

Original Article (Qualitative)

Artificial Intelligence and the Redefinition of Organizations Leaders' Skills

kobra khabareh 

Assistant Professor, Department of Educational Sciences, Faculty of Humanities, Bu-Ali Sina University, Hamedan, Iran

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Abstract

The present study aimed to explore artificial intelligence and the redefinition of organizational leaders' skills. This research was conducted through a qualitative approach and the meta-synthesis method based on the seven-step model of Sandelowski and Barroso (2007). The study population consisted of 360 articles published between 2021 and 2025, from which—after applying inclusion criteria—36 articles were selected for final analysis. Data analysis was performed by MAXQDA 2020 through open, axial, and selective coding. Using the data-analysis software, 275 open codes were initially extracted. Next, axial coding was carried out in two stages, resulting in 25 codes in the first stage and 7 axial codes in the second stage. Ultimately, 3 selective codes were identified as the key leadership skills.

The findings indicated that leaders' skills in the age of artificial intelligence fall into three broad categories: 1. Soft leadership skills, including personal skills, social skills, cognitive-analytical skills, continuous learning, and personal development. 2. Hard skills, such as technical skills and managerial skills. 3. Multidimensional skills, such as creative and agile leadership.

Digital transformation and the growing penetration of artificial intelligence have reshaped the nature of organizational leadership. To remain effective, leaders can no longer rely solely on traditional skillsets; instead, they must cultivate a combination of soft, hard, and multidimensional skills in order to navigate the complexities of the AI era.

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Corresponding Author: kobra khabareh

Email: k.khabareh@basu.ac.ir



Extended Abstract

Introduction

In the field of leadership, artificial intelligence is defined as a tool that supports, empowers, and enhances leaders' performance. These advanced computational systems analyze large volumes of data and provide valuable analytical insights that enable more informed, accurate, and forward-looking decisions (Smith & Green, 2018). This creates a close interconnection between leadership and artificial intelligence that not only strengthens organizational efficiency but also reshapes the very definition of leadership skills. In this regard, Zaidi et al. (2025) emphasize that successful leaders in this dynamic environment must simultaneously develop technological intelligence, human understanding, and ethical orientation in order to remain effective.

Schmidt et al. (2023) likewise stress that despite the extensive research on leadership skills, technological transformations necessitate a serious re-examination of leadership competencies, as management is no longer solely considered a human action but one that is understood within the context of data-driven technologies. This point is also underscored by Zaidi et al. (2025), who argue that future research should focus on developing technology-proficient leadership skills and competencies.

In the age of artificial intelligence, continuous learning and the recalibration of leaders' skills have become fundamental imperatives. According to Abositta et al. (2024), to maintain competitive advantage in rapidly evolving technological environments, leaders must acquire advanced technological competencies and adaptive skills that complement AI-driven functions. Furthermore, this era requires preserving a human-centered approach by designing active reskilling programs that enable effective coexistence with artificial intelligence.

Given the accelerating shift of organizations toward intelligent structures and the clear gap between emerging skill requirements and existing leadership development programs, conducting this research is essential. Accordingly, the central question of this study is: *What are the key leadership skills required in the age of artificial intelligence?*

Theoretical Foundations of the Study

Artificial Intelligence and Leadership

Artificial intelligence is a branch of computer science that aims to develop systems capable of learning, decision-making, and problem-solving in ways similar to humans. The introduction of this technology into workplaces has transformed the concept of leadership. In the age of artificial intelligence, leadership entails guiding and making decisions in contexts where humans and AI systems operate synergistically. Rather than being a mere decision-maker, the leader assumes the role of a facilitator who orchestrates the alignment between human wisdom (knowledge, intuition, ethics) and algorithmic capabilities (data mining, prediction, machine learning).

The key applications of artificial intelligence in leadership include: Automation and productivity: Performing repetitive and complex tasks intelligently to reduce cost and time. Enhancing decision-making and leadership processes: Analyzing large-scale data to provide precise insights and support data-driven decisions. Strengthening human-machine collaboration: Empowering leaders through real-time data-driven insights and effective interaction with intelligent systems. Transforming human resource management: Utilizing big data analytics to better identify employee potential and make more scientific decisions in HR domains.

In their study titled *Competencies and Skills of Leaders in the Age of Artificial Intelligence*, Myszak and Dawidowicz (2025), through a comprehensive review of 17 related articles, highlight a broad set of essential skills for organizational leaders. These include critical

thinking, communication skills, strategic thinking and vision, innovation and creativity, emotional intelligence, change management, ethical leadership, adaptive agility, risk awareness, and resilience in interacting with AI technologies.

Hoang (2025), through in-depth interviews with 17 teachers in Vietnam, conducted a study titled *Developing Leadership Skills for Guiding Organizations in the Digital Age*. This study introduces a five-dimensional framework of essential leadership skills, which includes: mastery of fundamental technical skills; the application of educational innovation to ensure continuous workforce development; prioritization of cross-border digital collaboration; agile change management; and the establishment of transparent digital communication to strengthen technological literacy and organizational adaptability.

