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IMPROVING MANAGEMENT DECISIONS BASED ON ARTIFICIAL INTELLIGENCE IN ENTREPRENEURIAL ENTITIES AND ENHANCING BUSINESS COMPETITIVENESS

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Abstract. This article analyzes the improvement of management decisions based on artificial intelligence (AI) in entrepreneurial entities and the resulting enhancement of business competitiveness. The author argues that AI affects competitiveness not directly but through the quality of management decisions and proposes an analytical framework based on the “data – AI analysis – decision – competitiveness” linkage, together with an approach for assessing an entity’s AI-based decision-making capability. The analysis relies on official statistics and regulatory documents of the Republic of Uzbekistan and international sources. The results show that the strategic use of AI (forecasting, optimization, recommendation systems) improves decision quality and firm adaptability, while barriers such as data quality, infrastructure, and skills shortages limit this effect. Concrete policy mechanisms are proposed.

Keywords: entrepreneurial entities, artificial intelligence, management decisions, business competitiveness, machine learning, digital transformation, decision support.

Аннотация. В статье анализируется совершенствование управленческих решений на основе искусственного интеллекта (ИИ) в субъектах предпринимательства и повышение на этой основе конкурентоспособности бизнеса. Автор обосновывает, что ИИ влияет на конкурентоспособность не напрямую, а через качество управленческих решений, и предлагает аналитическую рамку «данные – анализ ИИ – решение – конкурентоспособность», а также подход к оценке способности субъекта принимать решения на основе ИИ. Результаты показывают, что стратегическое применение ИИ улучшает качество решений и адаптивность фирмы. Предложены конкретные механизмы политики.

Ключевые слова: субъекты предпринимательства, искусственный интеллект, управленческие решения, конкурентоспособность, машинное обучение, цифровая трансформация.

INTRODUCTION

In the modern economy, the competitiveness of entrepreneurial entities increasingly depends on the speed and quality of management decisions. Artificial intelligence (AI) technologies raise decision-making to a qualitatively new level by analyzing large volumes of data, forecasting the future, and recommending optimal solutions [1]. According to international estimates, AI could add up to USD 15.7 trillion to the global economy by 2030, which indicates its potential economic significance [2].

In Uzbekistan, the development of AI technologies is supported through relevant strategic and regulatory initiatives. Presidential Resolution No. PQ-358 of 14 October 2024 approved the “Strategy for the Development of Artificial Intelligence Technologies until 2030,” which sets the goal of raising the volume of AI-based software products and services to USD 1.5 billion and placing the country among the top fifty states in the Government AI Readiness Index [6]. The strategy is closely linked to the “Digital Uzbekistan – 2030” programme [7]. According to the cited source, Uzbekistan improved its position by seventeen places in the international AI readiness index and recorded the highest result among Central Asian countries [10].

At the same time, the use of AI in small business and private entrepreneurship is still at an early stage. Small business plays a significant role in Uzbekistan’s economy – in 2024, its share in gross domestic product

exceeded 54 percent, and its share in employment exceeded 74 percent [8] – while traditional and experience-based approaches to management decision-making remain common among entrepreneurial entities. This may constrain their ability to strengthen competitive advantages, particularly in terms of productivity and export performance.

Existing studies often examine AI within the general framework of digital transformation or focus on specific technical aspects; the mechanisms through which AI affects the quality of management decisions and, through them, business competitiveness, as well as the assessment of this capability, remain insufficiently addressed. The aim of this article is to substantiate the mechanisms for improving management decisions based on AI, to propose an approach for assessing an entity's AI-based decision-making capability, and to develop the corresponding policy mechanisms. The research questions are: (1) Through what mechanisms does AI affect business competitiveness via management decisions? (2) How can an entity's AI-based decision-making capability be assessed? (3) What policy mechanisms are needed to accelerate this process?

LITERATURE REVIEW

The role of artificial intelligence in management has been actively studied in the international literature. Davenport and Ronanki (2018) show that enterprises apply AI mainly in three directions – process automation, gaining insight from data (predictive analytics), and improving interaction with customers and employees – and emphasize that real value comes precisely from gradual implementation focused on specific business problems [1]. Verhoef et al. (2021) demonstrate that digital transformation can significantly affect business processes and decision-making, increasing productivity and adaptability [3]. Kraus et al. (2021) emphasize the role of digital transformation in strengthening business competitiveness, while the OECD (2021) highlights the opportunities that digital technologies provide for small and medium-sized enterprises [4; 5].

