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Article

Culinary Heritage and Service Quality as Drivers of Sustainable Foodservice Development in a Heritage Tourism Destination: Evidence from Bukhara, Uzbekistan

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Abstract: Heritage tourism destinations face a dual challenge: sustaining rapid commercial growth in their foodservice sector while preserving the culinary heritage that underpins their distinctiveness. This study examines how culinary heritage and service-quality attributes jointly shape customer satisfaction and the sustainable competitiveness of foodservice enterprises in Bukhara, a UNESCO-listed Silk Road city in Uzbekistan. Three complementary data sources are combined: a regional panel (2016–2025) of sector indicators, a consumer survey (n = 512), and an enterprise-level survey covering 50 firms and more than 500 customers. A multifactor ordinary-least-squares model of customer satisfaction is estimated, the macro turnover process is modelled and projected to 2030, and investment efficiency is assessed through return-on-investment and marginal-product measures. The satisfaction model ($R^2 \approx 0.79$) identifies food quality (24.8% of explained influence), sanitation–hygiene (22.8%) and the availability of national "heritage" dishes (16.1%) as the three strongest positive determinants, ahead of price–quality balance and staff conduct, while waiting time exerts a small negative effect. The sector's turnover is projected to grow from UZS 1,724.8 bn (2025) to about UZS 5,684 bn by 2030, with average return-on-investment of 486% over 2015–2024. The findings reposition culinary heritage from a cultural amenity to a measurable economic driver and motivate a cluster-based, green-oriented development pathway capable of cutting operating costs by 20–30% while raising revenue by 25–40%.

Keywords: Culinary Heritage, Gastronomy Tourism, Foodservice, Customer Satisfaction, Service Quality, Sustainable Development, Cluster, Bukhara, Uzbekistan

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1. Introduction

The global foodservice market has become one of the most dynamic components of the service economy, valued at roughly USD 4 trillion in the mid-2020s and expanding at around 7% per year. Its growth is increasingly entangled with two structural transitions: the shift of consumption toward experience and authenticity, and the transition of production toward environmentally and socially responsible models. For destinations whose competitive identity rests on tangible and intangible heritage, these transitions converge on a single question: how can the foodservice sector grow commercially while reinforcing, rather than eroding, the culinary heritage that makes the destination distinctive?

Uzbekistan offers an instructive setting. The service sector accounts for more than a third of national value added, and foodservice is among its fastest-growing branches. Bukhara, a UNESCO World Heritage city on the historic Silk Road, concentrates the

country's heritage-tourism flows: it received about 1.8 million visitors in 2024 and hosts a foodservice sector that grew from roughly UZS 47.7 bn in turnover in 2015 to more than UZS 1,500 bn in 2024. Yet rapid commercial expansion has not been matched by consistent quality: official inspections and consumer surveys repeatedly point to uneven service standards, hygiene shortcomings and an under-leveraged national-cuisine offer.

This gap sits against three established literatures. Service-quality research traces a lineage from the market-oriented view of the service firm [1] and services as bundles of tangible and intangible elements [2] to experiential service ecosystems [3] and industry-structure analysis [4]; the SERVQUAL gap paradigm [5], rooted in expectation-disconfirmation theory [6] and adapted to dining through DINESERV [7], identifies food quality [8] and the physical environment [9] as dominant antecedents, synthesised in unified customer-experience frameworks [10]. A parallel gastronomy-tourism literature treats cuisine as a core element of destination experience [11] and a primary motivator of destination choice [12], linking local food to authenticity and the sustainable tourism experience [13] and to destination attraction [14]; in heritage cities the national-dish offer is accordingly a strategic marketing asset [15] within the wider food-tourism segment [16], with food increasingly central to the visitor "foodscape" [17], as reflected in international gastronomy-tourism guidance [18]. A third literature addresses sustainability: local sourcing and carbon-footprint reduction [19], food-waste reduction [20], and the environmental, social and economic dimensions of hospitality sustainability [21], codified into operational principles [22] that can lower costs and strengthen brand value [23]; cluster theory holds that proximate, interlinked enterprises achieve advantages unavailable to isolated firms [24].

