



Article

Improving the Organizational-Economic Mechanism for the Effective Use of Human Resource Potential in Hotel Services: Evidence from Samarkand Region, Uzbekistan

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Abstract: Samarkand region has become the main gateway for international tourism in Uzbekistan, yet the people who serve this growth have received far less attention than hotel construction and visitor numbers. This study assesses how effectively the region uses the human resource potential of its accommodation and food service sector and proposes an improved organizational-economic mechanism for hotel services. The analysis draws on official open data of the Statistics Agency for 2017 to 2025 and combines labor productivity accounting, a growth decomposition, a location quotient and a two-way fixed effects panel model for the 14 regions of Uzbekistan (126 observations). Real output of the sector in Samarkand grew 6.1 times over the period, while employment rose by only 22.7 percent and the number of hotels almost tripled. Productivity gains explain 88.7 percent of real output growth, and output per worker rose from 39.7 to 79.3 percent of the national level. Despite this, the region remains the thirteenth of the fourteen regions in terms of output per worker, which would bring an additional 6.8 trillion soum to output per year in the sector. The estimates from the panel range from 0.33 to 0.39, implying that output elasticity of employment is less than one. This is echoed by wage signals, which saw the sector's wage drop from 90.3 to 79.8 percent of the national average over the same period (2023-2025). The results indicate that the issue of the constraint is not a matter of the number of workers but the quality of their use. The paper suggests a mechanism, which connects organizational levers, economic incentives and a monitoring system of key performance indicators with measurable targets for the regional authorities and hotel operators.

Keywords: Human resource potential, hotel services, labor productivity, organizational-economic mechanism, regional tourism, Samarkand, Uzbekistan

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1. Introduction

Tourism has become one of the fastest-growing service industries in Uzbekistan. The number of visitors accommodated in hotels and similar establishments almost doubled from 1.71 million in 2017 to 3.38 million in 2025, and the number of beds in such establishments rose from 39.8 thousand to 88.1 thousand over the same period [1]. Presidential Decree PF-87 of 15 May 2025 set targets of 15.8 million foreign tourist trips and 4 billion US dollars of tourism exports for 2025 alone [2]. Samarkand region is at the center of this strategy. In 2024 it received 2.52 million foreign and 4.72 million domestic tourists, its tourism exports reached 537 million US dollars, and its 642 accommodation facilities offered about 18 thousand beds [3].

But physical capacity is only part of the picture when it comes to hotel competitiveness. The skills, motivation and stability of staff influences both the experience of the guest and the cost base of the enterprise as hotel services are produced and consumed in the same

time [4] [5]. International studies have consistently identified low wages, low job stability, and limited career advancement as challenges associated with tourism jobs, and the COVID-19 crisis has exacerbated these issues, not caused them [6], [7], [8]. The OECD has set a tourism recovery goal with a thematic chapter in its 2024 tourism report on strengthening the tourism workforce [11] and the ILO has advocated a recovery based on decent work [9, 10]. This poses a practical question when it comes to a rapidly developing city like Samarkand. Are the local labor force, stock of hotel establishments, and visitors increasing at the same rate, and is the labor force utilized?

This question is typically approached in the economic literature of the post-Soviet countries in terms of an organizational-economic mechanism. A set of institutions, management methods, economic levers and control procedures by which the human resource potential of an industry is formed, allocated and used. This concept is similar to that of mechanism design in economic theory that is a set of rules and incentives which induces the decentralized agents to converge toward a desired allocation of resources [11]. In hotel services the relevant agents are owners and managers, employees, training institutions and public authorities. They make decisions on hiring, wages, training and the organization of work that will determine what proportion of the available labour potential will be converted into output and service quality.

1.1. Theoretical background

Human resource capability of an industry can be defined as the capability of the existing and potential workforce of the industry to deliver services. It includes the number of workers, their knowledge and skills, health and motivation, as well as the organizational conditions under which they work. According to human capital theory, such a capacity is dependent on investment. Education, training and experience increase productivity and income; and firms invest in particular skills if they believe they will retain the worker long enough to justify the expense [12]. The strategic perspective provided by the resource-based view. A skilled and service-oriented employees can create a source of sustainable competitive advantage if they are valuable and rare, and difficult to imitate [13]. In hotels, this is easy to see as two hotels with the same rooms and location may have different guest satisfaction and revenue based on staff performance.

There is a significant amount of research that documents the relationship between bundles of HR practices and organizational outcomes. Huselid found that firms using more high-performance work practices had lower turnover, higher productivity and better financial performance [14]. Appelbaum and coworkers classified such practices into three categories: ability, motivation and opportunity to participate, and the result is referred to as the AMO framework [15]. In a meta-analysis, Jiang et al. found that the practices of skill-enhancing, motivation-enhancing and opportunity-enhancing practices had a primary impact on operational and financial results through human capital and employee motivation [16]. Evidence from hotels follows the same pattern. In a multilevel study of hotels in China, Sun et al. showed that high-performance practices were associated with service-oriented citizenship behavior, lower turnover and higher productivity [17]. Karatepe found that these practices raised the work engagement of hotel employees, which in turn improved their job performance [18].

At the same time, hospitality is a sector where such practices are often weak. Kusluvan et al. reviewed several decades of research and described a recurring cycle of low wages, irregular hours, limited training and high staff turnover, which in turn discourages further investment in employees [4]. Baum reached a similar conclusion in his 2015 reprise of an earlier review and observed that the core features of tourism work had changed little in twenty years [6]. The pandemic exposed the fragility of this model. Many workers left the industry, and the subsequent labor shortage has been interpreted as an acceleration of long-standing problems rather than a new phenomenon [7], [8]. Data from the United States indicates that the people who emerged as hospitality professionals with less

professional identity were the most likely to turn careers during the crisis [19]. Retention strategies are reviewed and compensation, training, and career development and work-life balance are identified as the primary levers that employers have to use [20][5].

