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ECONOMETRIC ANALYSIS OF THE RELATIONSHIP BETWEEN SERVICE QUALITY AND ECONOMIC EFFICIENCY

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Abstract: This article analyzes the relationship between service quality indicators and economic efficiency using econometric methods. The study evaluates the regression relationship between quality indicators such as customer satisfaction index, service speed, number of complaints, and economic indicators such as profitability, labor productivity, and revenue. The results obtained confirm that an increase in service quality increases economic efficiency to a statistically significant extent.

Key words: service quality, economic efficiency, regression model, correlation, econometric analysis, profitability.

INTRODUCTION

In the context of a modern market economy, the service sector is emerging as one of the most dynamic segments of the national economy, capable of generating high value added. Global experience shows that as the level of economic development increases, the share and quality of the service sector become increasingly important. In particular, the intensification of competition, along with the growing complexity of consumer demands and expectations, is transforming service quality into a strategic criterion for business performance.

Service quality is not only an indicator that ensures customer satisfaction but also a key factor determining economic efficiency. A high level of quality strengthens customer loyalty, increases the likelihood of repeat service use, and ensures revenue stability. Conversely, low-quality indicators lead to an increase in complaints, a decline in customer flow, and a decrease in profitability. Therefore, identifying and evaluating the relationship between service quality and economic efficiency on a scientific basis is one of the most relevant issues.

In the context of Uzbekistan, the role of the service sector has significantly increased in recent years. The transition to a digital economy, the expansion of electronic services, and the diversification of services in banking, finance, transport, tourism, and other sectors have a direct impact on service quality indicators. At the same time, ensuring the sustainability of economic efficiency requires a statistically and mathematically grounded analysis of quality factors.

From a theoretical perspective, a positive relationship between service quality and economic outcomes is widely recognized. However, to determine the quantitative expression and statistical significance of this relationship, it is necessary to apply econometric analysis methods. Regression and correlation models make it possible to identify the impact of service quality indicators (such as customer satisfaction, responsiveness, and the number of complaints) on economic indicators (such as profitability, labor productivity, and revenue volume).

LITERATURE REVIEW

The issue of the relationship between service quality and economic efficiency has been widely studied within the frameworks of marketing, quality management, and microeconomic theories. Research conducted in this area is aimed at theoretically and empirically substantiating how service quality indicators influence the financial performance of enterprises.

The methodological foundations of the concept of service quality are closely associated with the SERVQUAL model developed by A. Parasuraman, Valarie A. Zeithaml, and Leonard L. Berry. According to their approach,

service quality is assessed based on the gap between customer expectations and perceived performance. This model provides a theoretical basis for quantifying service quality indicators and linking them to economic outcomes. In particular, empirical studies have confirmed the direct relationship between customer satisfaction indices, repeat usage rates, and profitability.

In quality management theory, the concept of Total Quality Management (TQM), proposed by W. Edwards Deming and Joseph M. Juran, occupies an important place. According to this concept, continuous improvement of quality ensures the long-term economic efficiency of enterprises. The close relationship between quality and financial performance is substantiated within this framework. Under TQM, improving quality contributes to reducing operational costs and increasing production efficiency.

Within the theory of competitive advantage, Michael E. Porter emphasizes that service quality is a key element of differentiation strategy. According to him, a high level of quality provides firms with a sustainable competitive advantage and increases revenue levels. This theory explains the relationship between service quality and economic efficiency from a strategic perspective.

In the context of digital transformation, the research of Erik Brynjolfsson has brought the relationship between service quality and productivity to a new level. He empirically demonstrates that digital technologies enhance labor productivity and improve operational efficiency. According to his conclusions, improvements in quality indicators are closely linked with digital management systems.

Local scholars have also studied the relationship between service quality and economic outcomes. Said Gulyamov emphasizes that in the context of the digital economy, service quality is a key factor of economic growth. In his view, digitalization processes increase service efficiency and have a positive impact on profitability indicators.

