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Research Article

THE IMPACT OF DISTANCE ON WILLINGNESS TO EAT OUT: EVIDENCE FROM SAMARKAND, UZBEKISTAN

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Abstract
This study investigates the determinants influencing participation in gastronomic tourism in Samarkand, Uzbekistan, focusing on the role of distance, price satisfaction, and demographic characteristics. Using data collected from 303 respondents, logistic regression and decision tree analyses were applied to assess key behavioral predictors of culinary travel. The results reveal that distance is the most significant factor influencing willingness to engage in gastronomic tourism—individuals willing to travel farther are substantially more likely to seek authentic food experiences. In contrast, satisfaction with food prices and demographic factors such as age, gender, and expenditure levels were found to be statistically insignificant. These findings highlight that logistical accessibility outweighs demographic variables in shaping tourism participation. The study contributes to the literature by providing empirical evidence from an emerging destination, emphasizing the importance of mobility and access in gastronomic decision-making. Practical implications include the need for policymakers to improve transportation infrastructure, enhance culinary destination visibility, and promote authentic local food experiences. By strengthening these elements, Uzbekistan can better position itself as a prominent culinary tourism destination in Central Asia. The research also opens opportunities for future studies to explore psychological, cultural, and digital factors influencing food tourism behavior.

Keywords: Gastronomy Tourism, Factors, Food, Food Tours, Travel

INTRODUCTION

Gastronomy is much more than food (Lopez et all., 2019). Gastronomy is the culture, heritage, tradition, and feeling of belonging to various ethnic communities (Hall & Sharples, 2003). It is a tool to promote intercultural understanding and unification of people and cultures. Besides facilitating employment and other opportunities, gastronomy tourism is also increasingly seen as a major guardian of cultural heritage, particularly in rural society (Ajadi et al., 2025; Bakri et al., 2025; Charlize et al., 2025).

The United Nations World Tourism Organization (UNWTO) defines gastronomy tourism as any travel activity centered around a visitor's interaction with local cuisine and beverages. UNWTO, 2012. Gastronomy festivals, food fairs, restaurants, farmer's markets, food demonstrations, trips to locations with a culinary theme, and food tours are all examples of gastronomy tourism, according to Hall and Mitchell (2001). In addition to being a component of the local culture, gastronomy is seen as a means of promoting local tourism and economic growth (Tikkanen, 2007; Alkilany et al., 2025; Demon & Santos, 2025). Travelers' decisions to return, their selection of places, and their promotion of those destinations are significantly influenced by gastronomy tourism (Kivela & Crotts, 2005; Asmaningrum et al., 2025; Diaz et al., 2025; Fetmirwati et al., 2025; Hafiz et al., 2025). Additionally, it is one of the primary determinants of a destination's appeal (Aydogdu et al., 2016). Gastronomy tourism, which tends to refer to the uniqueness of a dish and native to a region, a region or a nation, encompasses the key aspects of indigenous cuisine and wine tourism (Hall & Mitchell, 2000). The experience of other cuisines has always been part of the travelers' moment, but the definition of food tourism has in recent times gone beyond mere consumption (Mensah, Solanki & Bansah, 2023; Hagad & Riah, 2025; Islami et al., 2025; Le & Aye, 2025). These are visitor and recreation activities that position food traditions as a cornerstone of local identity and cultural heritage and to appreciate the interrelationship of food and society(J. Obaid et al., 1 C.E.). It is good change, for it opens the potential for the engagement of food at various points of the value chain and the learning from people who produce the food (Turaeva et al., 2024; Jackson & Alfaki, 2025; Klinaku et al., 2025). Through this, it becomes easier to take economic growth to other levels of society and provide more individualized and genuine experiences to the traveler. Gastronomic tourism represents a new cultural type of tourism aimed at responding to the needs of a target market segment with respect to food supply products (Lopez, Hernandez, Sanchez, Pastaz, 2019, p. 1). It is a function that has a biological purpose as it provides the body with substances which are crucial for its survival (Linh et al., 2025; Mor, 2025; Saindah, 2025). The other definition points out that the theme says that food is the satisfaction of bodily needs and gastronomy allows to sublimate this role and turns the act of eating into a pleasure for senses and intellect (Silva, 2012; Nisa et al., 2025; Rahajo & Kumyat, 2025).

