Neuromarketing In Traditional Ecuadorian Gastronomy and Its Influence on The Millennial Generation

Giovanny Haro-Sosa^{1*}, Jessica Robalino Vallejo², Telmo Marcelo Zambrano Núnez³, Carolina Giselle Herrera Egüez⁴

^{1,2,3,4}Escuela Superior Politécnica de Chimborazo, Facultad de Salud Pública, Carrera de Gastronomía. Riobamba, Ecuador; E-mail: <u>gharo@espoch.edu.ec</u>

Abstracts: This article addresses the topic of neuromarketing applied in the context of traditional Ecuadorian gastronomy, with a specific focus on its impact on the Millennial generation. The objective of the work was to analyze the effect of neuromarketing on the preference and choice of traditional Ecuadorian foods by this generation. The research was carried out in Ecuador and included a sample of 250 consumers. The results show that neuromarketing significantly influences Millennials' decision to choose traditional Ecuadorian food. In addition, this research is relevant for marketing and gastronomy professionals as well as for those interested in delving into this exciting field of neuromarketing applied to Ecuadorian gastronomy.

Keywords: Marketing, Statistics, Brain, Consumer Behaviors.

1. INTRODUCTION

Over time, society has undergone a series of technological, political, social, and economic changes (1) which have boosted the evolution and competitiveness of populations (2). Since time immemorial, human beings have sought to establish valuable exchanges of value (3), where both buyers and sellers obtain mutual benefits (4). This is how marketing emerged as a discipline aimed at satisfying diverse human needs (5). However, the old marketing techniques have gradually become obsolete as people are constantly looking for changes and innovations in their environment (6). As a result, marketing has undergone an evolution in the generation of strategies, which has allowed for the modernization of products and services (7).

Today, technological developments have given rise to an interesting combination of marketing, neuroscience, and biology (8). This combination uses scientific techniques to understand consumer thinking and decision making, known as neuromarketing (9). The field of neuromarketing focuses on studying the communication process between seller and customer, especially focused on the sensations experienced by the consumer during the purchase of a good or service (10). It is important to note that, despite the widespread belief that neuromarketing seeks to manipulate the consumer's mind, its true objective is simply to learn about the buyer's deepest desires to satisfy them more effectively (11). Despite the potential that neuromarketing offers, not everyone is familiar with this discipline, and few companies are currently taking advantage of this tool (12). Mostly, it is the renowned companies that benefit from the advantages that neuromarketing provides in their business strategies. In recent years, neuromarketing has gained prominence in Latin America (13), especially in the field of gastronomy and catering, where it has become an essential part of any business (14). Almost imperceptibly, neuromarketing stimulates the brain by using the five senses to transmit continuous information about the moment and the environment being experienced (15). This approach also makes it possible to establish an emotional and sensory link with customers, either through external elements or through a direct relationship with the product or service (16). In this regard, both positive and negative emotions have been identified as influencing consumer decision making. The role played by neuromarketing is essential to identify which emotions determine a purchase decision (17).

Gastronomy goes beyond the simple art or fondness for food; it involves knowledge and activities related to ingredients, recipes, culinary techniques (18), as well as the consideration of aroma, taste and presentation that activate the taste memory and stimulate a variety of feelings and emotions (19). Research has shown that the predominant color in an image has a strong impact on people's minds (20), and neuro-advertising seeks precisely to

elicit an emotional response in consumers when they are exposed to advertising messages (21). The purpose of these tactics is to establish an emotional bond between the customer and the restaurant, thus creating an attachment and loyalty to the brand. (22). In the specific context of gastronomy, we find dishes that are visually enjoyable, ingredients and sauces that awaken unique sensations, and presentations carefully designed to make us feel special. In addition, cozily decorated atmospheres and the right music contribute to a special enjoyment of the company and the moment (Organización de las naciones unidas para la gastronomía y agricultura, 2020). All this is part of the field of neuromarketing applied to gastronomy (16).

Millennials are a generation that has emerged in a context marked by traditional beliefs and the accelerated development of new technologies, which places them between the old and the new (23). They are characterized by searching for natural foods with multiple properties and focusing on tasting and culinary experience (24). In addition, they currently have the greatest purchasing power and purchasing decisions (25). This generation is conscious of what they consume, looking for healthy and quick-to-prepare foods, with a strong interest in organic, unprocessed foods and traditional cooking techniques (26).

The technological development that has accompanied the growth of millennials has inspired the creation of advertising strategies aimed specifically at capturing their attention (27). In this context, neuromarketing has become an innovative direction to study consumer behavior (28), as it uses tools that allow for in-depth research into consumers' true reactions and obtain relevant data to highlight preferences in traditional Ecuadorian gastronomy (29).

2. Theoretical framework

2.1. Conceptualization of Neuromarketing and Segmentation

Neuromarketing emerges as an autonomous scientific method that revolutionizes the way of communicating with customers (30). It is a technique used in the marketing field that seeks to establish a solid relationship between the customer and the product or service, focusing on feelings, emotions and the subconscious mind of the individual (31). This approach is interdisciplinary, encompassing diverse fields such as psychology, sociology, marketing, and neuroscience (32). Neuromarketing performs an analysis of behavior, response, and action, both physical and emotional, to certain stimuli, which translates into effective advertising strategies. Its objective is to provide an efficient response to consumers in relation to marketing stimuli, using the brain as a measurement instrument (33). In this way, neuromarketing identifies the neural processes involved in purchasing decisions and consumer behavior.

To understand how neuromarketing works and to apply it effectively in an establishment or business, it is essential to have knowledge of how the brain works and the areas involved in emotional consumer decisions (34). In this sense, the influence of neuromarketing on the minds of consumers has been studied with contributions from cognitive neuroscience to consumer events (35). It is important to note that human behavior is not based solely on rationality; approximately 85% of decisions are emotional in nature and are made unconsciously, being generated by the brain at the specific moment (36). The brain also stores emotional memories through lived experiences, including those that are transmitted in DNA. When the sensations and emotions experienced at a given moment are combined with the stored memories, the brain produces an intuitive, instinctive action and an emotional or rational decision, which will ultimately influence the consumer's final decision (37).

