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Savouring Peru through tourists' profiles. An artificial neural networks perspective

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Abstract: This study aims to determine the variations occurring across different constructs concerning the importance of gastronomy — motivation to travel, willingness to visit specific destinations, gastronomic aspects and experiences, and emotions — in accordance with tourists' sociodemographic profiles (age, gender, university education, and income). Based on 1,042 valid questionnaires, an artificial neural network (ANN) was developed using sociodemographic profile characteristics as input variables. This approach is useful for developing products and services tailored to tourists interested in gastronomy. The results indicate that age is the most influential variable in the model, with younger tourists attributing higher values to the constructs examined. These findings contribute to the body of research on gastronomic tourism in Peru and offer practical guidance for market segmentation and the management of tourist destinations.

Keywords: gastronomic tourism; tourist behaviour; market segmentation; artificial neural networks; Peru

Saboreando Perú a través de los perfiles de los turistas. Una perspectiva de redes neuronales artificiales

Resumen: El objetivo de esta investigación es determinar las variaciones que se producen en diferentes constructos sobre la importancia de la gastronomía — motivación para viajar, intención de visitar destinos concretos, aspectos y experiencias gastronómicas, y emociones — según el perfil sociodemográfico de los turistas (edad, género, estudios universitarios e ingresos). A partir de 1.042 cuestionarios válidos, se desarrolló una red neuronal artificial empleando las características del perfil sociodemográfico como variables de entrada. Este enfoque resulta útil para el desarrollo de productos y servicios adaptados a turistas interesados en gastronomía. Los resultados muestran que la edad es la variable más influyente en el modelo, siendo los turistas más jóvenes quienes atribuyen valores más elevados a los constructos analizados. Estos hallazgos contribuyen a la investigación sobre turismo gastronómico en Perú y ofrecen orientaciones prácticas para la segmentación de mercado y la gestión de destinos turísticos.

Palabras Clave: turismo gastronómico; comportamiento del turista; segmentación de mercado; redes neuronales artificiales; Perú

1. INTRODUCTION

Tourists increasingly align their satisfaction with a gastronomic experience, especially in places with great cultural and historical symbolism. The value that determines the gastronomy of a place for a tourist can range from purely physiological aspects, derived from the need to eat that any individual has, whether a tourist or not, to consider it as a privileged way of understanding the ancestral customs of a destination, its history or its social relations.

In this sense, it is necessary to determine the different segments of tourists according to their interrelationship with the gastronomy of the place visited. This will allow understanding of their motivations and perceptions concerning this variable of attraction and tourist loyalty (Hjalager, 2004; Pesonen et al., 2011). A broad spectrum of factors contributes to the gastronomic experience, ranging from the purely auxiliary and logistical support of the trip to its role as a pivotal element in shaping the tourist experience, and even becoming the decisive factor in the selection of a destination (Basil and Basil, 2009; López-Guzmán et al., 2017).

The rationale behind the selection of this research topic is twofold. Firstly, it is grounded in the growing relevance of gastronomic tourism as a determining factor in the satisfaction and choice of tourist destinations. This is especially evident in contexts characterised by a rich historical and cultural heritage, such as Peru. Renowned internationally for its culinary diversity and connection with ancestral traditions, Peru offers an ideal scenario for analysing how gastronomic experiences influence tourists' motivations, perceptions and emotions. Moreover, a comprehensive understanding of these dynamics facilitates the identification of specific tourist segments and the development of customised products and services, thereby contributing to the sustainable development of tourism and the cultural promotion of the country.

Thus, this research aims to determine the variations that occur in different constructs about the importance of gastronomy as a motivation to travel (as a willingness to visit specific destinations, as well as the positive emotions that are generated in each tourist in accordance) with their sociodemographic profile (age, gender,

university studies and income). To this end, an artificial neural network (ANN) has been developed to estimate these constructs as output values. The ANN is based on the profiles of the respondents, incorporated into the network as input values, and the researcher easily customises it. This feature is especially useful in developing products and services adapted to a tourist interested in gastronomy.

Recent research has incorporated diverse methodologies related to artificial intelligence into the tourism sector (Buitrago-Esquinas et al., 2024; Rita et al., 2025). Specifically, the ANN methodology has been employed to estimate negative uses of gaming and video game viewing based on Twitch user profiles (Cabeza-Ramírez et al., 2022) and, inversely, to estimate sociodemographic profiles related to tourism, flamenco show attendees (García-García et al., 2023), film tourists (Aguilar-Rivero et al., 2026) and visitors to World Heritage Sites (Valverde-Roda et al., 2023).

Concerning gastronomic tourism, this methodology has been employed in various research studies (Moral-Cuadra et al., 2022; Solano-Sánchez et al., 2024). However, a preliminary search in Scopus revealed that it had not been utilised in the context of this specific form of tourism, with Peru, a nation renowned for its culinary traditions, serving as the primary focus of the research. Consequently, the present study aims to address this knowledge gap. Then, the primary innovation of this work is undertaking a study examining the role of gastronomy in the motivations of individuals travelling and residing in a developing country, such as Peru, employing an ANN which is a method proved effective in the literature (Aguilar-Rivero et al., 2026; Cabeza-Ramírez et al., 2022; García-García et al., 2023; Moral-Cuadra et al., 2022; Solano-Sánchez et al., 2024; Valverde-Roda et al., 2023) to detect how input values (collected as sociodemographic profile variables, in this case) influence on output variables (constructs about gastronomy as a travel motivation, in this case) as the aim of the present research. Thus, ANN methodology, which captures non-linear relationships, aligns better with the present research aim over other methodologies as linear regressions and structural equation modelling.

