

American Journal of Economics and Business Management

Vol. 9 Issue 5 | **pp.** 378-384 | **ISSN:** 2576-5973

Available online @ https://www.globalresearchnetwork.us/index.php/ajebm

Article

Integrated Development Model of Digital Governance in Joint-Stock Companies and Strategic Forecasting

Farxod Shonazarov Shodiyor o'g'li[1]

1. Independent Researcher, Tashkent State University of Economics, Tashkent, Uzbekistan

* Correspondence: farkhodshanazarov@gmail.com

Abstract: This article develops an integrated model for improving digital governance in joint-stock companies. The study applies a five-block theoretical architecture and a DEI-based measurement methodology to integrate organizational, economic, technological, and institutional mechanisms into a unified system. Based on empirical analysis, the effectiveness of digital governance is assessed and practical mechanisms are proposed. Scenario-based forecasts up to 2030 are developed, demonstrating the impact of digital transformation on financial performance. The scientific novelty lies in the integrated approach combining measurement, governance mechanisms, and forecasting within a single framework.

Keywords: Digital Governance, Joint-Stock Companies, Digital Transformation, Dei Index, Strategic Forecasting, Scenario Analysis, Data Governance, Kpi System, Artificial Intelligence, Institutional Mechanisms

1. Introduction

In recent years, the development of the digital economy and the modernization of corporate governance systems have become one of the priority directions of state policy in the Republic of Uzbekistan. In particular, within the framework of large-scale reforms being implemented in the country, including the "Digital Uzbekistan – 2030" strategy, the introduction of digital technologies across all sectors of the economy, the automation of management processes, and the transition to data-driven governance models have significantly accelerated. These reforms necessitate a fundamental improvement of governance systems in joint-stock companies.

At the same time, state decisions aimed at reforming corporate governance, increasing transparency, and improving efficiency in the activities of joint-stock companies have identified the implementation of digital governance mechanisms as a key factor. As a result, the transition from traditional management systems to integrated, data-driven governance models has become inevitable. This process not only enhances management efficiency but also contributes to risk reduction, faster decision-making, and increased corporate value.

The development of digital governance in joint-stock companies is particularly relevant in the context of transition economies. This is because the formation of the institutional environment, the level of digital infrastructure development, and the transformation of management practices occur simultaneously and are closely

Citation: Shodiyor o'g'li F. S. Integrated Development Model of Digital Governance in Joint-Stock Companies and Strategic Forecasting. American Journal of Economics and Business Management 2026, 9(5), 378-384.

Received: 14th Feb 2026
Revised: 20th Mar 2026
Accepted: 10th Apr 2026
Published: 16th May 2026

Copyright: © 2026 by the authors. Submitted for open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/)

interconnected. At the same time, strategic documents aimed at reforming the banking system emphasize the introduction of digital technologies and the improvement of management efficiency as priority objectives. However, in practice, several challenges remain in the implementation of digital governance, including the insufficient development of evaluation methods, the absence of integrated models, and the limitations of strategic forecasting approaches.

In modern scientific research, digital governance is often studied in the context of individual technological solutions or functional optimization, while its analysis as a comprehensive and integrated system remains insufficiently developed. In particular, there is a need to combine organizational, economic, technological, and institutional components of digital governance in joint-stock companies within a unified model. Furthermore, corporate governance codes and modern standards increasingly emphasize the necessity of a systematic approach to digital transformation.

Taking these challenges into account, the main objective of this study is to develop an integrated development model of digital governance in joint-stock companies, to assess its effectiveness based on the Digital Efficiency Index (DEI), and to substantiate strategic forecasting mechanisms. Within the framework of the study, key directions for improving digital governance are identified and structured into a unified system of practical mechanisms.

The scientific significance of the study lies in the application of an integrated approach to evaluating digital governance, analyzing its structural components, and identifying development trends. The practical significance is determined by the fact that the proposed model and mechanisms can be used to effectively manage digital transformation processes in joint-stock companies, improve strategic decision-making, and enhance the overall quality of corporate governance.

Literature Review

Issues of digital governance and transformation are interpreted in modern economic literature as complex and multidimensional processes. In particular, within change management theory, digital transformation is considered not only as technological modernization but also as a comprehensive transformation of organizational culture and human capital. Studies by Kotter (1996) and the Prosci ADKAR model demonstrate that if structural changes are not implemented simultaneously with the development of human capital and competencies, transformation processes are likely to fail [1] [2]. This approach provides a scientific basis for the priority role of organizational mechanisms in the implementation of digital governance in joint-stock companies.