On this basis, three hypotheses are advanced. H1: food quality and sanitation–hygiene are the strongest positive determinants of satisfaction. H2: the availability of heritage dishes exerts an independent, positive effect comparable to core service-quality attributes. H3: the sector exhibits high investment efficiency consistent with a non-saturated growth phase, supporting a cluster-based, green-oriented pathway.

Despite this substantial literature, the role of culinary heritage as a measurable, quantifiable determinant of satisfaction and competitiveness in emerging heritage destinations remains under-examined, particularly in Central Asia. This study addresses that gap with three objectives: (i) to estimate the relative contribution of culinary-heritage and service-quality attributes to customer satisfaction; (ii) to characterise and project the growth trajectory and investment efficiency of the sector; and (iii) to translate the findings into a cluster-based, green-oriented development pathway. The contribution is to reposition culinary heritage from a cultural amenity to an economic driver with an estimable weight, and to integrate micro-level satisfaction evidence with macro-level forecasting in a single, policy-relevant framework.

2. Materials and Method

Bukhara region combines a UNESCO-listed historic core, a developed tourism infrastructure and a distinctive culinary tradition. Three datasets are used: (i) a regional panel of annual sector indicators for 2016–2025 from official statistics [25]; (ii) an anonymous consumer survey (November–December 2025; n = 512; 78% urban, 60.7% female, 62.5% aged 19–29); and (iii) an enterprise-level survey of 50 establishments and 500+ customers (2024 reference year), rating six service attributes on a 1–5 scale.

Customer satisfaction ($\hat{Y}$, 1–5) is modelled by OLS as $\hat{Y} = \beta_0 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_{10} x_{10} + \beta_{11} x_{11} + \varepsilon$, where x_2 = food quality, x_3 = sanitation–hygiene, x_4 = price–quality balance, x_5 = staff conduct, x_6 = waiting time, x_{10} = national/heritage dishes and x_{11} = digital-technology use. At the sector level, turnover (Y) is modelled as a multifactor function of establishment count (X_1), employment (X_2), capital investment (X_3), labour productivity (X_4) and GRP share (X_5), with standard diagnostics [26], and an exponential trend is fitted for projection to 2030. Investment efficiency is summarised by ROI and the

marginal product of capital (MP), with a cluster scenario scaling ROI by a synergy coefficient.

3. Results

3.1. Sector growth, structure and trajectory

Over 2015–2024 every headline indicator of the Bukhara foodservice sector rose sharply. Table 1 summarises the magnitudes: turnover increased almost thirty-two-fold, capital investment forty-six-fold, and labour productivity nearly nine-fold, while the sector's share of gross regional product more than doubled. These multiples establish the sector as one of the region's most dynamic, and frame the analysis that follows.

Table 1. Key indicators of the Bukhara foodservice sector, 2015 vs 2024.

Indicator	2015	2024	Change
Turnover (UZS bn)	47.7	1,511.7	×31.7
Establishments (units)	428	1,548	×3.6
Employment (thousand)	3.24	11.84	×3.7
Labour productivity (UZS m/worker)	14.7	127.7	×8.7
Capital investment (UZS bn)	8.4	384.2	×45.7
Share of GRP (%)	1.12	2.64	+1.52 pp

Note: pp = percentage points. Source: authors' compilation from regional statistics.

Behind these aggregates lies a clear growth path. Figure 1 traces observed turnover from UZS 72.5 bn (2016) to UZS 1,724.8 bn (2025), with a visible COVID-19 slowdown in 2020, and overlays the projection to 2030. The fitted exponential trend implies average annual growth near 43.7%, taking turnover to roughly UZS 5,684 bn by 2030.