Additionally, this work contributes to enhancing tourism research in Latin America (Tzeremes, 2022). The innovative aspect of this research in the field of culinary tourism lies both in the geographical area in which it is conducted (Peru), and in the use of an advanced methodology, such as ANN. Consequently, this research provides insights into tourists' experiences with local cuisine, which, in turn, enables the development of new strategies for the destinations themselves.

2. LITERATURE REVIEW

2.1. Gastronomic tourism concept

According to Hall et al. (2003), “gastronomic tourism” refers to visits to food producers, festivals, restaurants and other such establishments to taste or experience local or regional products. This concept has been the subject of extensive debate in the scientific literature, giving rise to several terms, including “food and wine tourism”, “tasting tourism”, “gourmet tourism”, “culinary tourism”, “food tourism”, and “gastronomic tourism” (Ellis et al., 2018). The association between tourism and food has evolved from approaches such as “food in tourism” to “food for tourism” and, more recently, “tourism for food” (Park and Kim, 2025). This paradigm shift has led to the enhancement of creative food tourism experiences (Molina-Collado et al., 2024).

Ellis et al. (2018) identify five pillars defining food tourism: motivation, culture, authenticity, management and marketing, and destination. The initial concept underpinning food tourism is motivation, encompassing factors such as experience and health-related concerns (Kim et al., 2013). Secondly, culture is identified as a pivotal element, emphasising the role of gastronomy as a component of the local community's cultural heritage (López-Guzmán et al., 2017). Thirdly, authenticity is identified as a fundamental aspect of developing a region's gastronomy and as a driving force for promoting tourism (Uslu et al., 2024). The management and marketing of the destination are addressed, with an analysis of fundamental aspects such as consumer behaviour. Finally, the destination is analysed in terms of its relationship with gastronomy.

Many research studies have been conducted that address the review of different fields of study in gastronomic tourism. Noteworthy contributions include those undertaken by Surjood et al. (2024), Park and Kim (2025), and Anubha et al. (2023). It is also important to note that there are different case studies on gastronomic tourism. Noteworthy examples include the studies conducted by Pavlidis and Markantonatou (2020) in Greece, Akhoondnejad (2024) in New Zealand, Carvalho et al. (2023), and Sivrikaya and Pekersen (2020) in Turkey.

2.2. Gastronomy and tourism

Gastronomy plays a pivotal role in the tourism experience of visitors to a particular destination. According to Salgueiro Rachao et al. (2021), the gastronomic experience about tourism encompasses several aspects, including social interaction, novelty, creativity, social sustainability, enjoyment, and environmental awareness. To understand gastronomic tourism, it is essential to analyse tourist behaviour concerning the culinary heritage of the destination visited (Ellis et al., 2018).

Not all tourists share a common interest in the local cuisine of their destination. A two-dimensional typology of tourists can be proposed, distinguishing between two main profiles. The first profile can be described as those who understand gastronomy to be a distinctive element of the destination, and a unique and authentic way of getting to know the region or city they visit. For this group, gastronomy becomes their trip's primary or secondary motivation. In contrast, a divergent perspective is held by a group of tourists who perceive local cuisine merely to satisfy their fundamental need for nutrition, without acknowledging its role as a distinctive element of the destination (Ting et al., 2017).

The relationship between tourist's motivation for a trip and the gastronomy of the places visited has been studied in scientific research. Fields (2002) proposed a classification system, categorising tourists' motivations for experiencing local cuisine into four distinct categories: status or prestige, interpersonal, physical and cultural. Physical motivation is defined as the fundamental need for nourishment. On the other hand, cultural motivations encompass an interest in understanding the destination through its culinary heritage and tradition. Interpersonal motivations are based on the need for interpersonal interaction, with gastronomy as a vehicle for social interaction between visitors and local communities. Finally, status and prestige motivations are related to the social recognition of unique culinary experiences. The amalgamation of these factors can develop a profound interest in local gastronomy among travellers, thereby serving as a pivotal factor in their selection of travel destinations (López-Guzmán et al., 2017).

On the other hand, an emerging line of research focuses on analysing street food, especially in developing countries. This culinary offer has been approached from different perspectives. For example, Ghatak and Chatterjee (2018) deal with the analysis of food safety in these culinary stalls, while Torres Chavarria and

Phakdee-Auksorn (2017) analyse these culinary stalls as a tourist attraction, or Ukenna and Ayodele (2019) study them as an essential urban informal sector in certain countries. More recently, some research has focused on analysing comments on social networks about specific establishments (Barbosa et al., 2024).

2.3. Sociodemographic profile of the gastro-tourist

The increasing interest in gastronomy as a component of the tourism experience has prompted the examination of the travellers' sociodemographic profile and their food consumption tendencies (Park, 2017; Robinson et al., 2018). According to Ignatov and Smith (2006), the average age of travellers who consider gastronomy to be a determining factor in their choice of destination is approximately 45 years, and they typically have a high educational level and a medium/high-middle income. McKercher et al. (2008) further note that the main characteristics of food tourists include university education, a medium-high income and an age between 35 and 45 years. This description is complemented by Correia et al. (2013) findings, who provide a more detailed gastro-tourist sociodemographic profile, highlighting a greater interest in local gastronomy among women compared to men and again emphasising the relationship between gastronomic tourism and a high level of education (university education).

Abdelhamied (2011) also associates the food tourist profile with high-income level and higher education people. This assertion is corroborated by extant research (Björk and Kauppinen-Räsänen, 2017; Getz et al., 2014; Jiménez Beltrán et al., 2016; Levitt et al., 2019), which lends further support to the proposition that this demographic of gastronomic tourists is composed of individuals with a high level of education (typically at the university level), aged between 35 and 45 years, and with middle and upper-middle income levels.

