

HOW BUSINESSES DEPLOY DIGITAL PLATFORMS IN UZBEKISTAN: DYNAMICS OF GROWTH

A.A. Djumanov

Pharmaceutical Technical University, Tashkent, Uzbekistan

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Abstract. *In this article, the author examines internal conditions and legal, economic, technological, and personnel resource provision trends in the development of management and decision-making systems at enterprises in Uzbekistan. Analyzing the outcomes of two-year survey results, the author revealed trends, achievements and challenges of businesses facing developing digitalization and digital transformation of their business operations. The research outcomes may help to understand the practical experience and ICT strategies of businesses and fine-tune digital transformation strategies and related actions implemented by public administration bodies in Uzbekistan. The case can be useful for other developing countries to foster national digital strategies.*

Keywords: *digitalization, digital transformation, use of ICT in businesses, survey on digitalization.*

Introduction

Digital readiness of enterprises should be understood as the comprehensive ability of an organization to implement modern information and communication technologies to improve processes, create new value, and enhance management and decision-making efficiency to enhance competitiveness. It encompasses infrastructure, personnel skills, organizational culture, and transformation strategy.

Digital readiness of an enterprise, including technological infrastructure and personnel competencies, directly improves the effectiveness of management decisions through process automation, access to operational data, digital transformation of decision-making, and risk mitigation. The implementation of technologies (Big Data, Artificial Intelligence) accelerates decision-making, reduces costs, and increases business agility, which is critical for competitiveness.

Rapidly evolving technologies and the rapid changes ubiquitous in today's world pose significant challenges for organizations, while simultaneously offering innovative opportunities for those able to capitalize on them in this era of globalization, technological advancement, and productive capacity. There is no doubt that deepening digitalization and digital transformation, as well as the application of artificial intelligence in management and decision-making, will have significant positive, and possibly negative, impacts on societies in low- and middle-income countries (Annarelli et al., 2021, Fadhlurrahman, 2024). Digital management and decision-making platforms, fueled by increasing computing power, expanded connectivity, and big data, offer exciting opportunities to support economic growth and effectively address a wide range of management and decision-making challenges at the enterprise, industry, and national economic levels. The ensuing changes will be significant and potentially transformative in the roles of humans and technology in decision-making and the production of goods and services.

The growth and development of digitalization, digital transformation, and AI are leading to an increasing impact on future economic and social change (Kraus et al., 2021, Mahraz et al.,

2019, Reis et al., 2018, Vial, 2019, Wang et al, 2021). According to the European Union Digital Transformation Monitor (EMIS, 2017), the economic impact of digital solutions and artificial intelligence could reach €13.3 trillion by 2030. Research shows that the implementation and development of artificial intelligence can lead to an increase in labor productivity of up to 40% and significant growth in retail, education, electricity, manufacturing, healthcare, and other sectors. The development of digital platforms and AI can be realized not only in the governmental but also in the organizational aspects, bringing benefits such as personnel management through cost reduction (Farias-Gaytan et al, 2023, Egodaweale et al., 2022), customer attraction and strengthening of market positions, cost savings, and more (Pan et al., 2021, Gomes et al., 2020, Andriushchenko et al, 2020).

This section examines trends in the development of technological, organizational, administrative, and strategic aspects of the implementation and expansion of digital systems in enterprises across the country. To this end, a study was conducted through a survey of business entities to gain a deeper understanding of the state of digitalization and digital transformation of economic processes at various enterprises in Uzbekistan. The study primarily focused on enterprises that have implemented digitalization and use relevant information systems in economic management. The survey, conducted over several years, demonstrates the dynamics of enterprise digitalization.