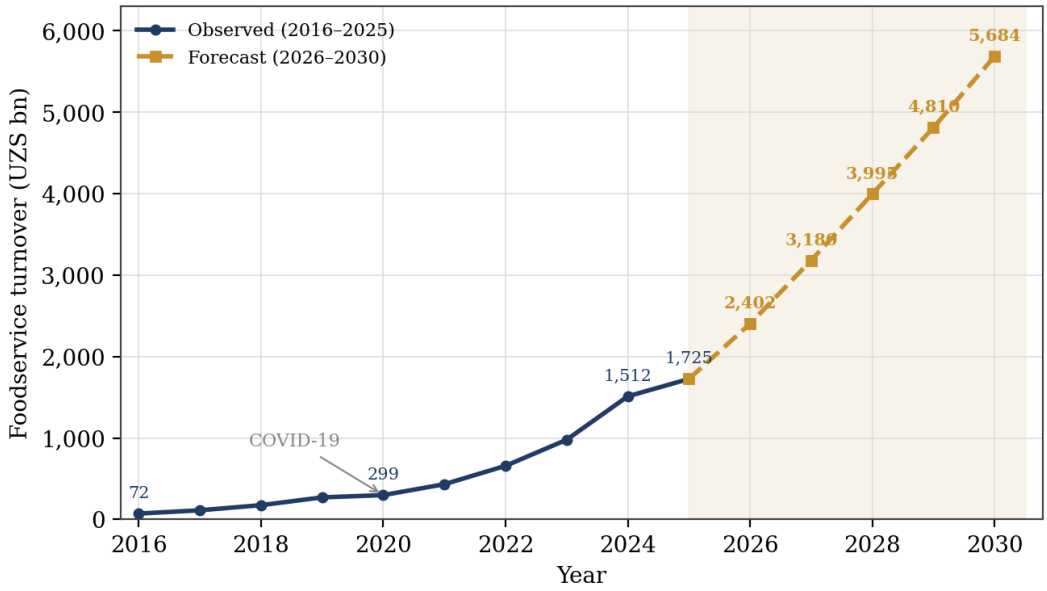


Figure 1. Observed turnover (2016–2025) and projected trajectory to 2030 (UZS bn); shaded band marks the forecast horizon. Source: authors' estimation.

Growth was structurally uneven, as Figure 2 shows. Between 2020 and 2024 the fastest expansion occurred in quick-service outlets (+325.9%), buffets (+300.0%) and full-service restaurants (+259.2%), while national-cuisine restaurants grew by 242.3% (from 78 to 189) and cafés multiplied 2.4-fold to 648. The prominence of national-cuisine and heritage-oriented formats is itself evidence that culinary heritage functions as a

commercial driver, not a passive backdrop — a reading the satisfaction model in Section 4.3 confirms quantitatively.

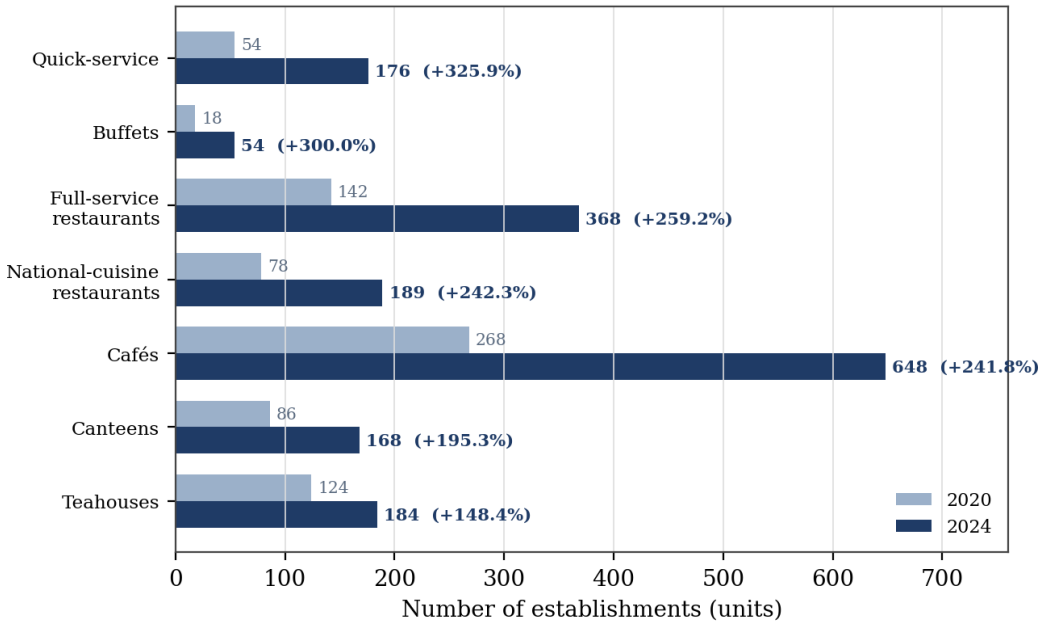


Figure 2. Establishment counts by format, 2020 vs 2024, with growth rates. Source: authors' compilation.