In summary, Academia points to a certain gastronomic tourist profile, which is considerable for tourist destinations consolidation and development. Gastronomic travellers, who are interested in acquiring knowledge and inspiring with the place culture using gastronomy, generate a significant economic impact on destinations, given their high level of spending (Du Rand et al., 2003).

3. METHODOLOGY

3.1. Survey design

The survey identifies two blocks. The first block includes questions analysing motivation to travel, food-related aspects of their travels and willingness to visit food-related destinations, and questions focused on measuring features such as food motivations, perceived value, food experiences, satisfaction and loyalty. The second block contains questions designed to ascertain the sociodemographic profile of the sample, including age, gender, educational level and monthly disposable household income. The questionnaire was designed to ensure a logical sequence of responses, beginning with general perceptions regarding gastronomic tourism and subsequently progressing towards more specific evaluations associated with motivations, experiences, emotions, and behavioural intentions. Finally, sociodemographic information was collected to characterise the respondents' profiles and facilitate the subsequent development of the ANN model.

Except for the sociodemographic variables, the questionnaire items were measured using seven-point Likert scales adapted to the characteristics of each construct. The remaining questions were polytomous (gender, level of education, and monthly disposable household income) or numerical (age). The questionnaire was developed through a sequential process aimed at improving the clarity, coherence, and methodological consistency of the instrument. Initially, the items were adapted from previous studies related

to gastronomic tourism and tourist behaviour (Agyeiwaah et al., 2019; Berbel-Pineda et al., 2019). Subsequently, the preliminary version of the questionnaire was reviewed by specialists in gastronomy, tourism, and consumer behaviour, who evaluated the wording and relevance of the proposed items. Afterwards, tourism researchers assessed the logical organisation and overall structure of the instrument. Finally, a pilot test involving 35 individuals familiar with gastronomy and tourism was conducted to identify possible comprehension difficulties, inconsistencies in responses, or excessive questionnaire length. The observations collected during these stages contributed to refining the wording, improving the sequence of questions, and strengthening the quality of the final instrument before the fieldwork stage (Hair et al., 2019; Moore et al., 2021). Table 1 lists the items finally used in this study and the scientific literature on which it is based.

Table 1. Questionnaire design

Items	References
GMT. Gastronomic motivations for travelling	
GMT1. How important is gastronomy in your motivation to travel	
GMT2. How important is the search for gastronomic experiences when you choose a destination to visit	
GMT3. How important is the gastronomic experience in the satisfaction of your travel	McKercher et al. (2008), Björk and Kauppinen-Räsänen (2017), Robinson et al. (2018), Berbel-Pineda et al. (2019)
GMT4. How important is the culture and gastronomic heritage of a destination when choosing to travel there	
GMT5. How important is the existence of famous dishes or recipes when choosing your travel destination	
GMT6. How important is the presence of famous restaurants when choosing a travel destination	
WVP. Willingness to visit places	
WVP1. Restaurants	
WVP2. Bars/Pubs	
WVP3. Agricultural producers	
WVP4. Agro-industries (cheese factories, wineries, oil mills, drying sheds, etc.)	McKercher et al. (2008), Björk and Kauppinen-Räsänen (2017), Robinson et al. (2018), Berbel-Pineda et al. (2019)
WVP5. Gastronomic festivals/events	
WVP6. Gastronomic markets	
WVP7. Gastronomic museums	
WVP8. Traditional food shops	
GAS. Gastronomic aspects	
GAS1. Dishes quality	
GAS2. Dishes variety	
GAS3. Prices	
GAS4. Culinary establishment facilities	Taar (2014), Ji et al. (2016), Björk and Kauppinen-Räsänen (2017)
GAS5. Establishments atmosphere	
GAS6. Innovation and new flavours in dishes	
GAS7. Service and hospitality	
GXP. Gastronomic experiences assessments	
GXP1. The local gastronomy increases my knowledge about different culinary preparations	
GXP2. The local gastronomy allows me to discover the true flavours of the local cuisine	
GXP3. The chance to enjoy local cuisine in its place or origin is an important reason for me	Taar (2014), Getz et al. (2014), Björk and Kauppinen-Räsänen (2017), Agyeiwaah et al. (2019)

Items	References
GXP4. The local gastronomy contains a large quantity of fresh ingredients	
GXP5. Local gastronomy allows me to spend a pleasant time with my family and/or friends	
GXP6. My knowledge of local gastronomy allows me to converse with other people about gastronomic experiences	
PEM. Positive emotions	
PEM1. Joy	
PEM2. Surprise	Levitt et al. (2019)
PEM3. Admiration	
PEM4. Trust	
PEM5. Optimism	
Sociodemographic profile	
GEN. Gender	
UNI. University studies	Getz et al. (2014); Alderighi et al. (2016), Björk and Kauppinen-Räsänen (2017); Levitt et al. (2019)
MHI. Monthly household income	
AGE. Age	

3.2. Fieldwork performance, sampling and sampling error

The fieldwork process was conducted through the administration of an online, structured questionnaire aimed at Peruvian tourists interested in gastronomy-related travel experiences. The survey was distributed between September and October 2024 through digital platforms and online communities related to tourism and gastronomy, facilitating access to respondents with diverse sociodemographic characteristics. Before completing the questionnaire, participants were informed about the academic purpose of the study and the anonymous treatment of the information provided. The online modality enabled efficient data collection and organisation, while also facilitating broader geographical coverage in the context of tourism research (Otto et al., 2020).