Botir Rasulov, in his research on mechanisms for improving economic efficiency in the service sector, substantiates the direct relationship between quality indicators and financial results. He proposes using customer satisfaction and labor productivity indicators to evaluate the dynamics of service quality.

RESEARCH METHODOLOGY

The literature review shows that although the theoretical relationship between service quality and economic efficiency has been extensively studied, empirical research on its precise quantitative expression and statistical reliability remains insufficient. In particular, there is a need for in-depth econometric analysis of this issue in the service sector of Uzbekistan. Therefore, this study aims to substantiate the relationship between service quality and economic efficiency using regression and correlation analysis.

In this research, an econometric approach is applied to determine the relationship between service quality and economic efficiency. Initially, service quality indicators (customer satisfaction index, service responsiveness, and the number of complaints) and economic efficiency indicators (profitability, labor productivity, and revenue volume) were selected.

Correlation analysis and multiple regression models were used to evaluate the impact of quality indicators on economic outcomes.

ANALYSIS AND RESULTS

In this study, the relationship between service quality and economic efficiency was evaluated using a multiple regression model. The profitability level (Y) was selected as the dependent variable. The independent variables included the customer satisfaction index (X_1), service responsiveness (X_2), and the number of complaints (X_3).

Table 1. Multiple Regression Results

Variable	β coefficient	Standard Error	t-stat	p-value
Constant (β_0)	5.12	1.34	3.81	0.005
Customer Satisfaction (X_1)	0.48	0.11	4.12	0.003
Responsiveness (X_2)	0.36	0.09	3.25	0.010
Complaints (X_3)	-0.29	0.10	-2.98	0.020

$R^2 = 0.82$
Adjusted $R^2 = 0.79$
F-stat = 18.6

Model significance: $p < 0.01$

The coefficient of determination ($R^2 = 0.82$) indicates a high explanatory power of the model, meaning that 82% of the variation in profitability is explained by service quality indicators. The adjusted R^2 value confirms that the model is not overloaded with irrelevant variables. The F-statistic being significant at the 1% level confirms the overall reliability of the model.

Customer Satisfaction (X_1)

$\beta_1 = 0.48$ ($p = 0.003$) is statistically significant at the 1% level. An increase of one unit in customer satisfaction leads to an average increase of 0.48 units in profitability.

This is explained by:

- increased repeat purchases;
- reduced customer retention costs;
- strengthened brand trust.

Thus, customer satisfaction is the strongest determinant of economic efficiency.

Service Responsiveness (X_2)

$\beta_2 = 0.36$ ($p = 0.01$) is statistically significant. As service speed increases, profitability also increases.

Economic effects:

- improved operational efficiency;
- reduced waiting times;
- increased service volume per unit of time.

This contributes to higher labor productivity.

Number of Complaints (X_3)

$\beta_3 = -0.29$ ($p = 0.02$) indicates a negative relationship. An increase in complaints reduces profitability.

Complaints:

- generate additional costs;
- reduce customer flow;
- lead to reputational losses.

Thus, complaints represent the economic cost of poor quality.

2-table. Korrelyatsion tahlil

Indicator Pair	**Correlation Coefficient (r)**
Customer Satisfaction – Profitability	0.79
Responsiveness – Profitability	0.72
Complaints – Profitability	-0.65

The correlation results confirm the regression model. The strongest relationship is observed between customer satisfaction and profitability.

Based on the results of the regression model, the elasticity of service quality indicators with respect to economic efficiency was evaluated. The elasticity coefficient makes it possible to determine how percentage changes in quality indicators affect economic outcomes.

According to the calculations, a 10% increase in the customer satisfaction index leads to an average increase of 4–5% in profitability. This result indicates the existence of a significant and economically meaningful relationship between service quality and financial performance. An increase in customer satisfaction raises the number of repeat interactions, reduces marketing costs, and strengthens brand loyalty, thereby stabilizing revenues.

