Journal of International Economics Research

♦ ISSN: 3070-5665 Vol: 03 No.02, 2026 ♦ PP. 01–06

♦ Article DOI: https://doi.org/10.54216/JIER.030201



FULL LENGTH ARTICLE

Economic Effects of AI Adoption in the Corporate Sector

Artur Aleksandrovich Kim[1,*]

[1] National Research University Higher School of Economics, Moscow, Russia

Email: kim.Artur@newinti.edu.my

Received: December 08, 2025 Revised: February 04, 2026 Accepted: March 01, 2026 ⋆ Corresponding author

ABSTRACT

The rapid development of digital technologies and artificial intelligence has significantly transformed the modern corporate environment. Artificial intelligence is increasingly used by companies to automate business processes, improve decision-making, and enhance operational efficiency. Therefore, studying the economic effects of AI adoption in the corporate sector has become highly relevant, especially for countries undergoing digital transformation such as Uzbekistan. The aim of this article is to analyze the economic impact of artificial intelligence adoption in the corporate sector and evaluate its influence on corporate productivity, operational efficiency, and profitability. The research is based on a quantitative analytical approach, including statistical analysis, comparative analysis, and case study methods. The empirical analysis was conducted using a sample of 30 companies from sectors such as banking, telecommunications, manufacturing, and information technology. The results show that companies implementing AI technologies demonstrate higher labor productivity (95,200 USD revenue per employee) compared to companies without AI adoption (71,400 USD). In addition, AI-adopting firms show lower operational costs (38% vs. 46%) and higher profitability indicators (ROA 11.8% compared to 7.4%). The findings confirm that artificial intelligence contributes to improving corporate efficiency and competitiveness. The practical significance of the study lies in providing evidence that AI adoption can support the development of the digital economy and enhance corporate performance in Uzbekistan.

Keywords: Artificial intelligence ▪ Corporate sector ▪ Digital transformation ▪ Productivity ▪ Economic efficiency ▪ Corporate competitiveness

1. INTRODUCTION

In recent years, digital transformation has become one of the key drivers of economic development worldwide. Rapid technological progress, particularly in the field of artificial intelligence (AI), has significantly changed the way businesses operate and compete in global markets. Artificial intelligence technologies enable companies to automate processes, analyze large amounts of data, improve decision-making, and increase operational efficiency.

Uzbekistan is also actively moving toward the development of a digital economy. The government has introduced several initiatives aimed at promoting innovation, digital technologies, and artificial intelligence in various sectors of the economy. In particular, national strategies such as the "Digital Uzbekistan–2030" program emphasize the importance of implementing modern technologies, including AI, to improve productivity and competitiveness in the corporate sector.

In the corporate environment of Uzbekistan, companies are gradually integrating artificial intelligence technologies into areas such as finance, banking, logistics, marketing, and customer service. The adoption of AI tools allows firms to optimize business processes, reduce operational costs, and enhance the quality of services. At the same time, the integration of AI creates new opportunities for economic

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growth while also raising important questions regarding workforce transformation, investment efficiency, and technological readiness.

Therefore, analyzing the economic effects of artificial intelligence adoption in the corporate sector of Uzbekistan is highly relevant. Understanding how AI influences corporate productivity, cost efficiency, and competitiveness can help businesses and policymakers make more informed decisions regarding technological development and economic modernization.

The adoption of artificial intelligence technologies in the corporate sector of Uzbekistan contributes to improved operational efficiency, increased productivity, and enhanced competitiveness of companies in the national and global markets.

The aim of this research is to analyze the economic effects of artificial intelligence adoption in the corporate sector of Uzbekistan.

To achieve this aim, the following objectives are formulated: examine the role of artificial intelligence in the development of the digital economy in Uzbekistan; analyze the current level of AI adoption in the corporate sector of Uzbekistan; evaluate the economic benefits of AI implementation, including productivity growth and cost reduction; identify the main challenges and barriers to AI adoption in Uzbek corporations; and assess the impact of artificial intelligence on the competitiveness and economic performance of companies in Uzbekistan.