A total of 1,191 questionnaires were collected during the fieldwork stage. Subsequently, a filtering process was conducted to eliminate incomplete questionnaires, resulting in a final valid sample of 1,042 questionnaires. This procedure contributed to ensuring the reliability and consistency of the database employed for the ANN estimation process. Assuming an infinite population and applying the guidelines established for convenience sampling, the sample error margin was determined to be $\pm 3.036\%$, with a confidence level of 95%.

3.3. Data analysis

After completing the data collection and validation process, the resulting database was analysed using an ANN approach. An ANN is a model with a network shape, which has various nodes or process elements with a small amount of storage capacity (Rumelhart and McClelland, 1986). The latter are comprised of an inputs vector $(x_1, x_2, \dots, x_n)$, with synaptic weights $(w_1, w_2, \dots, w_n)$ that are applied to these input vectors using a propagation rule. An activation function applied to that propagation rule result runs the output value of these

nodes. The nodes are grouped into layers, such as input, intermediate or hidden layers (one or more), and output.

Using SPSS Statistics software, a multilayer perceptron (MLP) type of ANN is developed, in which the input values correspond to the different sociodemographic items of the profile of the respondent, and the outputs correspond to the estimations that the model produces on the constructs regarding gastronomic tourism. Various networks are tested, preserving the one that presents a higher degree of adjustment in terms of root mean square error (RMSE) and mean absolute percentage error (MAPE).

4. RESULTS

4.1. Sociodemographic profile and question collection

The respondents' sociodemographic profile is shown in Table 2. Six out of ten respondents are women, and eight out of ten have a university education. On the other hand, six out of ten respondents report a monthly household income of between 263 and 1,053 United States Dollars (USD), which, by international standards, would be classified as lower-middle income, while, by Peruvian standards, taking into account the minimum wage and the local cost of living, this income could be classified as belonging to the emerging middle class. In terms of age, the population is predominantly young, with eight out of ten respondents under the age of 31, and one in four under the age of 21. As a result, the average profile is a young woman (less than 30 years old) with a university education and a family purchasing power that is lower-middle class by international standards, but emerging middle class in the Peruvian context.

Table 2. Profile of the respondents, sociodemographic

Gender (GEN)		University studies? (UNI)	
Female	59.88%	Yes	78.98%
Male	40.12%	No	21.02%
Monthly household income (MHI)		Age (AGE)	
Less than 1,000 S/. (≈263 USD)	17.28%	From 18 to 20	24.67%
From 1,000 to 1,999 S/. (≈263 to 526 USD)	28.50%	From 21 to 30	53.07%
From 2,000 to 2,999 S/. (≈527 to 790 USD)	20.63%	From 31 to 40	11.13%
From 3,000 to 3,999 S/. (≈790 to 1,053 USD)	13.05%	More than 40	11.13%
From 4,000 to 5,000 S/. (≈1,053 to 1,317 USD)	8.06%		
More than 5,000 S/. (≈1,317 USD)	12.48%		

Source: Source: Author's own work

Table 3 presents the questions about the importance of gastronomy in their trips, including their mean and standard deviation. All these items are asked on a seven-point Likert scale. They show averages with very high scores, consistently above five, with a few exceptions. These items are grouped according to common themes in different constructs aligned with the present research aim, including gastronomic motivations for

travelling (GMT), willingness to visit places (WVP), gastronomic aspects (GAS), gastronomic experiences (GXP), and positive emotions (PEM). Cronbach's Alpha (α) (1951) is used to measure the reliability of these groups. All values obtained are above the figures that confirm this reliability (Nunnally and Bernstein, 1994).

Table 3. Gastronomic tourism question set and constructs

Code	Cronbach's Alpha	Mean	Std. Dev.
GMT	($\alpha=0.899$)		
GMT1		5.52	1.39
GMT2		5.42	1.39
GMT3		5.67	1.34
GMT4		5.57	1.35
GMT5		5.23	1.47
GMT6		4.57	1.70
WVP	($\alpha=0.885$)		
WVP1		5.56	1.37
WVP2		4.28	1.87
WVP3		4.62	1.68
WVP4		4.84	1.67
WVP5		5.52	1.51
WVP6		5.28	1.53
WVP7		4.77	1.81
WVP8		5.07	1.62
GAS	($\alpha=0.901$)		
GAS1		5.95	1.28
GAS2		5.92	1.23
GAS3		5.77	1.31
GAS4		5.58	1.32
GAS5		5.64	1.33
GAS6		5.57	1.42
GAS7		6.18	1.16
GXP	($\alpha=0.904$)		
GXP1		5.56	1.35
GXP2		5.72	1.30
GXP3		5.38	1.48
GXP4		5.60	1.35
GXP5		5.94	1.24
GXP6		5.61	1.40
PEM	($\alpha=0.891$)		
PEM1		5.93	1.25
PEM2		5.60	1.30
PEM3		5.67	1.34
PEM4		5.49	1.33
PEM5		5.52	1.34

