in the form of a structural and measurement model using SmartPLS version 4 software (Ringle, C. M., Wende, S., and Becker, J.-M., 2024).

Research findings

The results of this study showed that the use of artificial intelligence tools has a positive effect on four dimensions of strategic thinking (systemic thinking, critical thinking, creative thinking, and forward-looking thinking). Also, the two dimensions of critical thinking and forward-looking thinking play a mediating role in the relationship between the use of artificial intelligence tools and academic performance and the relationship between smart learning and academic performance. Smart learning has a significant positive effect on the four dimensions of strategic thinking and the most effect on the dimensions of systemic thinking and critical thinking. Also, smart learning has a mediating role in the relationship between the use of artificial intelligence tools and the four dimensions of strategic thinking. Strategic thinking (except for the dimension of creative thinking) has a positive effect on the academic performance of management students. Among other results that were obtained for the first time in this study was the role of personal ethics, which has a moderating role in the relationship between intelligent learning and strategic thinking (except for the creative thinking dimension) and also has a positive effect on intelligent learning.

Conclusion

This study showed that the use of artificial intelligence tools increases the academic performance of management students, and smart learning also has a mediating role. These findings are consistent with the study of Shahzad et al., (2024) that measured the impact of

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artificial intelligence and social networks on students' academic performance. Artificial intelligence tools can have a significant impact on their academic performance by creating an interactive learning experience for students (Pang, 2024). Smart learning also gives students access to educational resources, interactive platforms, and a personalized feedback loop, and as a result, strengthens their self-directed learning (Samaha & Hawi, 2016). The positive impact of the use of artificial intelligence tools on strategic thinking was also confirmed. In this regard, previous research showed that artificial intelligence training at high educational levels leads to the development of critical thinking, computational skills, and problem solving (Heras et al., 2023). In this study, it was shown that smart learning has a positive effect on strategic thinking, and the role of smart learning as a mediator in the relationship between the use of artificial intelligence tools and the dimensions of strategic thinking was also confirmed. Therefore, it can be said that students who are placed in a smart learning environment and seek to use artificial intelligence tools acquire more strategic thinking skills. In this regard, previous research has shown that self-directed learning has a positive effect on computational thinking, which is the core of artificial intelligence and is useful for students to better understand artificial intelligence (Zhong et al., 2024). The effect of individual ethics on smart learning was also confirmed, which is consistent with the study of Shahzad et al., (2025) that examined the effect of justice and ethics of artificial intelligence on learning performance. The results of this study showed that information quality has a positive impact on the use of AI tools, which is consistent with previous studies (Almulla, 2024; Dahri et al., 2024), which emphasize the need for accurate, reliable, and relevant information provided by AI tools.

Based on the results of the present study, the following practical suggestions are presented:

-Special attention to the development of smart learning environments to engage students with this type of learning in order to improve student performance.

-Intelligent use of AI tools in the classroom of students, management and preparation of the hard and soft infrastructures required for the development of the use of these tools.

-Training students in obtaining correct and appropriate information and the correct and appropriate use of AI tools.

-Development of ethical frameworks for the use of AI in the educational system in parallel with the widespread use of these tools.