HSR (LONDON),
HOUGHTON STREET REVIEW JOURNAL
ISSN: 2058-5519|Impact factor-15.9
http://houghtonstreetreview.com/index.php/hsr

IMPROVING MANAGEMENT EFFICIENCY IN ENTERPRISES THROUGH THE USE OF ARTIFICIAL INTELLIGENCE TECHNOLOGIES

Samarkand State Technical University
Associate Professor, Department of Business Management, Candidate of Economic Sciences
Zayniddin Karjavov
doi:https://doi.org/10.5281/zenodo.23576018

Abstract. This article examines the theoretical and practical aspects of improving management efficiency in enterprises through the use of artificial intelligence (AI) technologies. The impact of AI on strategic planning, financial management, marketing, human resource management, production, logistics, and risk management is systematized. Drawing on recent academic studies and data from international organizations, the paper demonstrates that AI can improve the speed and quality of managerial decision-making, expand data-processing capabilities, and contribute to the more efficient use of enterprise resources. At the same time, challenges related to data quality, digital infrastructure, employee competencies, algorithmic transparency, information security, and managerial accountability are considered. The author proposes a step-by-step mechanism for improving enterprise management efficiency through AI-based solutions.

Keywords: artificial intelligence, business management, management efficiency, managerial decision-making, digital transformation, innovation, strategic management, human capital, algorithmic management.

Introduction. In the digital economy, the growing complexity of enterprise operations, the rapid increase in data volumes, and the accelerating pace of market change require new approaches to managerial decision-making. Traditional management methods are often limited in their ability to process large volumes of data in real time, rapidly evaluate alternative scenarios, and respond flexibly to changing demand.

Artificial intelligence technologies enable enterprises to analyze data, forecast future developments, identify emerging problems at an early stage, automate repetitive tasks, and provide managers with relevant information for decision-making. According to an OECD study published in 2025, 60% of managers using algorithmic management tools reported that these tools improved the quality of their decisions. This improvement was primarily associated with greater access to relevant information and faster decision-making.

The purpose of this study is to systematically analyze the impact of artificial intelligence technologies on enterprise management efficiency and to develop organizational and economic recommendations for their effective integration into management processes.

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Literature Review. Recent research on the relationship between artificial intelligence and management has focused primarily on decision-making quality, operational efficiency, investment activity, human resource management, and organizational capabilities.

OECD studies indicate that algorithmic management software can partially automate or support traditional managerial functions. According to a 2025 survey covering six countries, such tools are widely used for work allocation, monitoring, and employee performance assessment. At the same time, the explainability of algorithmic decisions, accountability, and the protection of employee interests have been identified as important management challenges.

A 2025 study published in the Journal of Global Information Management found that artificial intelligence capabilities can improve managerial decision-making performance, with a particularly strong effect on decision speed. The findings indicate that AI generates greater value when its capabilities are aligned with an enterprise's digital capacity and business strategy.

A 2026 study published in the Journal of Strategy and Management on small and medium-sized enterprises reported that AI can improve the speed and accuracy of strategic decisions and support international business activities. However, financial constraints, insufficient technical expertise, and resistance within organizational culture were identified as major barriers to AI integration.

The theoretical approach developed by Jovanovic and Rousseau suggests that more accurate signals generated by AI can help managers assess problems more effectively and make decisions faster. A 2026 empirical study on corporate investment further found that AI adoption is positively associated with investment efficiency, the accuracy of managerial forecasts, and innovative activity.

Research Methodology. The study employs a systematic approach, comparative analysis, scientific abstraction, grouping, logical analysis, and generalization. The impact of artificial intelligence on management efficiency is examined across strategic management, financial management, marketing, human resource management, production and logistics, and risk management. In addition, recent academic literature and OECD studies are used to summarize the opportunities and organizational risks associated with AI adoption.

Results and Discussion. The economic significance of artificial intelligence in enterprise management lies not in completely replacing human management, but in expanding managers' analytical capabilities. By rapidly processing large volumes of data, identifying patterns, and forecasting possible outcomes, AI provides managers with stronger informational support throughout the decision-making process.

The main applications of artificial intelligence across enterprise management functions and their expected managerial outcomes are summarized in Table 1.