Source: Source: Author's own work

4.2. Artificial neural network performance

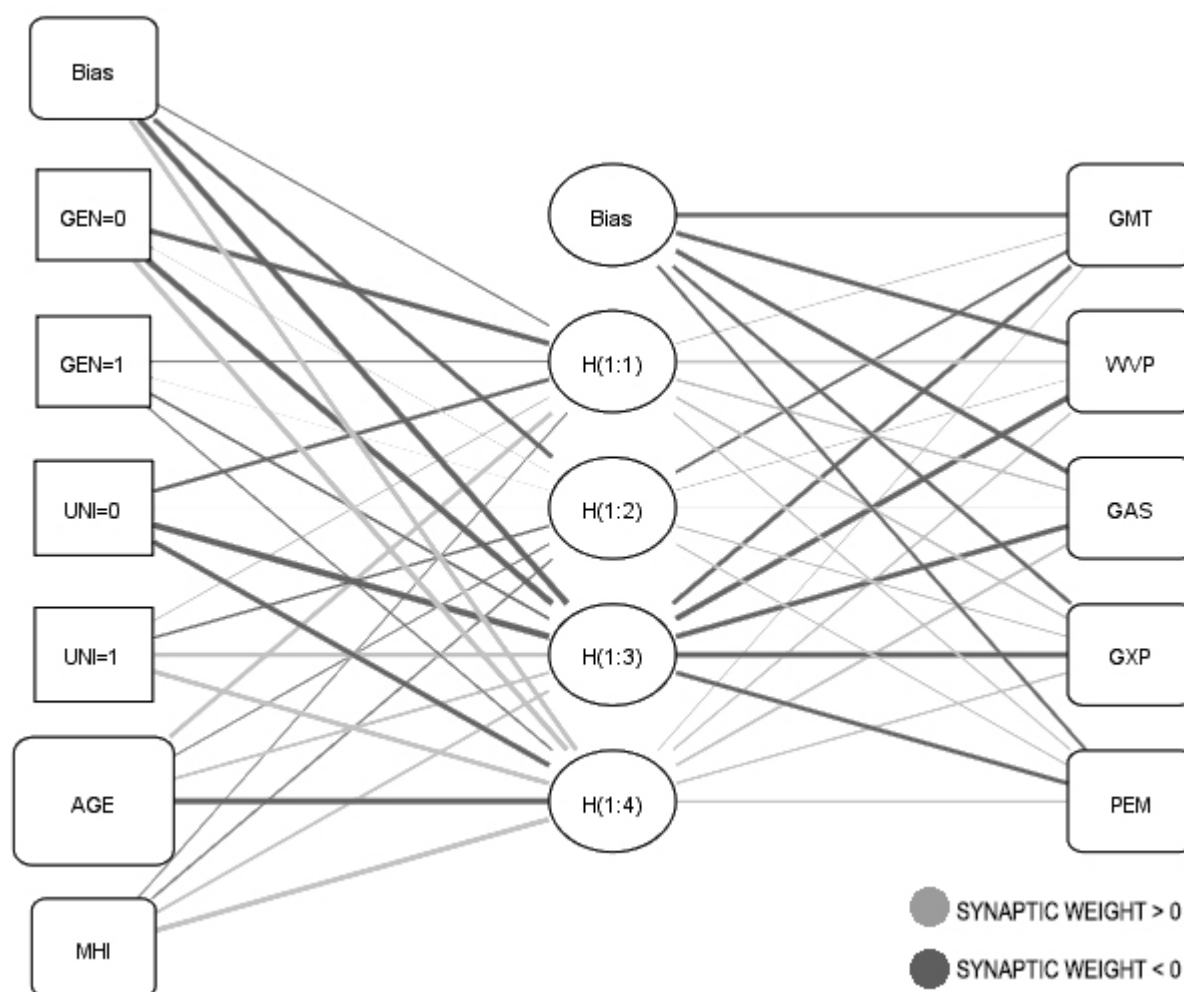
The structure of the ANN model achieved is detailed in Table 4 and shown graphically in Figure 1. Initially, the input layer comprises the independent variables corresponding to the sociodemographic profile. This includes dichotomous nominals (GEN and UNI) and covariates for continuous variables (AGE and MHI). To estimate the output values, these input variables are standardised and multiplied by their respective synaptic weights (Figure 1). These values transform the hyperbolic tangent function (Table 4), yielding the values of the hidden layer neurons. These are subsequently multiplied by the synaptic weights from the hidden layer to the output layer. These values correspond to the estimates of the constructs. Finally, because these values are standardised, they are inverted to obtain the figures on the original scale.

Table 4. Artificial neural network architecture

Input layer	Bias	Value=1
	Factors	GEN=0(female), GEN=1(male) UNI=0 (no), UNI=1(yes)
	Covariates	AGE (from 18 to 68) MHI (from 1 to 6)
Hidden layer	Number of units (excluding bias)	6
	Rescaling method for covariates	Standardised
	Number of hidden layers	1
	Number of units in hidden layer (excluding bias)	4
Output layer	Activation function	Hyperbolic tangent
	Dependent variables	GMT
		WVP
		GAS
		GXP
		PEM
	Number of units	5
	Rescaling method for scale dependents	Standardised
	Activation function	Identity
	Error function	Sum of squares

Source: Source: Author's own work

Figure 1. Artificial neural network's graphic representation



Source: Source: Author's own work

The development of the ANN model is presented in Table 5. Initially, the sample is divided between the training and test groups, with an approximately 70%-30% weighting, respectively. Concurrently, the training group is tasked with developing synaptic weights whilst the test group calculates the error level, that is, the discrepancy between the actual and estimated values achieved through these synaptic weights. If the test group identifies that the error level cannot be reduced, the stopping rule (Table 5) is initiated, and the synaptic weights are fixed, thus terminating the model. Table 5 presents the time spent during training and the relative error level in each group, both in general and expressed by output variables.