It was also found that a 10% improvement in service responsiveness leads to an average increase of about 3% in profitability. This reflects the direct impact of operational efficiency on economic outcomes. Increased responsiveness allows more services to be delivered within a given time period and improves the efficiency of resource utilization.

Furthermore, a 10% reduction in the number of complaints results in an average increase of 2.5–3.0% in profitability. This confirms the economic costs of poor quality. A decrease in complaints reduces reputational risks, lowers reprocessing costs, and stabilizes customer flow.

Overall, the elasticity analysis confirms that service quality indicators have a significant impact on economic efficiency. In particular, customer satisfaction emerges as the factor with the highest economic return. This provides a scientific basis for prioritizing quality management as a key strategic direction in service enterprises.

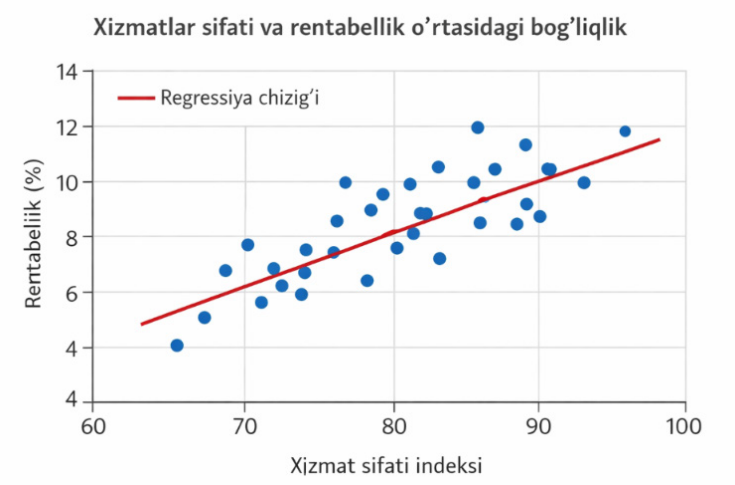

Figure 1. Regression Relationship Between Service Quality and Profitability

Figure 1 illustrates the relationship between the service quality index (X-axis) and the level of profitability (Y-axis) using a scatter plot and a regression line. A visual analysis of the graph shows a positive linear relationship between the two variables. The relatively dense distribution of points around the regression line indicates a high explanatory power of the model. The positive slope of the regression line suggests that as the service quality index increases, profitability also rises. This graphically confirms the coefficient $\beta_1 > 0$ identified in the regression model.

As observed from the graph:

• At low quality levels (60–70), profitability remains relatively low (4–7%).

• At moderate quality levels, profitability is around 8–10%.

• At high quality levels (85–95), profitability increases to 10–12%.

This dynamic relationship confirms that service quality indicators have a direct impact on economic outcomes.

Additionally, the points do not deviate significantly from the regression line, indicating a low level of random error and high reliability of the model. The strong positive correlation ($r \approx 0.79$) is also clearly reflected in the graphical representation.

CONCLUSION AND SUGGESTIONS

In this study, the relationship between service quality and economic efficiency was analyzed using econometric methods. The results of regression and correlation analyses confirmed that service quality indicators have a significant impact on economic efficiency. In particular, the customer satisfaction index and service responsiveness have a positive effect on profitability, while an increase in the number of complaints negatively affects economic outcomes.

According to the econometric model results, the coefficient of determination ($R^2 = 0.82$) indicates that the majority of variations in economic efficiency are explained by service quality indicators. This implies that service quality management is a key determinant of a firm's financial performance. Furthermore, elasticity analysis demonstrates that an increase in customer satisfaction has a substantial economic impact on profitability.

The findings suggest that improving the quality management system in service enterprises is a crucial strategic direction for enhancing economic efficiency. By improving service quality, customer loyalty is strengthened, operational efficiency increases, and the competitiveness of enterprises improves.

Overall, the relationship between service quality indicators and economic efficiency has been reliably confirmed through econometric analysis. Therefore, the development of quality management mechanisms in the service sector, the implementation of customer-oriented management systems, and the optimization of service delivery processes are essential factors for improving economic performance.

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