Market segmentation involves the division of the market into groups of consumers who share similar characteristics according to some specific criteria in commercial research (38). It is the first strategy that marketers use to satisfy the needs of the members of a society, considering habits, purchasing and consumption patterns (39). When analyzing the market, it is essential to consider the existence of different generational cohorts, which are influenced by demographic, psychographic and behavioral variables (40). Each generation is distinguished by certain events or occurrences, whether political, cultural, or economic, which in some way shape their perception and the way they perceive the products and services offered. Segmentation based on demographic criteria refers to the use of references such as age, gender, religion, race, income, education level, occupation, nationality, life cycle 1474

stage, family size, generation, height, weight, social class, or any other characteristic that can externally define the individuals in a population (41).

2.2. Exploring The Richness of Traditional Gastronomy

Gastronomy emerges as one of the most transcendental disciplines for man in the 21st century (42), because it is recognized as essential for health, its contribution to aesthetics and cultural processes that enrich community identity, thus strengthening social ties. At the same time, it is considered a powerful tool for local development (43). Traditional gastronomy represents a valuable resource that is intertwined with the cultural, social, environmental, and economic history of the people and their communities (44). Through its components, such as beliefs and lifestyles specific to different geographic locations, traditional gastronomy becomes an inseparable element of cultural heritage (45)

Neuromarketing applied to the gastronomic field offers the possibility of identifying foods and analyzing foodrelated decision making (46). This allows the implementation of best practices for food marketing, as well as the improvement of other aspects such as the perception of nutritional elements, health information on labels, the presence of additives and the evaluation of messages conveyed by food packaging (47). The importance of neuromarketing lies in its ability to assert that the sensory senses are a powerful channel to reach the consumer's mind. Specifically in the context of restaurants, it is a set of techniques aimed at understanding consumer behaviors in relation to the marketing mix, with the objective of satisfying their needs (48).

Visual neuromarketing focuses on the study of the impact that different elements of an image have on buyers, such as color, image, relief, size, shape, among others (49). All these aspects influence the consumer's decision when choosing between one option or another (50). It has been concluded that the perception of images represents one of the main stimuli for human beings, where visual interpretation occurs in the brain after processing light and information captured by the eyes (51). Within these elements, the use of color stands out for its ability to express visual meanings (52). Its influence on human behavior develops in an interesting way: color impresses when seen and by itself can convey meaning, thus helping a brand or product to communicate and be remembered by the consumer (53).

2.3. The Millennial Generation: Characteristics and Trends

Millennials, born between 1981 and 2000, make up a significant part of the labor market and enjoy good purchasing power (23). It is estimated that by the year 2025, they will represent 75% of the workforce, making them a group with great influence in the market (54). This generation stands out for being the first to be born in the digital era, growing up with technology as an integral part of their lives, which has allowed them to interact virtually in all aspects of their daily lives (55). In addition, unlike their previous generations, millennials are racially diverse, have higher levels of education and tend to live more solitary lives until older ages, which sets long-term trends (56). Millennials show an inclination towards products or services that maximize the social or environmental benefit to society (57). Due to globalization, the characteristics of this generation are more similar between countries than those of any other generation (58). However, they are also one of the most skeptical generations when it comes to advertising and promotions, opting to spend on authentic and especially satisfying experiences (59).

Millennials are known for having a certain amount of financial independence, which allows them to eat out on a regular basis. When it comes to food choices, they look for options that provide health benefits, such as gluten- and caffeine-free, protein-rich, organic, fortified and portion-controlled foods (60). In addition, they are willing to pay a fair price in relation to quality, i.e., they are looking for a good cost-benefit ratio (61). In today's market, there are many options for food choices and among them is traditional cuisine, which makes use of ancestral techniques and uses ingredients that are as natural as possible. Therefore, traditional foods can also be an opportunity to eat more healthily (62). An interesting aspect of this generation is that most of them seek to immerse themselves in culture through culinary tastings and cultural appreciation trips (63). That is, they seek to experience and learn about the gastronomy of different places to connect with local traditions and culture.

2.4. Hypothesis and model approach

This model is made up of the following interrelated variables: the degree of traditionality of plating in typical Ecuadorian food and the level of interest of the millennial generation in the consumption of these foods.

2.4.1. The Impact of Neuromarketing on The Consumer and Its Relationship with Gastronomy

Neuromarketing has a significant influence on consumer behavior, as it allows measuring both the rational, emotional, and instinctive aspects of people. These measurements are used to create effective marketing strategies that reach directly into the customer's brain, awakening their instincts, emotions, and rationality (64). Sensory factors are fundamental in advertising stimuli, since it is through the senses that we receive information from the world around us (65). Although the brain receives millions of external stimuli daily, only a small amount of them captures our attention, being these striking stimuli the ones that generate an immediate emotional reaction, with the predominant participation of the right hemisphere in their processing (66). This neuromarketing influence on the consumer can lead to unconscious decision making, resulting in generally positive behavior and a favorable association with the brand (67). In addition, this stimulation can be reflected in increased sales, more frequent visits to the store and greater engagement with advertising environments.

When a customer decides to make a purchase, his or her brain is focused on processing the information within a complex network of neurocircuits (50). This includes aspects such as the perception of the product, good or service as positive or negative, the appreciation of a fair price and other factors that can influence the purchase decision. All of this "alters" the brain's reward systems, which consider the cost-benefit ratio of each decision the consumer must make, regardless of what advertising may do (68). Based on the above, the following hypothesis is proposed:

H₁: Neuromarketing influences the consumer in relation to gastronomy.

