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# A UNIFIED DIGITAL ECOSYSTEM APPROACH TO ENTERPRISE MANAGEMENT AND DIGITAL SECURITY IN THE DIGITAL ECONOMY

**Khalilov Bekzod Akhmatovich**
**PhD student, TSUE**

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**Abstract:**

This article provides a scientific analysis of issues related to enterprise management and digital security in the context of the digital economy, based on information and communication technologies (ICT). Within the framework of the study, an approach aimed at organizing management processes, internal and external security, and operational monitoring through a unified digital ecosystem of enterprises is substantiated. This approach enables the integration of managerial decision-making, risk identification and control, and business process automation within a single digital environment. The article scientifically demonstrates that the coordinated application of digital technologies such as CRM, ERP, PLM, CALS, and SMART-ERP constitutes a key factor in improving enterprise management efficiency and strengthening economic security. The research findings provide a methodological basis for developing practical recommendations to enhance management activities and security processes in enterprises through a digital ecosystem–based approach.

**Keywords:** unified digital ecosystem; digital economy; enterprise management; digital security; information and communication technologies (ICT); automation of management processes; digital monitoring; integrated management system.

**INTRODUCTION:** The rapid development of the digital economy is fundamentally transforming the content and structure of enterprise management activities. Global analytical studies indicate that the fragmented implementation of digital technologies in enterprises has a significantly negative impact on management efficiency and digital security. In particular, reports by international consulting companies reveal that nearly 70 percent of enterprises that have initiated digital transformation identify the lack of integrated IT systems and the absence of a unified digital platform as a key challenge [11]. This situation leads to data fragmentation in managerial decision-making, increased complexity of operational monitoring, and the intensification of security risks. Therefore, at present, the implementation of digital technologies not as isolated tools but within the framework of a unified digital ecosystem of enterprises has become a priority direction of global management practice.

Under conditions of globalization, the digitalization of the economy, industry, and service sectors is not limited solely to improving management efficiency; rather, it has emerged as a decisive factor in ensuring enterprise stability, internal and external security, and competitiveness. In enterprises where integrated digital management systems have been implemented, opportunities for real-time operational monitoring, early risk identification, and timely and well-grounded managerial decision-making are significantly expanded. These aspects further enhance the theoretical and practical relevance of the unified digital ecosystem approach.

In the economy of Uzbekistan, the consistent deepening of digital transformation processes is clearly reflected in the year-by-year growth of ICT service volumes. In particular, the increase in the volume of communication and information services from 10.8 trillion UZS in 2020 to 22.9 trillion UZS in 2024, along with the substantial growth of IT service exports, demonstrates the real economic value of digital technologies. Moreover, the modernization of telecommunications infrastructure, the expansion of mobile internet coverage to a high level, and the sharp increase in the number of internet users provide a solid foundation for the widespread adoption of digital management solutions in enterprise activities [12].

However, practice shows that even in Uzbekistan the use of ICT in enterprises is often limited to the separate implementation of software solutions such as CRM, ERP, PLM, CALS, and SMART-ERP. Such a

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fragmented approach may lead to a lack of coherence in management processes, the formation of non-centralized information flows, and insufficient assurance of digital security. Consequently, under contemporary conditions, addressing issues of enterprise management and security within the framework of a unified digital environment has emerged as a pressing scientific and practical problem.

The integration of technologies such as CRM, ERP, PLM, CALS, and SMART-ERP into a unified digital ecosystem enables enterprises to organize managerial decision-making, operational monitoring, and security processes in a centralized manner. This approach facilitates the ICT-based control of internal and external security, early risk identification, and the enhancement of overall management efficiency.

From this perspective, the present article provides a scientific analysis of issues related to enterprise management and digital security in the context of the digital economy, based on a unified digital ecosystem approach for enterprises. Within the scope of the study, the methodological foundations for automating management processes, centralizing operational monitoring, and ensuring security through the integration of ICT technologies are substantiated.

**LITERATURE REVIEW.** The theoretical foundations of enterprise management, information technologies, and economic security have been widely discussed in both domestic and international scholarly literature. In particular, the work "Information Technologies in Management" by Iminov A.A. and Jamatov M.X. [3] provides a theoretical justification of the role of information and communication technologies (ICT) in management processes, information flow management, and their impact on management efficiency. The authors interpret ICT as a critical factor supporting managerial decision-making.

