JOURNAL OF MULTIDISCIPLINARY SCIENCES AND INNOVATIONS

VOLUME 04, ISSUE 11
MOPNTHLY JOURNALS

ISSN NUMBER: 2751-4390
IMPACT FACTOR: 9,08

DIGITALIZATION OF BUSINESS PROCESS MANAGEMENT IN JOINT-STOCK COMPANIES

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Abstract: This article examines the digitalization of business process management in joint-stock companies, with a particular focus on "Uzbekneftgaz" JSC and its recent economic and technological developments. The study analyzes key economic and financial indicators from 2019 to 2024, including workforce dynamics, capital, and investment trends. The article also explores the implementation of various digital systems—such as SAP ERP, CRM, SCADA, ECM, BI, and IoT platforms—and evaluates their functional capabilities and integration within the company's operations. The organizational structure, digital maturity, and challenges in adopting new technologies are assessed, along with comparative insights from global oil and gas enterprises. The results indicate that while financial management processes are highly digitalized, logistics, supply chain, and customer management areas still require further development. The study concludes that digital transformation enhances operational efficiency, reduces risks, and strengthens competitiveness in both domestic and international markets. These findings provide a foundation for strategic planning and further digital initiatives in the energy sector.

Keywords: Digital Transformation, Business Process Management, Digital Maturity, SAP ERP, IoT, SCADA, Joint-Stock Companies, Oil and Gas Industry

This article analyzes the indicators that characterize the activities of joint-stock companies in our country. At the same time, the impact of business processes on these indicators is also examined. Digital transformation is the process of fundamentally rethinking an enterprise's business models, operations, and interactions with customers through the use of digital technologies. In the oil and gas industry, this process enables increased efficiency, risk reduction, and the creation of new value across all stages—from extraction to processing, transportation, and sales.

For "Uzbekneftgaz" JSC, digital transformation is not only a means of optimizing operational costs, but also a tool for improving resource efficiency, reducing environmental impact, and strengthening competitiveness in international markets. This analysis serves to determine the company's level of digital maturity and to provide a foundation for future transformation directions.

There are several theoretical approaches to assessing digital transformation processes. Among the most widely used are Digital Maturity Models, Technology Acceptance Models (TAM), and Change Management theories. This study primarily focuses on organizational maturity and the level of technology integration. These theories provide a methodological basis for a comprehensive evaluation of the digital initiatives of "Uzbekneftgaz" JSC, making it possible to understand the interrelationship between technological capabilities, process optimization, and the role of human resources.

The digital maturity assessment model helps identify the company's status across various digital dimensions (strategy, culture, technology, and processes). Therefore, the activities of **"Uzbekneftgaz" Joint-Stock Company**, one of the key enterprises in our country's economy, are analyzed in this study.