The act of planning and gathering information after making a purchase decision, as well as utilizing and assessing goods and services, is referred to as tourist behavior (Moutinho, 1987; Engel et al., 1995). The selection, acquisition, utilization, assessment, and disposal of goods and services are also included in this process (Solomon et al., 1999; Odabas¸ıve Gülfidan, 2002). Marketing and tourism are the primary contexts in which tourist behavior is examined (Moutinho, 1987; Daries et al., 2018; Cohen et al., 2014; Chen and Peng, 2018; Richards 2021). Travelers' purchasing decisions are influenced by uncontrollable personal, cultural, psychological, and social aspects that marketing managers should take into account (Kotler et al., 2003). Efficiency usually refers to factors, which is related to impacting gastronomy tourist behavior, customers' preferences in the event of taken country, in addition to a process is considered more efficient if factors affect tourists behavior (Safarov et al., 2023). Diverse tourist behavior demand a thorough examination of the variables that may influence tourist behavior and the decision-making process (Cohen et al., 2014). This explains why there are so many studies on tourist behavior carried out in various factors, yet there aren't many thorough studies on tourist behavior in the context of tourism (Daries et al., 2018).

The research aims to study the development of gastronomy tourism since it has become a strategic industry (Humbatov et al., 2024). This study used qualitative and quantitative analysis of economic phenomena to facilitate numerical identification of risk significance and market volatility in guiding sound decision-making from the opinions of 303 individuals in the Samarkand area of Uzbekistan via semi-structured interviews, asking about eating out expenses. Research findings will give a range of regulations that can be utilized in the context of food tourism (Khusainova et al., 2024).

LITERATURE REVIEW

Gastronomic tourism is best suited to fulfill the needs of people with different ages and ethnicities (Sánchez-Cañizares & López-Guzmán, 2012). Cuisine has a peculiar ability to unite people with diverse backgrounds and promote certain cultures (Han et al., 2023). Nowadays, travellers travel to Italy or Austria to cook and eat in search of new sensations, feelings and namely behaviors (Jaelani et al., 2025). Touring companies are prepared to give these travellers a wide variety of tours on the subject as gastronomy tourism becomes more popular and developing segment of the industry (Schlüter, 2011). According to researchers work, tourist behavior in the context of tourism refers to the actions taken by visitors as they assess their experiences with their decision-making process (Kirikçı et al., 2007). Based on their encounters with food and beverages, culinary tourists form opinions on travel destinations (Chen & Peng, 2018). In many respects, the behavior of tourists differs from that of regular consumers. In this case, the spending schedule and budget are prearranged (Kozak et al., 2005). Many places strive to be appealing destinations for culinary tourism because of the potential to extend the visitor's stay, boost spending on local goods, and ultimately attain sustainability (UNWTO, 2017). Travelers' culinary experiences are seen as crucial instruments for destination marketing (Kivela, 2005).

The primary driving factor for all travelers on such a journey is the desire to eat, and gastronomic tourism is constructed around this principle (Prayoga, 2023). However, tourists similarly desire to experience the local cuisine while traveling to a specific destination, along with fulfilling their hunger requirements. Consumers today do not only want to acquire and utilize goods and services but live a happy life as well. Gastronomic tourism, a trip to the primary and secondary factors such as food producers, gastronomic festivals, restaurants and certain locations where the tasting of dishes and experimenting with the features of a food-producing region is the purpose for taking a trip (Hall & Sharples, 2003). Gastronomic tourism has also gained international recognition over the past few years.