Lower utilization of labor is a significant economic cost. In a detailed costing analysis of U.S. hotels, Hinkin and Tracey estimated that the costs of replacing one of the hotel's front-office associates ranged from approximately 5.7 to 12.9 thousand U.S. dollars, with more than half of these costs attributable to lost productivity [21]. The matter of incentive design also is relevant. Lazear found an increase in output per worker of approximately 44% in a large firm after converting its pay of workers from an hourly wage to a piece rate arrangement, with half of the effect due to higher effort and the other half to the selection of workers [22]. The results indicate that the relationship between pay and performance is a productivity factor and not just a cost factor.

Tourism productivity, on the other hand, at the sector level, is related to human capital and to the spillover effect from other sectors and this influences the contribution of tourism to economic development [23]. The idea of growth accounting dates back to Solow, and it is used to divide output growth into two components: the contribution of increased quantities of inputs and the contribution of increased efficiency [24]. When applied to labour it reveals whether a sector expands through increasing the number of labourers or through getting more output from each labourer. This difference is key to the idea of an organizational-economic mechanism. Organizational leverage includes proportion of staffing, training systems and work design and is primarily on the ability and opportunity levers. Economic leverages such as pay systems, subsidies and tax incentives have an impact on motivation and on the willingness of the employer to invest. The mechanism is a system that is able to correct itself if it receives feedback from its outcomes and if its levers are coordinated [11], [25].

The organizational-economic mechanism of human resource use in hotel services is presented in four elements for the purposes of this study. The first is the group of actors which are the bodies and organisations involved in decisions which impact the workforce. The second comes in the form of a set of organizational levers which influence recruitment, training, deployment and promotion. The third is the set of economic levers which shape the returns workers and employers receive from efforts and investments in skills. The fourth is the monitoring and feedback system, which measures results and adjusts the other elements. Weakness in any one element limits the effect of the others. Training subsidies, for example, have little effect if trained staff leave because pay is not linked to performance, and performance pay is difficult to apply if results are not measured.

1.2. Research gap, aim and questions

Empirical work on this topic in Uzbekistan is still scarce. National studies mostly describe the growth of tourist arrivals and hotel construction, while the labor side is discussed in qualitative terms. A recent mixed-method study of 55 Uzbek tourism companies concluded that human resource management is largely absent among tourism stakeholders and linked this to low profitability in the sector [26]. Regional evidence based on consistent statistical series is, to our knowledge, not yet available. Hospitality Research in HRM is also largely based on firm level surveys, and only infrequently links between labour inputs and regional economic results [27],[25] are mentioned in international reviews.

This paper fills this gap for Samarkand region. The purpose of its is to assess the effectiveness of the use of the human resources potential of the hotel and related services in the region and to elaborate a new organizational-economic mechanism based on these achievements. The analysis has three research questions. RQ1 focuses on the change in employment, output and hotel capacity for the regional accommodation and food service sector over the past three years since 2017. RQ2 is asking to what extent growth in output has been due to an increase in the number of workers and to what extent due to increased

output per worker, and to what extent Samarkand is outperforming other regions. RQ3 seeks to understand what information about the incentives for labour use and organizational and economic levers for improving efficiency is conveyed by wage and demand indicators.

The study has two contributions. Empirically creates a coherent set of regional data from official open statistics and uses productivity accounting and panel estimation on this data. In practical terms it turns the results into a mechanism that is based on tangible measures and measurable indicators that are accessible to the regional authorities and hotel operators. The data and the method is described in Section 2, the results are presented in Section 3, the results are discussed and a proposed mechanism is presented in Section 4, and finally Section 5 concludes.

2. Materials and Methods

2.1. Study area

Samarkand region lies in the Zarafshan valley in central Uzbekistan, and the historic city of Samarkand is inscribed on the UNESCO World Heritage List. In 2025 the region had 1.61 million employed persons, of whom 56.2 thousand worked in accommodation and food services [1]. Accommodation capacity has expanded quickly in recent years. At the end of 2022 the region had 154 hotels with 10,719 beds, 305 family guesthouses and 48 hostels [28]. A year later it had 607 accommodation facilities with 16,529 beds, including 164 hotels, 352 family guesthouses and 91 hostels [29]. By the end of 2024 the total reached 642 facilities with about 18 thousand beds [3]. The international tourism center Silk Road Samarkand, which comprises eight hotels, accommodated 80,028 hotel guests in 2024 [30].

2.2. Data

The study relies on official statistics of the Statistics Agency under the President of the Republic of Uzbekistan, published on the SIAT open data portal under a CC BY 4.0 licence [1]. Regional series on employment by type of economic activity, the volume of accommodation and food services, the number of hotels and similar accommodation facilities and total employment were collected for all 14 regions for the years 2017 to 2025. The starting year was chosen because, from 2017 onward, the service volume series include estimates of informal and shadow activity, which makes earlier years incomparable. Values for 2025 are preliminary. Regional figures were checked against the national totals published on the same portal, and the sums match to within rounding.