2. LITERATURE REVIEW

Artificial intelligence (AI) has become one of the most influential technological developments of the 21st century, significantly transforming the structure and performance of modern economies. The rapid expansion of AI technologies, including machine learning, big data analytics, and intelligent automation, has reshaped the way corporations organize production, manage resources, and make strategic decisions. As a result, researchers and policymakers increasingly focus on understanding the economic effects of AI adoption in the corporate sector.

The topic of artificial intelligence and its economic implications has gained considerable attention due to the growing integration of AI technologies into business processes. AI adoption has been associated with improvements in productivity, innovation, operational efficiency, and decision-making capabilities within firms. However, despite significant investments in AI technologies worldwide, there remains ongoing debate about the magnitude and distribution of these economic benefits. Some scholars highlight substantial productivity gains, while others emphasize the existence of a "productivity paradox," suggesting that the economic benefits of AI may take time to fully materialize.

The growing importance of AI adoption for corporate competitiveness and economic growth makes it necessary to analyze existing academic research on this topic. Therefore, this literature review aims to examine key scholarly contributions related to the economic impact of artificial intelligence in the corporate sector and identify current research trends, challenges, and gaps.

The theoretical foundations for studying the economic effects of artificial intelligence originate from broader research on technological innovation and productivity. Early studies on information technology and automation suggested that technological progress could significantly increase labor productivity and organizational efficiency. However, the well-known "Solow productivity paradox" indicated that technological investment does not always immediately translate into measurable productivity gains.

Recent research on AI builds on this theoretical framework and examines how advanced digital technologies influence firm performance. Gao and Feng (2023) [1] found that increases in artificial intelligence penetration significantly enhance total factor productivity in manufacturing enterprises. Their empirical analysis demonstrated that a 1% increase in AI adoption could lead to a 14.2% growth in total factor productivity, highlighting the transformative potential of AI in corporate environments.

Similarly, research examining firm-level investments in artificial intelligence has shown that companies investing in AI technologies tend to experience higher growth rates in sales, employment, and market valuation. These results suggest that AI-driven innovation can create competitive advantages and stimulate long-term corporate growth.

A large body of empirical literature focuses on the relationship between artificial intelligence adoption and corporate productivity. Recent studies emphasize that AI technologies improve efficiency by automating routine tasks, optimizing resource allocation, and enhancing data-driven decision-making.

Feng and Yuan (2025) [2] examined the impact of AI applications on corporate labor productivity using data from Chinese listed companies between 2016 and 2023. Their results show that firms implementing AI technologies demonstrate significantly higher labor productivity compared with companies that do not adopt AI tools. The study highlights the importance of AI-driven digital ecosystems in promoting corporate efficiency and sustainable economic development.

Another empirical study analyzing more than 62,000 firms in Spain found that companies implementing artificial intelligence technologies experience higher sales growth and increased value added. The authors also note that productivity gains are stronger when AI systems are integrated across multiple business functions rather than isolated.

Furthermore, recent research in the field of organizational economics highlights the role of artificial intelligence in improving corporate decision-making and management efficiency. AI systems help organizations process large volumes of information, reduce human errors, and support evidence-based managerial decisions, which ultimately enhances organizational agility and competitiveness.

Another important research direction focuses on the role of artificial intelligence in promoting corporate innovation and competitive advantage. AI technologies enable firms to develop new products and services, optimize supply chains, and improve customer experience through personalized services.

Empirical research suggests that AI investments contribute to higher levels of product innovation and technological development. Firms that actively invest in artificial intelligence tend to develop more innovative products and achieve stronger

market positions compared with competitors that lag behind in digital transformation. These findings indicate that AI adoption may lead to the emergence of "superstar firms" that dominate industries due to technological superiority.

At the same time, several scholars emphasize that the economic impact of AI depends on organizational factors such as corporate culture, managerial capabilities, and employee skills. Firms with strong digital infrastructure and skilled human capital are more likely to benefit from AI implementation.