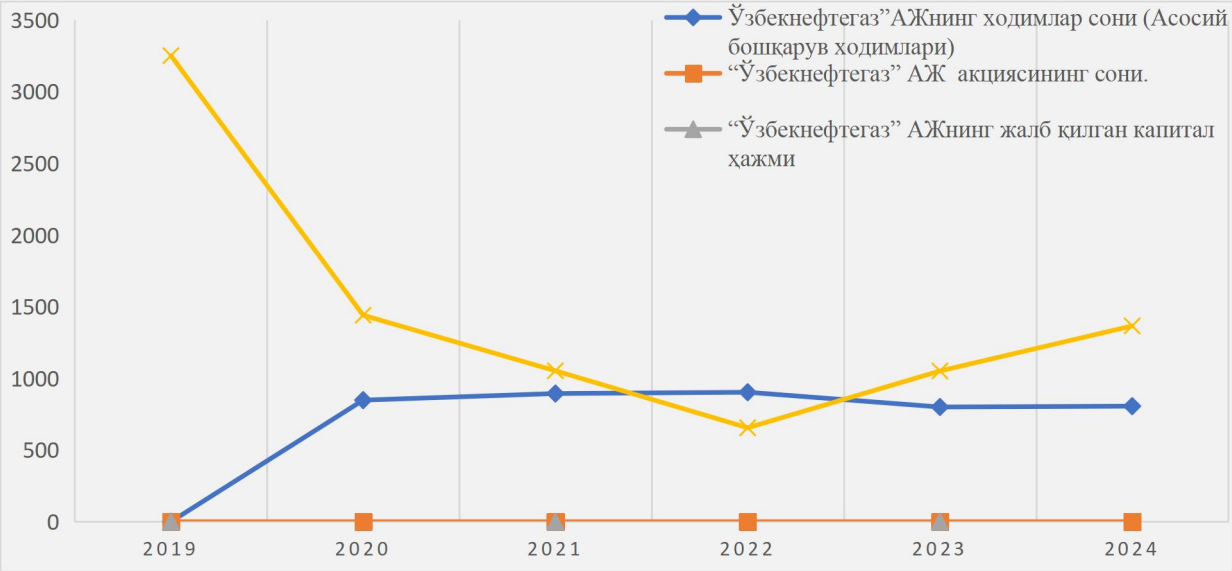

Figure 2.1. Dynamics of the economic and financial indicators of "Uzbekneftgaz" JSC for 2019–2024[1]

During this period, although the number of employees working at the company increased from 848 thousand to 903 thousand by 2021, it declined in subsequent years and amounted to 806 thousand in 2024. This reduction in workforce size may be associated with the implementation of automation processes, resource optimization, and improvements in the management system within the company.

The capital attracted by the company amounted to 3,339 and 3,647 billion UZS in 2019 and 2020, respectively. In 2021, this indicator increased significantly to 13,928.5 billion UZS, indicating the attraction of substantial financial resources by the company. Although the volume of capital declined in the following years, it reached 6,568.01 billion UZS in 2024, reflecting a trend toward stabilization.

The volume of investments was 3,250.8 billion UZS in 2019 and decreased in subsequent years, falling to 655.2 billion UZS in 2022. This decline may be attributed to external economic challenges, particularly the impact of the pandemic or changes in international markets. However, investment volumes recovered in 2023 and 2024, amounting to 1,051.3 and 1,365.6 billion UZS, respectively.

The modern oil and gas industry is undergoing profound transformation in the era of digital technologies, which plays a decisive role in enhancing corporate competitiveness and ensuring operational efficiency. As a leading enterprise in Uzbekistan's energy sector, "Uzbekneftgaz" Joint-Stock Company (JSC) has not remained apart from these global trends and is taking significant steps toward the digitalization of its business processes. This study, within this section, aims to conduct an in-depth analysis and assessment of the current state of the company's digital transformation process, highlighting its strategic importance, current practices, achievements, and existing barriers from a scientific perspective.

A comprehensive methodological approach was applied to analyze the current state of business process digitalization at "Uzbekneftgaz" JSC. This approach includes the following stages:

1. Document analysis. Company reports and internal documents related to digital transformation strategies, investment plans, and implemented technologies were examined.

[1] "O'zbekneftgaz" AJ ma'lumotlari asosida muallif ishlanmasi.

2. Interviews and surveys. Surveys were conducted among management staff, IT specialists, and employees from various departments to assess attitudes toward digitalization, identify challenges, and collect suggestions.
3. Process mapping. Key business processes (production, logistics, and financial reporting) were mapped to determine their level of digitalization.
4. Technical audit. The company's existing IT infrastructure, network capacity, and cybersecurity measures were evaluated.
5. Benchmarking. A comparative analysis was conducted with digitalization practices of similar international oil and gas companies.

A number of digital systems have been implemented at "Uzbekneftgaz" JSC, covering various aspects of the company's operational activities. The following table presents the main digital systems introduced and their functional capabilities.

Table 2.1.

