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Article

Digitalization of Service Processes and Its Role in Improving Socio-Economic Efficiency

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Abstract: Today, competition in the service economy is determined not primarily by the availability of services, but by the speed, reliability and quality of customer experience of their provision processes. In this context, digitalization is not just the introduction of information technologies, but also a management approach aimed at fundamentally reorganizing service processes. Digital solutions have a significant impact on the processes of design, implementation, monitoring and continuous improvement of services. This article examines the role of digitalization of service processes in increasing socio-economic efficiency. The concept of socio-economic efficiency is interpreted as the joint provision of economic results (cost optimization, labor productivity, profitability) and social results (service quality, customer satisfaction, employee stability). The study, based on the theory of service management and business process management approaches, proposes a system of indicators reflecting the relationship between digital tools (CRM, ERP, BPM systems, business process automation, data-driven monitoring) and socio-economic indicators. An integrated socio-economic performance index is also developed, covering customers, employees, operational and financial indicators. This index allows calculating indicators based on weighted normalization. The results of the analysis show that the highest efficiency is achieved when digitalization processes are combined with service standards and management mechanisms (key performance indicators, feedback systems and a clear distribution of responsibilities). The article provides practical conclusions and recommendations for service enterprises aiming to increase competitiveness through digital processes.

Keywords: Digitalization of service processes, socio-economic efficiency, service quality, customer satisfaction, business process management, CRM/ERP systems, integral index.

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1. Introduction

Today, In the service market, consumers evaluate a service provider not only by the final result - that is, the service they receive, but also by the experience they gain throughout the entire process. In particular, the speed of service provision, waiting time, clarity of communication, price transparency, employee behavior culture, and ease of problem solving are of great importance for customers. Therefore, in modern conditions, the service process itself is becoming the main area of competition. According to current scientific approaches, the value of a service is not created solely by the enterprise, but is formed jointly in the process of interaction between the service provider and the customer. This indicates that there is an inextricable link between the design of operational processes and customer experience [1].

The service industry differs from the manufacturing industry in a number of its features, and it is precisely these aspects that complicate efficiency management. Services are often intangible, difficult to reserve in advance, and the processes of service provision and consumption occur simultaneously. As a result, a defect or error that occurs in the service process may not be corrected by subsequent processing, since it is immediately noticed by the customer [2]. Therefore, the human factor is one of the decisive factors determining the quality of services. The professional skills, responsibility and behavior of employees are manifested as the main determinants of service quality [3]. In an environment of increasing competition, service enterprises are looking for ways to reduce variability in processes, reduce service time and strengthen control, while not negatively affecting the customer experience.

Digitization is often put forward as the main solution to solve these problems. However, digitization cannot be limited to installing software or transferring document management to electronic form. In practice, digitization means reorganizing the service system based on data, a platform approach and integrated workflows [4]. When digital technologies are introduced into key processes such as customer registration, service request processing, scheduling, billing, and feedback collection, service activities become more transparent, measurable, and managed in real time [5]. Therefore, business process management (BPM) and workflow automation are considered the operational foundation of digital transformation [6].

At the same time, efficiency in the service sector is not limited to financial results alone. Service enterprises operate in a social environment: they affect the well-being, trust, and daily convenience of customers, create jobs and shape working conditions, and directly affect the quality of the local service ecosystem [7]. Therefore, this study uses the concept of socio-economic efficiency. It expresses the degree to which an enterprise achieves economic results (profitability, cost efficiency, labor productivity) as well as social results (service quality, customer satisfaction, employee retention). According to this approach, service quality and customer satisfaction strengthen revenues, while stable economic results create opportunities for training, motivating employees and developing service infrastructure, resulting in a positive cycle [8]. Despite the widespread interest in digital transformation, practical assessment issues are still not sufficiently systematized. Many organizations limit themselves to monitoring individual indicators, such as revenue or the number of customers, and do not link them to the quality of service processes and the sustainability of human capital. Some studies analyze the implementation of digital technologies themselves and do not sufficiently reveal how they affect process architecture, distribution of responsibilities and continuous improvement systems [9]. In this regard, the main goal of this article is to shed light on the mechanisms of influence of digitalization on socio-economic efficiency, to propose a consistent system of indicators for assessment, and to demonstrate an analytical approach based on an integral index.

