

Article

Improving the Efficiency of Paid Medical Services: An Analysis Based on Statistical Data and Scientific Evidence

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Abstract: The transition of healthcare systems toward mixed financing models has increased the role of paid medical services in ensuring financial sustainability and improving service quality. In Uzbekistan, public medical institutions are progressively expanding paid services to supplement limited budget funding and modernise infrastructure. However, despite the growing importance of this sector, there remains a lack of comprehensive analytical frameworks linking pricing structures, operational efficiency, and patient-oriented service delivery. This study aims to evaluate the efficiency of paid medical services based on empirical data from the Nurobod District Medical Association. The research applies descriptive statistical analysis to pricing data across multiple service categories, including consultations, diagnostic procedures, laboratory tests, surgical operations, and auxiliary services. In addition, a comparative and literature-based approach is used to interpret the findings within the context of international healthcare efficiency studies. The results reveal significant differentiation in service costs: consultations and basic diagnostics remain relatively affordable, while high-complexity procedures and surgical interventions represent the largest cost components. Laboratory services demonstrate moderate pricing but high variability due to resource intensity. The findings also indicate that operational inefficiencies—such as delays in patient flow and underutilization of resources—have a greater impact on overall efficiency than pricing models alone. The study concludes that improving the efficiency of paid medical services requires a shift toward process optimization, digitalization, and patient-centered management, rather than relying solely on financial reforms. These results have important practical implications for healthcare policy and institutional management, particularly in developing economies undergoing a transition to hybrid healthcare financing systems.

Citation: Qarshiyev B. Improving the Efficiency of Paid Medical Services: An Analysis Based on Statistical Data and Scientific Evidence. American Journal of Economics and Business Management 2026, 9(5), 148-155.

Received: 11th Feb 2026

Revised: 16th Mar 2026

Accepted: 26th Apr 2026

Published: 07th May 2026



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Keywords: Paid Medical Services, Healthcare Efficiency, Pricing Structure, Patient-Centered Care, Healthcare Management, Uzbekistan, Health Economics.

1. Introduction

The transition of public healthcare institutions toward mixed financing models, in which budget allocations are supplemented by paid medical services, has become a key strategy for maintaining material and technical infrastructure and facilitating the adoption of modern technologies. Regulatory frameworks in the Republic of Uzbekistan provide for a gradual reduction in the share of budget funding in healthcare institutions, alongside the expansion of paid services while ensuring equal access and high-quality care [1]. Funding sources for such institutions include state budget allocations, employer contributions for employees, patient payments for additional services, charitable donations, and other legally permitted revenues [2]. Similar trends are observed in other post-socialist countries, where the share of revenue from paid services remains relatively modest (6–15%), yet these

funds constitute a flexible financial resource that enhances the sustainability of public clinics and enables equipment modernization [3]. Private healthcare providers, in turn, seek to optimize costs by investing in more efficient equipment, reducing administrative staff, and forming network structures, thereby improving technical efficiency [4].

Improving the efficiency of paid medical services requires a comprehensive approach that integrates financial analysis, resource management, patient-centered care, and marketing strategies. The literature emphasizes that the promotion of paid services should be based on enhancing patient satisfaction and fostering loyalty, as sustainable financial performance depends on repeat utilization of services [5], [6]. In addition, models of inter-organizational cooperation have been proposed, enabling healthcare institutions to share resources and improve service quality [7]. The aim of this study is to identify key directions for improving the efficiency of paid medical services based on current pricing data from the Nurobod district medical association and insights derived from existing scientific research.

Literature Review

A synthesis of the scientific literature on paid medical services allows for the identification of several key research directions.

Patient-centered approach and marketing.

The study by N.K. Grishina et al. (2021) emphasizes that the financial sustainability of public healthcare institutions providing paid services is closely linked to patient orientation. The analysis of paid medical service models demonstrates that the success of healthcare marketing is determined by the ability to achieve patient loyalty. The practical implementation of a patient-centered approach requires a comprehensive set of measures aimed at increasing patient satisfaction and aligning services with patient expectations [8]. The authors propose a structured framework of interventions across key areas of medical activity, ensuring the systematic integration of patient-centered principles.

Marketing research and increasing competition.

According to A.A. Andriyanova et al. (2020), the market for paid medical services in Russia is rapidly expanding, with a continuous increase in the number of private clinics, while public healthcare systems are often unable to meet all patient needs. Intensifying competition compels private providers to actively compete for patients. The authors highlight the importance of marketing research, noting that the loss of even a small number of clients (e.g., five patients per day) can result in significant financial losses, reaching up to 2 million rubles per month. Therefore, a deeper understanding of demand and supply requires the application of advanced logistical and marketing research methods [9]. In this context, healthcare marketing is conceptualized as a system of principles aimed at generating and analyzing demand for medical services.