Wage data come from the annual press releases of the Statistics Agency and cover enterprises other than agricultural enterprises and small businesses [31]. Tourist flows, bed numbers and tourism exports for Samarkand were taken from the regional administration and the national news agency [29], [3]. Values in current prices were converted to constant 2017 prices with the December-on-December consumer price index, whose cumulative value reached 2.316 by 2025 [1].

Official statistics in Uzbekistan do not publish regional employment for hotels separately. The analysis therefore uses Section I of the national classification of economic activities (OKED-2), accommodation and food service activities, as the statistical frame for hotel services. Accommodation for visitors and food and beverage serving are also the core characteristic industries in the tourism satellite account framework applied by the Statistics Agency. Hotel capacity enters the analysis through the number of hotels and similar facilities. The consequences of this choice are discussed in Section 4.3.

2.3. Analytical procedures

The analysis proceeds in four steps. In the first step, labor productivity is measured as output per worker in current and constant prices:

$$LP_{it} = \frac{Y_{it}}{L_{it}}, \quad LP_{it}^R = \frac{Y_{it}}{P_t L_{it}} \quad (1)$$

where Y is the volume of accommodation and food services in billion soum, L is employment in the sector in thousand persons, P is the price deflator with 2017 = 1, i denotes the region and t the year. Productivity is therefore expressed in million soum per worker. The specialization of Samarkand in the sector is measured with the location quotient

$$LQ_t = \frac{L_{i,t}^S / L_t^S}{L_{i,t}^{UZ} / L_t^{UZ}} \quad (2)$$

where the superscripts S and UZ denote Samarkand and Uzbekistan and the subscript I denotes Section I. Values above one indicate that the sector has a larger weight in regional employment than in the country as a whole.

In the second step, growth in real output between two years is decomposed into the contribution of employment and the contribution of labor productivity, in the spirit of growth accounting [24]:

$$\ln \left(\frac{Y_{t1}^R}{Y_{t0}^R} \right) = \ln \left(\frac{L_{t1}}{L_{t0}} \right) + \ln \left(\frac{LP_{t1}^R}{LP_{t0}^R} \right) \quad (3)$$

To express the unused human resource potential in monetary terms, a productivity reserve is calculated as the additional output that the regional sector would produce if its workers reached the national average productivity:

$$R_t = (LP_t^{UZ} - LP_t^S) \cdot L_t^S \quad (4)$$

In the third step, the relationship between output, employment and capacity is estimated for all regions with a two-way fixed effects model:

$$\ln Y_{it}^R = \alpha_i + \lambda_t + \beta \ln L_{it} + \gamma \ln H_{it} + \varepsilon_{it} \quad (5)$$

where H is the number of hotels and similar facilities, α captures time-invariant regional characteristics such as location, heritage assets and climate, λ captures shocks common to all regions in a given year, including the pandemic and nationwide price changes, and ε is the error term. The coefficient β is the output elasticity of employment. A value below one means that, within a region, a 1 percent increase in employment is associated with less than 1 percent growth in output, so that further growth must come from productivity. Two sets of standard errors are reported. Driscoll and Kraay standard errors are robust to heteroskedasticity, serial correlation and cross-sectional dependence [32]. Cluster-robust standard errors by region are also shown, although with only 14 clusters they tend to be conservative [33]. For Samarkand alone, the elasticity of employment with respect to real output is estimated by ordinary least squares on the nine annual observations.

In the fourth step, wage indicators and demand pressure indicators, namely tourists and beds per sector worker, are calculated to assess the incentive environment. All calculations were carried out in Python with the pandas, statsmodels and linearmodels libraries.

3. Results

3.1. Workforce, output and capacity dynamics

Table 1 summarizes the main indicators of the sector in Samarkand region. Employment grew from 45.8 thousand in 2017 to a peak of 60.6 thousand in 2023 and then fell back to 56.2 thousand in 2025, a net increase of 22.7 percent. The share of the sector in regional employment rose from 3.0 to 3.5 percent. The location quotient stayed between 1.30 and 1.54 throughout the period, which confirms that Samarkand is relatively specialized in these services compared with the country as a whole. Over the same period real output increased 6.1 times, from 1.83 to 11.21 trillion soum in 2017 prices, and the number of hotels and similar facilities rose from 110 to 322, after a peak of 361 in 2024.

Table 1. Key indicators of accommodation and food services in Samarkand region, 2017–2025

Indicator	2017	2019	2021	2023	2024	2025
Employment, thousand persons	45.8	46.3	54.4	60.6	55.7	56.2
Share in regional employment, %	3.0	3.2	3.8	4.0	3.7	3.5
Location quotient	1.30	1.37	1.50	1.54	1.44	1.34
Output, billion soum, current prices	1,825.8	3,873.3	6,700.1	15,716.0	20,264.2	25,977.9
Output, billion soum, 2017 prices	1,825.8	2,941.6	4,163.7	7,993.3	9,386.7	11,214.7
Output per worker, million soum, current prices	39.9	83.7	123.2	259.3	363.8	462.2
Output per worker, million soum, 2017 prices	39.9	63.5	76.5	131.9	168.5	199.5
Output per worker, Uzbekistan = 100	39.7	52.4	58.5	65.3	71.9	79.3
Hotels and similar facilities, units	110	146	116	265	361	322
Hotels per 1,000 sector workers	2.40	3.15	2.13	4.37	6.48	5.73

Source: calculated by the author(s) from SIAT data [1]. Data for 2025 are preliminary.