2.4.2. The Impact of Neuromarketing on The Millennial Generation in A Gastronomic Context

The millennial generation is composed of people born between 1977 and 2000 (23). This group has developed in parallel with technological progress and shows a strong interest in social welfare and environmental preservation. A large percentage of this generation currently occupies leadership positions in companies, while a smaller percentage is still in the process of professional training (69).

A significant difference between millennials and previous generations is their appreciation of connectivity through social networks and apps. They feel accepted when their friends interact with their posts and messages by sending them "likes" and emoticons (70). This generation does not simply want to be passive consumers; they want to actively participate, co-create and, above all, be part of the brands they admire. The co-creation process can span from product or service design to the customer's shopping experience and is especially evident in marketing and social media towards the end of the marketing cycle (71). In fact, it could be argued that functional and emotional benefits alone will not be enough to captivate this generation, as millennials feel a shared bond with the success of the brands, they love (72). Given this desire to engage, there are many opportunities for companies that want to win over millennials. However, a deeper understanding of the interests, needs and consumption habits of this generation is necessary to develop impactful marketing strategies (73). Although this knowledge is valuable, it has not yet been applied specifically to the gastronomic context. Therefore, the following hypothesis is put forward:

H₂: Neuromarketing influences the millennial generation in the gastronomic context.



Figure 1. Proposed model Source: Authors

3. Methodology.

In this study, quantitative research was employed based on the application of surveys aimed at the target audience, young people between 22 and 41 years of age. The sample consisted of 250 individuals and was conducted in July 2022 using a self-administered online questionnaire. In addition, the historical-logical method was used to analyze the trajectory and development of neuromarketing and its impact on Ecuadorian gastronomy for the millennial generation (74). The research and the questionnaire are the result of an exhaustive search for relevant concepts and aspects related to the central theme: neuromarketing applied to Ecuadorian gastronomy. To achieve this purpose, books, scientific articles, and previous studies on Ecuador's gastronomic position were reviewed. The questionnaire used was based on a combination and adaptation of questions proposed by other authors (75–77). By modifying and discarding some of these questions, it was possible to develop a specific approach for the present research, facilitating the obtaining of relevant information on the influence of neuromarketing applied to the millennial generation in relation to traditional Ecuadorian gastronomy.

The techniques applied in this work constitute the instruments through which information was collected using a survey. For this purpose, the population and the sample were previously established through the analytical-synthetic method, which made it possible to know the relevant theories and conceptions on the subject and to analyze the information obtained through them.

4. RESULTS

Table 1. Sample profile-Contingency test Gender Female Male Total Age Observed 22 to 25 years old 49 88 137 of total % 24.5% 44.0 % 68.5 % 26 to 29 years old Observed 16 26 10 of total % 5.0 % 8.0 % 13.0 % 30 to 33 years old Observed 6 8 14 of total % 30% 4.0% 70% 34 to 37 years old Observed 8 5 13 of total % 2.5 % 6.5% 40% Observed 7 3 38 to 41 years old 10

To arrive at the results, statistical analysis tools were used. The first of these is a contingency table, which in this case was used to analyze the profile of several individuals who share the same nature.

Age		Gender			
		Female	Male	Total	
	of total %	3.5 %	1.5 %	5.0 %	
Total	Observed	80	120	200	
	del % total	40.0 %	60.0 %	100.0 %	

Table 1 shows that the majority population in the sample is represented by more men than women and is in the age range of 22 to 25 years. On the other hand, the minority is made up of people of both genders, between 38 and 41 years of age. In total, 250 participants were surveyed, 80% of whom belonged to the millennial generation and were considered for the development of the research.

4.1. Analysis of the Results of The Population Proportion Test.

	Т	able 2. Populat	ion propor	tion test			
						95% Confidence Index	
	Level	Counting	Total	Proportion	р	Lower	Upper
1.1. How much do you know about Ecuadorian gastronomy?	Much	85	200	0.425	< .001	0.3556	0.4967
	Nothing	6	200	0.030	0.254	0.0111	0.0642
	Little	109	200	0.545	< .001	0.4733	0.6154
1.2. How much do you consider that neuromarketing applied to gastronomy affects consumer choice?	Much	111	200	0.555	< .001	0.4832	0.6251
	Nothing	8	200	0.040	0.627	0.0174	0.0773
	Little	81	200	0.405	< .001	0.3363	0.4765
1.3. How often do you go to a place to taste traditional Ecuadorian dishes?	1 time per week	126	200	0.630	< .001	0.5591	0.6970
	2 times per week	32	200	0.160	< .001	0.1121	0.2183
	3 or more times per week	22	200	0.110	< .001	0.0702	0.1618
	Never	20	200	0.100	0.003	0.0622	0.1502

Table 2. Population proportion test								
						95% Confidence Index		
	Level	Counting	Total	Proportion	р	Lower	Upper	
1.4. What type of establishment do you go to most often for the consumption of these?	Bar/restaurant	25	200	0.125	< .001	0.0826	0.1790	
	Dining room in general (breakfasts, lunches).	51	200	0.255	< .001	0.1961	0.3213	
	Seafood or picanteria.	41	200	0.205	< .001	0.1513	0.2677	
	Creole food restaurant.	45	200	0.225	< .001	0.1691	0.2892	
	Theme restaurant (a la carte dishes).	21	200	0.105	0.002	0.0662	0.1560	
	among others	17	200	0.085	0.033	0.0503	0.1326	
Note. H _a is proportio	on ≠ 0.05							

Source: Authors

In this second table, known as the Z Test for a population proportion, it is used for a variable X that represents the state of something, for example, defective and not defective, sold or not sold, among others, and seeks to prove a hypothesis with the proportion of a certain category of that variable (78). From the information presented, we can reach the following conclusions: First, a significant part of the sample claims to know a lot about Ecuadorian gastronomy. However, within this population, the majority indicates that they know little about this culinary culture, followed by a minority that claims to know nothing about it. This suggests that the millennial generation has some knowledge about Ecuador's food heritage, but there is also a small group of individuals who do not know about this topic. These results support the idea that neuromarketing can significantly influence a customer's consumption choice, which validates our hypothesis. In addition, individuals revealed that they eat out at least three times a week, and their preferred destination is bars and restaurants. This shows that there is a market with a wide gap to exploit in the restaurant sector.

