METHODS FOR ASSESSING THE EFFECTIVENESS OF DIGITAL SERVICES

Xakimdjanova Dildora Kamilevna
Senior lecturer of
Tashkent University of Information Technologies
named after Muhammad Al-Khwarizmi

Abstract. *In all countries of the world community, the provision of digital government services in line with the requirements of the times, as well as the provision of high-quality, secure and user-friendly services to the population by expanding the scope of services, is emerging as one of the priority areas for increasing the efficiency of public administration. This, in a modern economy dominated by digital technologies, with the rapid introduction of solutions such as big data, artificial intelligence and IoT, further increases the urgency of conducting a deep analysis of the integration and diversification processes in the provision of digital government services, evaluating them through efficiency criteria and developing them based on strategic approaches. Therefore, the scientific development of organizational and economic mechanisms for diversifying services within the e-government system, assessing the effectiveness of their implementation, increasing the speed of data exchange through integrated platforms and creating user-centered interfaces is becoming one of the most important issues of scientific and academic interest today.*

Keywords: *Digital economy, modern technologies, scientific theories, information technologies, scientific development, effectiveness of digital services.*

In his book "The Fourth Industrial Revolution," German scholar Klaus Schwab emphasizes the importance of technological integration and innovation in assessing the effectiveness of digital services. "In his opinion, to succeed in the process of digital transformation, companies need to quickly adopt and adapt to technological innovations." This approach helps companies remain competitive and provide high-quality services to customers. To do this, the researcher gave his recommendations using this formula:

$$S = \frac{Q \times T}{C} \; ;$$

In this:
S — efficiency, percent;
Q — service quality, percent;
T — level of technological innovation, percent;
C- costs, percent.

In order to increase efficiency through the introduction of new technologies, it was possible to formulate its strategies using this assessment method. This approach was successfully tested in the German company "Siemens", which allowed it to increase competitiveness by improving service quality and reducing costs. As a result, the company

developed a "Digital Transformation" strategy, which involves the rapid introduction and adaptation of technological innovations.

American researcher Michael E. Porter recommends using value chain analysis to assess the efficiency of digital services. "In his opinion, digital technologies affect all areas of the company's activities and allow optimizing value creation processes." This scientific reasoning shows that companies can achieve success in increasing the efficiency of digital services and meeting customer needs, which is also reflected in this assessment formula:

$$V = \Sigma(Pi \times Ei);$$

In this formula: V — total value;

Pi — product value;

Ei — efficiency index.

The advantage of this evaluation method and its focus on universality is that all services in the value chain are optimized. He proposed a method for determining the total value of a company through value chain analysis. This approach was used by Apple to increase the value of its products and improve efficiency. Based on the "vertical integration" strategy, the company significantly increased its profit by fully controlling the production and supply chain.

Brazilian scientist Silvio Meira "considers it important to measure user experience (UX) when evaluating the effectiveness of digital services, and accordingly, improving user experience is a key factor for the success of digital services." This approach is promoted based on his research to increase customer satisfaction and increase the ability of companies to expand the use of services.

$$UX = \frac{Ssat + Seff}{2};[1]$$

Here: UX — user experience, years;

Ssat — user satisfaction level; percent;

Seff — service efficiency, percent.

Based on this formula, personnel control is carried out and the method of improving the user experience is expanded. This method was implemented in the Brazilian e-commerce platform "Mercado Livre". Using this method, it was possible to increase user satisfaction and improve service efficiency. As a result, the company developed a "User-Centered Design" strategy and adapted its services to the needs of customers.

Japanese scientist Hiroshi Ishii recommends studying "human-computer interaction (HCI)" when assessing the effectiveness of digital services, that is, effective interaction between technology and people determines the success of digital services. He substantiated in

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[1] E. S. de Almeida, A. Alvaro, D. Lucredio, V. C. Garcia and S. R. de Lemos Meira, "RiSE project: towards a robust framework for software reuse," Proceedings of the 2004 IEEE International Conference on Information Reuse and Integration, 2004. IRI 2004., Las Vegas, NV, USA, 2004, pp. 48-53, doi: 10.1109/IRI.2004.1431435. keywords: {Robustness;Programming;Software systems;Productivity;Software engineering;Costs;Software quality;Best practices;Inhibitors;Control systems},

his assessment approach that the usability and efficiency of services can be improved through this method:

$$HCI = \frac{Iacc \times Uint}{Terr};^2$$

Here: HCI - human-computer interaction, in percent;

Iacc - ease of use, in percent;

Uint - interface flexibility, in percent;

Terr - error rate, in percent.