Fig. 1 shows the divergence between these series in index form. By 2025 the index of real output reached 614 and the hotel index 293, while the employment index stood at 123. The number of hotels per thousand sector workers more than doubled, from 2.4 to 5.7. Two episodes stand out. During the pandemic, output stagnated in 2020 and the hotel count fell in 2021, yet employment jumped in 2021 as businesses reopened. After 2022 the hotel stock expanded quickly while employment first rose and then contracted. Sector employment fell by 4.9 thousand persons in 2024, the same year in which foreign arrivals in the region grew by about 17 percent [29], [3].

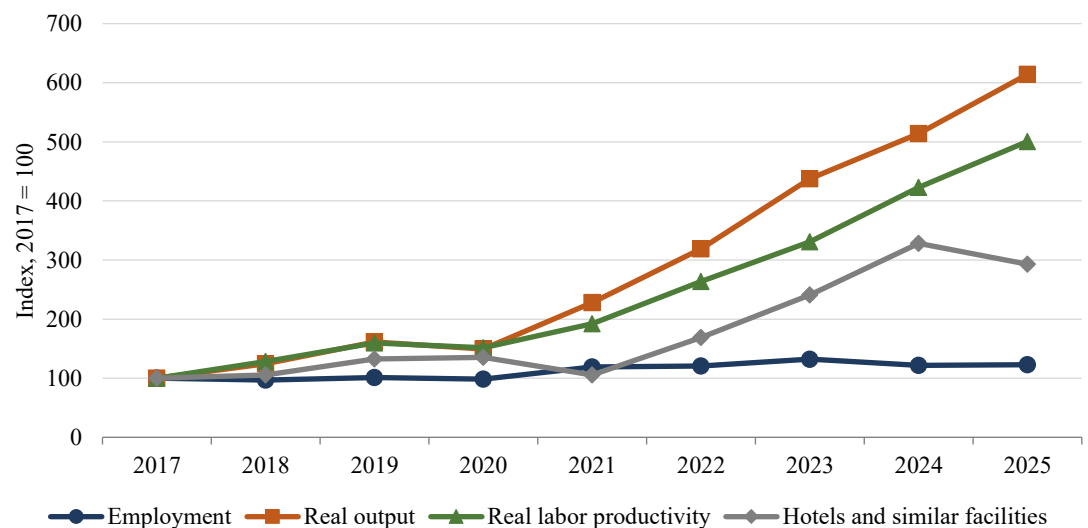


Figure 1. Employment, real output, real labor productivity and the number of hotels in the accommodation and food service sector of Samarkand region, 2017–2025 (index, 2017 = 100)

Source: calculated by the author(s) from SIAT data [1]. Real values are in 2017 prices, deflated by the December-on-December CPI.

3.2. Labor productivity and the regional position of Samarkand

In 2017 an average worker in the regional sector produced 39.9 million soum of output, only 39.7 percent of the national figure of 100.4 million soum. By 2025 output per worker

had reached 462.2 million soum in current prices, or 79.3 percent of the national level of 582.7 million soum. In constant 2017 prices, productivity rose from 39.9 to 199.5 million soum, an average annual growth rate of 22.3 percent, compared with 12.2 percent for Uzbekistan as a whole (Fig. 2). As a result, the share of Samarkand in national sector output almost doubled, from 5.8 to 11.4 percent, while its share in national sector employment remained close to 14.5 percent.

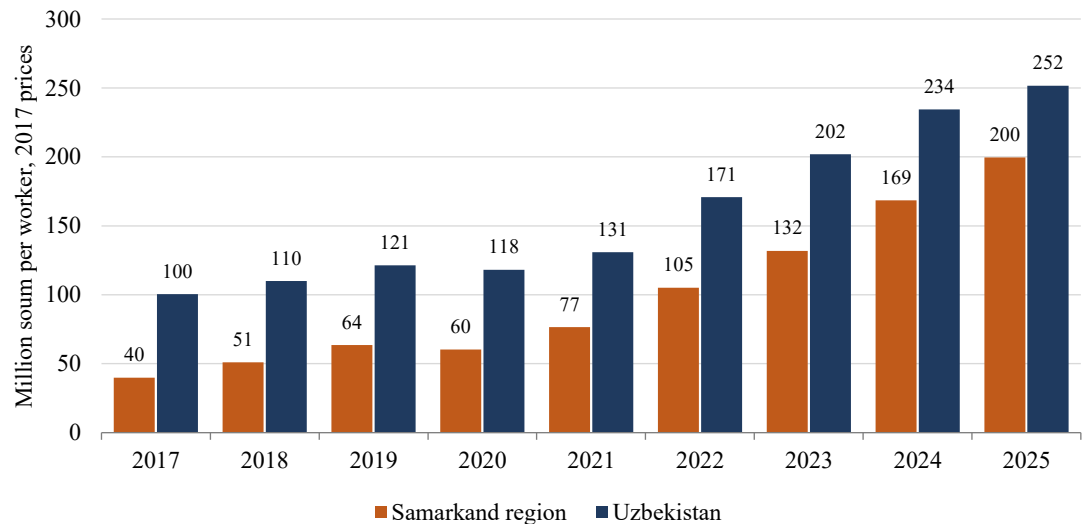


Figure 2. Real labor productivity in accommodation and food services, Samarkand region and Uzbekistan, 2017–2025 (million soum per worker, 2017 prices)

Source: calculated by the author(s) from SIAT data [1].

Despite this convergence, the regional comparison in Fig. 3 shows how large the initial gap was. In 2025 Samarkand ranked thirteenth of the fourteen regions by output per worker, ahead only of Andijan. The highest values were recorded in Kashkadarya (1,019 million soum), the Republic of Karakalpakstan (837 million soum) and Navoi (792 million soum). Bukhara, the other major heritage destination, reached 633 million soum with about one third of the sector workforce of Samarkand. At the same time, real productivity growth in Samarkand since 2017 was the fastest in the country, slightly ahead of Navoi with 21.8 percent per year.