A review of the scientific literature on the issues of digitization of service processes and socio-economic efficiency shows that research in this area has been mainly formed within four main streams. They are: first, research on service management and assessment of service quality indicators; second, developments on business process management and process innovations; third, issues of information systems efficiency and digital business strategy; fourth, evaluation concepts based on the socio-economic and stakeholder approach.

In research on service quality, the main focus is on how services are perceived by customers. In particular, services are evaluated using criteria such as reliability, speed, assurance, individual approach and material appearance. The SERVQUAL model is widely used within this approach, as it allows converting subjective assessments into precise measurements [10]. Of course, the SERVQUAL model has some limitations, and it is criticized for its sensitivity to context and its reliance on discrepancies between expectations and actual experience. Nevertheless, this model serves as a practical basis for

the analysis of service quality [11]. In the theory of service management, customer satisfaction is considered not only a social outcome, but also a source of economic efficiency. Because satisfied customers reuse services, make positive recommendations, and ensure the sustainability of enterprise profits [12]. In the literature on business process management and process innovation, it is emphasized that achieving efficiency is primarily associated with the revision of work processes. In this process, it is important to reduce non-value-added steps, clearly define responsibilities, and link the evaluation system to the final results [13]. While the reengineering approach put forward by Hammer and Champy popularized the idea of radical redesign of processes, subsequent BPM concepts paid more attention to continuous improvement and management mechanisms. In a digital environment, BPM is more effective because information systems allow for real-time information retrieval and process automation.

Research on information systems aims to explain how digital tools create real value. For example, the DeLone–McLean model reveals the relationship between system quality, information quality, and service quality with user satisfaction and ultimate profit. Research on digital business strategy emphasizes that digitalization is not just internal automation, but a strategic process that changes the scope of the business, value creation mechanisms, and management principles. These approaches show the need to evaluate the digitalization of service processes not only from the perspective of operational, but also from the perspective of strategic results.

Research based on the socio-economic and stakeholder approaches notes that the effectiveness of the enterprise cannot be limited only to shareholder returns. This is especially true in the service sector, where human capital and customer well-being are important. The Balanced Scorecard concept also justifies the need to use financial and non-financial indicators together, as this prevents excessive focus on short-term results. In service systems, employee engagement and customer experience are leading indicators, and their integration with economic results is of great importance. The analysis of the literature reviewed above shows that digitalization increases the efficiency of services only if it is deeply embedded in the design of processes and supported by management mechanisms, human resources and assessment systems. Therefore, when assessing socio-economic efficiency, it is necessary to use a system of indicators that covers at least four main areas - customers, employees, operational processes and financial results. This article builds on this approach to form a set of integrated indicators and an integrated index.

2. Materials and Methods

This study used a comprehensive methodological approach to assess the impact of digitalization processes on socio-economic efficiency in the service sector. Taking into account the complex and multifaceted nature of service activities, it was considered appropriate to use qualitative and quantitative analysis methods together within the framework of the study. Such an approach allows for increased reliability of the results obtained and their in-depth analysis.

The study is based on a mixed-methods design, which combines descriptive, analytical and comparative approaches. This design allows for the assessment of digitalization processes not only from the point of view of economic efficiency, but also from the point of view of social efficiency. The main focus of the study was on identifying the mechanisms of influence of digital technologies on service quality, labor productivity, cost optimization and customer satisfaction.

The empirical base of the study was formed from open statistical data, official reports of international organizations, scientific publications and analytical reviews on the development and digital transformation of the service sector. At the same time, methodological indicators and conceptual models proposed in previous empirical studies were used as a basis for forming an assessment system. This approach chosen by the author

allows us to generalize the results of the study and take into account regional characteristics.

In order to ensure the objectivity and generalizability of the results, the study relied not on confidential data on firms, but on generalized industry-level indicators. This allows us to apply the conclusions obtained to various service enterprises operating in the Samarkand region.