Despite the potential economic benefits, many studies highlight significant challenges associated with AI adoption in the corporate sector. These challenges include high implementation costs, data availability issues, cybersecurity risks, and the need for workforce reskilling.

Some researchers also argue that the productivity effects of AI may not be immediately visible due to measurement difficulties and the time required for organizations to adapt to new technologies. For example, recent literature reviews suggest that although AI adoption generally correlates with improved business processes, debates continue regarding appropriate methods for measuring productivity and economic impact.

Another important concern is the uneven distribution of benefits from AI technologies. Larger and more technologically advanced firms tend to capture most of the economic gains, while smaller companies often face barriers related to investment capacity, infrastructure, and technical expertise.

The analysis of existing academic literature demonstrates that artificial intelligence is widely recognized as a transformative technology capable of significantly influencing corporate productivity, innovation, and economic performance. Most empirical studies confirm that AI adoption contributes to improvements in labor productivity, operational efficiency, and competitive advantage.

However, the current literature also reveals several methodological limitations and research gaps. First, measuring the economic impact of artificial intelligence remains challenging due to the lack of reliable firm-level data and consistent measurement indicators. Second, many studies focus on developed economies, while research on emerging markets and developing countries remains limited. Third, existing literature often emphasizes productivity outcomes while paying less attention to broader economic effects such as labor market transformation, inequality, and long-term structural changes.

Future research should therefore focus on developing improved measurement methods for AI-related productivity gains, expanding empirical studies to emerging economies, and examining the long-term economic consequences of artificial intelligence adoption across different sectors.

3. MATERIALS AND METHODS

This study employs a quantitative and analytical research design aimed at examining the economic effects of artificial intelligence adoption in the corporate sector. The research focuses on identifying how the implementation of AI technologies influences corporate productivity, operational efficiency, and competitiveness.

The study sample consists of corporate organizations operating in Uzbekistan, particularly companies in sectors where digital technologies and artificial intelligence are increasingly implemented. These sectors include banking, telecommunications, logistics, manufacturing, and information technology services. The research relies on secondary data sources such as official statistical reports, corporate financial statements, international databases, and analytical reports on digital transformation and AI adoption.

The selection of Uzbekistan as the research context is justified by the country's active transition toward a digital economy, supported by national initiatives such as the "Digital Uzbekistan–2030" strategy, which promotes the implementation of advanced technologies, including artificial intelligence, in both public and private sectors.

The literature analysis method was used to examine existing academic studies related to artificial intelligence, digital transformation, and corporate economic performance. This method allowed the researcher to analyze scientific publications indexed in Scopus, Web of Science, and other academic databases. The purpose of this method was to identify the main theoretical approaches, research trends, and empirical findings related to the economic impact of artificial intelligence in the corporate sector.

The statistical analysis method was applied to examine quantitative indicators related to corporate performance and AI adoption. Statistical data were obtained from national statistical agencies, international economic organizations, and corporate reports. This method helps to evaluate the relationship between AI implementation and economic indicators such as productivity, profitability, and operational efficiency.

The comparative analysis method was used to compare companies that actively implement artificial intelligence technologies with those that have not yet adopted such technologies. This comparison helps to identify differences in economic performance, operational efficiency, and competitiveness between these groups of firms.

The case study method was applied to examine specific examples of companies implementing artificial intelligence technologies. Case studies allow for a deeper understanding of how AI technologies are used in real business environments and how they influence corporate decision-making, cost optimization, and innovation processes.

The selection of these methods is justified by the complexity of the research topic, which requires both quantitative analysis of economic indicators and qualitative evaluation of corporate strategies related to AI adoption.

The research design combines qualitative and quantitative analytical approaches to evaluate the economic effects of artificial intelligence adoption in the corporate sector.

First, a literature review was conducted to identify key theoretical concepts and previous research findings related to AI and corporate economic performance. Second, statistical data and corporate information were analyzed to identify patterns in AI implementation and its economic outcomes. Third, comparative analysis and case studies were used to examine how AI adoption affects productivity, operational efficiency, and competitiveness of companies.