The results to the respondents show that, regarding their preferences in the choice of a dish, they mainly focus on the taste. However, it is important to bear in mind that this organoleptic characteristic cannot be appreciated until the moment of acquiring the dish. In this sense, it should be noted that both texture and color are the attributes that possibly influence the choice of a particular dish. These factors play a relevant role when it comes to making gastronomic decisions by the millennial generation in the context of traditional Ecuadorian gastronomy.

	Level	Counting Total		tal Proportion	р	95% Confidence Index	
			Total			Lower	Upper
1.7. Do you think that the more traditional is the plating in typical Ecuadorian food, the greater the interest in consuming these foods?	No	94	200	0.470	<.001	0.399	0.542
	Yes	52	200	0.260	< .001	0.201	0.327
	Perhaps	54	200	0.270	< .001	0.210	0.337

Source: Authors

According to the results obtained in the population proportion test, it can be clearly distinguished that most of the individuals surveyed express that a traditional dish reduces their interest in the consumption of native foods from Ecuador. This sample turns out to be significant, as shown in Table 3, which indicates that the hypothesis posed is valid; that is, people belonging to the millennial generation prefer a plating that is different from the common.

On the other hand, a small number of the population analyzed, approximately 25 individuals, claim to enjoy traditional plating, while about 26 individuals are unsure if their interest would decrease depending on the plating. However, the majority of 149 individuals support the proposed hypothesis, which supports the idea that the presentation of dishes influences the preference for consumption of native foods among millennials.

DISCUSSION AND CONCLUSION

The objective of this research was to analyze the effect of neuromarketing applied to traditional Ecuadorian gastronomy on the millennial generation in Ecuadorian territory. For this purpose, the years that comprise this generation were considered, covering from 1981 to 2000, since it is the most representative generational cohort within the context of the study (23). Through the analysis of various postulates of relevant authors in the field of neuromarketing and gastronomy (50,67,79)In this study, it was possible to establish a significant connection between neuromarketing and the gastronomic preferences of Ecuadorian millennials. The results obtained showed that neuromarketing has a significant effect on the decision to choose and purchase a particular dish by millennial consumers, as confirmed by the studies of several authors (75,80). In this sense, it was determined that neuromarketing plays a relevant role in traditional Ecuadorian gastronomy, as it allows establishing a deeper connection between the restaurant and the diner, based on subjective feelings and thoughts.

The hypotheses proposed in this study, "Neuromarketing has effects on the consumer in relation to gastronomy" and "Neuromarketing has effects on the millennial generation in the gastronomic context", have been supported by the results obtained, which reveal the influence of neuromarketing in gastronomy, considering factors such as color, flavor, texture, aroma, and forms of plating. These elements have the capacity to evoke emotions and memories in the diner, which can be evaluated by neuromarketing to develop strategies to increase the consumption of traditional dishes.

The methodology used in this research, which combines the analysis of scientifically proven theories and concepts, as well as the application of surveys and statistical tools, has allowed obtaining relevant and significant results in the field of gastronomy and neuromarketing. The use of the statistical tool Jamovi has facilitated the processing and analysis of the data, strengthened the foundation of the proposed relationships and demonstrated that neuromarketing plays a transcendental role in the development of traditional Ecuadorian gastronomy (81).

Therefore, this research has contributed to demonstrate the importance and incidence of neuromarketing in the context of gastronomy, specifically in the millennial generation. (73). The results obtained provide a solid basis for the development of marketing strategies that focus on the preferences and emotions of millennial consumers, in order to increase the consumption of traditional Ecuadorian dishes and strengthen the link between restaurants and their diners (82). In addition, the use of statistical techniques and the rigorous analysis of the information have enriched the relevance and validity of the results, positioning this research as a significant contribution in the field of neuromarketing applied to gastronomy.

CONCLUSION

The conclusions of this empirical study have yielded significant and revealing results about the impact of neuromarketing on the millennial generation in the context of Ecuadorian gastronomy. It became evident that neuromarketing has a relevant influence on the consumer's purchasing process, being determinant the way in which food is presented and how these organoleptic qualities impact on the customer's choice and satisfaction. An important finding was that the millennial generation shows a clear preference for the presentation of traditional Ecuadorian dishes, especially in relation to the use of colors and the form of plating. These elements generate an emotional connection with the diner, facilitating the association of experiences and emotions with the food, which contributes to their enjoyment and appreciation of the gastronomic experience.

The use of the Jamovi statistical tool allowed obtaining reliable and relevant results, which reinforces the validity of the findings and the influence of neuromarketing in the context studied. This highlights the importance of neuroscience in the analysis of consumer behavior, since many times the stimuli that generate purchase decisions are not consciously perceived by customers.

From an academic point of view, this research has contributed to deepen the study of neuromarketing, traditional gastronomy and the millennial generation, establishing a connection between these areas that has not been widely explored in the literature. Further research is needed to further understand how neuromarketing can influence purchasing decisions in developing countries such as Ecuador. In practical terms, this study offers valuable applications for restaurant owners and managers who wish to improve their marketing strategies and appeal to the millennial generation. The implementation of neuromarketing as a tool to increase the consumption of traditional dishes can be highly effective and generate higher revenues for gastronomic establishments.