The institutional foundations of digital governance have been further explored within the framework of IT governance. International standards such as COBIT and ITIL emphasize that the effectiveness of governance depends on clearly defined roles and responsibilities [3]. From this perspective, the effective organization of digital governance requires the optimization of organizational architecture and management structures.

In this context, the AI augmentation framework developed by McKinsey is of particular importance. According to this approach, the most effective model for implementing artificial intelligence in the financial services sector is not full automation, but rather an integrated collaboration between humans and AI [4]. This highlights the necessity of aligning technological mechanisms with the human factor in digital governance systems.

At the same time, studies by the World Economic Forum (WEF, 2022) indicate that financial institutions implementing phased AI integration achieve significantly higher economic efficiency compared to those relying on full automation strategies. In particular, such institutions achieve returns on investment (ROI) that are 2.5–3.5 times higher [5].

These findings empirically confirm the priority of phased technological implementation in digital governance.

The economic mechanisms of digital governance are explained within the framework of classical institutional and organizational theories. According to Milgrom and Roberts (1992), financial incentive systems, when aligned with performance indicators, ensure stable behavioral changes in corporate governance [6]. This approach provides a theoretical justification for the effectiveness of KPI-based incentive systems in enhancing digital governance performance.

Furthermore, according to agency theory developed by Jensen and Meckling (1976), information asymmetry and insufficient monitoring are key factors that reduce corporate efficiency [7]. In the context of digital governance, these problems can be significantly mitigated through real-time monitoring and data-driven management systems.

Thus, the analysis of existing scientific literature demonstrates that the effective implementation of digital governance requires the integration of organizational, technological, and economic mechanisms.

However, current studies do not sufficiently address the integration of these components into a unified model, nor do they adequately link quantitative evaluation with strategic forecasting. This gap defines the research direction of the present study and highlights its relevance.

2. Material and Methods

In this study, mechanisms for improving digital governance are developed based on a three-stage methodological framework.

The first stage is **gap–mechanism alignment**, in which the identified imbalances in DEI components are matched with the corresponding mechanism directions (organizational, economic, technological, and institutional). This stage ensures that each deficiency in digital governance performance is addressed through a targeted intervention mechanism.[8]

The second stage is **the development of a technological roadmap**, where a bank-specific sequence of digital transformation is determined based on the stages of artificial intelligence (AI) implementation, the expansion of Big Data infrastructure, and API-based system integration. This approach allows the alignment of technological development with the actual level of digital maturity of financial institutions.[9]

The third stage is **scenario-based forecasting**, in which the dynamics of digital governance are expressed through the following model:

$$DG_t = f(AI_t, BD_t, EM_t, \varepsilon_t)$$

where:

AI_t — the level of artificial intelligence implementation;

BD_t — the level of Big Data coverage;

EM_t — the level of electronic signature (E-signature) system implementation;

ε_t — the impact coefficient of institutional factors.

This methodological framework enables the integration of digital governance evaluation, the formation of practical mechanisms, and strategic forecasting within a unified analytical system.[10]

3. Results and Discussion

Based on the results of the study, a four-directional system of practical mechanisms for improving digital governance in joint-stock companies has been developed (Table 1). This system is aimed at eliminating the imbalances identified in DEI components and

предусматривает the integrated application of organizational, economic, technological, and institutional mechanisms.[11]

Within the framework of organizational mechanisms, the transformation of governance architecture is proposed, including the introduction of the Chief Digital Officer (CDO), the establishment of a digital committee, and the implementation of the RACI matrix. These measures contribute to improving decision-making accuracy and data quality. Economic mechanisms, in turn, ensure the alignment of efficiency with financial outcomes through KPI-based incentive systems and DEI monitoring.[12][13]

Technological mechanisms are focused on the integration of ERP, CRM, and BI systems, the phased implementation of artificial intelligence, and the development of Big Data platforms, thereby enhancing operational speed and decision quality. Institutional mechanisms strengthen governance transparency and stability through the introduction of data governance policies, E-signature systems, and digital standards.

As a result of the integrated approach, there is a significant potential for improving DEI indicators. According to the forecasts, in the short term, it is possible to increase the DEI level from 73.9 to 80 and above for BRB Bank, and from 66.1 to 75 and above for Turonbank (Table 1).