A significant contribution to the formation of digital economy theory was made by Negroponte through the concept of "Being Digital" [4], which outlines the integration of digital technologies into economic processes, the transformation of information into economic value, and the conceptual foundations of digital transformation in business and society. These theoretical perspectives serve as an important methodological basis for contemporary research on the digitalization of enterprise management.

International studies have also provided an in-depth analysis of various aspects of digital transformation. For instance, Antonenko N.A. et al. [5] examine digital transformation processes in small businesses and assess the impact of ICT on economic efficiency. Aubakirova G.M. and Isatayeva F.M. [6] analyze the opportunities and prospects of digitalization in industrial enterprises in Kazakhstan, emphasizing the integration of ICT into production and management processes. Stepanov M.M. [7], in turn, investigates digital transformation mechanisms in small business entities, focusing on the role of digital technologies in enhancing management efficiency.

In addition, technical sources that provide practical explanations of modern management technologies play an important role in the study. In particular, the functional capabilities of ERP systems are widely described through the Signavio platform, the architecture of CRM systems is detailed in the crm-systems.info resource, the application of PLM technologies is presented in materials by Arena Solutions, and the role of CALS technologies in digital integration is comprehensively covered in SAFE Software documentation. These sources contribute to revealing the practical aspects of automating management processes and implementing digital integration in enterprises.

In the economy of Uzbekistan, the institutional foundations of digital transformation have been formed through a number of regulatory and legal documents adopted by the state. Notably, Presidential Decree No. PF-6079 approving the "Digital Uzbekistan - 2030" Strategy defines the priority directions for developing the digital economy in the country [1]. The Strategy adopts a comprehensive approach to the digitalization of public administration, economic sectors, and business processes, the development of ICT infrastructure, and the strengthening of information security. Furthermore, Resolution No. PQ-4699 establishes practical mechanisms for the development of e-government, the digitalization of information exchange among public authorities, and the modernization of ICT infrastructure [2]. At the same time, although the analyzed scientific literature extensively discusses the impact of digital transformation, ICT, and technologies such as CRM and ERP on management efficiency, most studies consider these technologies as separate software tools. Issues related to the systematic and comprehensive integration of management, monitoring, and digital security processes within enterprises as a unified digital ecosystem remain insufficiently explored. Addressing this research gap-specifically, substantiating an ICT-based unified digital ecosystem approach to enterprise

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management and security—constitutes the main scientific focus of the present article.

**RESEARCH METHODOLOGY.** This study is aimed at improving the use of information and communication technologies (ICT) in ensuring enterprise management and digital security in the context of the digital economy. The main objective of the research is to provide a scientific justification for the possibilities of integrating management, monitoring, and security processes within a unified digital ecosystem.

The study employs general scientific methods such as analysis and synthesis, comparison, grouping, as well as induction and deduction. These methods are used to identify the impact of ICT on enterprise management and to determine the differences between fragmented and integrated applications of digital technologies. The methodological framework of the research is based on digital transformation theory and the priority directions outlined in the "Digital Uzbekistan - 2030" Strategy. Empirical analysis relies on official statistical data related to the volume of communication and information services, as well as the development of IT infrastructure.

In addition, a functional approach is applied to analyze the impact of CRM, ERP, PLM, CALS, and SMART-ERP systems on management efficiency and digital security. It is substantiated that the integration of these systems within a unified digital ecosystem enables the centralization of managerial decision-making, the strengthening of monitoring mechanisms, and the enhancement of digital security.

Overall, the selected methodology serves to scientifically substantiate a management approach based on a unified digital ecosystem for enterprises and to reveal the practical significance of the research findings.