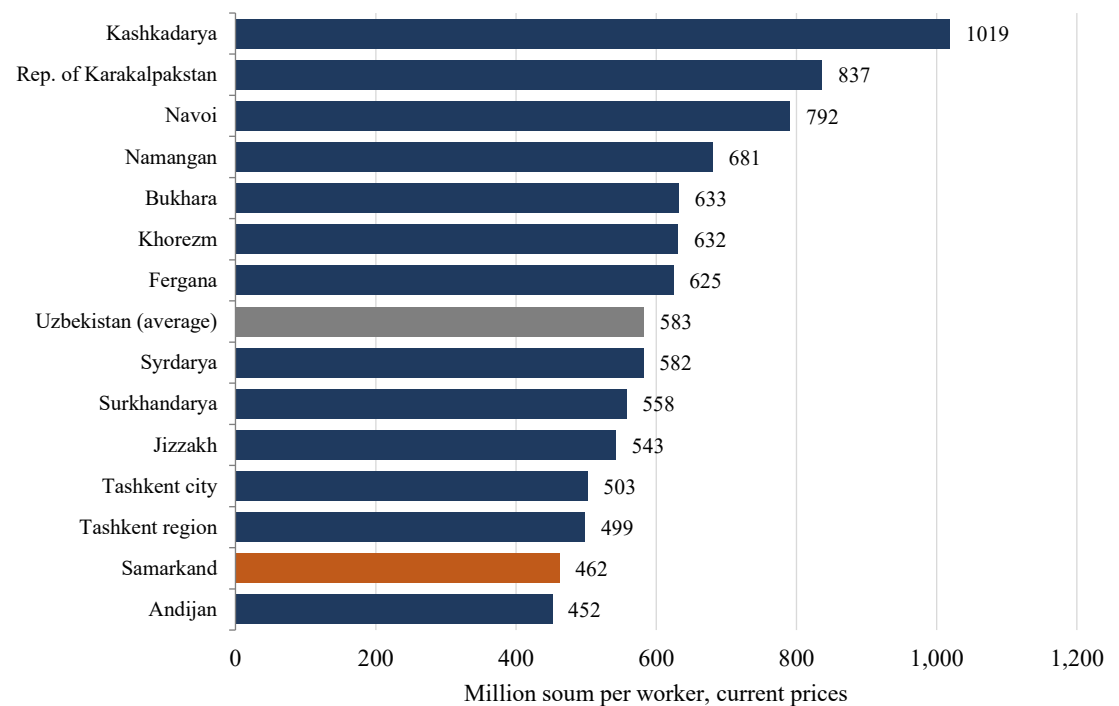


Figure 3. Output per worker in accommodation and food services by region of Uzbekistan, 2025 (million soum per worker, current prices)

Source: calculated by the author(s) from SIAT data [1]. Data for 2025 are preliminary.

Applying Eq. (4), the productivity reserve amounted to 6.77 trillion soum in 2025, which equals 26.1 percent of actual sector output. The reserve has declined from 53.1 percent of output in 2023 and from more than 150 percent in 2017, but it still represents a sizeable share of human resource potential that the region does not convert into output.

3.3. Sources of growth and panel estimates

The decomposition based on Eq. (3) confirms that the expansion of the sector has been driven by productivity rather than by headcount. Between 2017 and 2025 real output in Samarkand grew by 181.5 log points. Employment contributed 20.5 points, or 11.3 percent of the total, and productivity contributed 161.1 points, or 88.7 percent. For Uzbekistan as a whole the employment contribution was larger, at 19.2 percent. The role of employment varied strongly across sub-periods in Samarkand. It was negligible in 2017 to 2019, when it accounted for 2.3 percent of growth, and in 2021 to 2025, when it accounted for 3.3 percent, but it reached 46.4 percent in 2019 to 2021, when the post-pandemic reopening brought many workers back into the sector. A simple regression of log employment on log real output for Samarkand gives an elasticity of 0.16 (standard error 0.03, $R^2 = 0.81$). Each 10 percent increase in real output was thus accompanied by a rise in employment of only about 1.6 percent.

Table 2 reports the fixed effects estimates for all regions. In Model 1 the output elasticity of employment is 0.385. It is highly significant with Driscoll and Kraay standard errors and imprecise with region-clustered errors, which is expected with only 14 clusters. In Model 2, which adds the number of hotels, the employment elasticity is 0.327 and the hotel elasticity is 0.088, the latter significant at the 10 percent level with Driscoll and Kraay errors. The hypothesis of a unit elasticity of employment is rejected at the 1 percent level with Driscoll and Kraay errors and at the 10 percent level with clustered errors in both models. The within R^2 of 0.14 to 0.20 indicates that most of the variation of output inside regions over time is not explained by changes in employment or capacity, which is consistent with the dominant role of productivity found in the decomposition.