Table 5. Artificial neural network's development summary

Training (N=720; 69.10%)	Sum of squares error	1,706.021
	Average overall relative error	0.949
	Relative error for scale dependents	GMT 0.979
		WVP 0.953
		GAS 0.931
		GXP 0.939
		PEM 0.943
	Stopping rule used	1 consecutive step(s) with no decrease in error (based on the testing sample)
	Training time	0:00:00.58
Testing (N=322; 30.90%)	Sum of squares error	888.649
	Average overall relative error	0.987
	Relative error for scale dependents	GMT 0.983
		WVP 0.976
		GAS 1.009
		GXP 0.981
		PEM 0.987

Source: Source: Author's own work

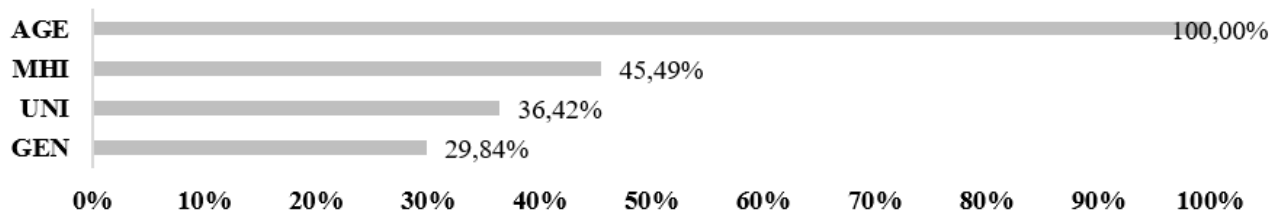
As shown in Table 6, the model as a whole and each output variable exhibit a certain error level. The MAPE is the mean of the values of the differences between the actual and estimated values, in absolute and relative terms. The RMSE is calculated as the square root of the mean difference between the real and predicted values. Given that the constructs possess differing numerical scales in absolute value, the RMSE is presented in a relative form, facilitating the straightforward comparison of all terms, including the MAPE. In this case, the MAPE values are around 20%, while the relative RMSE values are around 15%. Based on previous social science research (Aguilar-Rivero et al., 2026; Cabeza-Ramírez et al., 2022; García-García et al., 2023; Moral-Cuadra et al., 2022; Solano-Sánchez et al., 2024; Valverde-Roda et al., 2023), it can be considered a low error level. The importance of each input variable in contributing to the model is displayed by percentage in Figure 2. The influence of age is particularly noteworthy compared with the other variables, which are comparatively less relevant in elaborating the ANN.

Table 6. Artificial neural network's goodness of fit

	GMT	WVP	GAS	GXP	PEM	Overall
MAPE	22.42%	23.85%	17.13%	19.53%	18.91%	20.37%
Rel. RMSE	16.68%	17.08%	14.30%	15.52%	15.30%	15.77%

Source: Source: Author's own work

Figure 2. Artificial neural network exogenous variables' relevance



Source: Source: Author's own work

The methodology employed also allows the determination of the effect that each input variable has on each output variable. To this end, all output values are collected when each input variable takes its minimum and maximum values, while the rest of the input variables remain at their mean or, in the case of dichotomous nominals, at their majority value. Consequently, Table 7 presents the ten most significant increases of the output variables when the input variables are altered from their minimum to their maximum value. In contrast, Table 8 presents all the decreases obtained following this procedure.

Thus, Table 7 shows a notable increase in the propensity to engage in gastronomic activities among males (GEN=0 to GEN=1), accompanied by an elevated appreciation of experiences and specific gastronomic elements (shared with higher income profiles). This shift is accompanied by a heightened inclination towards travel motivated by gastronomic experiences and a heightened sensitivity to positive emotions. Concerning academic level, having a university education (going from UNI=0, no to UNI=1, yes) also leads to higher gastronomic motivations to travel, willingness to visit places, positive emotions and value gastronomic experiences. Summarising, men with university studies are more interested in most of the constructs analysed.

Table 7. Sociodemographic items with the most direct influence in constructs

Inputs from min. to max. values			Outputs variation		
GEN	Gender	→	WVP	Willingness to visit places	14.49%
GEN	Gender	→	GXP	Gastronomic experiences assessments	11.73%
GEN	Gender	→	GAS	Gastronomic aspects	11.63%
GEN	Gender	→	GMT	Gastronomic motivations for travelling	10.69%
GEN	Gender	→	PEM	Positive emotions	9.75%
UNI	University studies?	→	GMT	Gastronomic motivations for travelling	4.72%
UNI	University studies?	→	WVP	Willingness to visit places	3.29%
MHI	Monthly household income	→	GAS	Gastronomic aspects	1.91%
UNI	University studies?	→	PEM	Positive emotions	1.43%
UNI	University studies?	→	GXP	Gastronomic experiences assessments	1.09%

Source: Source: Author's own work

Conversely, as illustrated in Table 8, there is an inverse relationship between input and output values, signifying that an augmentation in inputs reduces outputs. In this case (Table 8), it is noteworthy that the values of all the gastronomic tourism constructs analysed (GMT, WVP, GAS, GXP and PEM) decrease as age increases. Except for GAS, the same phenomenon occurs as the respondent's disposable income increases, thus reducing the ratings of the remaining constructs. In this way, younger and low-income profiles are more interested in most of the constructs analysed.

Table 8. Sociodemographic items with the most inverse influence in constructs

Inputs from min. to max. values			Outputs variation		
AGE	Age	→	WVP	Willingness to visit places	-17.10%
AGE	Age	→	GAS	Gastronomic aspects	-16.51%
AGE	Age	→	GXP	Gastronomic experiences assessments	-15.97%
AGE	Age	→	PEM	Positive emotions	-13.21%
AGE	Age	→	GMT	Gastronomic motivations for travelling	-11.32%
MHI	Monthly household income	→	GMT	Gastronomic motivations for travelling	-5.95%
MHI	Monthly household income	→	WVP	Willingness to visit places	-5.94%
MHI	Monthly household income	→	PEM	Positive emotions	-1.61%
MHI	Monthly household income	→	GXP	Gastronomic experiences assessments	-0.96%

Source: Source: Author's own work

5. DISCUSSION

The study confirms that gastronomic tourists do not constitute a homogeneous segment; their motivations, emotions, and preferences are modified according to their sociodemographic profile. Specifically, the data obtained in Peru show certain differences compared to previous literature, making it necessary to analyse gastronomic tourism from a territorial perspective, given that gastronomy is not only a tourist product but also a fundamental and key cultural element in differentiating a destination.