Hiroshi Ishii proposed an approach aimed at ensuring effective interaction between technology and humans through the human-computer interaction (HCI) model. This approach was successfully tested at the Japanese corporation Sony by increasing the convenience of the interface and reducing errors. This became the basis for the development of the company's "Human-Centered Innovation" strategy.

Russian scientist Vladimir Ivanov suggests analyzing economic efficiency indicators when assessing the effectiveness of digital services. In his opinion, "assessing the economic efficiency of digital services is important for determining their profitability and determining future development strategies." His evaluation formula is also considered proof of his reasoning:

Here: E-economic efficiency, in percent;

R-income, in percent;

C-costs.

Service efficiency is determined by analyzing the economic profit indicator. With this approach, companies can evaluate the financial results of digital services and make investment decisions. The research of these scientists shows the importance of using different approaches and assessment methods to improve the efficiency of digital services. In particular, Vladimir Ivanov's economic efficiency analysis was used in the Russian company "Yandex". By calculating the economic efficiency indicators between income and expenses, the company increased the profitability of digital services. This approach became the basis for developing the "Diversification" strategy, which allowed the company to offer a variety of services and expand its market share.

These scientific and practical approaches are of fundamental importance in improving the efficiency of digital services. Each formula and strategy created the basis for improving the quality of services in its field and introducing new approaches. This was an important step not only for companies, but also for the integration of science and practice.

Scientists have put forward various theoretical views on assessing the effectiveness of digital services. For example, A. Rakhmonov, studying theoretical views on improving the management of public organizations in the context of digital transformation, provides "theoretical information on the strategic approaches necessary for the successful implementation of digital technologies."

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[2] Fitzmaurice G. W., Ishii H., Buxton W. A. S. Bricks: laying the foundations for graspable user interfaces //Proceedings of the SIGCHI conference on Human factors in computing systems. – 1995. – C. 442-449.

G.R. Boltaboyeva "analyzes the theoretical methodological foundations of increasing the efficiency of using digital technologies in e-commerce, indicating the main factors, opportunities and directions". Also, "the role of modern information and communication technologies in managing digital services is emphasized, the importance of "measures to increase the scope and quality of digital services and digital transformation of sectors, industries and regions" is emphasized" by A. Aliyev. The assessment methods and approaches reflected in the studies of foreign and national economists above were carried out based on the legal framework for e-government services in our country. In particular, the legally established criteria interpreted in Chapter 5 of the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 728 dated September 15, 2017 "On measures to improve the procedure for providing e-government services through the Unified Interactive State Services Portal of the Republic of Uzbekistan" are a vivid example of this. Turning to this chapter, in order to determine "Chapter 51. The procedure for forming a rating of the level of satisfaction of the population and business entities with electronic government services and services", we come across the definition given in paragraph 34 of this Resolution as "The level of satisfaction of the population and business entities with electronic government services and services on the Single Portal of state bodies is assessed". Assessing the effectiveness of electronic services and services provided by state bodies through the Single Interactive State Services Portal, in fact, serves to strengthen trust in the public administration system. This assessment is not only an indicator of technological progress, but also a process of determining how convenient and effective the services are for citizens and business entities. Citizens express their level of satisfaction by assessing the convenience they experience when using services such as paying taxes online, updating personal information, or obtaining various permits.

In order to ensure the comprehensiveness of services, it is possible to increase information security and transparency by integrating the portal with blockchain technologies. For example, the use of the blockchain system when carrying out financial transactions through the public services portal strengthens user trust and ensures the reliability of services. Also, the introduction of gamification elements to further attract users to use the portal will yield great results. This will not only increase user loyalty, but also bring the popularity and efficiency of the portal to new heights. Thus, it is possible to increase the social and economic efficiency of services through continuous improvement of indicators and the involvement of innovative technologies.

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