Methodology

The research methodology was based on a survey of focused group of companies that had more advanced practical experience in ICT applications in business operations. The survey was conducted during consecutive two years to compare certain trends in maturity of ICT applications in local businesses. The survey questionnaire consisted of 18 questions. In the first year of the survey research involved 42 companies and in the second year 26 companies responded the survey questionnaire. These companies operated in various sectors of economy such as education, ICT, tourism & hospitality, financial institutions & banking, chemicals, oil & gas, public administration, agriculture, legal services, trade and entrepreneurship. The survey responses were quantified to represent response categories as specific numbers. These numerical values were analyzed using basic exploratory data analysis method, namely using frequency distribution analysis in each year, and the outcomes of the analysis were visualized and presented in bar-diagrams and radar-diagrams considering complexity of responses. A deductive method was used to discuss visualized research outcomes. The research finding was summarized with specific conclusion.

Findings

Considering the need for various types of information systems implemented by organizations in the country, it is clear that customer relationship management (CRM) is the most widely adopted, with half of respondents effectively using it. During the survey period, growth in the use of each type of information system was observed, particularly for enterprise resource planning (ERP) systems, which grew by approximately 31%. Furthermore, management information systems (MIS) have gained popularity among companies, demonstrating rapid growth: from 19% of respondents to over 42%, putting them on par with customer relationship management (CRM) systems. Interest in knowledge management systems (KMI) has increased, but compared to other types of information systems, it has shown the smallest growth (Figure 1). The most important aspect of the development of digitalization in the economy is the digital transformation of business processes. The next criterion for the survey was which business processes are currently implemented using information systems. Based on the participants'

responses, three most popular areas of activity were identified: finance and accounting, quality control, and sales and marketing. It is noteworthy that the implementation of digital quality control systems has shown growth, outpacing information search, logistics, human resources management, and research and development, which also showed a certain increase in adoption. Significant growth has also been observed in the implementation of digital warehouse management systems (Figure 2).

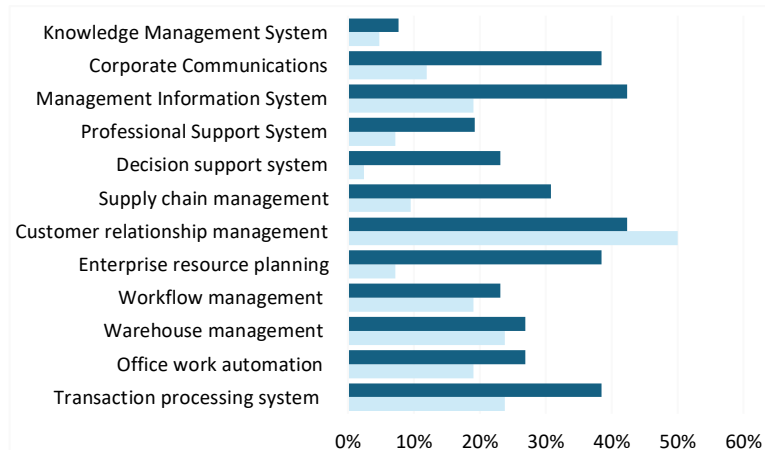


Figure 1. Information systems used in enterprises in Uzbekistan.

One of the most important research questions was to determine the tangible and intangible benefits of implementing digital systems (Figure 3). The results of the study showed that the implementation of digital systems has contributed to increased efficiency, resulting in reduced production and management costs, as well as increased customer satisfaction.

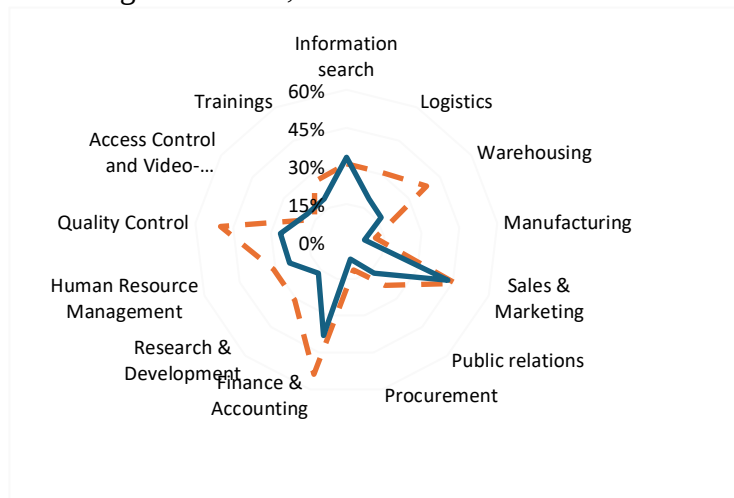


Figure 2. Dynamics of digitalization of business processes in enterprises in Uzbekistan.