Table 2. Two-way fixed effects estimates of the output elasticity of employment and hotel capacity, 14 regions of Uzbekistan, 2017–2025

Variable	Model 1	Model 2
$\ln L$ (employment), β	0.385	0.327
Driscoll and Kraay SE	(0.087)***	(0.090)***
Region-clustered SE	[0.338]	[0.314]
$\ln H$ (hotels), γ		0.088
Driscoll and Kraay SE		(0.046)*
Region-clustered SE		[0.108]
p-value, $H_0: \beta = 1$ (Driscoll and Kraay)	<0.001	<0.001
p-value, $H_0: \beta = 1$ (clustered)	0.092	0.051
Region fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Observations (regions $\times$ years)	126 (14 $\times$ 9)	126 (14 $\times$ 9)
Within R^2	0.137	0.197

Note: The dependent variable is the natural logarithm of real output of accommodation and food services (billion soum, 2017 prices). Driscoll and Kraay standard errors (Bartlett kernel, bandwidth 2) are in parentheses and region-clustered standard errors in brackets. Significance stars refer to Driscoll and Kraay errors: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Source: estimated by the author(s) from SIAT data [1].

3.4. Wages, incentives and demand pressure

Wage indicators help to explain why productivity gains have not been matched by a stronger inflow of workers into the sector. The average monthly wage in Samarkand region was 4.74 million soum in 2025, or 74.3 percent of the national average of 6.38 million soum, and this ratio has barely changed since 2022, when it stood at 75.6 percent [31]. In accommodation and food services nationwide, the average wage rose from 79.5 percent of the national average in 2022 to 90.3 percent in 2023, but then fell to 87.2 percent in 2024 and 79.8 percent in 2025 (Fig. 4). The nominal increase in the sector wage in 2025 was 8.8 percent, only slightly above consumer price inflation of 7.3 percent, while the economy-wide average wage rose by 18.9 percent [31], [1].

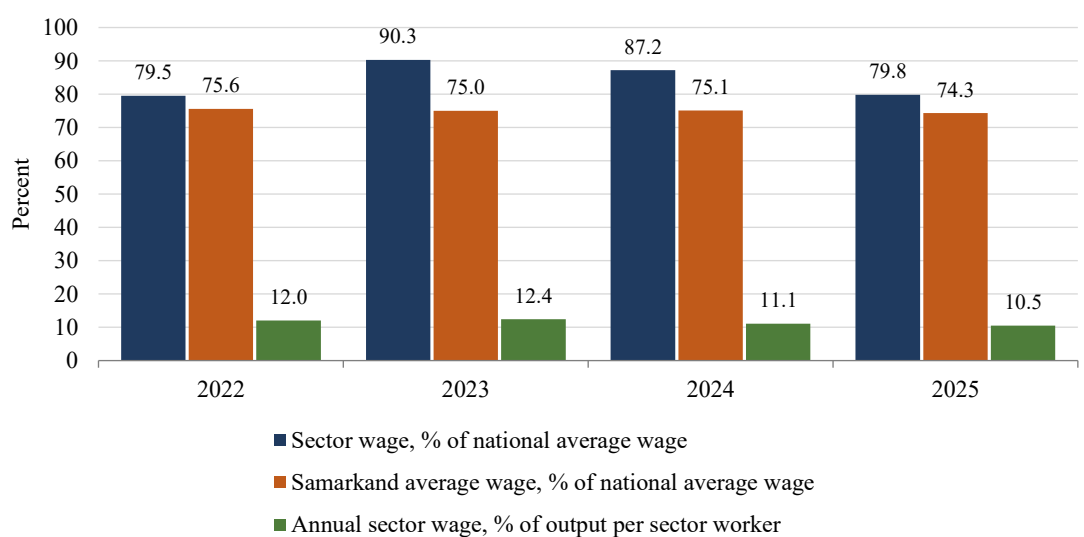


Figure 4. Wage indicators for accommodation and food services and for Samarkand region, 2022–2025 (percent)

Source: calculated by the author(s) from Statistics Agency wage releases and SIAT data [31], [1]. Wages exclude agricultural enterprises and small businesses. Sector refers to accommodation and food services in Uzbekistan as a whole.

The ratio of the annual sector wage to output per worker, a rough indicator of the labor share, declined from 12.0 percent in 2022 to 10.5 percent in 2025 at the national level. Between 2022 and 2025 nominal output per worker grew by 88.9 percent nationally and by 143.1 percent in Samarkand, whereas the sector wage grew by 64.4 percent. Because the wage data exclude small businesses, these ratios should be read as indicative. They nevertheless point to a widening gap between what sector workers produce and what they earn.

Demand pressure moved in the opposite direction. The number of foreign tourists per sector worker in Samarkand rose from 35.5 in 2023 to 45.3 in 2024, and the total number of foreign and domestic tourists per worker increased from 110 to 130. Beds per hundred sector workers rose from 27.3 to 32.3 [29], [3]. In other words, each worker served more guests and more capacity, while the relative pay of the sector declined.

4. Discussion

4.1. Interpretation of the results

The results lead to three conclusions about the use of human resource potential in the hotel services of Samarkand. First, the region has a large but under-used workforce. It employs about one in seven of the accommodation and food service workers of the country, yet in 2025 it still produced less output per worker than twelve of the other thirteen regions. The rapid convergence since 2017 shows that the gap can be narrowed, but a reserve equal to about a quarter of current output remains. This is in line with the qualitative finding that HRM practices are weak in Uzbek tourism companies [26] and with international evidence that bundles of HR practices are an important source of productivity differences among hotels [17], [16].

Second, growth has been driven almost entirely by productivity, and additional hiring has brought low returns. An output elasticity of employment of less than one is common for an industry where a large number of workers work in small, family businesses, with a limited division of labour and often in an informal sector. It also implies that increased staffing, the implicit goal of job creation initiatives, won't automatically create the output that new hotel investment capacity creates. It is significant that hotel stocks increased by nearly three times, and employment grew by less than a quarter, at the same time, indicating an increasing downturn for the current workforce. The studies carried out in the world indicate that this pressure, in addition to low wages, is a cause of dissatisfaction and personnel turnover, and that most of the cost incurred from these is in the form of loss of productivity [21] [4].

