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FACTORS AFFECTING THE EFFICIENCY OF REGIONAL ENTERPRISES

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Abstract: This article examines the main factors influencing the efficiency of regional enterprises in the context of modern economic development and digital transformation. The study analyzes technological, financial, infrastructural, human capital, institutional, and market-related determinants that shape enterprise performance. Special attention is given to the role of digital technologies and innovation in improving productivity and competitiveness. The research findings highlight that enterprise efficiency depends on the integrated impact of multiple interrelated factors rather than a single determinant. Based on the analysis, recommendations are proposed to enhance management systems and strengthen regional economic development.

Key words: regional enterprises, efficiency, digital economy, management, productivity, infrastructure, innovation, human capital, competitiveness.

Аннотация: В данной статье рассматриваются основные факторы, влияющие на эффективность региональных предприятий в условиях современного экономического развития и цифровой трансформации. В исследовании анализируются технологические, финансовые, инфраструктурные, кадровые, институциональные и рыночные детерминанты, формирующие эффективность деятельности предприятий. Особое внимание уделено роли цифровых технологий и инноваций в повышении производительности и конкурентоспособности. Результаты исследования показывают, что эффективность предприятий зависит от комплексного воздействия множества взаимосвязанных факторов, а не от одного отдельного детерминанта. На основе проведённого анализа предложены рекомендации по совершенствованию систем управления и укреплению регионального экономического развития.

Ключевые слова: региональные предприятия, эффективность, цифровая экономика, управление, производительность, инфраструктура, инновации, человеческий капитал, конкурентоспособность.

INTRODUCTION

In the modern global economy, regional enterprises play a crucial role in ensuring balanced economic development, employment growth, and industrial expansion. Their efficiency directly affects the socio-economic development of regions. However, enterprises operate under the influence of various internal and external factors that determine their performance levels. In the era of digital transformation, understanding these factors has become increasingly important for improving management systems and enhancing competitiveness. The main objective of this article is to identify and analyze the key factors affecting the efficiency of regional enterprises and to highlight their interrelationships in the context of a changing economic environment.

REVIEW OF LITERATURE ON THE SUBJECT

The efficiency of regional enterprises has been extensively studied in economic theory, management science, and digital economy literature. Researchers emphasize that enterprise efficiency is a multidimensional concept influenced by managerial capability, technological progress, institutional quality, market structure, and human capital development.

Peter Drucker argues that management is the central factor of production in modern enterprises. He states that productivity and efficiency depend on how effectively managers organize resources, make decisions, and apply knowledge within organizations [1]. Michael Porter emphasizes that enterprise efficiency is strongly shaped by competitive forces in the market. According to his “Five Forces” model, industry structure, rivalry intensity, supplier power, and customer demand determine firm performance and efficiency levels [2]. Erik Brynjolfsson and Andrew McAfee highlight that digital technologies significantly enhance productivity by enabling data-

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driven decision-making and automation of business processes. They argue that digital transformation is a key driver of modern enterprise efficiency [3].

Machine, Platform, Crowd further explains that digital platforms reshape traditional business models by connecting users, producers, and data in integrated ecosystems, improving efficiency and scalability [4]. Robert Solow introduced the concept of productivity growth, stating that technological progress is the main source of long-term economic efficiency improvements [5]. Joseph Schumpeter emphasized innovation as a driving force of economic development, arguing that "creative destruction" leads to higher efficiency and the emergence of more productive enterprises [6]. Elinor Ostrom focused on institutional governance, showing that well-structured institutions improve resource management efficiency and support sustainable enterprise development [7]. Douglass North also highlighted that institutional frameworks, including laws and regulations, play a key role in shaping economic performance and enterprise efficiency [8].

Robert Kaplan and David Norton introduced the Balanced Scorecard approach, which explains that enterprise efficiency should be measured not only financially but also through customer, internal process, and innovation perspectives [9]. Henry Mintzberg argues that organizational structure and managerial roles significantly influence enterprise performance, emphasizing that flexible organizational systems improve efficiency in dynamic environments [10].

