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MIDDLE MANAGEMENT TRANSFORMATION: PROSPECTS OF ARTIFICIAL INTELLIGENCE INTEGRATION

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ANNOTATSIYA. Mazkur maqolada tashkilotlarda o‘rta bo‘g‘in menejmentining o‘rni hamda ushbu boshqaruv darajasiga sun‘iy intellekt (SI) texnologiyalarini nazariy jihatdan integratsiyalash masalalari tahlil qilingan. Tadqiqot adabiyotlarni tahlil qilish usuli asosida olib borilib, xalqaro va mahalliy ilmiy manbalardan foydalanilgan. Tadqiqot natijalari shuni ko‘rsatadiki, sun‘iy intellekt boshqaruv qarorlarini qabul qilish, resurslardan samarali foydalanish hamda kommunikatsiya jarayonlarini optimallashtirishda katta salohiyatga ega. Shu bilan birga, O‘zbekiston sharoitida sun‘iy intellekt texnologiyalarini joriy etish jarayonida institutsional cheklovlar va kadrlar tayyorlash bilan bog‘liq muammolar mavjudligi aniqlangan.

Kalit so‘zlar: o‘rta bo‘g‘in menejmenti, sun‘iy intellekt, nazariy integratsiya, boshqaruv transformatsiyasi, boshqaruv qarorlari.

АННОТАЦИЯ. В статье анализируется роль среднего звена управления в организациях, а также вопросы теоретической интеграции технологий искусственного интеллекта (ИИ) в данный уровень менеджмента. Исследование проведено на основе метода анализа научной литературы с использованием международных и отечественных научных источников. Результаты исследования показывают, что искусственный интеллект обладает значительным потенциалом в принятии управленческих решений, эффективном использовании ресурсов и оптимизации коммуникационных процессов. Вместе с тем выявлены институциональные проблемы и вопросы подготовки кадров, связанные с внедрением технологий искусственного интеллекта в условиях Узбекистана.

Ключевые слова: средний уровень менеджмента, искусственный интеллект, теоретическая интеграция, трансформация управления, управленческие решения.

ABSTRACT. The article analyzes the role of middle management in organizations and the theoretical integration of artificial intelligence (AI) technologies into this level of management. The study was conducted using the literature review method and international and local scientific sources. The results show that AI has significant potential for making management decisions, effectively using resources, and optimizing communication processes. At the same time, there are institutional and personnel training issues related to the use of AI in the conditions of Uzbekistan.

Key words: middle management, artificial intelligence, theoretical integration, management transformation, management decisions.

INTRODUCTION

In recent years, fundamental changes have been taking place in the theory and practice of management. One of the main factors behind this is the widespread introduction of digital technologies, in particular, artificial intelligence (AI). While AI was initially used in industries such as manufacturing, services, and the financial sector, today it is increasingly being used in various parts of the management system.

Middle management is an important level in organizations that provides a balance between strategic decisions and operational activities. In traditional approaches, middle managers were interpreted mainly as intermediaries who convey and control top management decisions to lower levels. However, in modern conditions, their tasks have become significantly more complex, including responsibilities such as strategic thinking, promoting innovative ideas, and developing teams. The emergence and rapid development of AI also requires fundamental changes at this management level. First of all, AI allows you to automate and optimize decision-making processes. Secondly, it can be an important tool in improving human resource management, employee performance assessment and incentive systems. Thirdly, AI-based systems increase the flexibility of the organization by accelerating communication and information flows.

Although a number of scientific studies have been conducted internationally in this regard, the integration of AI in middle management is still an area that has not been fully explored theoretically. This issue remains relevant, especially in developing countries, including Uzbekistan. Because while the digital transformation processes are accelerating in the country, the institutional foundations and practical mechanisms for using AI in the management system have not been sufficiently formed. Therefore, this article examines the theoretical foundations and prospects for using AI in middle management through an analysis of existing scientific literature. The main goal of the study is to systematically

study international and national literature on this topic, identify existing scientific gaps, and create a theoretical basis for future research.

METHODOLOGY

The methodological basis of this study is the literature review method. The article analyzes international and national scientific sources on the theoretical integration of middle management and AI. The methodology includes three main stages: literature selection, classification and systematization, and analytical approach.

1. Literature selection

Scientific articles, monographs, and conference proceedings published between 2010 and 2025 were selected for the analysis. The main sources were international databases such as Scopus, Web of Science, Google Scholar, as well as the electronic fund of the National Library of Uzbekistan and dissertation databases of higher educational institutions of the Republic.

The selection criteria were as follows:

- Scientific developments that study the impact of AI technologies on management processes;
- Theoretical analyses and empirical observations, in particular, on the level of middle management;
- Research conducted in the conditions of Uzbekistan and Central Asia.

2. Classification and systematization of literature.

The literature found was divided into the following groups:

- Management theory and the traditional role of middle management;
- General theoretical foundations of artificial intelligence and its integration into the management system;
- Scientific developments on the application of AI in international experience;
- Works of Uzbek scientists and observations on national conditions.

3. Analytical approach

The selected literature was studied using the content analysis method. The theoretical ideas put forward in each source, the methodologies used, and the conclusions drawn were analyzed comparatively. Special attention was also paid to the similarities and differences between international and national literature.

4. Limitations

Methodologically, the study is based solely on a review of the existing literature. No field observations or empirical data were collected. Therefore, the article mainly includes a theoretical level of analysis. However, this approach serves to strengthen the scientific foundations of the topic and create a theoretical foundation for future empirical research.