Digitalization also contributed to increasing the value of information in management activities and, especially, improving the quality of decisions. Furthermore, the companies surveyed noted that digitalization led to increased revenue and return on investment.

A study of the scale of digitalization implementation in enterprises revealed positive trends in the expansion of digitalization (Figure 4). A very important trend is noted: a transition from digital solutions at the scale of individual departments to integrated corporate digital solutions. A significant increase in the use of digital systems at national, international, and global scales by enterprises in the country is also noted. Overall, the use of digital systems in Uzbekistan is expanding at a significant pace.

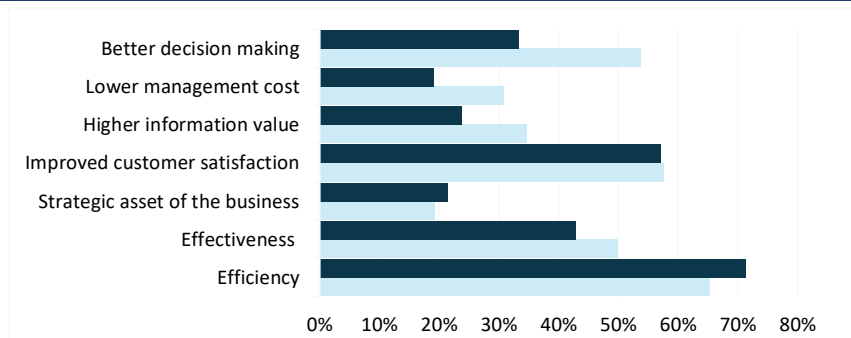


Figure 3. Dynamics of change in benefits from digitalisation.

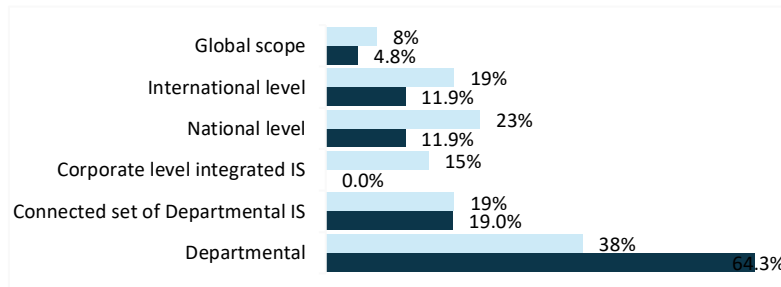


Figure 4. Scope of digitalization in enterprises.

A crucial factor in the development of digitalization and digital transformation of the economy is the availability and use of information and communication technology resources. Analysis of the study results revealed that enterprises in our country utilize computing systems and centralized data storage platforms at various levels (Figure 5). The most important indicator of the development dynamics in this context is the significant growth in the adoption of centralized computing and data storage systems (data centers), the expansion of corporate digital systems, and the expanding use of cloud systems in the practice of digitalization and digital transformation of enterprises. This trend in the development of technologies for creating enterprise digitalization platforms is a positive indicator of improved quality, technological understanding, and the effectiveness of digital solutions, and is a particularly important prerequisite and technological foundation for the implementation of more complex digital decision-making systems based on predictive and prescriptive analytics.