**Table-1**
**Key indicators of services provided in the fields of economic activity and information technology (in billion UZS)[1]**

| Indicators | Years | | | | | Change in 2024 compared to 2019 (+,-) |
|---|---|---|---|---|---|---|
| | 2019 | 2020 | 2022 | 2023 | 2024 | |
| **Total services** | 146 834,2 | 190 353,6 | 218 854,6 | 284 355,5 | 357 553,4 | 210 719,20 |
| **Communication and information services** | 9 744,1 | 10 868,3 | 12 884,6 | 17 116,3 | 22 917,5 | 13 173,40 |
| **Financial services** | 21 192,9 | 34 636,2 | 45 815,4 | 59 853,4 | 80 431,3 | 59 238,40 |
| **Services for the repair of computers and household goods** | 2 628,0 | 3 107,3 | 3 404,3 | 4 772,6 | 5 842,2 | 3 214,20 |
| **Change relative to the total, percent** | 1,79 | 1,64 | 1,56 | 1,67 | 1,69 | -0,10 |

The analysis based on the data presented in table 1 shows that the steady growth in the volume of communication and information services in Uzbekistan has significantly increased the scale of information flows in enterprise activities. In particular, the rise in the volume of these services from 9,744.1 billion UZS in 2019 to 22,917.5 billion UZS in 2024 has substantially strengthened the reliance on digital data in managerial decision-making processes. At the same time, the rapid expansion of financial services confirms the real economic value of digital technologies and their

[1] Calculated by the author based on data obtained from the State Statistics Committee of the Republic of Uzbekistan https://stat.uz/uz/default/press-relizlar.

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deepening integration into management systems.

These trends are directly associated with the modernization of telecommunications infrastructure, the expansion of mobile internet coverage, and the growth in the number of internet users. As a result, enterprise management activities are increasingly based on digital platforms, automated systems, and real-time monitoring mechanisms. However, the research findings indicate that, under conditions of expanding ICT service volumes, the isolated implementation of digital technologies is unable to fully ensure management efficiency.

Practical analysis reveals that the application of information systems such as CRM, ERP, PLM, CALS, and SMART-ERP as independent platforms may lead to fragmented information flows, delays in managerial decision-making, and an increase in digital security risks. Therefore, the need arises to consider issues of effective ICT utilization and security assurance not within separate systems, but within a unified digital environment.

Based on this necessity, the study develops an approach for integrating ICT into enterprise management and security processes through a unified digital ecosystem. The systemic representation of this approach is presented in table 2, where management processes, information flows, monitoring mechanisms, and digital security elements are integrated in an interrelated manner.

**Table-2**
**Integration of ICT Based on a Unified Digital Ecosystem in Ensuring Enterprise Management and Security[2]**

| No | Integration areas | ICT components | Functional outcomes in management | Impact on security |
|---|---|---|---|---|
| **1** | Strategic management | ERP, BI, analytical platforms | Data-driven decision-making and improved planning accuracy | Early identification of strategic risks |
| **2** | Operational management | SMART-ERP, BPM, real-time monitoring systems | Process automation and centralized control | Reduction of internal operational errors |
| **3** | Financial management | ERP financial modules, digital payment systems | Cash flow control and increased transparency | Monitoring of financial risks |
| **4** | Customer relationship management | CRM, marketing automation systems | Centralized management of customer data | Reduced risk of data loss |
| **5** | Resource and asset management | PLM, warehouse and logistics systems | Efficient use and optimization of resources | Enhanced control over assets |
| **6** | Document management | CALS, electronic document management systems | Accelerated information exchange | Data integrity and protection |
| **7** | Human resource management | HRM, KPI monitoring systems | Performance evaluation and workforce control | Reduction of risks related to the human factor |
| **8** | Information security | Cybersecurity platforms, access control systems | Centralized access management to information | Protection against internal and external cyber threats |
| **9** | Operational monitoring | Dashboards, IoT, real-time analytics tools | Continuous monitoring of enterprise activities | Rapid risk detection |

[2] Developed by the author based on a digital ecosystem–based management approach.

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| | | | | |
|---|---|---|---|---|
| **10** | Integrated management | Unified digital platform | Management of all processes within a single digital environment | Comprehensive digital security |

The analysis of the model presented in table 2 demonstrates that organizing management activities within a unified digital ecosystem enables the centralization of information, real-time support for managerial decision-making, and continuous monitoring of internal and external risks through ICT. This approach enhances the transparency of management processes, reduces errors associated with the human factor, and contributes to the comprehensive provision of digital security.

In addition, an integrated management model based on a unified digital ecosystem strengthens the interconnection between strategic planning, operational management, and control stages of enterprise activities. As a result, the soundness of managerial decisions increases, resource utilization efficiency improves, and the overall stability of enterprise operations is ensured.