Uzbekistan, which has a rich culture and traditional food, is a tempting spot for food travelers. Tourism includes the significance and necessity of the introduction of modern management in the tourism and cultural heritage industries, developing these industries' infrastructure intensively on the basis of developed foreign experience, using facilities rationally, creating appropriate living conditions for the population, and developing Uzbekistan's gastronomic tourism sector while improving service quality and bringing it in line with international standards (Tulkinovna, 2023). Gastronomic tourism is where tourists visit to experience traditional food, culinary arts, and food culture. Tourist behavior is impacted by cultural factors which local foods and food culture influence tourists' willingness to travel significantly, social factors which word of mouth from family and friends, and opinions on social media affect tourists' choice, personal factors which tourists' interests, tastes in food, and need to experience new things are crucial factors (Ali, M., Puah, C.-H., Ayob, N., & Raza, S. A., 2019). Uzbekistan is well-known for its rich food culture, and visitors are attracted to it by pilaf, samsa, lagman dishes. Local fruits and vegetables on sale in bazaars and traditional sweets make an exotic touristic experience (Obaid et al., 1 C.E.). Uzbekistan also has immense scope for gastronomic tourism. Learning in detail the determinants of tourist behavior will help the country further advance gastronomic tourism and enhance tourist traffic (Boltabayev M.R, 2018)

RESEARCH METHOD

The application of economic and mathematical methods enables both qualitative and quantitative analysis of economic phenomena, allowing for a numerical evaluation of risk significance and market uncertainty to support effective decision-making. In terms of qualitative analysis, surveys are among the most widely used approaches. In our survey, we gathered responses from 303 individuals in the Samarkand region of Uzbekistan, asking about their food expenditure preferences, the distance they were willing to travel for a quality meal, their age, gender, and prior experience with gastronomic tourism. The findings of this study added to the existing literature by examining factors influencing tourist decisions in the context of gastronomy tourism. For data analysis, we employed both linear regression and logistic regression models.

Logistic regression is commonly applied in analyzing data with a binary outcome. It relies on maximum likelihood estimation, which uses the mean and variance as parameters to determine specific values within a given model. The logistic function produces an S-shaped curve that transforms real-valued inputs into a range between 0 and 1. When the function's output exceeds 0.5, the result is classified as "Yes"; otherwise, it is categorized as "No". The logistic function is expressed as follows (Gujarati, 2004):

$$Y = \frac{1}{e^{-\alpha-\beta_1 X_1-\beta_2 X_2-\beta_3 X_3-\beta_4 X_4-\beta_5 X_5}} \dots (1)$$

Where Y is whether respondent previously travelled to eat indigenous food or drink beverage; X_1 is the expenses respondent can spend on eating indigenous food and drink beverage in a day (1- less than 20 thousand UZS, 2- 20-50 thousand UZS, 3- 50-100 thousand UZS, 4- 100-500 thousand UZS, 5- more than 500 thousand UZS); X_2 is the distance a respondent is ready to travel to eat indigenous food or drink beverage(1-less than 5 km, 2- 5-10 km, 3- 11-15 km, 4- more than 15 km); X_3 is Satisfaction level of respondents with prices (1- very low, 2- low, 3- average, 4- good, 5- excellent); X_4 is the age of the respondents (1- younger than 18, 2- 19-30 years old, 3- 31-45 years old, 4- older than 45 years old); X_5 is gender (1-male, 0-female); α is intercept; β_1, β_2 is coefficients; ϵ is error term.

We aimed to verify the following hypothesis:

H_0: the expenditure on a meal, the distance a respondent is eager to go to eat, satisfaction level from prices, their age, and gender significantly affect the probability of him or her become a gastronomic tourist.

H_1: the expenditure on a meal, the distance a respondent is eager to go to eat, satisfaction level from prices, their age, and gender does not significantly affect the probability of him or her become a gastronomic tourist.