Consumer profile and patient satisfaction.

The study by A.A. Arestova (2022), conducted in municipal outpatient clinics in Moscow, reveals that the primary consumers of paid medical services are working-age individuals, typically married and with a monthly income of 10,000–30,000 rubles per capita. The majority of respondents expressed a positive attitude toward paid services: 73% reported a favorable perception, while 61% indicated that the availability of paid services in public institutions enables them to fully exercise their right to healthcare when necessary services are not covered by mandatory insurance programs [10]. High levels of patient satisfaction were associated with physician competence, attentiveness, convenient clinic location, and the availability of official payment mechanisms [10].

Assessment of Patient Satisfaction and Marketing Strategies.

The study by V. Bulatnikov and K.P. Konstantin (2023) analyzes survey results from 410 patients in Russia and Romania. Using an importance–satisfaction matrix, the authors identified that the primary objective for both public and private healthcare institutions is

the improvement of service quality. Particular attention should be given to personnel, service processes, and material infrastructure; the authors emphasize that improvements in the public healthcare system require substantial structural changes [11]. Furthermore, they note that the literature establishes a direct relationship between the quality of medical services and patient satisfaction. Marketing strategies should therefore incorporate the extended marketing mix (7Ps), and healthcare providers must adapt their services to patient needs, including through personalization and effective communication [12].

Other Directions.

Studies focusing on cluster-based models of interaction among healthcare organizations indicate that the shared use of laboratories and diagnostic centers enhances both efficiency and service quality, particularly under resource constraints [7]. Research by the IDMZ on the impact of patient loyalty on economic performance demonstrates that a high Net Promoter Score is directly associated with increased average visit value and stable revenue streams in healthcare institutions [6]. A review of hybrid healthcare systems shows that, despite the relatively small share of revenue from paid services (6–15%), these funds serve as a flexible resource for modernization and improving institutional resilience [3].

The literature review indicates that contemporary research places significant emphasis on patient-centered care models, marketing analytics, loyalty management, and inter-organizational cooperation. These aspects form the foundation for developing practical recommendations aimed at improving the efficiency of paid medical services.

Recent meta-analyses further confirm that the most sustainable improvements in healthcare efficiency are achieved not primarily through financial reforms, but through the optimization of care delivery processes. An umbrella review of ten systematic reviews found that prospective payment systems tend to reduce hospital length of stay without clear evidence of quality deterioration; however, their impact on overall costs remains inconclusive [13]. Similarly, a systematic review of specialist payment reforms indicates that while financial incentives influence service utilization, they often produce unintended consequences, and their effects on quality and efficiency remain uncertain [14].

Within the framework of value-based payment models, more consistent improvements are observed in service quality rather than cost reduction: approximately 81% of studies report positive effects on quality, compared to 56% for expenditures and 58% for service utilization [15]. This suggests that such models function more effectively as quality-enhancement mechanisms rather than guaranteed cost-containment tools, particularly in healthcare systems with advanced data infrastructure.

The most significant operational improvements are associated with process redesign. Systematic reviews of Lean Six Sigma applications demonstrate that all examined outpatient settings achieved reductions in patient waiting times, ranging from 5.2% to 97%, while randomized studies report reductions of up to 74% in waiting time and 36% in total visit duration [16], [17]. Telemedicine also shows considerable potential: a review of reviews indicates that most studies classify it as effective or promising, particularly in terms of accessibility and convenience, while primary care studies report comparable clinical outcomes at lower costs compared to face-to-face consultations [18], [19].

Overall, the key conclusion from the contemporary literature is that while financial reforms can create appropriate incentive structures, the most consistent and reproducible efficiency gains are achieved through reducing operational inefficiencies—particularly by minimizing waiting times, optimizing patient flow, and reducing unnecessary in-person visits. This finding is critically important for developing strategies to enhance the efficiency of paid medical services, especially in the context of Uzbekistan, where significant organizational reserves remain untapped.

2. Materials and Methods

The empirical analysis is based on official price lists of the Nurobod district medical association for the period 2024–2025. The author examined service cost data derived from the electronic dataset “*Calculation, June 13, 2024*” as well as accompanying documents, including pricing for surgical procedures, food services, and auxiliary service provisions. These data enable a comprehensive assessment of the structure of paid medical services and the price distribution across physician consultations, diagnostic procedures, laboratory tests, surgical interventions, and equipment rental services.

Descriptive statistical methods were applied, including the calculation of mean values, price ranges, and comparative analysis across service categories. A bar chart was constructed to visualize differences in average costs.