3.2. Macro econometric model

The multifactor turnover model fits the data closely (R^2 = 0.9987; adjusted R^2 = 0.9971; F = 612.48, $p < 0.01$), with all coefficients significant at the 5% level, mean VIF = 4.32 (no problematic multicollinearity) and Durbin–Watson = 1.876 (no autocorrelation). Table 2 reports the estimates. The strongest marginal effects come from the sector's GRP share and employment: a one-point rise in the GRP share is associated with UZS 127.3 bn of additional turnover, and an extra thousand workers with UZS 42.7 bn.

Table 2. Multifactor turnover model (OLS): $Y = f(X_1 \ldots X_5)$.

Variable	Coef.	Std. err.	t-stat	p-value
Constant (β_0)	−324.86	78.42	−4.142	0.014
Establishments (X_1)	0.428	0.124	3.452	0.026
Employment (X_2)	42.67	12.86	3.318	0.029
Capital investment (X_3)	1.824	0.486	3.753	0.020
Labour productivity (X_4)	3.156	0.842	3.748	0.020
GRP share (X_5)	127.34	38.64	3.295	0.030

Note: R^2 = 0.9987; F = 612.48; DW = 1.876; mean VIF = 4.32. All coefficients significant at $p < 0.05$.

The model therefore confirms that the sector's expansion is broad-based, driven jointly by establishment entry, employment, investment and productivity. Because all factors contribute significantly and multicollinearity is moderate, the specification is suitable for the projection reported in Section 4.5.

3.3. Determinants of customer satisfaction

What customers themselves prioritise is shown in Figure 3, drawn from the consumer survey (n = 512). Food taste and quality dominate, named by 88.1% of respondents, followed at a distance by price affordability (54.2%) and sanitation–hygiene (48.2%); national dishes are cited by 16.7%. This ranking of stated importance provides the behavioural backdrop against which the estimated impacts are interpreted.

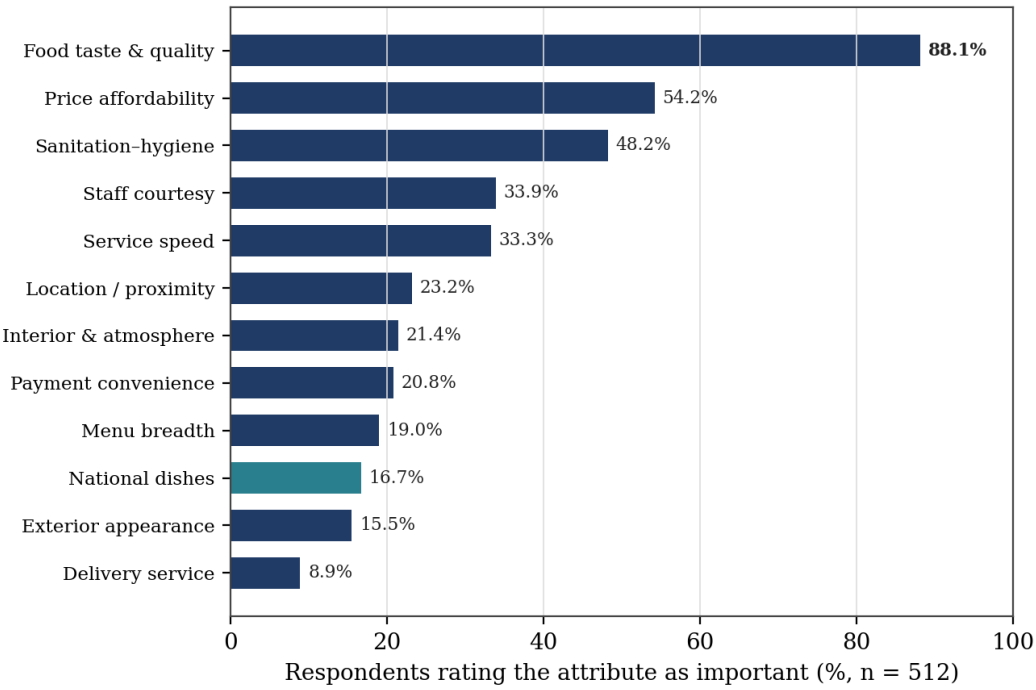


Figure 3. Attribute importance in choosing a foodservice establishment (% of respondents, n = 512). Source: consumer survey.