To verify the results, we also used decision tree to predict to analyze the dataset. The impurity based Gini index was used to classify nodes. Gini impurity measures how often a randomly chosen element of a set would be incorrectly labeled if it were labeled randomly and independently according to the distribution of labels in the set. It reaches its minimum (zero) when all cases in the node fall into a single target category. Gini index can be formulated as follows:

$$Gini = 1 - \sum_{i=1}^{i=n} (p_i^2) \dots (2)$$

$\boldsymbol{p_i}$ – the proportion of class i in the node, $\boldsymbol{n}$ – the number of nodes.

To formulate the accuracy, precision, recall and F1 score used in the reporting of decision trees, first of all, it is crucial to identify following:

True Positives (TP) → Correctly predicted positive cases.

True Negatives (TN) → Correctly predicted negative cases.

False Positives (FP) → Incorrectly predicted positive cases (Type I error).

False Negatives (FN) → Incorrectly predicted negative cases (Type II error).

Accuracy measures overall correctness of the model, and can be formulated as follows:

$$Accuracy = \frac{TP + FN}{TP + TN + FP + FN} \dots (3)$$

Precision is used to measure how many predicted positives are correct and is formulated as follows:

$$Precision = \frac{TP}{TP + FP} \dots (4)$$

Recall is used to measure how well the model finds all actual positives. Its formula is following:

$$Recall = \frac{TP}{TP + FN} \dots (5)$$

F1 score is the harmonic mean of precision and recall indicators, it reflects trade-off between them and can be formulated as follows:

$$F1 = 2 \times \frac{Precision \times Recall}{Precision + Recall} \dots (6)$$

The term “Support” is also used in reporting, it shows the number of actual instances per class in the dataset.

RESULTS AND DISCUSSION

The study included 303 respondents who were mainly students, teachers, and random visitors of cafes and restaurants in Samarkand. All the variables in the analysis are categorical, except gender all the variables are ordinal.

Table 1. Descriptive statistics

Variables	N	Minimum	Maximum	Average	Standard deviation
Y (gastronomic tourist or not)	303	0	1	0.50	0.501
Gender (X_5)	303	0	1	0.60	0.491
Age (X_4)	303	1	4	2.03	0.572
Distance (X_2)	303	1	4	1.98	1.062
Expenses (X_1)	303	1	5	2.63	0.896
Satisfaction from prices (X_3)	303	1	5	2.98	0.940

The results of pseudo R squared (Neigelkerk) of the binary logit model show that independent variables explain 14.7% of the change in the dependent variable. Pseudo R -squared value of Cox and Snell account for 0.11 which is slightly lower than Neigelkerk's value. As the summary illustrates satisfaction from prices of food is slightly above average (2.5) inclining towards positive answers.

Table 2. Pseudo R-squared values

Step	-2 Log-likelihood	R-square Cox and Snell	R- Square Neigelkerk
1	384.640a	0.110	0.147

a. Evaluation stopped at iteration number 20 because the maximum number of iterations was reached. A final solution could not be found.

Overall, it is clear that the model is not supposed to explain 95% of the change in the odds of becoming gastronomic tourist. It is also important to clarify how people perceive gastronomic tourism. In this study, we briefly explained the characteristics of gastronomy tourism and most of the respondents correctly understood and gave their feedback on gastronomic facilities in Samarkand, Uzbekistan.

Table 3 below demonstrates how each independent variable and their categories affect the dependent variable.