Table 1. Four-directional mechanisms for improving digital governance in joint-stock companies

#	Mechanism	Measures	DEI Component	Model Block
1	Organizational	CDO, RACI, competencies	D / A	I–II
2	Economic	KPI, dashboard, ROI	C / S	V
3	Technological	ERP/CRM/BI, AI	S / A	III
4	Institutional	Data governance, E-signature	D / C	I–IV

The analysis results indicate that the imbalance in the DataQuality component (Turonbank: 65% vs target ≥70%) is primarily associated with organizational factors. Based on this, a four-stage transformation model is proposed, grounded in CDO architecture and a competency system:
1. introduction of the Chief Digital Officer (CDO) position at the strategic level;
2. integration of the RACI matrix into digital processes;
3. development of employees' digital competencies based on the Digital Competency Framework (DCF);
4. systematization of management decisions based on DEI results.

This approach contributes to improving decision accuracy and data quality.

Table 2. Phased Practical Plan for AI Integration in Banks

Stage	Technology	Actions	Speed	Cost
I	BI analytics	Dashboards	≥72%	≥18%
II	AI modeling	Risk analysis	≥75%	≥21%
III	RPA + ML	Automation	≥80%	≥25%
IV	AI advisory	Strategy optimization	≥85%	≥30%

improving the effectiveness of digital governance is closely linked to the enhancement of the institutional environment. Based on this, a four-element institutional mechanism is proposed:

1. **Corporate data governance policy** (including data ownership, data quality standards, and lifecycle management);

2. **API-based interoperability standards** ensuring integration across systems;
3. **E-signature and audit trail integration** to enhance transparency;
4. **Cybersecurity and risk management system based on ISO 27001**.

This approach contributes to strengthening governance transparency, reducing corruption risks, and improving regulatory assessments.[14][15]

Table 3. Recommendations for the Development of Digital Governance

Area	Recommendation	Outcome
Government	Data governance law	Costs ↓15–20%
Banks	DEI monitoring	Efficiency ↑
Management	CDO, KPI	Quality ↑
HR	Data literacy	Skills ↑

The recommendations presented in Table 3 reflect the functional interdependence among various stakeholders in the development of digital governance. In particular, at the level of the public sector, improving the regulatory and legal framework and introducing interoperability standards contribute to strengthening the institutional environment. This, in turn, enables the reduction of transaction costs and supports the formation of a digital ecosystem.

At the level of joint-stock companies, the implementation of DEI monitoring systems, along with the integration of artificial intelligence and Big Data technologies, enhances operational efficiency. At the same time, governance-level instruments such as the CDO institution, the RACI matrix, and KPI-based incentive systems improve decision-making accuracy and increase the effectiveness of the human factor.

Within the framework of human resource policy, the development of digital competencies—particularly data literacy and analytical skills—serves as a key factor ensuring the sustainability of digital transformation. Overall, the proposed system of recommendations is aimed at the comprehensive development of digital governance and at creating the necessary institutional and technological conditions for improving its effectiveness.

To assess the development of digital governance, three scenarios up to 2030 (inertial, adaptive, and innovative) have been developed. These scenarios are formed based on the pace of technology adoption and the intensity of institutional factors. The results demonstrate a steady increase in DEI indicators as well as a positive impact on financial performance (Table 4).

Table 4. Scenario Forecasts of Digital Governance Development up to 2030

Indicator	Base	Inertial	Adaptive	Innovative
DEI	73.9 / 66.1	76.2 / 68.9	83.4 / 75.5	91.0 / 83.7
IE (%)	57 / 48	60 / 51	70 / 60	80 / 71
Speed	80 / 71	82 / 74	88 / 81	93 / 88
Cost	24 / 21	27 / 23	33 / 28	40 / 35
NPL	4.1 / 5.3	3.8 / 4.9	3.0 / 4.0	2.2 / 3.1
ROE	—	+1.0–1.5	+2.5–3.5	+4.5–6.0

Scenario analysis shows that under the innovative scenario, the efficiency of digital governance increases significantly: DEI rises from 73.9 to 91.0 for BRB Bank and from 66.1 to 83.7 for Turonbank. Under the adaptive scenario, the minimum efficiency threshold (DEI ≥75) is achieved for both banks. In contrast, under the inertial scenario, growth remains slow and existing imbalances persist.