The enterprise-level model translates these stated priorities into estimated impacts. Table 3 reports the regression: all attribute coefficients are statistically significant, and the model explains the bulk of variation in satisfaction ($R^2 \approx 0.79$). Food quality and sanitation are the two strongest determinants, and the availability of national/heritage dishes is the third — ahead of price–quality balance and staff conduct — while waiting time is the only attribute with a negative sign.

Table 3. Customer-satisfaction model: standardized coefficients, significance and share of explained influence (50 firms, 500+ customers).

Attribute	Coef. (β)	Std. err.	t-stat	Influence share
Food quality (x_2)	**0.312**	0.031	10.06***	24.8%
Sanitation–hygiene (x_3)	**0.287**	0.029	9.90***	22.8%
National/heritage dishes (x_{10})	**0.203**	0.041	4.95***	16.1%
Price–quality balance (x_4)	**0.198**	0.028	7.07***	15.7%
Staff conduct (x_5)	**0.156**	0.026	6.00***	12.4%
Digital technology (x_{11})	**0.089**	0.045	1.98*	7.1%
Waiting time (x_6)	**−0.024**	0.012	−2.00*	1.9%
Constant (β_0)	**0.847**	0.124	6.83***	—

*Note: *** $p < 0.001$; * $p < 0.05$. Influence share computed over the sum of absolute coefficients. Model $R^2 \approx 0.79$.*

Figure 4 visualises the standardised weights and their shares of explained influence. The ordering is unambiguous: food quality (+0.312, 24.8%) and sanitation (+0.287, 22.8%) lead, culinary-heritage dishes (+0.203, 16.1%, highlighted) come third, and waiting time (−0.024) is the sole drag. These results support H1 and H2 jointly: heritage cuisine is not merely culturally valuable but a measurable economic driver of satisfaction.

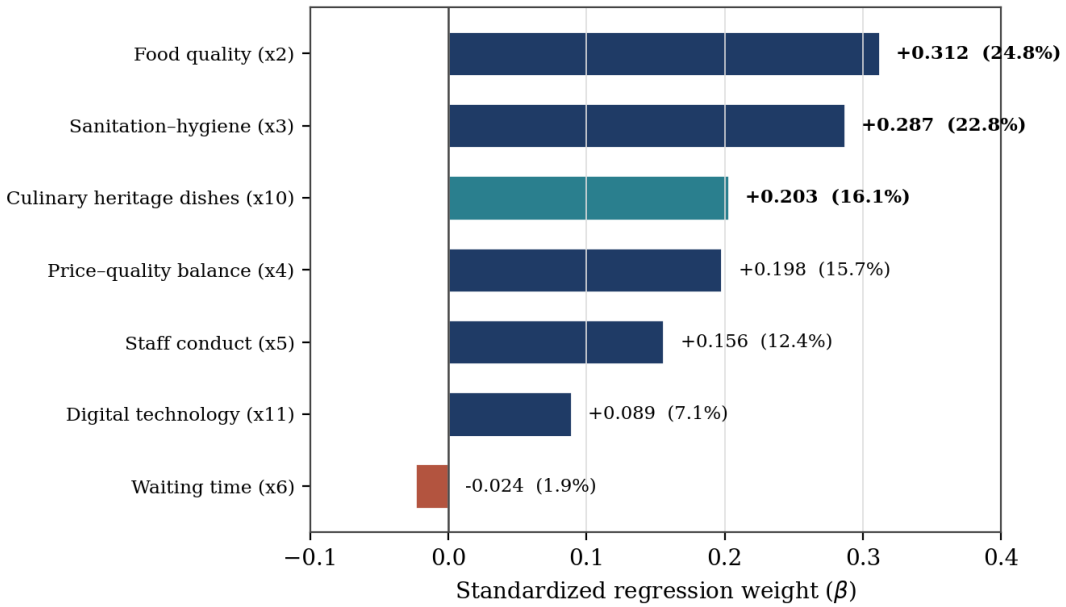


Figure 4. Standardized weights of satisfaction determinants; culinary-heritage dishes (highlighted) rank third. Source: authors' estimation.