Table 3. Variables in the equation

	Variable	B	Root mean square error	Wald	df	Sig.	Exp (B)	95% confidence interval for EXP(B)	
								Low	High
Step 1[a]	Gender (1)	-.266	.281	.896	1	.344	.766	.442	1.330
	Age			3.811	3	.283			
	Age (1)	-1.245	.988	1.586	1	.208	.288	.042	1.998
	Age (2)	-.779	.929	.702	1	.402	.459	.074	2.838
	Age (3)	-.356	.958	.138	1	.710	.700	.107	4.578
	Distance			6.262	3	.100			
	Distance (1)	-.940	.404	5.421	1	.020	.390	.177	.862
	Distance (2)	-.794	.412	3.717	1	.054	.452	.201	1.013
	Distance (3)	-1.085	.527	4.232	1	.040	.338	.120	.950
	Expenses			3.127	4	.537			
	Expenses (1)	-21.63	40191.867	.000	1	1.000	.000	.000	.
	Expenses (2)	-21.51	40191.867	.000	1	1.000	.000	.000	.
	Expenses (3)	-21.12	40191.867	.000	1	1.000	.000	.000	.
	Expenses (4)	-20.88	40191.867	.000	1	1.000	.000	.000	.
	Satisfaction from prices			11.294	4	.023			
	Satisfaction from prices (1)	-1.287	.825	2.431	1	.119	.276	.055	1.392
	Satisfaction from prices (2)	-1.195	.790	2.289	1	.130	.303	.064	1.423
	Satisfaction from prices (3)	-1.890	.708	7.128	1	.008	.151	.038	.605

Variable	B	Root mean square error	Wald	df	Sig.	Exp (B)	95% confidence interval for EXP(B)	
							Low	High
Satisfaction from prices (4)	-1.863	.736	6.407	1	.011	.155	.037	.657
Intercept	24.368	4019.867	.000	1	1.000	38278748238.91		

a. Variables introduced in step 1: Gender, Age, Distance, Expenses, Satisfaction from prices.

The significance of the impact is illustrated in the seventh column. The reference category for all the variables is the lowest category value. Only distance and some categories of satisfaction from prices have significant affect on the people's desire to become gastronomic tourist. For the distance variable the overall significance level is 0.1.For the distance of 5-10 km (p=0.02, exp(B)=0.39) people who travel short distances are 61% less likely to be gastronomic tourists. If the distance that the respondents are willing to pass is 10-15 km then they will be 55% less likely to gastro tourists. Other independent variables do not significantly affect the dependent variable. If we take only significant variable, namely the distance, the relationship between distance and probability of being a gastronomic tourist can be illustrated in this figure.

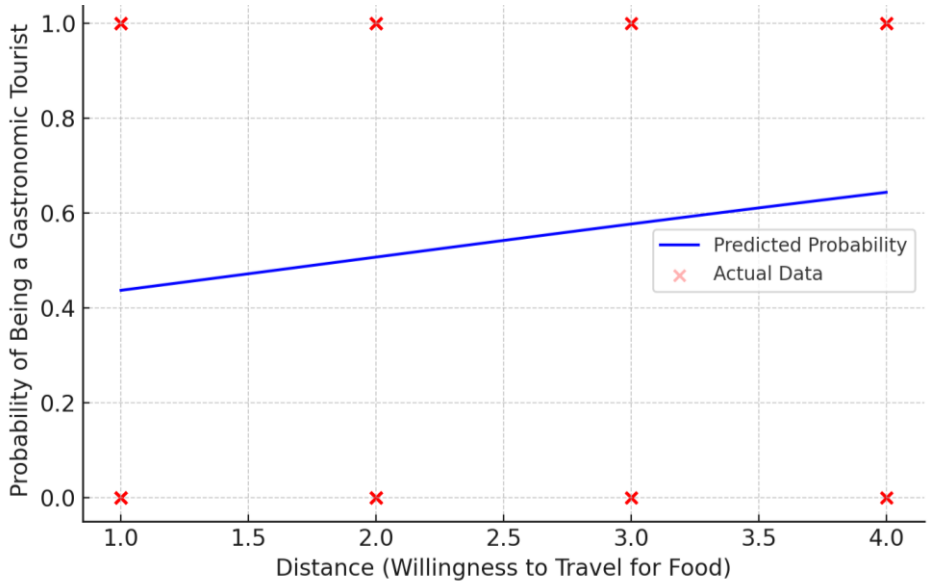

Figure 1. Probability of gastronomic tourism by distance

From the figure 1, it is obvious that distance and probability of being a gastronomic tourist increase as the distance that a person is willing pass to eat increases. This relationship is linear and can be formulated as follows:

$$P(Y) = 0.28X_2 - 0.53$$

Here, $P(Y)$ −probability of becoming a gastronomic tourist, X_2 −the distance that a respondent is willing to pass. Distance is given in categorical variables, if we convert categorical into kilometers it will mean that if a person is willing to go for 5-10 km to eat he or she is 3% is likely to be a gastronomic tourist. If a person is ready to pass 11-15 km, he or she is 31% likely, while if the distance is more than 15 km the probability of being a gastro-tourist will increase to 59%. So, in brief, distance is a significant factor in the formation of the desire of becoming a gastronomic tourist.

Also, to verify robustness of the results we implemented decision tree analysis. Decision trees are used for classification and regressions. The Gini index in the decision tree accounts for the measurement of impurity, whether the node is mixed or not. If Gini value is zero it means that the leaf node is pure one class, if it is greater than 0, than it is impure and needs to be divided.

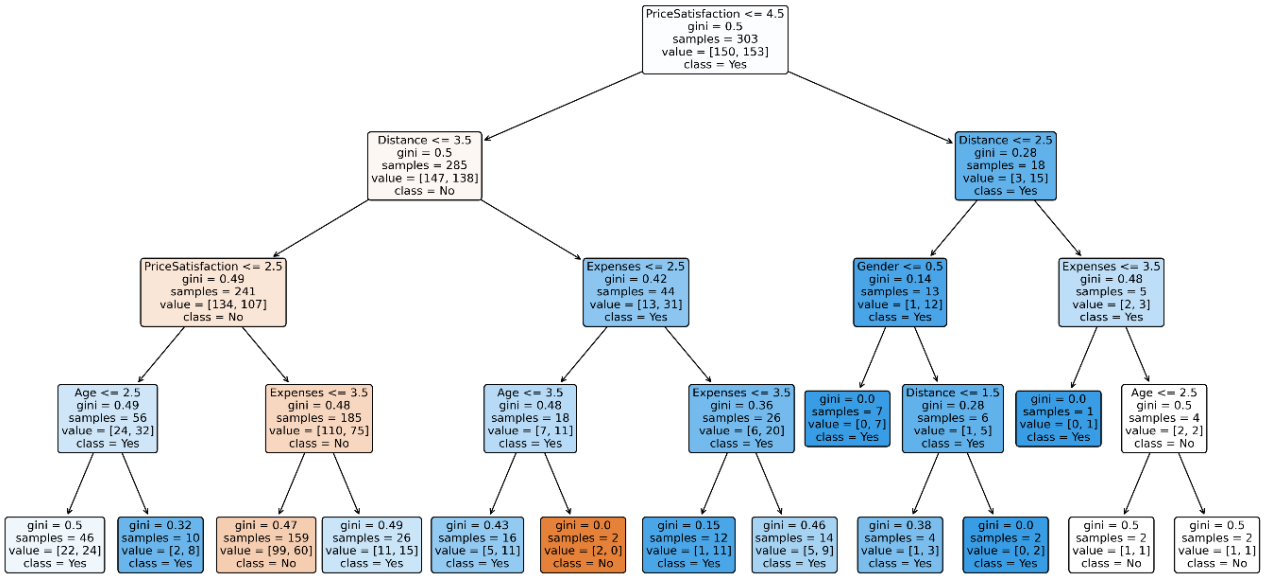

Figure 2. Decision tree for gastronomic tourism participation

Figure 2 illustrates decision tree with only two pure leaf nodes, other nodes are impure as Gini index suggest. Precision score is smaller, it shows that 44% of those who were not gastrotourists were predicted correctly, while 62% of those who were gastrotourists were forecasted correctly. Each class is supported by adequate number of values.