The sociodemographic profile analysis of the travellers interested in gastronomy is not homogeneous, as noted above, following the conclusions highlighted by the scientific literature. Regarding gender, the extant literature does indicate a greater interest on the part of women (Correia et al., 2013). This research contradicts this analysis, showing men's greater interest in gastronomy during their trips. This divergence suggests that gender differences in gastronomic tourism should not be interpreted as fixed or universal, but rather as context-dependent. In the Peruvian case, the greater interest observed among men could be associated with specific patterns of participation in leisure activities, culinary socialisation, and public consumption. Therefore, these findings expand upon the evidence proposed by Correia et al. (2013), suggesting that the relationship between gender and tourism can vary according to cultural and territorial contexts.

The scientific literature provides ambiguous results concerning tourist age. While Ignatov and Smith (2006) reveal an average of 45 years, Getz et al. (2014), Björk and Kauppinen-Räsänen (2017), Jiménez Beltrán et al. (2016) and Levitt et al. (2019), indicate a tourist aged between 35 and 45 years. The mean age

of the subjects in this study was approximately 30 years. This finding is closely related to the country where the research was conducted, Peru, a developing country with a strong young emerging middle class. The presence of a young and emerging middle class in Peru, coupled with the role of social networks and digital recommendations, may explain this result. In the present research, gastronomic constructs are more appreciated as age decreases, contrary to what happens, in general terms, in Moral-Cuadra et al. (2022).

One possible interpretation of this result is that younger tourists tend to integrate gastronomy into broader lifestyle and leisure experiences. Contemporary studies suggest that gastronomic experiences are increasingly associated with novelty, enjoyment, creativity, and social interaction (Salgueiro Rachao et al., 2021). Likewise, Ellis et al. (2018) argue that food tourism is strongly linked to experiential and cultural dimensions. Therefore, gastronomy may represent a more relevant component of the travel experience for younger individuals, not only because of the food itself, but also because of its capacity to generate memorable experiences and social value.

In education, the scientific literature concludes that university education tourists exhibit a pronounced interest in gastronomy during their travels (Abdelhamied, 2011; McKercher et al., 2008; Park, 2017; Robinson et al., 2018). This research corroborates this conclusion, as most respondents interested in gastronomy on their trips are university-educated. However, mixed results regarding education level are presented in Moral-Cuadra et al. (2022) and Solano-Sánchez et al. (2024), as some aspects are more valued as it increases, but some other as it decreases.

Educational attainment may also influence the way tourists perceive local gastronomy. Previous studies have shown that tourists with higher levels of education tend to demonstrate greater interest in gastronomy, cultural heritage, and destination authenticity (Abdelhamied, 2011; Björk and Kauppinen-Räsänen, 2017). In this sense, gastronomy can be interpreted as a mechanism for understanding local traditions, identity, and cultural expressions. This perspective may help explain why respondents with university education assigned higher values to several of the gastronomic dimensions analysed in this study.

In terms of economic income, the preponderance of extant research suggests medium-high economic level for the median tourist (Abdelhamied, 2011; Jiménez Beltrán et al., 2016; Björk and Kauppinen-Räsänen, 2017; Getz et al., 2014; Ignatov and Smith, 2006; Levitt et al., 2019; McKercher et al., 2008). The findings of this study demonstrate that, concerning economic income, the result is analogous when a tourist with an average economic level is considered. Nevertheless, the income is categorised as medium-low when juxtaposed with international standards. Moral-Cuadra et al. (2022) present a direct relationship between income and gastronomy as a motivation to travel. However, in the present research, the opposite happens. One of the contributions of this study is the role of average monthly income as a variable that affects tourists' assessments. Thus, it has been observed that a higher income is associated with lower values in gastronomic motivations, willingness to visit gastronomic places, and positive emotions.

The inverse relationship identified between income and several gastronomic tourism constructs suggests that economic resources alone do not determine interest in culinary experiences. Although previous studies generally associate gastronomic tourists with medium and high-income levels (Ignatov and Smith, 2006; McKercher et al., 2008), the present findings indicate that this relationship may vary according to the socioeconomic context of the destination. In emerging economies, gastronomy may represent an accessible form of leisure and cultural participation, generating high levels of interest among middle income groups.

The findings also contribute to the conceptual development of gastronomic tourism research by suggesting that the relationship between gastronomy and tourism should not be interpreted exclusively through destination attributes or culinary resources. Consistent with the perspective proposed by Ellis et al. (2018), gastronomy involves dimensions related to motivation, culture, authenticity, and destination experiences. However, the results of this study indicate that tourists assign different meanings and levels of importance to these dimensions according to their demographic and socioeconomic characteristics. In line with the arguments of Fields (2002) and López-Guzmán et al. (2017), gastronomic experiences are shaped not only by the characteristics of the destination but also by the motivations and personal attributes of tourists. Consequently, the study provides evidence that theoretical models of gastronomic tourism should incorporate a stronger segmentation perspective when explaining tourist behaviour, particularly in emerging destinations such as Peru.