Digital systems implemented at "Uzbekneftgaz" JSC and their functional capabilities

SAP ERP	Financial reporting, accounting, supply chain management, human resource management, production planning	2018	4
CRM (Customer Relationship Management)	Customer data management, automation of sales processes, marketing campaigns	2020	3
SCADA (Supervisory Control and Data Acquisition)	Real-time monitoring of extraction facilities, process automation, fault detection	2010 (modernizatsiya 2022)	5
ECM (Enterprise Content Management / Electronic Document Management)	Automation of document creation, storage, search, and approval processes	2019	4
BI (Business Intelligence)	Analysis of corporate data, report generation, decision-making support	2021	3
IoT Platform	Collection of data from sensors, asset monitoring, automated alert systems	2023	2

he implementation of these systems has played a significant role in strengthening the company's digital infrastructure. However, the level of their mutual integration and the extent to which they fully cover all business processes vary.

The organizational structure of "Uzbekneftgaz" JSC has a noticeable impact on the digital transformation process. The company operates under a traditional hierarchical management model, which may sometimes limit flexibility in the implementation of digital innovations. The level of digital readiness is mainly supported by the IT department and units responsible for innovation. The following table reflects the level of digitalization across various business processes:

Table 2.2.

Classification of business processes by level of digitalization (2023–2024)

Production (Extraction and Processing)	85	SCADA, IoT, and automated control systems are highly integrated. However, their predictive analytics capabilities remain limited.
Logistics and Supply Chain	60	Through SAP ERP, the management of material resources is partially automated. Human involvement in supply chain processes remains significant.

Financial Management and Accounting	90	Financial management processes are almost fully automated through the ERP system. The reporting process has been optimized.
Human Resource Management (HR)	70	Payroll calculation and employee data management are automated. Recruitment and employee development processes still need to be digitalized.
Customer Relationship Management and Sales	55	Although the CRM system has been implemented, the digitization and analytical capabilities of customer communication channels remain limited.

As seen from the table, financial management has achieved the highest level of digitalization, whereas logistics and customer relationship management still require significant improvements.

The company's digital transformation depends on the robustness of its technological infrastructure. Although "Uzbekneftgaz" JSC has undergone a significant modernization phase, additional investments are needed in certain areas. This is particularly evident in data storage, processing capacity, and cybersecurity enhancement.

A set of key performance indicators (KPIs) and metrics is applied to evaluate the effectiveness of digitalization projects. These include reducing operational costs, increasing production volume, accelerating processes, minimizing errors, and improving customer satisfaction. For example, the implementation of IoT systems resulted in a 10% reduction in equipment failures, achieved through the optimization of preventive maintenance processes. However, the financial return and long-term impact of many digital initiatives have not yet been fully assessed.

A comparative analysis of "Uzbekneftgaz" JSC's digitalization status against leading global oil and gas companies helps identify its strengths and weaknesses. Large corporations such as Saudi Aramco and ExxonMobil have widely applied advanced technologies—including Digital Twins, Artificial Intelligence (AI), and Machine Learning—across all processes, from production to resource optimization. "Uzbekneftgaz" JSC is currently in the initial stages of implementing these technologies, focusing primarily on automating core operations.

In conclusion, over the past six years, "Uzbekneftgaz" JSC has undergone highly active economic processes. The increase in the number of shares, substantial capital and investment inflows, and workforce optimization processes demonstrate the company's stable and strategic market development. Overall, "Uzbekneftgaz" JSC occupies a significant position in the national energy sector, making a substantial contribution to the economy.

Between 2019 and 2024, the financial indicators of "Uzbektelekom" JSC reflected the company's stable growth, although some years showed decreases in efficiency. During this period, the company's revenue increased from 3,082 billion UZS in 2019 to 8,965 billion UZS in 2024. This nearly fivefold growth in revenue indicates increasing demand for telecommunications services and the expansion of the company's market presence.

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