In addition, the research has contributed to the knowledge about the influence of neuromarketing on the millennial generation in the field of traditional Ecuadorian gastronomy. The results obtained open new perspectives and challenges for future research in the field of marketing and gastronomy, and it is hoped that this study will serve as a source of consultation and guidance for students and researchers interested in these areas. In addition, it provides a solid foundation for gastronomic sector actors to make more informed and effective decisions to attract and satisfy the growing millennial generation.

In conclusion, this study has highlighted the relevant relationship between neuromarketing and traditional Ecuadorian gastronomy, especially with regard to the millennial generation. The findings highlight the importance of conducting research that identifies the responses to various stimuli, based on consumer perception, in order to encourage an increase in the consumption of traditional cuisine. In this way, the aim is to preserve the essence of the country's representative dishes and ensure that the culinary richness that characterizes Ecuador is not lost. The impact of neuromarketing on the millennial generation has been evident in this study, showing how visual, emotional, and sensory stimuli significantly influence purchasing decisions and the gastronomic experience of this generation. The strategic use of appropriate colors, presentation and sensory techniques can generate an emotional connection with traditional dishes, increasing their appeal and perceived value for younger consumers.

This research contributes to the gastronomic and neuromarketing fields since it provides valuable knowledge for the development of more effective strategies in the commercialization of food and typical dishes. Furthermore, these results are relevant both for restaurant and gastronomic business owners, as well as for those responsible for the promotion of Ecuadorian culinary heritage. Ultimately, it is essential that neuromarketing be considered as a 1481 relevant tool in the field of gastronomy, especially to attract and captivate the millennial generation, which plays an important role in today's market. By understanding how stimuli influence their consumption choices, more effective strategies can be designed to foster appreciation and preference for traditional gastronomy, ensuring its perpetuity and recognition inside and outside the country.

Implications

The implications of this research are significant at both the academic and practical levels, providing valuable insights into the relationship between neuromarketing and the purchase decision of the millennial generation in the context of traditional Ecuadorian gastronomy. At the academic level, this research contributes to the literature on gastronomy management and neuromarketing by deepening the understanding of how neuromarketing can influence the purchase decision of the millennial generation in the context of traditional Ecuadorian gastronomy.

In terms of practical implications, the results of this research can be of great use to professional gastronomes and marketers involved in the commercialization and promotion of traditional gastronomy. By understanding the impact of neuromarketing on the purchase decision of the millennial generation, these professionals can design more effective strategies to attract and captivate this market segment. For example, they could focus on the use of colors, presentations and sensory techniques that generate an emotional connection with traditional dishes, thus increasing their appeal and preference among younger consumers.

In addition, these findings may also be of interest to owners of restaurants and gastronomic establishments, as it provides them with a deeper understanding of how they can use neuromarketing to improve their customers' experience and increase the demand for Ecuador's typical dishes. Together these findings can be useful for improving marketing strategies in the gastronomic sector and preserving the essence of the country's representative dishes, thus ensuring their recognition and appreciation within and beyond Ecuador's borders and for future research and studies related to the topic, thus expanding knowledge in this area of study.

Future Lines of Research

Neuromarketing has completely revolutionized the gastronomic sector, and its development and recognition continue to advance rapidly. In this context, interesting research opportunities are emerging that can provide valuable insights for market research professionals. One of these avenues is a comparison between traditional marketing methods and neuromarketing-based strategies, with a specific focus on the gastronomic field. In addition, it is relevant to explore the perception that both the centennial generation and the alpha generation have of the neuromarketing paradigm applied to gastronomy. A comparative analysis between the two generations could reveal significant patterns about how each demographic reacts and relates to these sensory and emotional marketing techniques. Research in these areas can provide a deeper understanding of how neuromarketing influences the purchasing decisions of consumers, especially the millennial and alpha generation, which are two key groups in today's marketplace. It could also shed light on the preferences and motivations that guide their dining choices and how these are impacted by neuromarketing strategies implemented in restaurants and food establishments.

In addition, comparative research between traditional methods and neuromarketing, along with the analysis of the perception of centennial and alpha generations to this discipline in the gastronomic context, could offer valuable insights for marketing and gastronomy professionals. These findings could drive the adoption of more effective and personalized strategies, as well as contribute to a better understanding of how these techniques influence the preferences and consumption behaviors of younger generations. Ultimately, this knowledge could help optimize gastronomy marketing strategies and strengthen the connection between brands and consumers, in tune with the needs and expectations of each generation.