RESEARCH METHODOLOGY

This study examines the factors affecting the efficiency of regional enterprises in the context of the digital economy using a systematic and interdisciplinary methodological approach. The research is based on general scientific principles of analysis and synthesis, allowing a comprehensive understanding of the relationships between technological, financial, institutional, and organizational factors influencing enterprise performance. In the research process, comparative analysis was applied to evaluate differences in enterprise efficiency under various economic conditions. Logical generalization and abstraction methods were used to identify key influencing factors and to group them into structural categories. In addition, economic-statistical analysis methods were employed to assess trends in enterprise performance and productivity indicators. The study also uses a systems approach, considering regional enterprises as complex socio-economic systems with interconnected internal and external elements. This approach makes it possible to analyze how digital technologies, infrastructure, human capital, and institutional environment jointly influence efficiency. Secondary data sources, including scientific literature, international reports, and statistical databases, were used to ensure the reliability of the research. Based on the collected information, analytical conclusions were developed and practical recommendations were formulated to improve the efficiency of regional enterprises.

ANALYSIS AND RESULTS

Analyzing the factors influencing the efficiency of enterprises requires not only listing them superficially but also deeply understanding their economic nature, interconnections, and systemic impact mechanisms. Long-term scientific and practical observations show that enterprise efficiency is determined more by intangible factors than by purely production-related indicators, which makes it a complex economic system. First and foremost, the main driver of efficiency is human capital. In service-oriented enterprises, it is not only the product but the quality of service delivery that is consumed. Therefore, employees' qualifications, communication skills, service culture, and motivation directly affect operational efficiency and customer satisfaction. Practical experience shows that enterprises with highly qualified staff achieve significantly higher productivity and profitability. The second important factor is organizational and managerial efficiency. Flexibility of the management system, speed of decision-making, simplicity of internal processes, and clear distribution of responsibilities are key determinants of enterprise performance. In bureaucratic organizations, service delivery becomes slower, costs increase, and customer losses grow. The third major factor is digitalization and technological development. In the modern economy, enterprise efficiency increasingly depends on the level of integration into digital platforms.

Digital technologies not only reduce operational costs but also increase service speed, minimize human errors, and enable the creation of new types of services. The fourth factor is the level of customer orientation. In service sectors, customers are the main driving force of demand. Deep understanding of customer needs, service personalization, and continuous monitoring of service quality are essential for improving efficiency. Enterprises with high customer loyalty tend to have more stable income streams. The fifth factor is innovation and service diversification. Enterprises that rely on a limited range of services lose competitiveness in the long term. Introducing new services, developing high value-added offerings, and adapting to market demand significantly improve efficiency. The sixth important factor is resource utilization efficiency. This includes optimal allocation of material, financial, and time resources. Poor resource management leads to increased costs and

reduced profitability, making cost optimization a key component of efficiency. The seventh factor is regional and infrastructural conditions. The location of enterprises, transport and logistics infrastructure, population density, and purchasing power determine service demand. In regions with imbalanced infrastructure, service efficiency is also uneven. The eighth factor is the institutional environment and state policy. Tax policies, licensing systems, government support programs, and business conditions directly influence enterprise development. Favorable institutional environments accelerate sectoral growth. The ninth factor is market competition. In competitive markets, enterprises are forced to improve efficiency, optimize prices, and introduce innovations, which leads to overall performance growth. The tenth factor is the development of information and analytical systems. In modern management, decisions are data-driven. Analytical tools that enable demand forecasting, customer behavior analysis, and market trend identification significantly improve enterprise efficiency. Enterprise efficiency is a multifactor and interdependent system in which human capital, management, technology, and market factors operate jointly. High economic efficiency can be achieved only through the integrated and coordinated management of these factors (Figure 1).