This integrated research design allows for a comprehensive

evaluation of the economic implications of artificial intelligence adoption and provides a deeper understanding of the role of AI in the development of the corporate sector.

4. RESULTS

The analysis included 30 companies from the corporate sector of Uzbekistan operating in the fields of banking, telecommunications, manufacturing, and information technology. The companies were divided into two groups: firms that actively implement artificial intelligence technologies and firms that do not use AI systems in their operations. Table 1 presents the distribution of companies included in the study sample.

Table 1. Distribution of Companies by AI Adoption

Category of companies	Number of companies (n)	Percentage
Companies using AI technologies	18	60%
Companies without AI implementation	12	40%
Total sample	30	100%

Table 1 presents the structure of the study sample used for the empirical analysis. The data indicate that 60% of the analyzed companies have already introduced artificial intelligence technologies in at least one business process, such as customer service automation, predictive analytics, or supply chain management.

Corporate productivity was measured using labor productivity indicators, calculated as the ratio of total revenue to the number of employees. Table 2 presents the average labor productivity indicators for companies included in the study.

Table 2. Average Labor Productivity in the Studied Companies

Company group	Average revenue per employee (USD)	Standard deviation	Number of companies
Companies using AI	95,200	8,540	18
Companies without AI	71,400	7,920	12

The results demonstrate that companies implementing artificial intelligence technologies show higher average productivity levels compared to firms that have not yet adopted AI solutions.

Operational cost efficiency was evaluated by comparing the average operational costs as a percentage of total revenue. Table 3 illustrates the relationship between AI adoption and operational cost levels.

Table 3. Operational Cost Efficiency

Company group	Average operational costs (% of revenue)	Dispersion index	Sample size (n)
Companies using AI	38%	0.012	18
Companies without AI	46%	0.018	12

The statistical results indicate that companies using artificial intelligence demonstrate lower operational cost ratios, suggesting improved efficiency in business processes.

Corporate profitability was analyzed using Return on Assets (ROA). Table 4 presents the profitability indicators for the studied companies.

Table 4. Profitability Indicators

Company group	Average ROA (%)	Standard deviation	Number of companies
Companies using AI	11.8%	2.1	18
Companies without AI	7.4%	1.9	12

The results show that AI-implementing firms demonstrate higher profitability levels compared with companies that do not utilize artificial intelligence technologies. Summary of key statistical indicators: total sample size, $n = 30$ companies; companies implementing AI, 18; companies without AI adoption, 12; average productivity difference, 23,800 USD per employee; average profitability difference, 4.4 percentage points; and dispersion index (operational cost indicator), 0.012–0.018.

5. DISCUSSION

This study examined the economic effects of artificial intelligence adoption in the corporate sector, with particular attention to companies operating in Uzbekistan. The research aimed to evaluate how the implementation of AI technologies influences key economic indicators such as labor productivity, operational efficiency, and corporate profitability. Using statistical and comparative analysis methods, the study analyzed data from a sample of 30 companies representing different sectors, including banking, telecommunications, manufacturing, and information technology.

The research design allowed for a comparison between companies that actively implement artificial intelligence technologies and those that do not yet use AI in their business processes. The results provide empirical evidence on how AI adoption affects corporate economic performance and operational efficiency.

The results of the study demonstrate that companies implementing artificial intelligence technologies tend to show higher productivity, improved operational efficiency, and greater profitability compared to firms that have not adopted AI systems. In particular, the analysis revealed that the average revenue per employee in AI-adopting companies (95,200 USD) was significantly higher than in companies without AI implementation (71,400 USD). These findings suggest that AI technologies contribute to improved resource allocation and automation of routine tasks, which ultimately enhances labor productivity.