The convergence of stated importance (Figure 3) and estimated impact (Table 3, Figure 4) on the same three levers — food quality, hygiene and heritage cuisine — strengthens internal validity and identifies them as the priority targets for both satisfaction and differentiation.

3.4. Investment efficiency and the cluster scenario

Figure 5 reports investment efficiency. Over 2015–2024 the sector's average ROI was 486% — each UZS 1 invested generated UZS 4.86 of turnover — some 2.4 times the international "excellent" benchmark of 200%, while the average marginal product of capital was 3.69. The mild downward drift in MP reflects diminishing marginal returns rather than saturation, supporting H3.

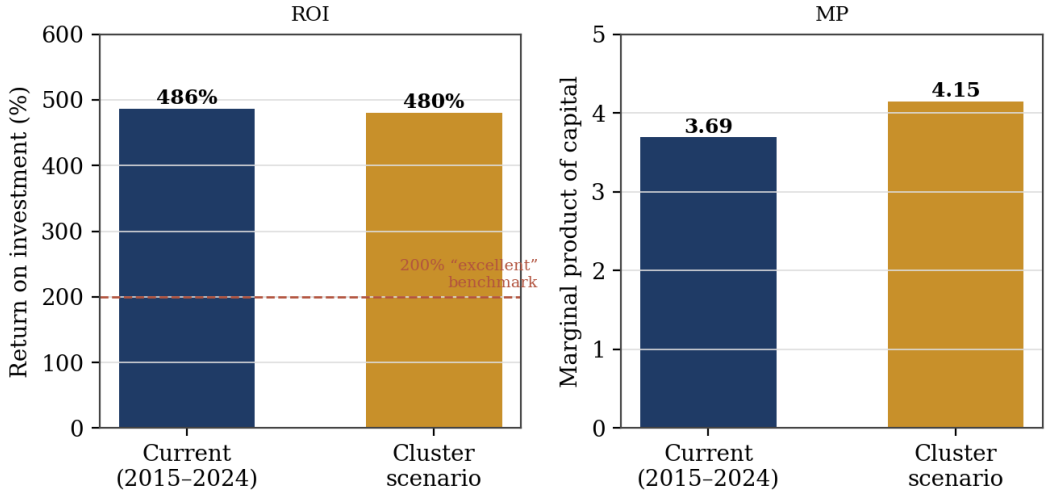


Figure 5. Investment efficiency: current (2015–2024 average) vs projected cluster scenario, for ROI and marginal product of capital. Source: authors' estimation.

Table 4 quantifies the cluster scenario. Centralised procurement, shared infrastructure and common standards are projected to hold ROI in the 470–490% range and raise MP to 4.0–4.3, while synergy effects cut operating costs by 20–30% and lift

revenue by 25–40%. The cluster thus converts the sector's abundant capital efficiency into a structured, sustainable competitiveness mechanism.

Table 4. Investment efficiency and projected cluster effects.

Indicator	Current (2015–2024)	Cluster scenario
Return on investment (ROI)	486.0% (avg.)	470–490%
Marginal product of capital (MP)	3.69 (avg.)	4.0–4.3
Operating-cost change	—	−20% to −30%
Revenue change	—	+25% to +40%

Note: cluster figures are model projections under a synergy coefficient $k \in [0.20, 0.25]$.

3.5. Projection of sector indicators to 2030

Bringing the macro model and trend together, Figure 6 and Table 5 summarise the projection. Turnover is expected to more than triple between 2024 and 2030 (from UZS 1,511.7 bn to UZS 5,684.2 bn), the number of establishments to rise to 2,918, employment to 25.7 thousand, and the sector's GRP share to 4.0%.