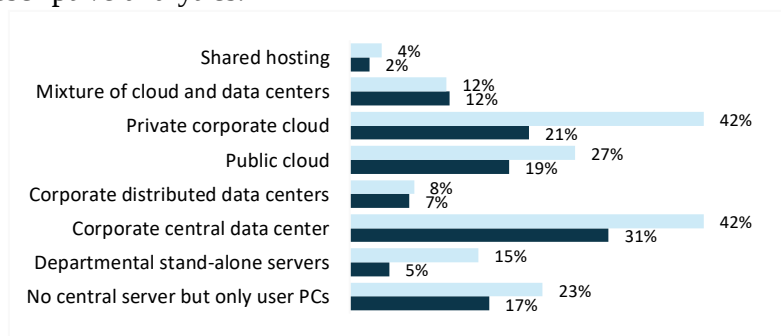


Figure 5. Computing technology used in enterprises.

The implementation of effective digital transformation of decision-making systems requires the availability of centralized platforms for structured and reliable storage of big data on enterprise economic activity. The study revealed a significant increase in the adoption of structured databases and a rapid increase in the use of cloud storage by enterprises across the country. It is noted that data backup for the reliability and resilience of digital systems has become more widely used, with a particular increase in the use of cloud systems instead of external data backups. This trend demonstrates the growing value of digital information in enterprise operations. It should be

noted that the respondent enterprises lack backup data centers for use in emergency situations. Such solutions require colossal investments and ongoing costs, which pose an unbearable financial and technological burden for local enterprises. Nevertheless, enterprises have begun to increasingly utilize cloud technologies from external ICT service providers instead of expensive in-house data centers with backup computing and storage resources. It should be noted that the "Law of the Republic of Uzbekistan on Personal Data" will create an incentive for the implementation of in-house data centers or the use of cloud-based data processing and storage solutions within the country []. Data security is one of the most important aspects of the effective operation of digital systems for every enterprise. More than half of the companies surveyed indicated that the primary measures for ensuring information security include corporate information policies, employment contracts, and regular network security management. This study notes an increase in the attention and efforts of enterprises to ensure the cybersecurity of digital systems, but the scale of digital security system implementation remains insufficient.

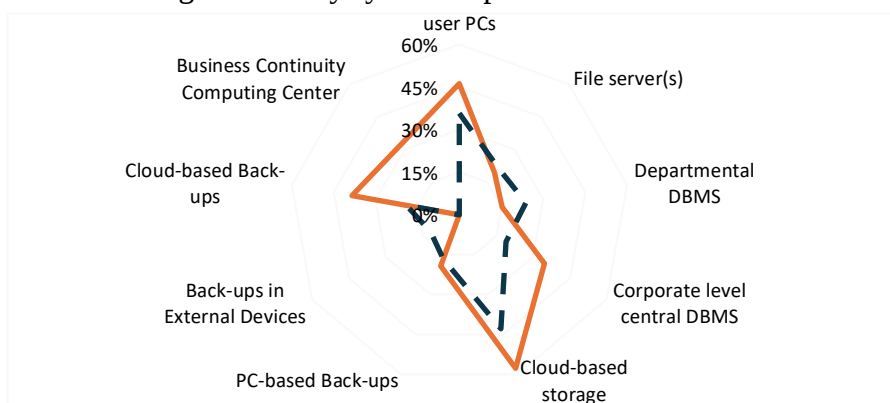


Figure 6. Data storage technologies applied in businesses.

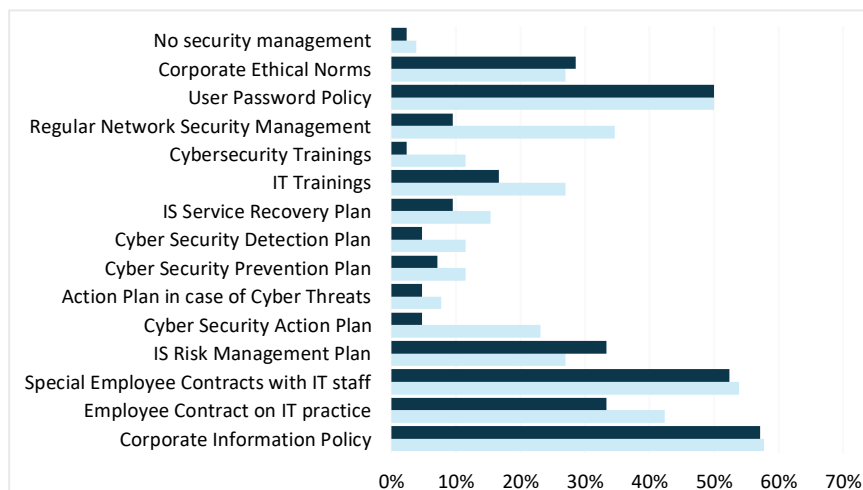


Figure 7. Dynamics of application cybersecurity systems.

