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Innovative Mechanisms for Improving Clustering and Resource Efficiency in The Field of Household Services

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Abstract: This article scientifically substantiates innovative mechanisms that ensure the effective use of resources based on clustering in the field of household services. The study examines the prospects for enhancing service productivity through territorial clustering, digital platforms, electronic business information databases, and mobile payments. The study of the dynamics of market development of services on the example of the Kashkadarya region, the development of proposals and recommendations for increasing the efficiency of resource use. Moreover, the paper describes the organizational and economic mechanism of development of the household services cluster in the framework of adaptive development in the digitalization paradigm from a systematic perspective. Also, the possibilities of reducing transaction costs and increasing management efficiency through the introduction of innovative technologies in the field of services are scientifically substantiated. The results of the study are of practical importance in making strategic decisions on the sustainable development of the regional services market and increasing economic efficiency.

Keywords: Household Services, Clustering, Resource Efficiency, Digital Platform, Service Market, Innovation, Electronic Systems, Economic Efficiency

1. Introduction

The services sector has emerged as one of the chief engines of economic growth in a globalization context. Especially the household services sector besides satisfying routine needs of the population has an important part in estimating employment one that increases the income of regional population and its development [1]. As for the services sector, international organizations, including the World Bank and the UN, say that at present it accounts for about 63–65 per cent of world gross domestic product, and in developed countries - more than 70–75%.

Also, globally, more than 50 percent of the employed population works in the services sector, and in developed countries this figure has reached more than 70 percent[1]. In recent years, digital transformation processes have accelerated in the services market, and as a result of the development of electronic services, the platform economy, and the "gig economy", the economic efficiency of the services sector is increasing significantly. For example, according to OECD data, as a result of the increase in the share of digital services, in some countries the export of services has reached 25-30% of total exports[2]. At the same time, the innovative development of the services sector has a direct impact on economic growth rates and remains one of the main sources of job creation [3].

In Uzbekistan, the development of the services sector has also become a priority area of state policy, especially in the consumer services market, where the cluster approach and acceleration of digitalization processes are considered urgent tasks. According to official statistics, the volume of services in the country will grow steadily over the period 2020–2025, and the share of this sector in the economy is steadily increasing[10]. At the same time, diversification and the emergence of new types of services in the consumer services segment are serving as an important factor in strengthening regional economic activity.

In this context, the development of innovative mechanisms for the efficient use of resources and improvement of the quality of services, especially clustering and improving the management system based on digital platforms, is of great scientific and practical importance [4]. This approach will ensure the sustainable development of the services market, increase competitiveness, and accelerate regional economic growth.

2. Materials and Methods

In this study, a set of scientific and methodological methods was used based on a systematic approach to conduct an in-depth analysis of the processes of clustering and increasing resource efficiency in the field of household services. In particular, during the study, the structural elements of the household services cluster, their interdependence and impact on economic efficiency were studied through a systematic analysis and a comprehensive approach. Using comparative and statistical analysis methods, regional and international indicators were compared, and the development trends of the services market were identified. Also, theoretical conclusions were formed based on induction and deduction methods, creating the opportunity to move from general scientific views to practical results and draw generalized conclusions from empirical data. Using the econometric modeling method, the development indicators of the household services market were assessed based on multifactor analysis, and the efficiency of resource use was forecasted. Monographic and empirical analysis methods played an important role in the in-depth study of the practical situation in the field, the identification of existing problems and the development of scientific and practical proposals aimed at eliminating them.

3. Results

The results of the study confirmed that clustering and digital transformation processes in the field of household services have a significant positive impact on economic efficiency. In particular, the analysis conducted on the example of the Kashkadarya region showed that the implementation of the cluster approach has increased the efficiency of resource use [5]. It was found that during 2015–2025, the volume of services increased by an average of 1.45 times, and labor productivity increased by 18–22 percent. The service quality index in clustered regions is 15–20 percent higher than in traditional regions, and increased cooperation between enterprises has reduced production and service costs by an average of 12–15 percent [6]. These results confirm that the integration of labor, financial and infrastructure resources through the cluster mechanism is an important factor in increasing economic efficiency.

The introduction of digital service platforms has also significantly increased the institutional efficiency of the services market. In particular, the ordering process has been simplified, the time to apply for services has been reduced by an average of 30–40 percent, and real-time monitoring of services has been provided to 90–95 percent. As a result of digitalization, the share of hidden economic turnover has decreased by 20–25 percent, while the share of electronic payments in the total volume of services has increased by 35–50 percent [7]. These results are explained by the reduction of transaction costs and the reduction of information asymmetry as a result of the integration of the order-execution-payment chain into a single system through digital platforms. As a result of the analysis of regional development trends, it was found that the consumer services market in the Kashkadarya region has been growing steadily. Specifically, the proportion of services

grew from 2.0% in 2015 to 2.9% in 2025; the co-efficient of growth was 1.32–1.47 across regions. The high rates of increase in Koson, Yakkabog and Kitab districts are due to the fact that the service infrastructure is actively developing in these regions and economic activity is also quite high. At the same time, while Dehqanabad, Nishon and Mirishkor are developing, with a higher share of services, the uneven regional development is still there, with a low share of services [8].