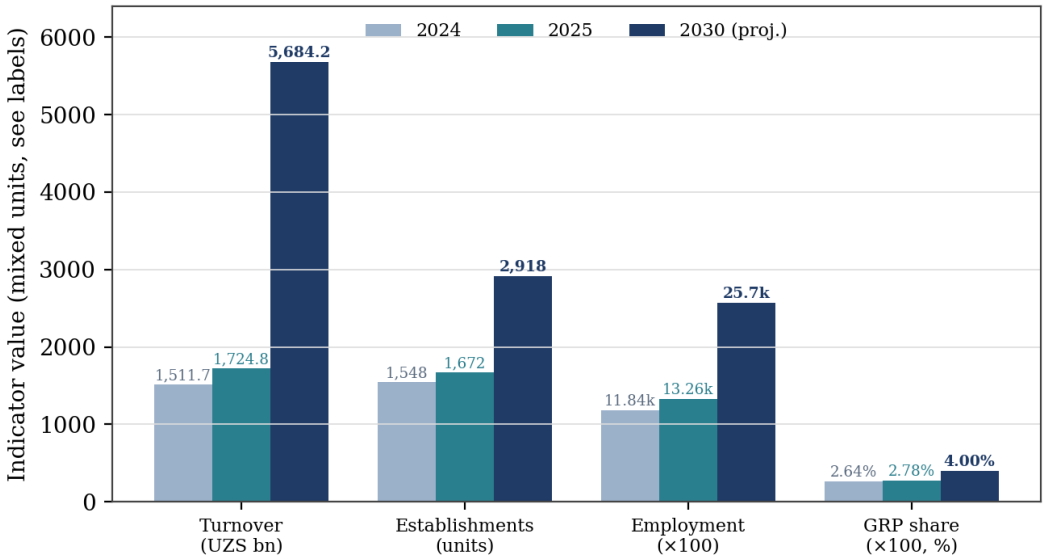


Figure 6. Key sector indicators, 2024 / 2025 / 2030 (projected), with values labelled. Source: authors' estimation.

Table 5. *Projected sector indicators to 2030.*

Indicator	2024	2025	2030 (proj.)	Change
Turnover (UZS bn)	1,511.7	1,724.8	5,684.2	×3.3
Establishments (units)	1,548	1,672	2,918	+74.6%
Employment (thousand)	11.84	13.26	25.7	×1.9
GRP share (%)	2.64	2.78	4.0	+1.2 pp

Note: projections from the multifactor model and fitted exponential trend ($R^2 = 0.9842$).

4. Discussion

Three findings stand out. First, the satisfaction model establishes culinary heritage as a quantifiable economic driver: the availability of national dishes is the third-strongest determinant of satisfaction, comparable to price–quality balance and stronger than staff conduct or technology. This moves heritage cuisine from the symbolic register, where it is usually discussed, into the estimable, managerial register — with direct implications for how heritage destinations design menus, source ingredients and position their offer.

Second, the juxtaposition of buoyant macro growth and high investment efficiency with persistent micro-level quality gaps reveals the sector's central tension. Demand and capital are abundant; what is scarce is consistent quality and a structured way to convert heritage assets into differentiated value. The negative weight on waiting time and the survey evidence on hygiene indicate that operational reliability, not capital, is the binding constraint on satisfaction.

Third, the cluster scenario offers a coherent mechanism for resolving that tension sustainably. By embedding common quality and sanitation standards, local sourcing and shared green infrastructure within an integrated cluster, the destination can raise satisfaction-relevant attributes while capturing cost and revenue synergies and reducing environmental load — aligning the micro-level levers with a meso-level organisational form and the national green-economy and gastronomy-tourism agenda articulated in the Uzbekistan–2030 development strategy [27], the measures to realize the economic potential of regions [28], and the additional measures for sustainable development of the service sector [29].

5. Conclusion

This study integrated micro-level satisfaction evidence, macro-level forecasting and investment-efficiency analysis to examine sustainable foodservice development in a heritage tourism destination. Its principal theoretical contribution is to quantify culinary heritage as an independent driver of customer satisfaction — the third-strongest attribute in Bukhara — bridging the gastronomy-tourism and service-quality literatures. Practically, the results identify food quality, hygiene and heritage cuisine as priority levers and motivate a cluster-based, green-oriented mechanism capable of cutting operating costs by 20–30% and raising revenue by 25–40%, against projected sector turnover approaching UZS 5,684 bn by 2030.

Several limitations qualify these conclusions. The enterprise evidence is cross-sectional and self-reported, and the analysis covers a single region. The satisfaction model is linear and does not capture interaction or threshold effects, and the cluster scenario is a projection rather than an evaluated intervention. Future work should extend the design to panel and multi-destination data, test heritage–quality interactions and non-linearities, incorporate visitor (as distinct from resident) segments, and evaluate cluster and green interventions through quasi-experimental designs once pilots are implemented.

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