REFERENCES

- [1] Giuliano P. Review of Cultural Evolution: Society, Technology, Language, and Religion Edited by Peter J. Richerson and Morten H. Christiansen. J Econ Lit [Internet]. 2016 Jun;54(2):522–33. Available from: https://www.proquest.com/scholarly-journals/review-culturalevolution-society-technology/docview/1793913384/se-2?accountid=14777
- [2] Guaita Martínez JM, Azevedo PS, Martín Martín JM, Puertas Medina RM. Key factors in tourism management to improve competitiveness in Latin America. Academia [Internet]. 2022;35(2):131–47. Available from: https://www.proquest.com/scholarly-journals/key-factors-tourismmanagement-improve/docview/2683898844/se-2?accountid=14777
- [3] Wiltshier P, Clarke A. Virtual cultural tourism: Six pillars of VCT using co-creation, value exchange and exchange value. Tourism and Hospitality Research [Internet]. 2017 Oct;17(4):372–83. Available from: https://www.proquest.com/scholarly-journals/virtual-cultural-tourismsix-pillars-vct-using-co/docview/1944033944/se-2?accountid=14777
- [4] Wei K, Li Y, Zha Y, Ma J. Trust, risk and transaction intention in consumer-to-consumer e-marketplaces: An empirical comparison between buyers' and sellers' perspectives. Industrial Management & Data Systems [Internet]. 2019;119(2):331–50. Available from: https://www.proquest.com/scholarly-journals/trust-risk-transaction-intention-consumer-e/docview/2184205902/se-2?accountid=14777
- [5] Narasimhan K. Quality from Customer Needs to Customer Satisfaction. The TQM Magazine [Internet]. 2003;15(6):430–1. Available from: https://www.proquest.com/scholarly-journals/quality-customer-needs-satisfaction/docview/227596359/se-2?accountid=14777
- [6] Melander L. Customer involvement in product development: Using Voice of the Customer for innovation and marketing. Benchmarking [Internet]. 2020;27(1):215–31. Available from: https://www.proquest.com/scholarly-journals/customer-involvement-productdevelopment/docview/2534583697/se-2?accountid=14777
- [7] Olazo DB. Marketing competency, marketing innovation and sustainable competitive advantage of small and medium enterprises (SMEs): a mixed-method analysis. Asia Pacific Journal of Marketing and Logistics [Internet]. 2023;35(4):890–907. Available from: https://www.proquest.com/scholarly-journals/marketing-competency-innovation-sustainable/docview/2793845398/se-2?accountid=14777
- [8] Anninos LN. Towards the "Homo Deus" excellence perspective? International Journal of Quality and Service Sciences. 2019 Dec 9;11(4):542–58.
- [9] Goecking OHP, Muylder CF De, Martins HC, Felisberto JL da M. Neuromarketing genetics: a systematic review of literature. Journal of Contemporary Marketing Science [Internet]. 2021;4(1):69–82. Available from: https://www.proquest.com/scholarly-journals/neuromarketinggenetics-systematic-review/docview/2550462985/se-2?accountid=14777
- [10] Salas Canales HJ. Neuromarketing: Exploring the consumer's mind. Revista Científica de la UCSA. 2018 Aug 30;5(2):36-44.
- [11] Duque-Hurtado P, Samboni-Rodriguez V, Castro-Garcia M, Montoya-Restrepo LA, Montoya-Restrepo IA. Neuromarketing: Its current status and research perspectives. Estudios Gerenciales [Internet]. 2020;36(157):525–39. Available from: https://www.proquest.com/scholarlyjournals/neuromarketing-current-status-research/docview/2525719390/se-2?accountid=14777
- [12] Sung B, Wilson NJ, Yun JH, LEE EJ. What can neuroscience offer marketing research? Asia Pacific Journal of Marketing and Logistics [Internet]. 2020;32(5):1089–111. Available from: https://www.proquest.com/scholarly-journals/what-can-neuroscience-offer-marketingresearch/docview/2534604207/se-2?accountid=14777
- [13] Giraldo Pérez W, Otero Gómez MC. La importancia de la innovación en el producto para generar posicionamiento en los jóvenes. Revista Facultad de Ciencias Económicas. 2017 Sep 18;25(2).
- [14] Mengual-Recuerda A, Tur-Viñes V, Juárez-Varón D, Alarcón-Valero F. Emotional Impact of Dishes versus Wines on Restaurant Diners: From Haute Cuisine Open Innovation. Journal of Open Innovation : Technology, Market, and Complexity [Internet]. 2021;7(1):96. Available from: https://www.proquest.com/scholarly-journals/emotional-impact-dishes-versus-wines-on/docview/2596040736/se-2?accountid=14777
- [15] Alós-Ferrer C. A Review Essay on Social Neuroscience: Can Research on the Social Brain and Economics Inform Each Other? J Econ Lit [Internet]. 2018 Mar;56(1):234–64. Available from: https://www.proquest.com/scholarly-journals/review-essay-on-social-neuroscience-canresearch/docview/2011611104/se-2?accountid=14777
- [16] Gurgu E, Gurgu IA, Tonis RBM. Neuromarketing for a better understanding of consumer needs and emotions. Independent Journal of Management & Production [Internet]. 2020;11(1):208–35. Available from: https://www.proquest.com/scholarly-journals/neuromarketingbetter-understanding-consumer/docview/2399206548/se-2?accountid=14777
- [17] Bercík J, Horská E, Gálová J, Margianti ES. Consumer Neuroscience in Practice: The Impact of Store Atmosphere on Consumer Behavior. Periodica Polytechnica Social and Management Sciences [Internet]. 2016;24(2):96–101. Available from: https://www.proquest.com/scholarly-journals/consumer-neuroscience-practice-impact-store/docview/1875403168/se-2?accountid=14777
- [18] Cremades J, Ansón R, García JC, Oliart RA, Ferrero-Waldner B, Pérez MÁS, et al. Derecho y gastronomía. Dykinson; 2019.
- [19] Pantoja CT. Gastronomic heritage in the elderly. Vol. 18, Humanidades Médicas. 2018.
- [20] Singh S. Impact of Neuromarketing Applications on Consumers. Journal of Business and Management [Internet]. 2020 Sep;26(2):33–52. Available from: https://www.proquest.com/scholarly-journals/impact-neuromarketing-applications-on-consumers/docview/2696903140/se-2?accountid=14777
- [21] Baraybar Fernández A, Baños González M, Barquero Pérez Ó, Goya Esteban R, Morena Gómez A. Evaluation of emotional responses to television advertising through neuromarketing. Comunicar. 2017;25(52):19–28.
- [22] Abad NS. Neuromarketing y memoria: implicaciones para la comunicación publicitaria. Pensar la publicidad. 2012;6(2):297-313.
- [23] Llopis-Amorós MP, Gil-Saura I, Ruiz-Molina ME, Fuentes-Blasco M. Social media communications and festival brand equity: Millennials vs Centennials. Journal of Hospitality and Tourism Management [Internet]. 2019;40:134–44. Available from: https://www.sciencedirect.com/science/article/pii/S1447677019300816