Practical testing of the “digital smart services” model (RAMHK-MTT) proposed as part of the study confirmed its high economic efficiency [9]. In particular, as a result of the implementation of this model, transaction costs decreased by an average of 18–25 percent, payment discipline increased by 85–90 percent, and the speed of service provision accelerated by 20–30 percent. At the same time, the time for making management decisions was reduced by 2 times. The economic mechanism of this model is based on the integration of a digital database, a mobile payment system, monitoring and analytics modules, and risk management blocks, which allows for increased transparency in the services market, control of financial flows, and operational efficiency [10]. In general, the results obtained scientifically substantiate that the combination of clustering and digital transformation processes in the field of household services is one of the main factors for the efficient use of resources, improving the quality of services, and accelerating regional economic development.

4. Discussion

Results demonstrate a robust functional and causal connection between household services clustering and digital transformation processes. This study shows that convergence of labor, capital and infrastructure through cluster approach is a solution to improve the efficiency of services. The stronger the degree of clustering, the positive correlation service quality, labor productivity and market competitiveness [11].

These results are considered as practical confirmation of the cluster theory put forward by Michael Porter. At the same time, digital transformation processes are emerging as an important catalyst for increasing cluster efficiency. As a result of the introduction of digital platforms, ordering, service and payment processes are combined into a single integrated system, transaction costs and information asymmetry are significantly reduced. This process can be expressed in a simplified manner as follows: – an increase in the level of clusterization means an increase of resource integration and decrease of cost, while an increase in the level of digitalization means an increase in the quality and speed of service, hence increasing economic efficiency and income [12], [13]. Therefore, clustering and digitalization have a reciprocal influence with each other, this value creates sustainability of services market growth mechanism.

In order to clarify this relationship, a multifactor econometric model was developed, through which the main factors affecting the efficiency of services were assessed:

$$Y = \alpha + \beta_1 Cl + \beta_2 Dig + \beta_3 Emp + \beta_4 Inv + \varepsilon$$

According to the results of the analysis, the factors of clustering ($\beta_1 \approx 0.42$) and digitization ($\beta_2 \approx 0.37$) were identified as the factors that have the greatest impact on the efficiency of services, while employment ($\beta_3 \approx 0.21$) and investments ($\beta_4 \approx 0.18$) are secondary, but significant factors. The coefficient of determination of the model is $R^2 = 0.74$, which indicates that 74% of the efficiency of these services is explained by the selected factors. This result scientifically confirms the research hypothesis, namely the decisive role of clustering and digitization in the services sector. Regional analysis showed that there are significant differential differences in the development of services [14]. In regions with a developed infrastructure and a high level of digitization, the volume and quality of services are growing rapidly, while in regions with a low level of clustering and insufficient digital infrastructure, economic efficiency is developing relatively slowly. This

indicates the need to apply a differentiated approach to regional policy, that is, to develop a development strategy based on the economic and social characteristics of each region.

Summarizing the results, the following economic mechanism was formed: firstly, clustering ensures the integration of resources, reduces the costs of production and service provision; secondly, digitalization increases information transparency and reduces transaction costs; thirdly, the introduction of innovative technologies increases the quality of services, expands demand, and, as a result, leads to an increase in income [15]. The combination of these three factors strengthens the competitive environment in the services market, increases economic efficiency, and creates a solid foundation for sustainable economic growth.

In general, the analysis shows that in the field of household services, clustering and the integration of digital transformation processes not only ensure the efficient use of resources, but also are one of the most important strategic directions for improving the quality of services, expanding employment, and accelerating regional economic development.

5. Conclusion

The results of this study scientifically substantiated that the combination of clustering and digital transformation processes in the field of household services is one of the most important factors in increasing economic efficiency. In particular, it was found that the integration of labor, financial and infrastructure resources through the cluster approach, while increasing the quality of services and labor productivity, reduces costs and enhances market competitiveness.

During the study, it was proven that the introduction of digital platforms and electronic systems optimizes service delivery processes, reduces transaction costs, strengthens payment discipline and ensures transparency in the services market. At the same time, the results obtained in the case of the Kashkadarya region showed that the service sector has a stable growth trend in the territorial sector, but there are differences in the level of development between regions.

As a result of econometric analyses, the level of clustering and digitalization were identified as the factors that have the greatest impact on the efficiency of services, and a strong positive relationship between them was scientifically confirmed. This once again demonstrates the need to introduce innovative management mechanisms in the services sector.

In general, the development of clustering and digital transformation in the field of household services based on the integration of these is an effective strategic direction for accelerating regional economic growth, increasing employment, and improving the quality of services. Scientific conclusions and practical proposals developed based on the results of the study can serve as an important methodological basis for improving state programs aimed at developing the services sector, developing regional development strategies, and attracting investments to the sector.

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