Research Methodology

The present study employed a qualitative approach using the meta-synthesis method and was conducted based on the Sandelowski and Barroso (2007) framework. The research process began with formulating the central question, which focused on examining the impact of artificial intelligence on redefining leadership skills within organizations. A systematic review of domestic and international literature published between 2021 and 2025 was then carried out through databases such as ScienceDirect, Scopus, SAGE, Normgaz, and MagIran. From an initial set of approximately 350 articles, several stages of screening—title evaluation, abstract review, and full-text assessment—were applied, resulting in the selection of 36 articles (including 4 domestic and 32 international sources) for detailed analysis. Relevant statements addressing the research question were carefully extracted and coded through open, axial, and selective coding. To ensure the reliability and accuracy of the findings, data triangulation—enhancing the diversity of information across time, place, and participants—along with researcher auditing was utilized.

Research Findings

Data analysis was conducted through a coding process by MAXQDA 2020 software. In the open coding stage, 275 initial codes were extracted. Subsequently, through two stages of integration, 25 axial codes were formed in the first stage and 7 axial codes in the second stage. Ultimately, three final selective codes emerged as the main framework for redefining organizational leadership skills in the age of artificial intelligence.

The first category, **leaders' soft skills in the age of artificial intelligence**, refers to the personal, interpersonal, and social dimensions of leadership. This category includes several components. Social skills encompass network leadership and hybrid interactions, coaching, empowerment, trust-building, influence and stakeholder alignment, as well as ethical leadership grounded in empathy and humility. Cognitive-analytical skills involve data-driven decision-making, systems thinking and holistic organizational analysis, intelligent evaluation and feedback, critical thinking, and complex problem solving. Continuous learning and personal development skills include strategic and lifelong learning, personalization of skill-development pathways, and the transformation of learning into practice. Individual skills involve trust- and ethics-based leadership, high emotional intelligence, advanced interpersonal interactions, self-awareness, self-regulation, and resilience.

The second category, **leaders' hard skills in the age of artificial intelligence**, relates to leaders' professional knowledge and technical capabilities. These skills are grouped into two main domains. Resource management skills include managing organizational transformation and dynamics, developing human capital, human resource management, and creating a positive work environment. Technical skills and AI literacy include developing a strategic



understanding of artificial intelligence, integrating and applying AI technologies in practice, and the capability to interact effectively with these technologies.

The third category, **multidimensional leadership skills in the age of artificial intelligence**, represents a combination of soft and hard skills and emphasizes adaptability, innovation, and future-oriented thinking. A key example of this category is creative and agile leadership, which encompasses organizational creativity and innovation, technological agility and adaptability, and forward-looking, future-oriented thinking.

Conclusion

This study was conducted with the aim of examining artificial intelligence and the redefinition of leadership skills within organizations. The core conclusion is that the emergence of artificial intelligence has fundamentally transformed traditional conceptions of leadership. As a result, leaders in the new era must intentionally develop a broader and more contemporary set of competencies. These competencies fall into three major categories, each of which is discussed below.

The first category, **soft skills**, represents the primary priority of modern leadership. Leaders in the age of artificial intelligence must master capabilities such as emotional intelligence, empathy, trust-building, self-awareness, resilience, critical thinking, and complex problem solving. These skills enable leaders to harmonize human strengths with technological systems, foster learning-oriented cultures, and elevate decision-making from intuition-driven judgments to data-informed analysis. These findings align with the research of Myszak & Dawidowicz (2025), Zaidi et al. (2025), and Thomas et al. (2024).

The second category, **hard skills**, has become an unavoidable necessity. Leaders must view artificial intelligence not merely as a tool, but as a strategic partner in decision-making and process design. Consequently, proficiency in AI literacy, digital transformation management, and technology-aligned human capital development has evolved into a set of essential leadership competencies. These results are consistent with the findings of Frimpong & Wolfs (2024), Sriharan et al. (2024), and Hoang (2025).

The third category, **multidimensional skills**, reflects the new profile of future leadership. This category represents an integration of soft and hard skills, equipping leaders to navigate complex and dynamic environments. Agile and creative leaders—those capable of combining technological foresight with human-centered thinking—are more likely to enhance organizational innovation and prepare their organizations for the future. This future-oriented orientation is grounded in strategic agility and high adaptability. These findings are supported by the studies of Bevilacqua et al. (2025) and Sriharan et al. (2024).

Based on the study's findings, the following practical recommendations are proposed:

- Developing organizational policies to enhance AI literacy and technological skills, including facilitating leaders' and employees' access to AI-related training and technological skill development opportunities.
- Utilizing modern educational technologies, such as virtual reality and augmented reality, to create engaging and interactive learning experiences aimed at strengthening leadership competencies.