Third, an incentive system is off target. Although the number of guests and output per guest has grown, the relative wages of employees in the sector have declined since 2023. Human capital theory suggests that a decline in the return on skills in a particular sector would lead to reduced investment from workers and employers in those skills [12]. Pay and training and career paths are the primary levers that can be used for retention, as identified in retention research, and other countries' experience during the pandemic demonstrates the swiftness with which a shortage may emerge if these levers are not applied [20] [19]. For Samarkand, where national targets envisage further rapid growth of visitor flows [2], the risk is that capacity keeps expanding faster than the skilled workforce needed to operate it.

4.2. An improved organizational-economic mechanism

Based on these findings, we propose an improved organizational-economic mechanism for the effective use of human resource potential in the hotel services of the region (Fig. 5). The mechanism follows the AMO logic [15] and the principle that rules and

incentives should steer independent actors toward a common objective [11]. It consists of four connected blocks.

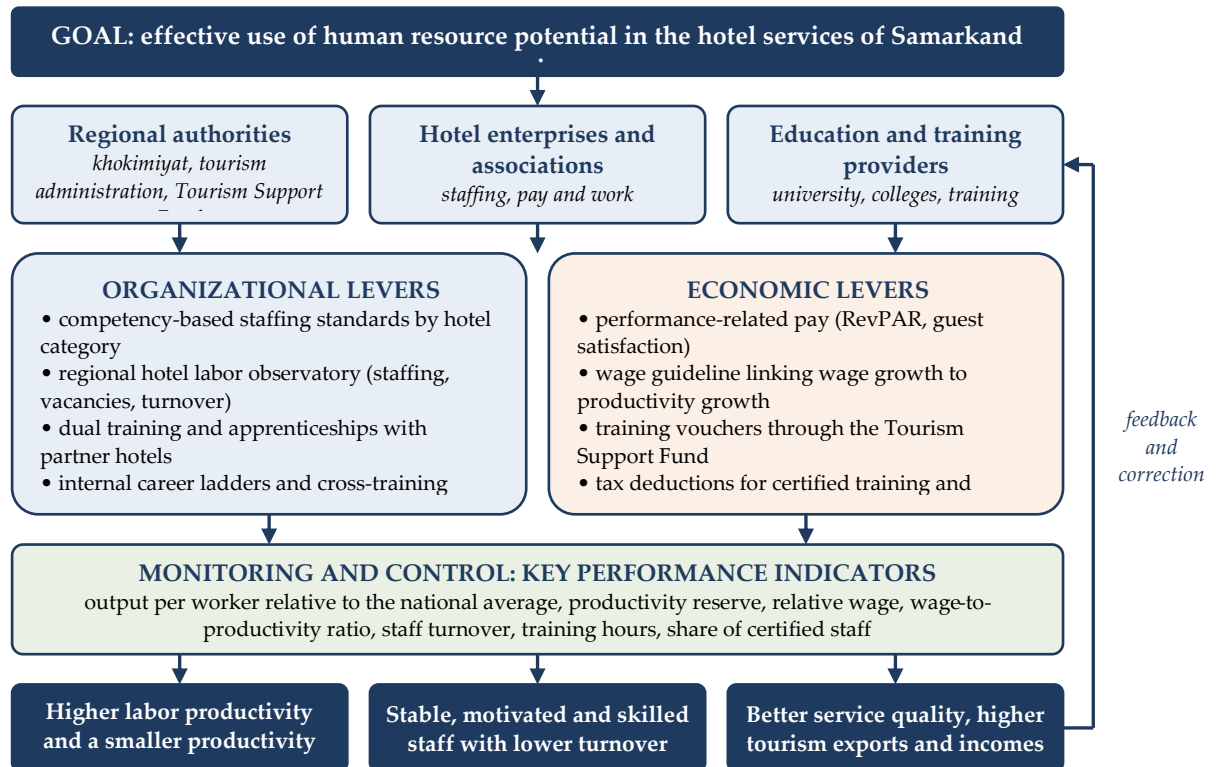


Figure 5. Proposed organizational-economic mechanism for the effective use of human resource potential in the hotel services of Samarkand region

Source: developed by the author(s).

The first block defines the actors and their roles. Regional authorities, including the regional khokimiyat, the territorial tourism administration and the Tourism Support Fund, set targets and co-finance training. Hotel enterprises and their associations are responsible for staffing, pay and work organization. Universities, vocational colleges and training centers, among them the Silk Road International University of Tourism and Cultural Heritage in Samarkand, supply graduates and retraining programs. Employees take part through their career choices and through regular feedback.

The second block contains organizational levers. These include competency-based staffing standards differentiated by hotel category, a regional hotel labor observatory that collects data on staffing, vacancies and turnover, dual training and apprenticeship schemes with partner hotels, internal career ladders, and pooled seasonal staffing among small hotels and guesthouses to smooth the strong seasonality of demand. The observatory also addresses a basic information problem identified in this study, namely that hotel employment is not visible in regional statistics at all.