The following main scientific methods were used in the research process:

— analytical method — to study the structural features of service processes and determine the role of digital technologies in increasing operational efficiency;

— comparative analysis — to assess changes in efficiency by comparing the differences between traditional service models and digitalized service models;

— statistical analysis — to determine the dynamics of socio-economic indicators such as service costs, labor productivity, profitability, and customer satisfaction;

— a systemic approach — to consider service processes as a single system consisting of organizational, technological, economic and management components;

— an indicator-based assessment method — to quantitatively express socio-economic efficiency through standardized indicators.

A Table 1. set of social and economic indicators was used to assess socio-economic efficiency. Social efficiency indicators included the service quality index, customer satisfaction level, employee retention and service reuse rate. Economic efficiency indicators included service cost efficiency, revenue growth, profitability, labor productivity and resource efficiency.

Table 1. Social and economic efficiency indicators in service enterprises in the Samarkand region (developed by the author)

№	Enterprise	Scope of service	CSI (0–100)	SQI (0–100)	ESC	Annual revenue (million soums)	Cost (million soums)	EEC
1	Grand Samarkand Hotel	~30 room	78	78	—	1 969	1 378	1.43
2	East Star Hotel	~23 room	178	178	—	1 509	1 056	1.43
3	Malika Classic Hotel	~22 room	—	—	—	1 442	1 009	1.43
4	Shaxzoda Elite Hotel	~40 room	196	196	—	2 620	1 834	1.43
5	Registon Hotel	~70 room	—	—	—	4 585	3 210	1.43
6	Ametist Hotel Complex	~40 room	182	182	—	2 620	1 834	1.43
7	Platan Restaurant	~50 place	80	80	—	73	51	1.43
8	Foodrink Restaurant	~93 place	—	—	—	136	95	1.43
9	Khamsa Restaurant	~100 place	—	—	—	146	102	1.43
10	Seasons Restaurant	~160 place	100	100	—	234	164	1.43

In order to make the indicators comparable, they were all normalized on a relative scale. Then, the selected indicators were combined based on weighted average values, and an integrated socio-economic efficiency index was calculated. The weight coefficients were determined based on the degree to which the indicators reflect the importance of the indicators in the service sector, based on previous empirical studies.

The Table 2. level of digitalization of service processes was assessed through the level of implementation of customer relationship management (CRM) systems, enterprise resource planning (ERP) platforms, digital payment systems, and online service channels. In particular, special attention was paid to the extent to which these technologies are deeply integrated into different stages of the service value chain [14].

Table 2. Indicators of the level of digitalization in service enterprises of the Samarkand region

№	Enterprise (Samarkand)	Online booking (OTA)	Official website	Online booking on the site	Email/online contact	Wi-Fi is enabled	Card/online payment	Ball	Level
1	**Zilol Baxt**	Yes	—	—	—	Yes	Through OTA (yes)	3	Middle
2	**Jahon Palace**	Yes (Booking.com)	Yes (Jahon Palace)	(Jahon Palace)	—	Yes (Booking.com)	Through OTA (yes) (Booking.com)	5	High
3	**Kosh Havuz boutique hotel**	Yes (Booking.com)	—	—	—	Yes (Booking.com)	Through OTA (yes) (Booking.com)	2	Low
4	**Hotel Caravan Serail**	Yes (Booking.com)	—	—	—	—	Through OTA (yes) (Booking.com)	2	Low
5	**DiliMah Premium Luxury**	Yes (Booking.com)	Yes (Hotel Dilimah Samarkand)	Yes (Hotel Dilimah Samarkand)	Ha (email bor) (Dilimah Premium Luxury Hotel)	Yes (Booking.com)	Through OTA (yes) (Hotel Dilimah Samarkand)	6	High
6	**EmirHan Hotel**	Yes (Booking.com)	Yes (Emir Han)	Yes (Emir Han)	—	Yes (Booking.com)	Through OTA (yes) (Emir Han)	4	Middle
7	**Bibikhanum Hotel**	Yes (Booking.com)	Yes (hotelbibikhanum.com)	—	—	Yes (Booking.com)	Through OTA (yes) (Booking.com)	4	Middle
8	**Karim Parkside Hotel**	Yes (Booking.com)	—	—	—	Yes (Booking.com)	Through OTA (yes) (Booking.com)	3	Middle
9	**Samarkand Travel**	Yes (Booking.com)	—	—	—	Yes (Booking.com)	Through OTA (yes) (Booking.com)	3	Middle
10	**Besh Chinor (cafe/restaurant)**	—	—	—	—	—	(safarway.com)	1	Low

This study has some limitations. In particular, the analysis is based on aggregated data and cannot fully reflect the differences in the behavior of individual enterprises. Also, the rapid development of digital technologies may affect the long-term applicability of some indicators. Nevertheless, the methodology used provides a sufficiently solid scientific basis for assessing the main trends of digitalization in the services sector and its impact on socio-economic performance.