Furthermore, the projected increase in ROE under the innovative scenario (+4.5–6.0 percentage points) is consistent with previous empirical results, confirming the practical validity of the proposed model. The findings indicate that accelerating technological integration and institutional reforms should be considered a strategic priority.

In the process of implementing digital governance, key risks and their corresponding management mechanisms have been identified. The most critical risks include cybersecurity threats, human capital adaptation, system integration challenges, regulatory compliance risks, AI model errors, and low data quality.[16][17]

To mitigate these risks, it is proposed to implement a cybersecurity system based on ISO 27001 standards, introduce the DCF competency development program, establish API-based integration standards, and deploy E-signature and audit trail systems, along with strict data quality standards. These mechanisms contribute to ensuring the stability of digital governance and minimizing operational risks.

4. Conclusion

This article integrates the theoretical model of digital governance and the DEI-based measurement methodology into a system of practical mechanisms, resulting in the development of a comprehensive governance approach for joint-stock companies. The proposed four-directional mechanism system (organizational, economic, technological, and institutional) forms a unified framework aimed at eliminating the identified gaps in DEI components.

The scientific contributions of the study are reflected in the following aspects: first, targeted governance mechanisms aligned with DEI components have been developed; second, a phased AI integration roadmap has been substantiated with empirical efficiency indicators; third, quantitative forecasts of digital governance development up to 2030 have been constructed based on three scenarios; fourth, a system of differentiated recommendations for stakeholders has been proposed.

The results indicate that within the adaptive scenario, it is possible to significantly increase the DEI level (BRB: 83.4; Turonbank: 75.5) and achieve ROE growth of +2.5–3.5 percentage points. The innovative scenario ensures maximum efficiency, justifying the economic effectiveness of digital governance investments (ROE +4.5–6.0 percentage points).

Overall, the proposed approach provides a methodological and practical foundation for the systematic implementation of digital transformation in joint-stock companies, improving governance efficiency and enhancing the quality of strategic decision-making.

REFERENCES

[1] BRB Bank JSC, *Annual Reports, 2019–2023*. Tashkent, 2024.

[2] Turonbank JSC, *Annual Reports, 2019–2023*. Tashkent, 2024.

[3] Central Bank of the Republic of Uzbekistan, *Statistical Bulletin, 2019–2023*, 2023. Central Bank of Uzbekistan

[4] Ministry of Economy and Finance of the Republic of Uzbekistan, *Analytical Report on the Activities of Joint-Stock Companies*. Tashkent, 2024.

[5] D. C. North, *Institutions, Institutional Change and Economic Performance*. Cambridge: Cambridge University Press, 1990.

[6] D. J. Teece, "Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance," *Strategic Management Journal*, vol. 28, no. 13, pp. 1319–1350, 2007.

[7] M. C. Jensen and W. H. Meckling, "Theory of the firm: Managerial behavior, agency costs and ownership structure," *Journal of Financial Economics*, vol. 3, no. 4, pp. 305–360, 1976.

[8] J. P. Kotter, "Leading change: Why transformation efforts fail," *Harvard Business Review*, vol. 73, no. 2, pp. 59–67, 1995.

[9] P. Milgrom and J. Roberts, *Economics, Organization and Management*. New Jersey: Prentice Hall, 1992.
[10] McKinsey & Company, *AI-Augmented Operations: A Practitioner's Guide*. McKinsey Digital, 2021.
[11] World Economic Forum, *The Future of Financial Services*. Geneva: World Economic Forum, 2022.
[12] ISACA, *COBIT 2019 Framework: Introduction and Methodology*. Rolling Meadows, IL: ISACA, 2018.
[13] R. Ramirez and A. Wilkinson, *Strategic Reframing: The Oxford Scenario Planning Approach*. Oxford: Oxford University Press, 2016.
[14] President of the Republic of Uzbekistan, "Presidential Decree No. PF-6079: On the 'Digital Uzbekistan – 2030' Strategy," Tashkent, 2020.
[15] President of the Republic of Uzbekistan, "Presidential Decree No. PF-60: On the Development Strategy of New Uzbekistan for 2022–2026," Tashkent, 2022.
[16] President of the Republic of Uzbekistan, "Presidential Decree No. PF-5992: On the Strategy for Reforming the Banking System for 2020–2025," Tashkent, 2020.
[17] *Corporate Governance Code of the Republic of Uzbekistan (Revised Edition)*. Tashkent, 2015.