In the domestic literature, studies on the digital economy and AI are growing, but they are often limited to the general capabilities of the technology or to the level of state policy. The impact of AI specifically on the quality of management decisions of entrepreneurial entities and, through this, on competitiveness – together with the mechanisms of this impact and an assessment approach – has not been presented in an integrated manner. This article seeks to contribute to addressing this research gap.

RESEARCH METHODOLOGY

The study employs a comparative-analytical approach based on secondary data. The data sources are the official publications of the National Statistics Committee and the Statistics Agency of the Republic of Uzbekistan [8; 9], reports of the Ministry of Digital Technologies [10], regulatory documents [6; 7], and international analytical sources (2019–2025). The methods include the assessment of statistical dynamics, comparative analysis, and conceptual modeling.

As the theoretical core, an analytical framework based on the “data – AI analysis – management decision – competitiveness” linkage is proposed (Figure 1). According to it, data collected by an entity from various sources are processed through an AI/machine-learning module and converted into management decisions (pricing, inventory, marketing, resource allocation); these decisions are manifested in competitiveness outcomes, and the outcomes return to the system as new data through a feedback loop.

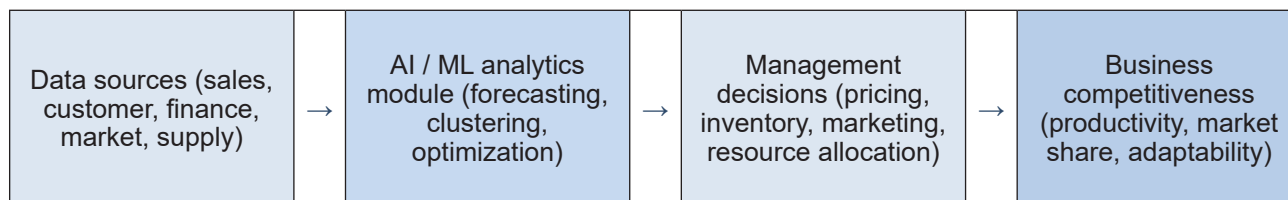


Figure 1. Scheme of AI-based management decision-making (developed by the author). Feedback: outcomes return to the system as new data.¹

On the basis of this framework, AI affects competitiveness not directly, but through intermediate mechanisms (Table 1): grounding decisions in data and reducing uncertainty, accelerating and optimizing processes, forecasting demand and risks, and providing personalized recommendations.

¹ Source: developed by the author.

Table 1
Mechanisms of the impact of AI tools on management decisions and competitiveness²

AI tool	Mechanism in management decisions	Competitiveness outcome
Predictive analytics	Forecasting demand, sales, and risks	Accuracy of inventory and pricing decisions
Optimization algorithms	Optimal allocation of resources and logistics	Cost advantage
Recommendation systems	Personalized offers to customers	Growth in sales and customer loyalty
Natural language / document analysis	Automation of operations and customer service	Advantage in speed and quality
Anomaly detection	Fraud and quality control	Reduction of risks and losses

To assess an entity's readiness to use AI, an AI-based decision-making capability index (AIDI) is proposed. It consists of three dimensions: database and infrastructure, integration of AI tools into processes, and staff competence (Table 2). The indicators are normalized to the 0–1 range and aggregated across the dimensions; the index serves for the comparative assessment of entities or industries.

Table 2
Structure of the AI-based decision-making capability index (AIDI)³

Dimension	Sample indicators	Source
Data and infrastructure	Digital data collection, cloud/computing resources	Company report, survey
AI tools and integration	Analytics/ML systems, degree of process integration	Survey, ministry reports
Staff competence	Data analysis and AI literacy skills	Survey, training statistics

ANALYSIS AND RESULTS

The digital foundation required for AI adoption has been expanding in Uzbekistan. As shown in Table 3, the share of the information economy and e-commerce in GDP rose from 1.6 percent in 2019 to 4.1 percent in 2024, the volume of e-commerce increased more than sevenfold between 2021 and 2025, the share of internet users exceeded 87 percent of the population, and more than 60 percent of consumer transactions are carried out through digital payments [9]. This growing database creates the necessary conditions for AI-driven decision-making.

Table 3
Key digital-economy indicators of Uzbekistan (2019–2025)⁴

Indicator	Value
Information economy and e-commerce, share of GDP [9]	1.6% (2019) → 4.1% (2024)
E-commerce volume [9]	3,150 (2021) → 22,300 (2025) bln UZS
Internet users, share of population [9]	87.2% (2025)
Digital payments, share of consumer transactions [9]	more than 60%
AI software and services, target volume [6]	USD 1.5 bln by 2030

² Source: developed by the author.

³ Source: developed by the author.

⁴ Source: developed by the author.