In other words, demographic and socioeconomic characteristics act as a filter in the tourist's perception of a gastronomic destination. Therefore, gastronomic tourism should be understood as a phenomenon in which the destination's attributes interact with the tourists' personal profiles, resulting in varying levels of motivation, emotional response, and willingness to engage with the destination. Thus, theoretical models must shift from a generalist conception of the gastronomic tourist toward a framework that recognizes heterogeneity based on age, income, gender, and educational level.

6. CONCLUSIONS

This research aims to analyse variations in different constructs related to gastronomic tourism, such as motivations to travel, willingness to visit specific destinations, gastronomic experiences and associated positive emotions, considering the sociodemographic profile of tourists. This study's rationale is the mounting significance of gastronomic tourism as a pivotal factor in destination selection and satisfaction, particularly in locales where gastronomy assumes a predominant role in tourism, as Peru exemplifies. Consequently, a comprehensive understanding of these dynamics is imperative for developing personalised products and services that cater to the needs and expectations of diverse tourist segments. This, in turn, contributes to the sector's sustainable growth and catering businesses' financial viability. The model developed enables the accurate estimation of variations in constructs related to gastronomic tourism, including motivations for travel, preferences for specific destinations, and the pursuit of gastronomic experiences. It also facilitates the identification of positive emotions experienced by tourists based on their sociodemographic characteristics.

In relation to the theoretical implications derived from the research development, it is revealed that men exhibit a more favourable valuation of all the aspects related to gastronomy in their trips, as evidenced by the analysis of these constructs. Furthermore, it is noteworthy that individuals with a university education exhibit a similar effect, except for the construct about gastronomic aspects. Consequently, it can be concluded that issues on gastronomy, including the variety and quality of dishes, prices, the ambience of the establishment, and culinary innovations, should be accorded more significant attention to ensure the attraction of diners with higher purchasing power, thereby enhancing the profitability of restaurant businesses.

On the other hand, the other constructs become more important as the level of income decreases and, in line with the above, if the aim is to attract tourists with greater purchasing power, these aspects should be

downgraded to improve the gastronomic aspects. It should also be noted that the value of all the constructs decreases with the respondent's age. Therefore, the profile of the gastronomic tourist in Peru seems to correspond to a young man with a university education, who is looking for an experience that focuses on the gastronomic aspects that can be developed in culinary establishments. The theoretical contribution of this study lies in broadening our understanding of gastronomic tourists by proposing a more segmented approach that is sensitive to the context in which tourism activity takes place. Therefore, this study reinforces the need to more explicitly incorporate the demographic and socioeconomic diversity of visitors into models of gastronomic tourism.

As a practical contribution, employing the ANN allows the personalisation of input values, encompassing the sociodemographic profile. Consequently, this process enables the derivation of adjusted estimates for output values, which pertain to constructs associated with gastronomic tourism. This approach permits identifying the aspects that are most (and least) valued according to the type of public profile or "target" to which the service is directed. This is particularly useful for developing and personalising different kinds of offers regarding gastronomic tourism. Thus, the present work delineates a particular profile of the gastronomic tourist in Peru, which has the potential to serve as a practical instrument for the advancement and solidification of various Peruvian tourist destinations.

These findings are particularly relevant for various stakeholders in the Peruvian tourism and gastronomy sector. For tourism destination managers, the results suggest the need or advisability of developing differentiated tourism strategies based on age, education level, gender, and income level. Tourists with university degrees show higher values in gastronomic motivations, positive emotions, and the overall evaluation of the gastronomic experience. Since the constructs studied include items linked to culture and heritage, the results suggest that this profile could respond favourably to proposals that connect gastronomy with local culture or identity. Furthermore, the results offer clear operational guidelines. Quality, variety of dishes, price, and facilities are aspects directly managed by businesses. Therefore, gastronomic establishments can use the results of this research to adapt their value propositions and differentiation strategies. The results avoid an elitist view of gastronomic tourism. Thus, gastronomic tourism should not be limited to fine dining restaurants but should become a tool for territorial diversification and cultural preservation.

The present study is not without limitations. Primarily, the study's methodology warrants discussion. The fieldwork was conducted using an online survey platform, a choice that may have constrained participation from individuals with restricted access to technology or limited digital familiarity. In the interest of future research, it is recommended that the study population be diversified to encompass diverse sociodemographic characteristics, thereby facilitating a more comprehensive understanding of gastronomic tourism in varied contexts. Furthermore, conducting longitudinal studies would be advantageous in analysing the evolution of motivations and perceptions in the context of socioeconomic and cultural shifts. The results of this study should be interpreted considering certain characteristics of the research design used. The data was collected via an online questionnaire; consequently, it is possible that those more familiar with digital tools may have found it easier to participate. Furthermore, the ANN model focused on sociodemographic variables, whilst other factors related to gastronomic tourism (such as the traveller's previous experience, length of stay,

knowledge of the destination, or use of digital platforms) were not included in the analysis. Consequently, the results obtained reflect the effect of the variables considered in the applied model.

A third research trajectory that merits exploration is the impact of digital tools, such as mobile applications or recommendation platforms, on the decisions of gastronomic tourists. This would open up new perspectives on optimising marketing and personalisation strategies in the sector. Future research could expand the model by incorporating variables related to tourist behaviour and experiences, to gain a broader understanding of the profiles of gastronomic tourists. It would also be interesting to conduct comparative studies with other Latin American destinations to determine whether the patterns observed in Peru hold true in similar contexts. Furthermore, longitudinal and qualitative approaches could help to provide a deeper understanding of how gastronomic motivations and perceptions evolve in different social and cultural contexts.

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