Table 4. Classification report

	Precision	Recall	F1-score	Support
Y (0)	0.44	0.77	0.56	26
Y (1)	0.62	0.29	0.39	35
Accuracy			0.49	61

Accuracy score of the decision tree is 49% which is much better than logistic regression. F1-score illustrates that there is imbalance between recall and precision indicators, recall is greater than precision for the respondents who did not have experience of gastronomy tourism meaning that the model is correctly identifying more actual positive cases, but at the cost of more false positives.

Feature importance in a decision tree represents how much a given feature contributes to making decisions (splitting nodes) in the model. The importance score is calculated based on the reduction in impurity (Gini index) each feature provides across all the splits where it is used.

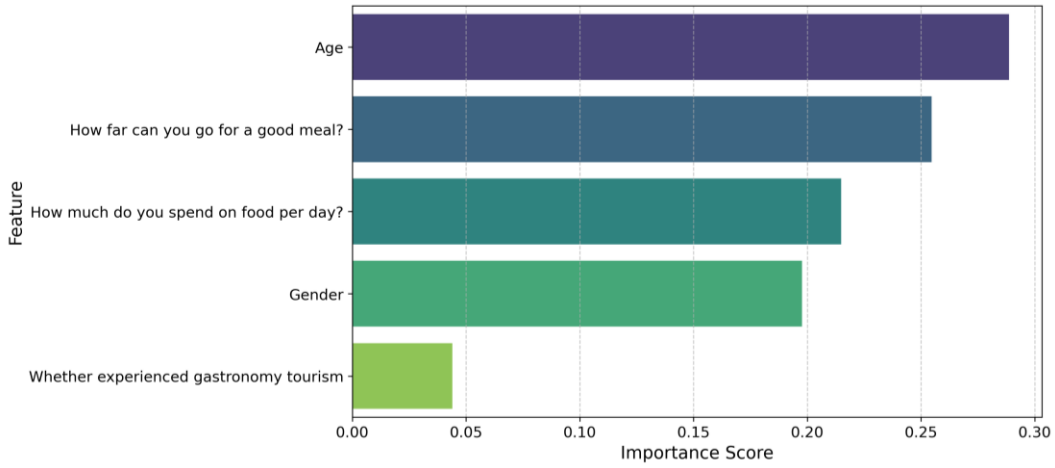

Figure 3. Feature importance

As it can be seen from figure 3, the most influential variable in decision tree model is age, then comes distance, expenses, gender and whether a person experienced gastronomy tourism variables. The

strongest predictor for gastronomic tourism participation is distance variable, which means people who are willing to travel further for food are more likely to be gastronomic tourists. The tree makes splits based on distance, expenses, and price satisfaction. Price satisfaction and food expenses play a role but are less significant than distance. The leaf nodes represent a final prediction (yes = 1, no = 0). The decision tree assigns a classification based on previous splits. Among all factors distance is the most influential. The decision tree depth was set to 4 levels to maintain interpretability. Even though accuracy is moderate, the model can be used to predict age, and distance a person is willing to go to a gastro-restaurant. In conclusion, logistic regression shows that people who are willing to travel further for food are more likely to be gastronomic tourists. The decision tree model also confirms that distance is the most significant factor to predict.

This study investigated factors influencing participation in gastronomic tourism in Samarkand, Uzbekistan, using logistic regression and decision tree models. Both analyses identified distance as the strongest predictor of gastronomic tourism engagement, indicating that individuals willing to travel longer distances are more likely to seek authentic culinary experiences. Satisfaction with food prices emerged as a secondary factor, while demographic variables such as age, gender, and expenditure levels did not demonstrate significant effects. These findings reinforce the importance of accessibility and perceived value in shaping tourist behavior and confirm that culinary tourism decisions in emerging markets may not be driven primarily by demographics.