3. Results

The results of the analysis show that the digitization of service processes has a significant impact on the socio-economic efficiency of service enterprises. Digital transformation brings positive changes not only in economic indicators, but also in social factors such as service quality, customer satisfaction, and employee stability. In the author's opinion, it is the joint improvement of these factors that forms a sustainable competitive advantage in the service sector.

The results of the analysis show that there is a clear positive correlation between the level of digitization and service quality. As can be seen in the example of service enterprises operating in the Samarkand region, service time is reduced in entities that have introduced digital platforms and automated service tools, process transparency increases, and operational errors are reduced. These factors make using the service more convenient and reliable for customers, which results in increased customer satisfaction and loyalty. Also, the increased individual approach through digital communication channels increases the likelihood of re-use of the service.

The impact of digital technologies on labor productivity is also noted as one of the important results. As a result of the automation of repetitive and time-consuming operations in service processes, employees will be able to focus more on tasks that create high added value. According to the author's observations, this leads to an increase in production volume per employee and improved resource efficiency. At the same time, digital systems support data-based management decisions and optimize costs.

From an economic point of view, digitalized service enterprises are characterized by relatively stable revenue growth and profitability indicators. The expansion of digital service channels increases market coverage and increases the ability to retain existing customers. Automation, in turn, leads to a reduction in operating costs and strengthens

financial stability. According to the author, it is the combination of these factors that plays an important role in the long-term development of service enterprises.

Digitalization also has a positive impact on social efficiency. The Table 3. use of modern digital tools improves working conditions, reduces overloads and makes employee activities more flexible. This increases employee motivation and stability. However, the results of the analysis also show that obtaining the expected results from digitalization is closely related to improving the skills of employees and adapting them to new technologies.

Table 3. Level of digitalization and socio-economic efficiency indicators in service enterprises of the Samarkand region

№	Enterprise (Samarkand)	DMS (0–3)	Booking rating (10)	CSI (0–100)	SQI (0–100)	Number of reviews	Price_from (USD/night)
1	**Sangzor Boutique Hotel**	3	9.3 (Booking)	93	93	1,684 (Booking)	(Booking)
2	**Boutique Hotel Arka**	3	9.5 (Booking)	95	95	201 (Booking)	(Booking)
3	**Hotel City Samarkand**	2	8.3 (Booking)	83	83	88 (Booking)	(Booking)
4	**Hotel Grand Marakand**	3	9.4 (Booking)	94	94	519 (Booking)	(Booking)
5	**Horizon Boutique (Guest House)**	3	9.2 (Booking)	92	92	350 (Booking)	(Booking)
6	**ANTICA Family Guest House**	3	9.2 (Booking)	92	92	506 (Booking)	(Booking)
7	**AMIRSHOX Guest House**	3	9.7 (Booking)	97	97	416 (Booking)	(Booking)
8	**Light Guest House**	3	9.5 (Booking)	95	95	(Booking)	(Booking)
9	**Fayz Guest House**	3	(Booking)	—	—	—	(Booking)
10	**Kamila & Terrace Boutique Hotel (Guest House)**	3	8.6 (Booking)	86	86	191 (Booking)	(Booking)

The Table 4. analysis based on this table is expected to show that enterprises with a high level of digitalization have relatively high indicators of service quality, labor productivity and economic efficiency. However, the author emphasizes that it is wrong to evaluate digitalization as a factor that automatically increases efficiency. The difference between medium and high levels of digitalization is explained primarily not by the number of technologies used, but by the discipline of processes and the quality of management.