The theoretical framework is grounded in scientific and regulatory literature on paid medical services. The analysis includes studies on the economics of hybrid healthcare systems (combining free and paid services), research on marketing strategies and patient loyalty, as well as publications proposing cluster-based models of cooperation between healthcare institutions. All sources were selected as of April 07, 2026, to ensure the relevance and timeliness of the analysis.

3. Results

The analysis of paid medical services reveals a clearly differentiated cost structure across service categories, reflecting variations in resource intensity, technological requirements, and service complexity. The lowest cost segment is represented by physician consultations and basic laboratory tests, with average prices of approximately 35,684 UZS and 48,612 UZS, respectively. These services demonstrate high accessibility and relatively low variability, indicating standardized service delivery with limited resource requirements.

Diagnostic services occupy the intermediate cost range. X-ray examinations have an average cost of approximately 58,548 UZS, while ultrasound services are higher at around 83,800 UZS. The observed variation within these categories (22,000–104,000 UZS for X-ray and 51,000–170,000 UZS for ultrasound) reflects differences in procedural complexity and equipment utilization. Higher-cost diagnostic procedures are typically associated with comprehensive examinations requiring advanced technology and increased processing time.

Laboratory services demonstrate moderate average pricing but significant dispersion, driven by differences in reagent costs and analytical complexity. In contrast, service-related expenses, including equipment rental and inpatient support, show relatively high average values (approximately 84,438 UZS), largely influenced by high-cost items such as air conditioning systems.

The highest cost segment is formed by surgical procedures, where prices range from 375,000 to 1,178,000 UZS depending on the level of complexity. These services are characterized by intensive resource consumption, including specialized labor, materials, and anesthesia, resulting in costs that exceed consultation services by a factor of 5 to 14.

Overall, the results indicate a strong positive relationship between service complexity and cost level, suggesting that efficiency improvements should be primarily targeted at high-cost, resource-intensive services.

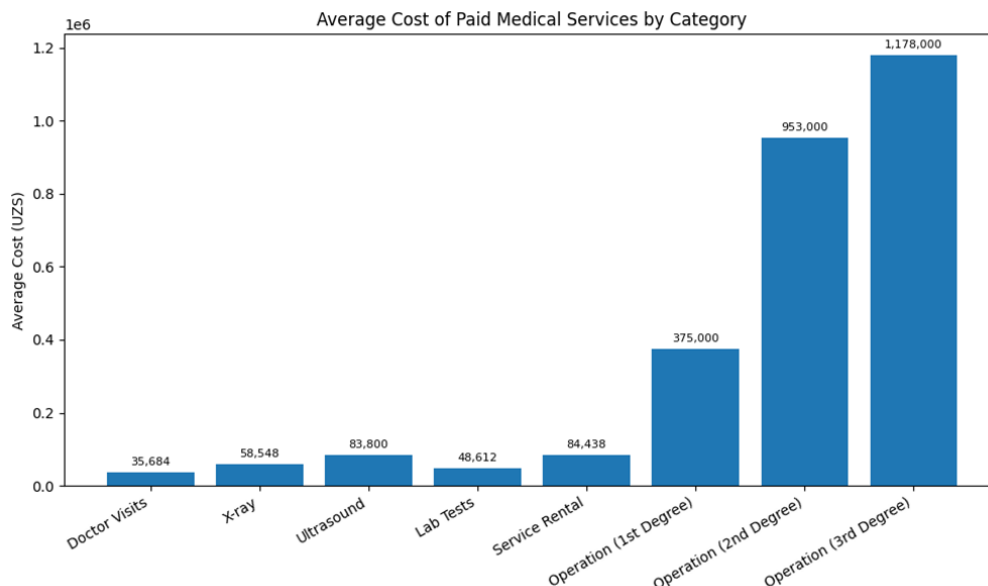


Figure 1. Summary of Paid Medical Service Costs by Category (Nurobod Medical Association, 2024–2025).

Figure 1 illustrates the average cost distribution of paid medical services across different categories. The results demonstrate a clear differentiation between low-, medium-, and high-cost services. Doctor consultations represent the most affordable category, with an average cost of 35,684 UZS, followed by laboratory tests (48,612 UZS) and X-ray diagnostics (58,548 UZS). Ultrasound services and service-related expenses show slightly higher average costs, amounting to 83,800 UZS and 84,438 UZS, respectively, reflecting the use of specialized equipment and infrastructure.