Economic levers in the third block. The main instrument is a pay system in which a portion of the pay is tied to measurable outcomes, such as revenue per available room or guest satisfaction scores, and based on evidence that performance-based pay raises effort and selection of effort [22]. The second instrument is a sector wage guideline which ties wage increases to productivity increases so that the share of wages does not decline forever. The third is extension of training cost compensation from the Tourism Support Fund. Staff training costs are partially reimbursed for medical tourism clusters in Decree PF-87 until 2028 [2] and could be used for staff training in Samarkand's certified medical tourism clusters. Finally, tax deductions or lower social contributions could be linked to confirmed investment in training and to formalized employment contracts, thus helping to incorporate informal workers into the statistical and social insurance systems.

The fourth block is a monitoring system with feedback. Table 3 lists the proposed indicators with their baseline values for 2025, where official data exist, and suggested targets for 2030. The indicators can be calculated from statistics that are already collected or that the observatory could collect at low cost. The productivity target is realistic. Raising output per worker from 79.3 to 95 percent of the national level by 2030 would require real productivity in Samarkand to grow about 3.7 percentage points per year faster than the national rate, whereas the actual difference in 2017 to 2025 was about 10 percentage points. Reaching 95 percent would also reduce the productivity reserve to about 5 percent of sector output.

Table 3. Key performance indicators for monitoring the proposed mechanism in Samarkand region

Indicator	Definition	Baseline (2025)	Proposed target (2030)
Relative labor productivity	Output per sector worker in Samarkand as % of national average	79.3%	≥ 95%
Productivity reserve	Eq. (4) as % of actual sector output	26.1%	≤ 5.5%
Relative sector wage	Average sector wage as % of national average wage	79.8%*	≥ 90%
Wage-to-productivity ratio	Annual sector wage as % of output per sector worker	10.5%*	≥ 12%
Staff turnover rate	Separations as % of average headcount in hotels	Not collected	Measured from 2026, falling every year
Training intensity	Training hours per hotel employee per year	Not collected	≥ 30 hours
Certified staff	Share of hotel staff with a recognized qualification certificate	Not collected	≥ 60%
Capacity load	Hotels per 1,000 sector workers	5.73	Staffing standard by category

Note: * national value for accommodation and food services, because a regional sector wage series is not published. Targets are proposals of the author(s). Source: compiled by the author(s).

Implementation can be organized in three stages. The emphasis for 2026 is on information. The observatory would begin to gather hotel-level data on headcount, vacancies, separations and training, and the baseline data that is currently missing from Table 3 would be completed. In 2027 and 2028, performance-based payment and training vouchers, as well as dual training, may be introduced in a group of volunteer hotels of various categories, and the results of the pilot compared to the results of hotels not subject to the pilot. The instruments that work will be expanded to the entire region from 2029 and tie to the tax and social contribution incentives. This approach will enable the regional body to control the initial cost of the fiscal investment and fine-tune the design before expanding.

It also has implications at the individual hotel level. Cross-training workers so that they can rotate between front office, housekeeping and food service as demand fluctuates, and working to the occupancy forecast, and providing greater flexibility to the frontline worker to resolve guest issues are all ways that managers can increase the output of a worker without sacrificing jobs. These practices relate to the opportunity channel of the AMO framework and are linked with increased engagement and decreased turnover in the literature [18, 17]. For small hotels and family guesthouses, which cannot afford their own training departments, joint programs organized by hotel associations together with the regional university and colleges are a practical way to obtain the same benefits.

4.3. Limitations and directions for further research

The study has a number of limitations. First, the official definition includes both food and room services, and the employment figures of hotels are not reported separately from the employment figures for restaurants and cafes, so some of the observed movements are attributable to these establishments as well. Secondly, the small businesses, which account for a significant proportion of the workforce of the sector, are not covered by the wage series and no regional wage series is available for the whole period. Third, the series on the number of hotels also has breaks. The national number of facilities jumped from 1,387 in 2023 to 2,383 in 2024, which probably reflects changes in registration and coverage. Fourth, the data for 2025 are provisional. Fifth, estimates are limited to 14 regions and 9 years and thus represent average associations not causal effects. The results of the study should be further developed in the future by applying these regional indicators along with the questionnaire of HR practices of Samarkand hotels, turnover and quality of service. This information would enable a direct test of the mechanism suggested here and evaluation of its impact on the performance of individual hotels.

5. Conclusion

Taking into account official statistical data of Samarkand region for the period 2017-2025, and productivity accounting and panel estimation, we considered the effectiveness of using the human resource potential of hotel and related services. As regards the first research question, the output and capacity of the sector increased much faster than its work force. Employment grew by almost 22.7 percent, real output grew by 6.1 times and the hotel stock nearly tripled. Regarding the second question, the overwhelming share of growth was attributable to productivity (88.7 percent of the growth in real output) and the returns to additional employment were modest, with output elasticities of 0.33 to 0.39 by region. Samarkand's speed of convergence to the national level of output per worker is rapid but the region still had a productivity reserve of 6.8 trillion soum in 2025, ranking 13 out of 14 regions. In response to the third question, the incentives for wages have decreased. Wages for the sector were less than 79.8 percent of the national average in 2025 than in 2023, and wages per worker decreased in the sector but the number of visitors served by each worker increased.

The results presented above show that the primary limitation on hotel services of the region is the quality and organisation of labour rather than the quantity of labour. The proposed organizational-economic mechanism responds to this by combining organizational levers, such as staffing standards, a regional labor observatory, dual training and career ladders, with economic levers, such as performance-related pay, productivity-linked wage guidelines, training subsidies and tax incentives, and by adding a monitoring system with measurable targets. Implementing it would allow Samarkand to support its tourism growth targets with a stable and skilled workforce, and to turn a larger part of its human resource potential into income for both hotel enterprises and their employees.

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