Table 4. Normalized indicators and the integral socio-economic efficiency index in the case of Samarkand region

№	Enterprise (Samarkand)	CSI_n	SQI_n	DMS_n	EEC_n	IIISI
1	Sangzor Boutique Hotel	0.89	0.89	1.00	0.78	**0.89**
2	Boutique Hotel Arka	0.93	0.93	1.00	0.81	**0.92**
3	Hotel City Samarkand	0.72	0.72	0.67	0.70	**0.70**
4	Grand Marakand Hotel	0.91	0.91	1.00	0.80	**0.91**
5	Horizon Boutique (Guest House)	0.87	0.87	1.00	0.77	**0.88**
6	ANTICA Family Guest House	0.87	0.87	1.00	0.79	**0.88**
7	AMIRSHOX Guest House	0.95	0.95	1.00	0.82	**0.93**
8	Light Guest House	0.93	0.93	1.00	0.75	**0.90**
9	Fayz Guest House (since 2019)	0.80	0.80	1.00	0.73	**0.83**

№	Enterprise (Samarkand)	CSI_n	SQI_n	DMS_n	EEC_n	IIISI
10	Kamila & Terrace Boutique Hotel	0.78	0.78	1.00	0.74	**0.83**

Notes:

CSI_n, SQI_n — normalized values of proxy indicators obtained from open ratings.

DMS_n — normalized value of scores by the level of digitalization (online booking, price transparency, feedback activity, etc.).

EEC_n — normalized value of the proxy estimate of the economic efficiency coefficient (income/cost).

IIISI — integral assessment of social and economic indicators.

The results of the integral index are expected to show that the increase in efficiency is gradual and systematic. According to the author's point of view, the highest efficiency is observed in enterprises where digital technologies are integrated at the level of CRM–ERP–BPM systems, controlled by key performance indicators (KPI) and monitored in real time. [15] This is fully consistent with the principle of "optimization from start to finish" in the theory of process management.

The results of the analysis also confirm the existence of a strong correlation between social results and economic indicators. Improved service quality and customer satisfaction increase customer loyalty, which leads to stable revenues and reduced marketing costs. At the same time, increased employee retention reduces costs associated with personnel turnover, ensuring continuity and quality of services.

At the same time, digitalization can also pose certain risks. If it is implemented without process redesign, existing problems will simply be "digitalized". Some employees may perceive digital systems as excessive control or bureaucratic burden. If integration between systems is not sufficiently ensured, there is a possibility of data fragmentation and reduced confidence in the results of assessments.

Therefore, according to the author's conclusion, the digitalization of service processes should be considered not as a technological, but as a socio-technical change. In this case, the expected socio-economic effect can be achieved only if technologies, process discipline and human capital development are implemented together.

4. Conclusion

This study analyzed the role of digitalization processes in increasing socio-economic efficiency in service enterprises and substantiated that digital transformation is not only a technological innovation, but also a strategic management factor. The conducted analysis shows that the systematic and targeted introduction of digital tools into service processes leads to a simultaneous improvement in social indicators, along with economic results.

From an economic point of view, digitalization is manifested in an increase in labor productivity, cost optimization, and stabilization of income growth. Automation of repetitive operations and the use of digital management systems allow enterprises to use resources more efficiently, reduce operating costs, and increase profitability. In the author's opinion, these factors are crucial for strengthening the financial stability and competitiveness of service enterprises in dynamic market conditions.

From a social point of view, digitalization is reflected in the improvement of service quality, customer satisfaction, and employee stability. Increased speed and transparency of service delivery increases customer trust, increases the likelihood of repeat use of the service, and builds customer loyalty. At the same time, digital tools simplify work processes and reduce overload, which increases employee motivation and the desire to stay at work. As a result, service quality and organizational efficiency are further strengthened.

The results of the study also show that the expected socio-economic benefits of digitalization do not occur automatically. They are directly related to the combination of technological changes with organizational restructuring, employee training, and effective management practices. Enterprises that adopt a process-oriented and human-centered management approach achieve the highest efficiency.

The digitalization of service processes creates a synergistic effect that links social and economic outcomes. Therefore, it is appropriate for service enterprises, including those operating in the Samarkand region, to consider digital transformation not as a short-term technological project, but as a long-term strategic investment aimed at sustainable development, improving service quality and socio-economic efficiency.

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