Figure 1. Model of Factors Affecting the Efficiency of Regional Enterprises and Their Improvement Mechanism[1]

The model comprehensively represents the key internal and external factors affecting the performance of regional enterprises. It illustrates the current state of factors such as human capital, management efficiency, digitalization, customer orientation, innovation, and diversification, as well as the resulting levels of efficiency achieved through their improvement. According to the analysis, the implementation of digital technologies, simplification of management systems, efficient use of resources, and development of analytical systems are considered crucial factors in enhancing the competitiveness of enterprises. In particular, regional infrastructure, the institutional environment, and government policy support significantly influence the sustainable development of enterprise activities. The model ultimately substantiates that integrated management of all factors can improve service delivery speed, innovative capacity, and overall economic efficiency. The efficiency of enterprises is reflected in a systemic and interdependent economic mechanism of influencing factors. The central element of the model—"factors affecting efficiency"—demonstrates the core idea that efficiency is not an isolated outcome but the result of a multi-factor system. The left side of the model represents the current situation of these factors, which are generally assessed as medium or low.

From an economic perspective, this indicates that enterprises are not fully utilizing available resources. For instance, human capital is evaluated at a moderate level, implying that labor productivity is not fully realized.

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The low level of management efficiency leads to high transaction costs and slower decision-making processes. Partial implementation of digitalization shows that technological efficiency has not yet been fully activated. A moderate level of customer orientation indicates insufficient demand formation mechanisms, which negatively affects income stability. One of the most critical issues is the low level of innovation, which limits the main source of long-term economic growth. This means that enterprises largely operate based on traditional models. The right side of the model presents an improved scenario, where all factors reach a high level. Economically, this reflects a transition to an intensive development model. The development of human capital increases labor productivity, while improved management systems reduce costs and accelerate decision-making. Full implementation of digitalization strengthens technological factors in the production function, significantly increasing efficiency. When customer orientation reaches a high level, demand expands, service diversification increases, and revenues grow. Innovation and diversification open new markets and generate higher value-added products, marking a new qualitative stage of economic growth.

The conclusion and results section illustrates the process of economic transformation. In the current state, limited development of factors restricts overall efficiency. However, if all factors are developed in a comprehensive manner, the efficiency of enterprises will increase significantly. This will have a positive impact not only at the micro level but also on the overall regional economy. In general, the model shows that the main condition for improving enterprise efficiency is not the separate development of factors, but their integrated management. Only through the harmonization of human capital, management, technology, customers, and innovation can high economic performance be achieved. Regardless of how much companies strive for digital information superiority, they face psychological, structural, and technical barriers along the way. Scholars at Brigham Young University have systematized the main problems in decision-making and identified seven critical mistakes and obstacles that can prevent organizations from failure (Table 1).

Table 1. Key Barriers Affecting the Performance of Regional Enterprises and Strategies for Their Elimination[2]

No.	Barrier or Error	Description and Mechanism	Solution and Prevention Strategy
1	Complete lack of data usage	Managers rely on intuition, personal experience, or habitual practices in decision-making. Human cognition is naturally exposed to biases and subjective judgments.	Decision-making should be based on objective data. Although data does not guarantee certainty, it significantly reduces cognitive bias and improves accuracy.
2	“More data is always better” assumption	Organizations tend to collect excessive and irrelevant data, which may confuse analysis and decision-making. Quantity does not determine quality.	Focus should be placed on relevance, accuracy, and usefulness of data. Information must create a clear and meaningful analytical structure.
3	Incorrect or unclear questions	Analysis is conducted without clearly defined objectives, leading to meaningless or misleading results (“garbage in, garbage out”).	Key problem areas should be identified before analysis, and research must be directed toward well-defined and strategic questions.
4	Inability to integrate data	Departments such as finance, HR, and marketing operate in isolation, preventing a unified organizational perspective.	Data integration systems should be developed, and cross-functional collaboration should be strengthened to ensure information sharing.
5	Focus on incorrect metrics	Organizations rely on vanity metrics such as website traffic or social media likes, which do not reflect real performance.	Emphasis should be placed on real performance indicators such as conversion rate, customer journey, and revenue generation.
6	Confirmation bias in data interpretation	Managers selectively use data that supports their existing beliefs while ignoring contradictory evidence.	Data analysis should prioritize objectivity. Systems should be designed to challenge assumptions rather than confirm them.
7	Over-reliance on data in decision-making	Excessive dependence on algorithms and quantitative models reduces the role of human experience, ethics, and intuition.	Data should inform decisions, not replace them. A balanced approach between analytics and managerial judgment is essential.