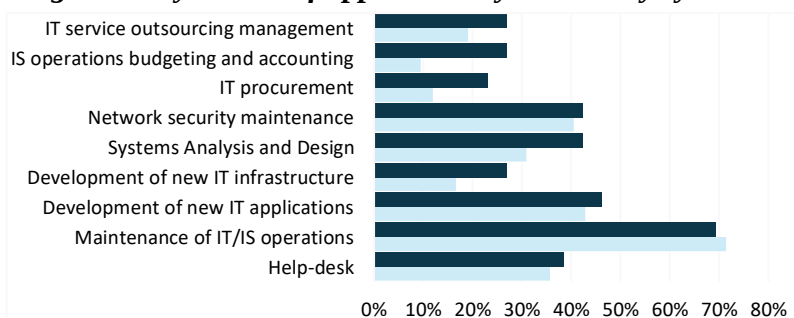


Figure 8. Dynamics of growth of ICT service functions in enterprises.

When considering organizational and administrative issues related to digitalization and digital transformation, it's particularly important to note the importance of organizing activities for the development, management, and support of tasks to ensure the sustainable operation of digital platforms—the continuous operation of technologies, the existence of appropriate job functions, rules and policies, and a management hierarchy. When examining the main functions of the organization's IT department, all indicators demonstrated growth during the survey period (Figure 7). While functions such as the development of new IT applications, systems analysis and design, and network security maintenance showed modest growth, the level of outsourcing, procurement, budget management, and ICT service accounting increased, indicating increased investment and its integration into the development of ICT platforms.

The increasing number of companies outsourcing business process reengineering services should also be considered. This growth in outsourcing also demonstrates that the ICT services market is growing and the range and complexity of services is expanding.

A study of the dynamics of changes in the range of outsourced services shows that the expanding use of ICT systems in enterprises has increased the level of hosting (location) of digital platforms in external specialized data centers and strengthened the vertical integration of digital systems technical support functions within the enterprise structure (Figure 9).

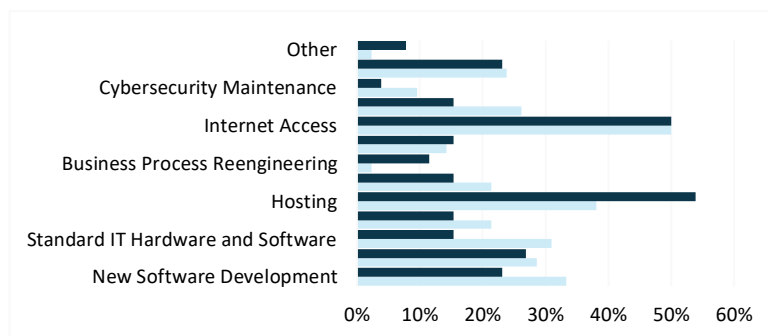


Figure 9. Outsourcing of ICT services in enterprises.

The creation, support, and development of digital management and decision-making systems requires significant financial investment. Creating a digital system is not a one-time investment project; rather, it requires ongoing funding for its maintenance and development. These expenses must be appropriately reflected in the budget plan. The management and funding of digital systems determines the quality of the system itself and the direction of its strategic development.