This research contributes to the growing literature on gastronomic tourism and consumer behavior in tourism by emphasizing the central role of distance as a behavioral determinant in culinary travel. Unlike many studies conducted in developed countries that highlight health consciousness and cultural motivations, this study adds evidence from an underexplored emerging destination context, offering a nuanced understanding of factors driving food tourism participation. The findings extend theoretical models of tourism decision-making by demonstrating that logistical considerations such as travel distance may outweigh traditional demographic predictors in shaping gastronomic tourism demand. The novelty of this research lies in its empirical analysis of gastronomic tourism behavior in Uzbekistan, an underexplored emerging destination. Unlike prior studies focusing on cultural or health motivations in developed countries, this study uniquely demonstrates that logistical accessibility (distance) is a stronger predictor of participation than traditional demographic factors. By integrating logistic regression and decision tree approaches, it introduces a robust analytical framework for understanding tourist behavior in gastronomy-based travel.

The results hold significant implications for tourism policymakers, local governments, and entrepreneurs in Uzbekistan. Improving transport infrastructure to culinary hubs, designing targeted promotional campaigns that highlight authenticity and cultural richness, and optimizing pricing strategies to increase perceived value can strengthen Uzbekistan's appeal as a gastronomic destination. Further investment in culinary events, cooking workshops, and food trails would encourage visitors to travel greater distances, boosting regional development and creating new opportunities for local businesses. While this study provides valuable insights, several limitations should be acknowledged. First, the sample size of 303 respondents was limited to the Samarkand region, which may affect the generalizability of results to other regions or international tourists. Second, reliance on self-reported survey data introduces the potential for response bias. Third, the study primarily focused on measurable variables such as distance, price satisfaction, and demographics, without exploring psychological and cultural motivations in depth. Future studies could expand on these findings by including larger and more diverse samples**,** incorporating international tourist perspectives, and using longitudinal data to examine changes in gastronomic tourism behavior over time. Qualitative research exploring tourists' cultural motivations, perceptions of authenticity, and experiences at gastronomic sites would add depth to this field. Additionally, research on the role of digital marketing, social media influence, and sustainability practices in shaping culinary tourism decisions could further inform policy and practice.

CONCLUSION

This study concludes that distance is the most influential determinant of gastronomic tourism participation in Samarkand, while price satisfaction and demographic factors have limited or no significant effects. The findings indicate that accessibility and willingness to travel play greater roles in shaping tourists' decisions than personal or socioeconomic characteristics. Thus, strategic infrastructure improvement, better mobility planning, and targeted promotion of culinary hubs can enhance participation in food tourism. The study extends current understanding by highlighting the dominance of logistical over

demographic determinants in an emerging economy context. The findings offer strategic implications for tourism development. Policymakers and destination managers should prioritize transport infrastructure linking urban centers and culinary attractions, enhance marketing strategies highlighting authenticity and cultural value, and design price strategies that maintain perceived value. Encouraging tourists to travel greater distances for unique food experiences can stimulate local economies, support small food enterprises, and strengthen regional tourism sustainability. The study also implies that local gastronomic identity can be leveraged as a key element of place branding for Uzbekistan's tourism industry.

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AUTHOR CONTRIBUTIONS

Conceptualization, Ch.M., and Kh. T.; methodology, Ch.M., Kh.T., M.A.; software, M.A.; validation, Ch.M., Sh. T., L. Y., Z.M., S.A., A.M..; formal analysis, Ch.M., R.R., M.V.; investigation, Ch. M., L.Y.; resources, Ch.M.; data curation, Ch.M., R.R.; writing—original draft preparation, Ch.M..; writing—review and editing, Ch.M., Sh.T., Z.M.; visualization, M.V., S.A.; supervision, Ch.M.; project administration, Ch.M., Sh.T; review and editing, R.B., B.S. All authors have read and agreed to the published version of the manuscript.

CONFLICTS OF INTEREST

The author(s) declare no conflict of interest.

USE OF ARTIFICIAL INTELLIGENCE (AI)-ASSISTED TECHNOLOGY

The authors declare that no artificial intelligence (AI) tools were used in the generation, analysis, or writing of this manuscript. All aspects of the research, including data collection, interpretation, and manuscript preparation, were carried out entirely by the authors without the assistance of AI-based technologies.

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