- [24] Namin A, Ratchford BT, Saint Clair JK, Bui M (Myla), Hamilton ML. Dine-in or take-out: Modeling millennials' cooking motivation and choice. Journal of Retailing and Consumer Services [Internet]. 2020;53(October 2019):101981. Available from: https://doi.org/10.1016/j.jretconser.2019.101981
- [25] Kellershohn J, Walley K, Vriesekoop F. An international study of fast-food dining perceptions: millennial parents, non-millennial parents, and peer judgement during fast-food family dining. International Journal of Culture, Tourism and Hospitality Research [Internet]. 2021;15(4):598– 614. Available from: https://www.proquest.com/scholarly-journals/international-study-fast-food-dining-perceptions/docview/2585705623/se-2?accountid=14777
- [26] Spence C. Neuroscience-Inspired Design: From Academic Neuromarketing to Commercially Relevant Research. Organ Res Methods. 2019 Jan 1;22(1):275–98.
- [27] Okumus B, Ozturk AB. The impact of perceived stress on US millennials' external and emotional eating behavior. British Food Journal. 2021;123(1):1–11.
- [28] Cavazos-Arroyo J, Sánchez-Lezama AP. Explaining green consumption: A cross-cultural study on young adult consumers through a multigroup comparison. Estudios Gerenciales. 2022;38(162):69–81.
- [29] Villagómez-Buele C, Carvache-Franco M, Carvache-Franco O, Carvache-Franco W, Villavicencio-Párraga M. Gastronomic experience as a factor of motivation and satisfaction in coastal destinations. Journal of Environmental Management and Tourism. 2020;11(6):1328–37.
- [30] Hsu M. Neuromarketing: Inside the Mind of the Consumer. Calif Manage Rev. 2017 Aug 1;59(4):5-22.
- [31] Morin C. Neuromarketing: The New Science of Consumer Behavior. Vol. 48, Society. Springer Science and Business Media, LLC; 2011. p. 131–5.
- [32] Stanton SJ, Sinnott-Armstrong W, Huettel SA. Neuromarketing: Ethical Implications of its Use and Potential Misuse. Journal of Business Ethics. 2017 Sep 1;144(4):799–811.
- [33] Bakardjieva E, Kimmel AJ. Neuromarketing Research Practices: Attitudes, Ethics, and Behavioral Intentions. Ethics Behav. 2017 Apr 3;27(3):179–200.
- [34] Luna-Nevarez C. Neuromarketing, Ethics, and Regulation: An Exploratory Analysis of Consumer Opinions and Sentiment on Blogs and Social Media. J Consum Policy (Dordr). 2021 Dec 1;44(4):559–83.
- [35] Nemorin S. Neuromarketing and the "poor in world" consumer: how the animalization of thinking underpins contemporary market research discourses. Consumption Markets and Culture. 2017;20(1):59–80.
- [36] Duque-Hurtado P, Samboni-Rodriguez V, Castro-Garcia M, Montoya-Restrepo LA, Montoya-Restrepo IA. Neuromarketing: Its current status and research perspectives. Estudios Gerenciales. 2020;36(157):525–39.
- [37] Gurgu E, Gurgu IA, Tonis RBM. Neuromarketing for a better understanding of consumer needs and emotions. Independent Journal of Management & Production. 2020;11(1):208.
- [38] Menor-Campos A, Fuentes Jiménez PA, Romero-Montoya ME, López-Guzmán T. Segmentation and sociodemographic profile of heritage tourist. Vol. 26, Tourism and Hospitality Management. University of Rijeka; 2020. p. 115–32.
- [39] Islam MM. Segmenting, targeting and positioning in Islamic marketing. Journal of Islamic Marketing. 2020;12(7):1385–404.
- [40] Carvache-Franco M, Carvache-Franco W, Carvache-Franco O, Hernández-Lara AB, Buele CV. Segmentation, motivation, and sociodemographic aspects of tourist demand in a coastal marine destination: a case study in Manta (Ecuador). Current Issues in Tourism. 2020 May 18;23(10):1234–47.
- [41] Pérez-Gálvez JC, Medina-Viruel MJ, Jara-Alba C, López-Guzmán T. Segmentation of food market visitors in World Heritage Sites. Case study of the city of Córdoba (Spain). Current Issues in Tourism. 2021;24(8):1139–53.
- [42] Carpio NM, Napod W, Do HW. Gastronomy as a factor of tourists' overall experience: a study of Jeonju, South Korea. International Hospitality Review. 2021;35(1):70–89.
- [43] Torres Navarrete M del C, García Muñoz Aparicio C. Turismo gastronómico: sabor y tradición. Journal of Tourism and Heritage Research: JTHR. 2018;1(3):23–40.
- [44] López-Guzmán T, Jesus MM. Turismo, cultura y gastronomía. Una aproximación a las rutas culinarias. Tourism & Management Studies. 2011;1:922–9.
- [45] Dixit SK, Prayag G. Gastronomic tourism experiences and experiential marketing. Tourism Recreation Research [Internet]. 2022 May 4;47(3):217–20. Available from: https://doi.org/10.1080/02508281.2022.2065089
- [46] Bakardjieva E, Kimmel AJ. Neuromarketing Research Practices: Attitudes, Ethics, and Behavioral Intentions. Ethics Behav. 2017 Apr 3;27(3):179–200.
- [47] Stasi A, Songa G, Mauri M, Ciceri A, Diotallevi F, Nardone G, et al. Neuromarketing empirical approaches and food choice: A systematic review. Food Research International. 2018 Jun 1;108:650–64.
- [48] Lima MM de, Mainardes E, Cavalcanti AL. Influence of social media on restaurant consumers: A case study of Crab island restaurant. Journal of Foodservice Business Research [Internet]. 2019;22(5):413–32. Available from: https://doi.org/10.1080/15378020.2019.1631657
- [49] Shepherd GM. Smell images and the flavour system in the human brain. Vol. 444, Nature. Nature Publishing Group; 2006. p. 316–21.
- [50] Herz RS. Birth of a neurogastronomy nation: The Inaugural Symposium of the International Society of Neurogastronomy. Chem Senses. 2016 Feb 1;41(2):101–3.
- [51] Berčík J, Paluchová J, Neomániová K. Neurogastronomy as a tool for evaluating emotions and visual preferences of selected food served in different ways. Foods. 2021 Feb 1;10(2).