Overall, the logical relationship between the dynamics of ICT services reflected in table 1 and the unified digital ecosystem model proposed in table 2 indicates that the rapid development of the digital economy in Uzbekistan requires qualitatively new, integrated, and security-oriented approaches to enterprise management. This, in turn, further confirms the scientific and practical significance of the unified digital ecosystem concept in the process of enterprise digital transformation.

**DISCUSSION.** The research results show that under conditions of digital economy development in Uzbekistan, both the scale and the nature of the use of digital technologies in enterprise management are undergoing substantial changes. In particular, the steady growth in ICT service volumes presented in Table 1 confirms the increasing volume of information flows in management processes and the growing reliance on digital data in decision-making.

However, the findings also indicate that the fragmented implementation of digital technologies may lead to information fragmentation and reduced management efficiency. From this perspective, the unified digital ecosystem model developed on the basis of the statistical trends observed in Table 1 and presented in Table 1.3 provides a scientific justification for the need to integrate management, monitoring, and digital security processes.

This approach is consistent with conclusions in international studies emphasizing the necessity of integrating digital technologies. Unlike these studies, however, the present research proposes a systematic application of ICT within a single digital environment aimed explicitly at enhancing both enterprise management efficiency and security. Overall, the discussion confirms that the unified digital ecosystem approach advanced in this study represents a scientifically grounded and practically viable solution for improving enterprise management efficiency and ensuring digital security.

**CONCLUSION.** The research results indicate that, in the context of the digital economy in Uzbekistan, issues of enterprise management and digital security should be addressed within an ICT-based integrated framework. The steady growth of ICT service volumes and the expansion of digital infrastructure intensify the need to centralize information flows and strengthen monitoring mechanisms in management processes. The analysis shows that the isolated implementation of systems such as CRM, ERP, PLM, CALS, and SMART-ERP does not fully ensure management efficiency and may increase digital security risks. In contrast, integrating these systems within a unified digital ecosystem enables centralized managerial decision-making, real-time operational monitoring, and comprehensive digital security assurance. Overall, the unified digital ecosystem approach substantiated in this study serves as an important scientific and practical foundation for enhancing enterprise management efficiency, strengthening security, and ensuring the sustainable implementation of digital transformation processes.

## REFERENCE

1. Presidential Decree of the Republic of Uzbekistan No. PF–6079 (2020) Digital Uzbekistan – 2030 Strategy. https://lex.uz/docs/5030957
2. Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. PQ–4699 (2020) On measures for the widespread implementation of the digital economy and e-government. https://lex.uz/docs/4800657
3. Iminov, A.A. and Jamatov, M.X. (2017) Boshqaruvda axborot texnologiyalari. Toshkent: Iqtisod-Moliya.

**World Economics & Finance Bulletin (WEFB)**
**Available Online at:** https://www.scholarexpress.net
Vol. 53, December 2025
**ISSN: 2749-3628**

4. Negroponte, N. (1995) Being Digital. New York: Alfred A. Knopf. https://www.wired.com/1995/01/negroponte-2/
5. Antonenko, N.A., Popov, E.V. and Semyachkov, K.A. (2020) 'Digital transformation of small business: strategic priorities and tools', Journal of the New Economic Association, 3(47), pp. 88–108. https://www.econorus.org/pdf/NEA-47.pdf
6. Aubakirova, G.M. and Isatayeva, F.M. (2020) 'Digitalization of industrial enterprises in Kazakhstan', Economy: Strategy and Practice, 15(3), pp. 121–131. https://esp.ieconom.kz/jour/article/view/315
7. Stepanov, M.M. (2022) 'Mechanisms of digital transformation in small business', Economics and Management, 28(4), pp. 45–53. https://elibrary.ru/item.asp?id=49432727
8. CRM Systems Info (2024) CRM system architecture and functions. https://www.crm-systems.info
9. Arena Solutions (2024) Product lifecycle management (PLM) solutions. https://www.arenasolutions.com
10. SAFE Software (2024) CALS and enterprise digital integration solutions. https://www.safe.com
11. Digital Transformation Statistics for 2026 — 70% and 89% insights, CFlowApps. https://www.cflowapps.com/digital-transformation-statistics/
12. https://www.uzdaily.uz/en/