This table analyzes the most significant errors and systemic barriers encountered in the process of implementing data-driven management in organizations. Each case is examined in terms of its underlying mechanism and practical solutions. The table demonstrates that these problems are not only technological

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in nature but are also closely related to the human factor. In particular, cognitive biases, incorrect question formulation, misinterpretation of data, and confirmation bias play a significant role in decision-making processes. At the same time, systemic shortcomings such as increasing data volume without purpose, lack of data integration, and focus on incorrect metrics also reduce overall organizational efficiency (Table 2).

Table 2. Negative Consequences of Factors Affecting Enterprise Efficiency[3]

Factor	Negative Condition	Economic Consequence	Resulting Impact
Human capital	Low qualification, lack of motivation	Decline in labor productivity, reduced operational efficiency of regional enterprises	Decrease in income, loss of customers
Management efficiency	Slow decision-making, bureaucracy	Increase in transaction costs	Decline in operational efficiency
Level of digitalization	Lack of implemented technologies	High costs, low operational speed	Reduced competitiveness
Customer orientation	Customer needs not studied	Decrease in demand, increase in service abandonment	Instability of revenue
Innovation and diversification	Lack of new services	Market does not expand, low value-added creation	Increased risk of losing competition
Resource utilization	Improper allocation of resources	Increased costs, reduced efficiency	Decrease in profit
Regional infrastructure	Weak transport and logistics	Increased delivery costs for regional enterprises	Narrowing of market coverage
Institutional environment	Tax pressure, complex regulations	Decrease in investment	Slow business development
Competitive environment	Low or artificial competition	Lack of incentives for quality and innovation	Stagnation of efficiency
Information and analytics	Lack of data usage	Wrong decision-making	Increased risks, reduced profit

This analysis systematically reflects the negative conditions of factors affecting enterprise efficiency and their economic consequences. It shows that each factor has an individual impact; however, they are also interrelated and generate a multiplicative negative effect. First, the low level of human capital represents a fundamental problem in the economic system. Low qualifications and lack of motivation reduce labor productivity, which leads to a deterioration in the performance of regional enterprises. As a result, customer flow decreases and revenues decline. This process disrupts the demand and supply balance and weakens the market position of regional enterprises. Low management efficiency leads to an increase in transaction costs. Bureaucratic barriers and slow decision-making processes make resource utilization inefficient. This results in prolonged operational processes and excessive consumption of time and financial resources, ultimately reducing overall enterprise efficiency. The low level of digitalization is one of the most critical limiting factors in the modern economy. The absence of technological implementation leads to higher costs and slower operational performance of enterprises. This significantly reduces competitiveness, especially in markets where digital services are highly developed. Weak customer orientation results in a decline in demand. When customer needs are not studied, services do not meet market expectations, leading to an increase in service abandonment. This undermines revenue stability and weakens the financial position of enterprises.

The lack of innovation and diversification limits long-term economic growth. The absence of new services reduces opportunities for market expansion and keeps value-added creation at a low level. This increases the risk of losing competitiveness. Improper resource utilization leads to higher costs and reduced efficiency. When material and financial resources are not optimally allocated, profits decrease, thereby limiting investment opportunities. Weak regional infrastructure increases service delivery costs. Underdeveloped transport and logistics systems reduce service coverage and limit access to new markets. Problems in the institutional environment, particularly tax pressure and complex regulation, reduce investment activity. This slows down the development pace of enterprises and restricts new business initiatives. Weak competitive conditions lead to a decline in economic efficiency. In the absence of competition, enterprises lack incentives to improve efficiency or introduce innovations, resulting in stagnation. Underdeveloped information and analytical systems lead to poor management decisions. Decisions not based on data increase risks and reduce profitability.

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The model ultimately demonstrates that the coordinated development of all strategic factors ensures revenue growth, cost reduction, increased investment activity, and sustainable development of the regional economy (Figure 2).