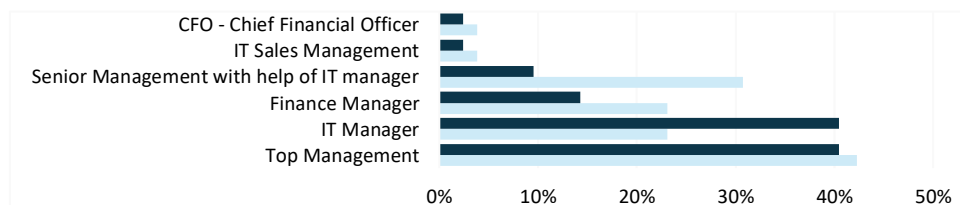


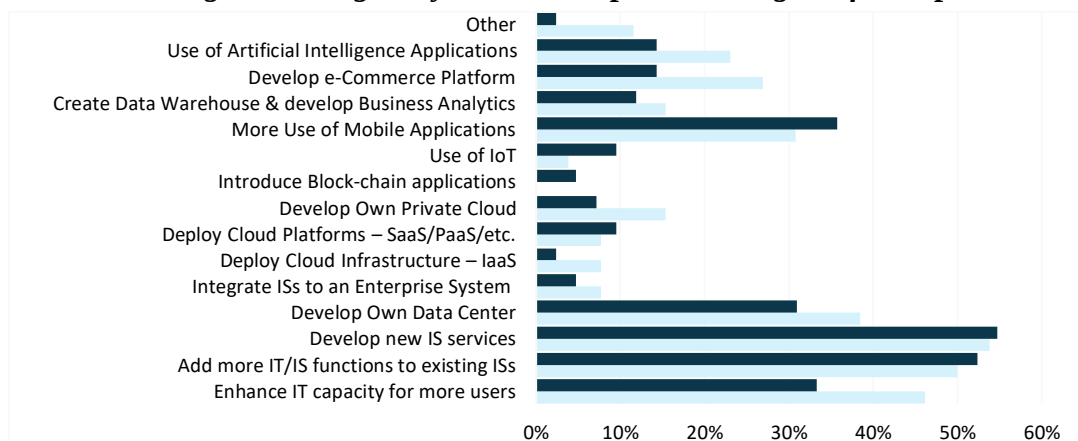
Figure 10. Change dynamics in IT management.

The study showed that responsibility for the development and funding of digital systems is increasingly being assigned to senior management (Figure 10). This trend is quite positive, as senior management recognizes the strategic importance of digital management and decision-making systems and, therefore, takes personal responsibility for their development.

This study examined an equally important factor playing a decisive role in the development of digital management and decision-making systems: enterprises' strategic plans for the future development of information systems. Positive dynamics are noted in the strategic focus of digital

platform development toward the implementation of more complex management and decision-making information systems. Enterprises increasingly plan to expand their client base and increase the computing potential of centralized data centers, deepen their digital transformation by developing business analytics and e-commerce platforms, and create conditions for the effective use of artificial intelligence solutions in decision-making (Figure 11). This fact is also confirmed by the fact that fewer enterprises plan to invest in existing digital systems and expand digital services. It is precisely the strategic investment plans of enterprises in the development of high-tech digital systems that create favorable conditions for the expanded use of more effective digital decision-making systems and artificial intelligence-based solutions.

Figure 11. Digital systems development strategies of enterprises.



Conclusion

The above study aimed to examine the internal aspects of enterprises regarding their economic, technological, and administrative-organizational measures for the development of digital management and decision-making platforms. Summarizing the findings of this study, the following key points should be noted:

- the use of digital platforms is expanding, with the primary benefit being reduced production costs;
- the use of digital systems to create additional value is in its infancy;
- there is a positive trend toward centralization and strengthening of technology platforms, as well as the increasing adoption of cloud-based digital solutions;
- there is a growing understanding of the value of data and information, and efforts aimed at ensuring cybersecurity are strengthening;
- enterprise digital strategy plans are focused on the creation of e-commerce platforms, data analytics, and the application of artificial intelligence.

The above trend demonstrates that enterprises are beginning to invest in deepening the digitalization of business processes and supporting the digital transformation of their business platforms to create additional economic value and ensure effective decision-making.

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