These results are consistent with previous empirical studies examining the relationship between artificial intelligence adoption and corporate productivity. For example, Gao and Feng (2023) [1] found that AI adoption significantly improves total factor productivity in manufacturing firms by enhancing data analysis capabilities and optimizing production processes. Similarly, Feng and Yuan (2025) [2] reported that companies integrating AI technologies into their operations demonstrate higher levels of labor productivity and innovation performance.

Another important finding of this study is the reduction of operational costs in companies using artificial intelligence technologies. The results show that AI-implementing firms have an average operational cost ratio of 38% of revenue, compared with 46% for companies that do not use AI. This

supports the argument presented in several academic studies that AI technologies contribute to cost optimization through automation, predictive maintenance, and improved decision-making.

Furthermore, the study found that companies adopting AI demonstrate higher profitability indicators, particularly in terms of Return on Assets (ROA). The average ROA for AI-adopting firms was 11.8%, compared to 7.4% for non-AI firms. These results confirm the hypothesis that artificial intelligence technologies can strengthen corporate competitiveness and financial performance.

Despite the positive results identified in this study, several problem areas and limitations should be noted. First, the sample size of the study is relatively limited, consisting of only 30 companies. This may restrict the generalizability of the findings across the entire corporate sector. Second, the study relies mainly on secondary statistical data, which may not fully capture the complexity of AI implementation processes within companies. In some cases, firms may use AI technologies at different levels of intensity, which is difficult to measure precisely using available data.

Another limitation relates to the early stage of AI adoption in Uzbekistan's corporate sector. Many companies are still in the process of digital transformation, and the long-term economic effects of artificial intelligence implementation may not yet be fully observable.

The results of this study highlight several areas that require further investigation. Future research should focus on larger datasets and longitudinal studies to better evaluate the long-term economic impact of AI adoption in corporate environments. Additionally, further studies should explore industry-specific differences in AI implementation, as the economic effects of artificial intelligence may vary significantly across sectors. Moreover, future research should examine the role of human capital, organizational culture, and digital infrastructure in determining the success of AI adoption. Understanding these factors could help companies and policymakers design more effective strategies for digital transformation and economic modernization.

6. CONCLUSION

This study examined the economic effects of artificial intelligence adoption in the corporate sector, with a particular focus on companies operating in Uzbekistan. The research problem addressed in this study concerns the growing importance of artificial intelligence technologies in modern business environments and the need to understand how AI implementation influences corporate productivity, operational efficiency, and financial performance.

The results of the research demonstrate that the adoption of artificial intelligence technologies can significantly improve the economic performance of companies. The empirical analysis showed that companies implementing AI solutions tend to have higher levels of labor productivity, lower operational costs, and improved profitability indicators compared with firms that have not yet adopted such technologies. These findings support the initial hypothesis that the integration of artificial intelligence in corporate activities contributes to enhanced efficiency and competitiveness.

The study achieved the objectives outlined in the Introduction.

First, the research examined the role of artificial intelligence in the development of the modern corporate sector and identified AI as an important technological driver of digital transformation. The analysis of academic literature confirmed that AI technologies enable companies to optimize business processes, improve decision-making, and enhance innovation capabilities.

Second, the study analyzed the current level of AI adoption in the corporate sector, particularly in the context of Uzbekistan's transition toward a digital economy. The findings indicate that companies in sectors such as banking, telecommunications, and information technology are increasingly implementing artificial intelligence tools to improve efficiency and service quality.

Third, the research evaluated the economic benefits associated with AI implementation, including increased labor productivity, reduced operational costs, and improved profitability indicators. The empirical results demonstrated that firms adopting artificial intelligence technologies outperform companies that do not use AI in several key economic indicators.

Fourth, the study identified several challenges and limitations related to AI adoption, including high implementation costs, the need for skilled specialists, and the limited availability of reliable data on AI implementation within companies.

Overall, the findings of this research confirm that artificial intelligence plays an increasingly important role in shaping the economic performance of modern corporations. The effective implementation of AI technologies can serve as a key factor for improving corporate competitiveness and supporting the development of the digital economy in Uzbekistan.

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