Management area in which AI is applied	**AI capability**	**Expected management outcome**
Strategic management	Forecasting and scenario	Improved accuracy and speed

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	analysis	of decisions
Marketing	Customer behavior analysis and segmentation	More accurate demand assessment and improved sales performance
Financial management	Analysis of cash flows, risks, and investments	Reduced financial risks and more efficient resource allocation
Human resource management	Analysis of employee data and forecasting workforce needs	More efficient utilization of human resources
Production	Process monitoring and predictive maintenance	Reduced downtime and production costs
Logistics	Forecasting demand, inventory, and deliveries	Inventory optimization and improved delivery efficiency
Risk management	Detection of anomalies and risk signals	Earlier risk identification and faster managerial response

As Table 1 shows, the value of AI technologies is not limited to the automation of individual functions. AI can contribute to integrated management efficiency by connecting information flows across the enterprise, evaluating alternative management scenarios, and supporting the targeted allocation of resources.

A Mechanism for Improving Enterprise Management Efficiency through Artificial Intelligence

Based on the findings of the study, the integration of artificial intelligence into an enterprise management system is proposed to follow the sequence below:

1. Identify the enterprise's strategic objectives and key management problems.
2. Select business processes in which AI is expected to generate the greatest economic value.
3. Assess the quality of databases, digital infrastructure, and information security.
4. Select an appropriate AI solution and implement a small-scale pilot project.
5. Develop the digital and AI competencies of managers and employees.
6. Combine AI-generated recommendations with human expertise and managerial accountability.
7. Evaluate outcomes using key performance indicators (KPIs) and gradually scale successful solutions across other business processes.

The central principle of the proposed mechanism can be expressed as follows:

DATA → AI ANALYSIS → MANAGERIAL EXPERTISE → MANAGEMENT DECISION → OUTCOME → FEEDBACK

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Under this approach, AI is not regarded as the final decision-making authority. Rather, it functions as an intelligent support tool that helps managers generate decision alternatives, identify risks, and forecast possible outcomes.

Key Challenges in Implementing Artificial Intelligence

The use of artificial intelligence does not automatically guarantee higher management efficiency. OECD studies have highlighted concerns related to unclear accountability for incorrect AI-supported decisions, difficulties in explaining algorithmic logic, and potential effects on employees. The costs of AI implementation, employee resistance, and shortages of relevant skills also remain important constraints.

Therefore, alongside technological factors, enterprises must address management culture, data quality, information security, ethical standards, employee reskilling, and clearly defined accountability mechanisms.

Recommendations

1. Implement AI as an integral component of the enterprise's broader digital transformation strategy.
2. Conduct a digital audit of management processes and data quality before launching AI projects.
3. Alongside AI-related cost indicators, establish outcome-based KPIs such as decision-making speed, cost savings, forecasting accuracy, and labor productivity.
4. Develop training systems for managers focused on interpreting AI outputs, working with data, and critically evaluating algorithmic recommendations.
5. Maintain the principle of human oversight in high-risk managerial decisions and clearly define the boundaries of final accountability.
6. Develop internal standards for AI ethics, data protection, algorithmic transparency, and regular auditing at the enterprise level.

Scientific Novelty. The scientific novelty of the study lies in systematizing the impact of artificial intelligence on enterprise management not merely by individual technological functions, but through a continuous management chain: "data – AI analysis – managerial expertise – management decision – outcome – feedback." The proposed mechanism makes it possible to align AI tools with the enterprise's strategic objectives, human capital, digital infrastructure, and performance-oriented KPIs.

Conclusion. Artificial intelligence is becoming an important digital instrument within enterprise management systems. Recent studies show that AI has the potential to improve the speed and quality of managerial decisions, enhance investment and operational efficiency, and promote data-driven management.

However, the effectiveness of AI technologies is not determined simply by purchasing such technologies or adding them to individual processes. An enterprise's digital readiness, data quality, managerial competencies, management strategy, information security, and mechanisms of algorithmic accountability must be developed in an integrated manner.

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From this perspective, the gradual implementation of AI in enterprises, linked to economic performance indicators and supported by continued human oversight, represents a promising direction for improving management efficiency.

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