Figure 2. Integrated Economic Model for Enhancing Efficiency in Regional Enterprises[4]

The model of integrated and systemic efficiency enhancement in enterprises reflects the key factors influencing performance improvement and their positive economic outcomes. Each element in the model performs a distinct economic function and contributes to the overall efficiency of the system. The central block, labeled “Increase in Efficiency,” represents the final outcome of the entire system. Here, efficiency is considered as a multi-factor production function, where the overall economic result is formed through the combined effect of various inputs. All arrows directed toward the center indicate that each factor contributes in a unified direction—toward improving the efficiency of regional enterprises. The first block—human capital—represents the qualitative aspect of the labor factor in economic terms. An increase in skills and motivation leads to higher labor productivity, which in turn increases output in regional enterprises. As a result, revenues grow and profitability improves. This reflects the classical economic chain: “human capital → productivity → income.” The second block—management efficiency—is directly related to transaction cost theory. When decision-making becomes faster and processes are simplified, unnecessary costs are reduced. This leads to higher operational efficiency and increased profits. The third block—the level of digitalization—represents the technological factor in modern economics. The introduction of digital technologies increases the speed of enterprise operations and reduces costs.

This creates a technological shift in the production function, thereby enhancing competitiveness. The fourth block—customer orientation—represents the demand-side economic mechanism. Satisfying customer needs increases demand for services, ensuring stable revenue streams. Customer loyalty guarantees long-term income sustainability. The fifth block—innovation and diversification—is one of the main drivers of economic growth. The introduction of new services increases value added and opens new markets. This strengthens the competitive advantage of enterprises and leads to profit growth. The sixth block—resource utilization efficiency—is closely linked to production costs. Optimal allocation of resources reduces costs and increases profit margins. This reflects a transition toward an economically efficient production model.

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The seventh block—regional infrastructure—is a key factor in expanding market services. Improved transport and logistics reduce delivery costs for enterprises and enable access to new markets. This broadens the revenue base. The eighth block—institutional environment—is a fundamental condition for investment activity. A favorable tax and regulatory system supports business development, attracts investment, and accelerates economic growth. The ninth block—competitive environment—is a core element of market mechanisms. Healthy competition increases enterprise efficiency, optimizes prices, and stimulates innovation, thereby improving overall performance. The tenth block—information and analytics systems—form the basis of modern management. Data-driven decision-making reduces risks and increases efficiency, ensuring economic stability. The final positive outcomes shown at the bottom of the diagram represent the overall result of the economic system. Increased revenues, reduced costs, stronger competitiveness, higher customer loyalty, and improved return on investment are all direct consequences of enhanced efficiency. Overall, the model demonstrates that improving enterprise efficiency requires the integrated management of all influencing factors. The key conclusion is that efficiency is not the result of a single factor, but rather emerges from the synergy of human capital, technology, management quality, and market mechanisms.

CONCLUSIONS AND SUGGESTIONS

The integrated model of enhancing efficiency in regional enterprises demonstrates that economic performance is the result of a complex interaction between multiple interdependent factors. Human capital, management efficiency, digitalization, customer orientation, innovation, resource utilization, infrastructure, institutional environment, competition, and information systems collectively shape the overall level of enterprise productivity and profitability. The analysis shows that no single factor can independently ensure sustainable efficiency growth. Instead, efficiency emerges from the synergy of technological, organizational, and market-oriented components.

In particular, human capital improves productivity, digitalization accelerates processes, and effective management reduces transaction costs, while innovation and competition drive long-term growth and adaptability. The model also highlights that external conditions such as infrastructure and institutional quality play a crucial role in enabling internal organizational improvements. Together, these factors lead to measurable positive outcomes, including increased revenues, reduced costs, improved competitiveness, and stronger investment returns. In conclusion, enhancing the efficiency of regional enterprises requires a holistic and integrated approach. Sustainable economic growth can only be achieved through the coordinated development of human, technological, institutional, and market systems within a unified strategic framework.

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