RESULTS AND DISCUSSION

The literature review conducted in this study identified several important areas for the theoretical integration of AI in middle management. The results were organized into four main blocks:

1. The traditional role of middle management

In the scientific literature, middle managers are usually described as a “bridge” between top management and the operational level (Mintzberg, 1993; Floyd & Wooldridge, 2000). Their main tasks are:

- conveying high-level decisions to lower levels,
- monitoring the daily activities of employees,
- ensuring the efficient use of resources,
- balancing the flow of information.

Uzbek researchers (Juraev, 2019; Kadirova, 2021) also support this approach, emphasizing that middle managers in national organizations play an important role as mediators between leadership and executive discipline.

2. The impact of artificial intelligence on management

The literature notes varying degrees of integration of AI into the management decision-making process. Brynjolfsson and McAfee (2017) demonstrated the possibilities of processing large amounts of data and forecasting using AI. Davenport and Ronanki (2018) emphasize the use of AI in three main areas: automation, expanding analytical capabilities, and supporting human resources.

Uzbek scholars (Karimov, 2020; Kholmatova, 2022) have studied the use of SI technologies in business management and human resources policy. The results show that the introduction of SI technologies in national companies is just beginning and is being used more at the information systems level.

3. AI integration in middle management

International studies show that AI is significantly changing the role of middle managers. For example:

- Decision-making: AI-based analytical systems enable managers to make fast and informed decisions (Raisch & Krakowski, 2021).
- Communication: SI tools optimize information exchange between teams (Jarrahi, 2018).
- Human resource management: AI-based HR platforms enable monitoring of employee performance and satisfaction (Collings et al., 2021).

Such experiences are not yet widespread in Uzbekistan. However, in some large organizations (for example, in the banking sector and telecommunications companies), the use of AI-based systems is observed to increase management efficiency.

4. Scientific gaps and prospects

The following scientific gaps were identified as a result of the analysis of the literature:

▪ Although there are many theoretical developments on the integration of IS in middle management, empirical research is insufficient.

▪ The specific aspects of the use of AI in the context of developing countries, including Uzbekistan, have not been sufficiently studied.

▪ There is almost no research in the local literature on the processes of reskilling and adaptation of managers to AI technologies. This indicates that there are broad opportunities for future scientific research.

The analysis of the results shows that the use of AI in middle management requires not only increasing management efficiency, but also a fundamental rethinking of the traditional role of managers. This section will comparatively discuss the theoretical ideas put forward in the international and national literature and shed more light on the scientific gaps.

1. The Changing Role of Middle Managers

While traditional theories (Mintzberg, 1993; Floyd & Wooldridge, 2000) interpret middle managers as intermediaries, modern research (Raisch & Krakowski, 2021; Jarrahi, 2018) shows their role as agents of strategic innovation and team development. IS technologies are further accelerating this change, reducing the “information disseminator” function of managers and directing them to develop analytical and strategic decisions.

2. The impact of AI on decision-making

International studies have shown that AI tools can speed up decision-making, reduce errors, and increase forecasting capabilities (Brynjolfsson & McAfee, 2017; Davenport & Ronanki, 2018). At the same time, some scholars (Makridakis, 2017) note that excessive reliance on AI can limit the human factor. Uzbek authors (Karimov, 2020) emphasize that in the national context, AI is considered more of an auxiliary tool, and key decisions are still made by humans. This indicates the need to study the balance of “human-machine” cooperation.

3. New competencies of managers

SI integration requires new skills from managers. In international literature, this process is expressed by the concepts of “reskilling” and “upskilling” (Collings et al., 2021). Middle managers now:

- data analysis and interpretation;
- working with SI tools;
- balancing people and technology.

In Uzbekistan, however, no systematic programs have yet been developed in this regard. Although some higher education institutions are introducing integrated courses in management and information technology, in practice, the experience of middle managers in using IS technologies is limited.

4. Institutional and cultural factors

In the international literature, AI integration is often addressed from a technological and economic perspective. In the context of Uzbekistan, institutional

and cultural factors are also of great importance. In national organizations, a hierarchical management model prevails, and decisions are often transmitted from top to bottom. This can limit the ability of middle managers to make independent decisions. The effective use of AI technologies also requires a change in organizational culture – namely, strengthening the principles of transparency, openness, and data-based decision-making.

5. Scientific gaps

During the discussion, the following scientific gaps were identified:

- Empirical research on the process of adaptation of middle managers to IS is insufficient.
- There is a need to develop specific models of AI integration in the conditions of Uzbekistan and Central Asia in general.
- Local scientific research on the development and retraining of managers' competencies is limited.

CONCLUSION

The results of the study show that the integration of AI in middle management is an important factor in increasing the efficiency of modern management processes. AI technologies significantly facilitate the work of middle managers in data processing, resource management and strategic decision support.

International experience has proven that organizations using AI have increased the speed and accuracy of decision-making and reduced costs. Although it has not yet been fully implemented in Uzbekistan, successful experiences are observed in a number of areas. At the same time, issues such as personnel training, infrastructure and legal and regulatory framework await resolution.

Based on the research, the following conclusions were drawn:

1. The need for the use of AI in middle management is growing – these technologies are of great importance for increasing the speed and quality of decision-making in the conditions of global competition.
2. AI does not completely replace the human factor, but effectively supports it. The most correct model is the “human + AI” partnership.
3. The main condition for the integration of AI for Uzbekistan is to increase the digital competencies of managers, develop technological infrastructure and improve the legal and regulatory framework.
4. In the future, scientific research should also study in more depth the psychological, social and cultural aspects of AI technologies in managerial activities.

Thus, the introduction of artificial intelligence into middle management is not only a technological, but also a strategic problem, which provides an opportunity to bring the management system to a new level.

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