Although the small and medium-sized business sector has a substantial share in the economy, its contribution is comparatively lower in certain indicators related to competitiveness. As shown in Figure 2, while the sector's share in gross domestic product is 54.6 percent and its share in employment is 74.3 percent, its share in industrial production is 34.5 percent and its share in exports is 27.1 percent [8]. This difference may indicate potential constraints related to productivity and participation in higher-value segments of the value chain.

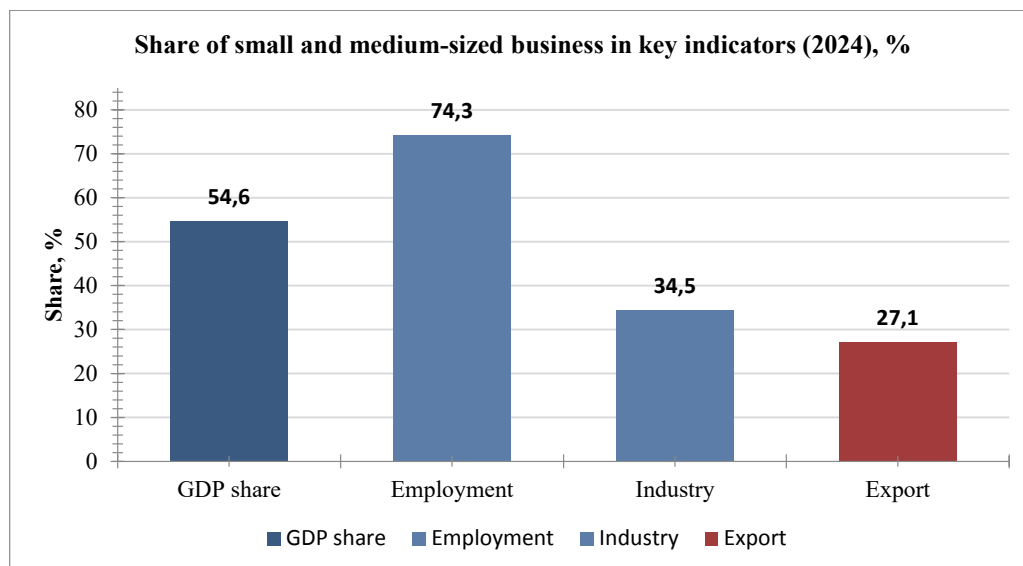


Figure 2. Share of small and medium-sized business in key indicators, 2024 (%). Source: author's calculation based on [8].

AI can influence competitiveness through this decision-making link—as a means of improving the quality of management decisions. Through the mechanisms presented in Table 1, predictive analytics improves inventory and pricing decisions, optimization algorithms reduce costs, and recommendation systems increase sales. The expanding digital infrastructure summarized in Table 3 forms the database necessary for these AI applications.

At the same time, the analysis reveals a number of barriers. First, in many small enterprises, data are fragmented and of low quality and are therefore unsuitable for AI models. Second, access to computing infrastructure and ready-made AI solutions is limited. Third, there is a shortage of staff with data-analysis and AI literacy skills. Fourth, regional disparities in digital infrastructure also create differences in the use of AI opportunities. These factors can be systematically identified through the AIDI index proposed in Table 2.

The overall result is that AI affects business competitiveness not through the technology itself, but through improving the quality of management decisions. The strategic use of AI (forecasting, optimization, recommendation) may provide broader competitive benefits than its operational use (automation alone). However, this potential is realized to a greater extent when constraints related to data, infrastructure, and staff capabilities are addressed.

CONCLUSION AND SUGGESTIONS

The results of the study indicate that artificial intelligence is an important means of improving management decisions in entrepreneurial entities and enhancing business competitiveness. First, AI affects competitiveness not directly, but through mechanisms that improve decision quality. Second, the strategic use of AI may provide broader competitive benefits than the use of AI solely for automation. Third, constraints related to data quality, infrastructure, staff capabilities, and regional disparities may reduce the effectiveness of AI adoption.

On this basis, the following policy mechanisms are proposed:

1. Developing affordable, ready-to-use AI services for small businesses (cloud analytics, recommendation systems) and ensuring open access to them;
2. Improving the quality and standardization of data by popularizing digital record-keeping and data collection;
3. Introducing targeted training programmes in data analysis and AI literacy for entrepreneurs and employees;
4. Reducing the regional digital-infrastructure divide to ensure equal use of AI opportunities;

5. Periodically assessing entities' AI-based decision-making capability using the AIDI index (Table 2) and targeting policy accordingly.

The limitation of the study is its reliance mainly on secondary data. In future research, it would be appropriate to fully compute the AIDI index using firm-level data and to econometrically evaluate the relationship between the use of AI and competitiveness indicators.

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