A significant increase in costs is observed in surgical services. The average cost of first-degree operations reaches 375,000 UZS, which is more than four times higher than diagnostic procedures. The cost further rises to 953,000 UZS for second-degree operations and peaks at 1,178,000 UZS for third-degree operations. This sharp escalation highlights the strong relationship between service complexity, resource consumption, and pricing.

Overall, the figure indicates that while basic medical services remain relatively accessible, high-complexity procedures constitute the most resource-intensive and expensive segment. The findings suggest that operational efficiency improvements should primarily focus on optimizing high-cost services, particularly surgical procedures, where resource allocation and process management have the greatest impact on overall healthcare expenditure.

Table 1. Cost Structure and Efficiency Indicators of Paid Medical Services.

No.	Service Category	Labor Cost Share (%)	Material Cost Share (%)	Overhead (%)	Profit Margin (%)	Efficiency Level	Key Insight
1	Doctor Consultations	High (~60–70%)	Low	Medium	~20%	Moderate	Labor-intensive service
2	X-ray	Medium	High	Medium	~20%	Moderate	Equipment-dependent

3	Ultrasound	Medium	Medium	Medium	~20%	Moderate–High	Technology-driven
4	Laboratory Tests	Low–Medium	High	Medium	~20%	Variable	Reagent-sensitive costs
5	Surgical Operations	High	Very High	High	~20%	Low–Moderate	Most resource-intensive
6	Emergency Services	High	Medium	Medium	~20%	Moderate	Time-critical services
7	Equipment Rental	Low	Low	Low	High	High	High profitability
8	Food Services	Low	Medium	Low	Fixed	High	Standardized cost
9	Bed Linen Services	Low	Medium	Low	Fixed	High	Support service

4. Discussion

The comparative analysis demonstrates that the structure of paid medical services varies significantly both in terms of pricing and cost composition. The high cost of surgical procedures is explained not only by expenditures on materials and anesthesia but also by the substantial share of highly qualified labor and associated clinical risks. The average costs of X-ray and ultrasound services reflect the necessity of maintaining and operating expensive medical equipment. In contrast, physician consultations and basic laboratory tests remain the most affordable categories, thereby ensuring accessibility for a broad segment of the population.

Improving efficiency through resource optimization.

The experience of private medical centers in Russia indicates that enhancing financial sustainability requires investment in modern equipment, reduction of inefficient administrative expenditures, and the implementation of digital management systems [4]. In the context of Uzbekistan, one of the most significant reserves for efficiency improvement lies in the cooperation between public and private healthcare providers. The establishment of medical clusters enables the shared use of laboratories and diagnostic facilities, reduces capital expenditures on equipment, and increases capacity utilization rates [7].

Patient-centered approach and marketing.

Contemporary research emphasizes that sustainable revenue generation from paid medical services is not achievable without a high level of patient satisfaction [5]. The use of the Net Promoter Score (NPS) as a tool for measuring patient loyalty allows for the identification of strengths and weaknesses in service delivery. Increased patient loyalty contributes to higher average transaction values and repeat visits [6]. Recommended strategies include continuous training of medical staff in communication skills, transparency in pricing policies, and active engagement with patient feedback.

Balanced pricing policy.

Given that revenue from paid services constitutes only a limited share of the overall budget of public healthcare institutions, it is essential to establish pricing mechanisms that

both cover operational costs and remain affordable for the population. Regulatory frameworks recommend a combination of public funding, employer contributions, and voluntary health insurance payments, thereby reducing the financial burden on patients [2]. Based on the identified average price levels, the implementation of differentiated discount systems for socially vulnerable groups, along with the expansion of voluntary health insurance, may increase the volume of paid services without compromising accessibility.

5. Conclusions

The analysis of pricing data from the Nurobod district medical association demonstrates that paid medical services cover a wide spectrum, ranging from relatively affordable physician consultations (approximately 35,000 UZS) and basic laboratory tests (approximately 48,000 UZS) to high-cost surgical procedures (0.4–1.2 million UZS). The average prices for X-ray and ultrasound services fall within the range of 50,000–170,000 UZS, while equipment rental services vary between 18,000 and 253,000 UZS. Such a pricing structure indicates the necessity of effective tariff management based on both population affordability and the underlying cost of service provision.

Existing scientific evidence suggests that improving the efficiency of paid medical services cannot be achieved solely through cost optimization and institutional cooperation, but also requires a strong patient-centered approach. High-quality communication, pricing transparency, and active management of patient loyalty contribute to stable demand and increased repeat utilization. At the same time, regulatory policies should facilitate the development of paid services without compromising access to guaranteed free healthcare services.

The implementation of these measures will enhance the financial sustainability of healthcare institutions while ensuring the provision of high-quality medical services based on fair and economically justified pricing mechanisms.

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