- [52] Lahne J. Neurogastronomy: How the Brain Creates Flavors and Why it Matters: By Gordon M. Shepherd. Food Cult Soc. 2013 Jun;16(2):327-30.
- [53] Di-Clemente E, Hernández-Mogollón JM, Campón-Cerro AM. Food-based experiences as antecedents of destination loyalty. British Food Journal. 2019 Jun 12;121(7):1495–507.
- [54] Rey-Ares L, Fernández-López S, Castro-González S, Rodeiro-Pazos D. Does self-control constitute a driver of millennials' financial behaviors and attitudes? J Behav Exp Econ. 2021;93:101702.
- [55] Ketter E. Millennial travel: tourism micro-trends of European Generation Y. Journal of Tourism Futures. 2020;7(2):192-6.
- [56] Nyheim P, Xu S, Zhang L, Mattila AS. Predictors of avoidance towards personalization of restaurant smartphone advertising: A study from the Millennials' perspective. Journal of Hospitality and Tourism Technology. 2015;6(2):145–59.
- [57] Yoon B, Chung Y. Consumer attitude and visit intention toward food-trucks: Targeting Millennials. Journal of Foodservice Business Research. 2018;21(2):187–99.
- [58] Jones A, Kang J. Media technology shifts: Exploring millennial consumers' fashion-information- seeking behaviors and motivations. Canadian Journal of Administrative Sciences. 2020;37(1):13–29.
- [59] Yangklun S, Ketkaew T, Wongwandee S, Phacharoen S, Dansiri W. Factors of Micro Influencers Affecting Purchase Decision of Millennial Consumers via Electronic Word-of-Mouth. 2022;2(1):15–24.
- [60] Chang J, Morrison AM, Lin SHH, Ching-Yen H. How do food consumption motivations and emotions affect the experiential values and wellbeing of foodies? TT - Foodie consumption motivations and emotions. British Food Journal [Internet]. 2021;123(2):627–48. Available from: https://www.proquest.com/scholarly-journals/how-do-food-consumption-motivations-emotions/docview/2534588753/se-2?accountid=14777
- [61] Yoon B, Chung Y. Consumer Attitude and Visit Intention toward Food-Trucks: Targeting Millennials. Journal of Foodservice Business Research [Internet]. 2018;21(2):187–99. Available from: https://doi.org/10.1080/15378020.2017.1368807
- [62] Negrete-Romero B, Valencia-Olivares C, Baños-Dossetti GA, Pérez-Armendáriz B, Cardoso-Ugarte GA. Nutritional Contributions and Health Associations of Traditional Fermented Foods. Vol. 7, Fermentation . 2021.
- [63] Anaya-Sánchez R, Molinillo S, Aguilar-Illescas R, Liébana-Cabanillas F. Improving travellers' trust in restaurant review sites. Tourism Review. 2019;74(4):830-40.
- [64] Spence C. Neuroscience-Inspired Design: From Academic Neuromarketing to Commercially Relevant Research. Organ Res Methods. 2019 Jan 1;22(1):275–98.
- [65] Ramsøy TZ. Building a foundation for neuromarketing and consumer neuroscience research: How researchers can apply academic rigor to the neuroscientific study of advertising effects. J Advert Res. 2019;59(3):281–94.
- [66] Lim WM. What will business-to-business marketers learn from neuro-marketing? Insights for business marketing practice. Journal of Business-to-Business Marketing. 2018 Jul 3;25(3):251–9.
- [67] Veloso e Sousa C, Lara JE, Vale e Sousa E, Pereira JR. State of the art of national and international publications on neuromarketing and neuroeconomics. Revista Brasileira de Marketing. 2016 Mar 1;15(1):28–41.
- [68] Wilson A. Book review: Darren Bridger, Neuro design: Neuromarketing insights to boost engagement and profitability. International Journal of Market Research. 2018 Nov;60(6):640–1.
- [69] Okumus B, Ozturk A. The impact of perceived stress on US millennials' external and emotional eating behavior. British Food Journal. 2020 Jun;ahead-of-p.
- [70] Sota S, Chaudhry H. Social Media Usage for Travel Information and its Determinants: A Study of Millennials. JOHAR [Internet]. 2021;16(1):1–22. Available from: https://www.proquest.com/scholarly-journals/social-media-usage-travelinformation/docview/2540839315/se-2?accountid=14777
- [71] Tang SYF, Wong AKY, Li DDY, Cheng MMH. Millennial generation preservice teachers' intrinsic motivation to become a teacher, professional learning and professional competence. Teach Teach Educ. 2020;96:103180.
- [72] Hammond RK, Velikova N, Dodd TH. Effects of Processing Styles on the Preference of Restaurant Menu Type: How Do Millennials Compare to Other Segments? Journal of Foodservice Business Research. 2013;16(1):20–39.
- [73] Gonzales-Chávez MA, Vila-Lopez N. Designing the best avatar to reach millennials: gender differences in a restaurant choice. Industrial Management and Data Systems. 2020;121(6):1216–36.
- [74] Fernández R, Hernández C, Baptista P. Fundamentos de metodología de la investigación. Editorial MC Graw-Hill Interamericana, México. 2007;100–354.
- [75] Monge Benito S, Fernández Guerra V. Neuromarketing: Tecnologías, Mercado y Retos. Pensar la Publicidad Revista Internacional de Investigaciones Publicitarias. 2012 Jan 11;5(2).
- [76] Business G, Research M. What is Neuromarketing? A Proposal for a Broader and more Accurate Definition [Internet]. Vol. 9, An International Journal. 2017. Available from: http://www.google.com.br/trends
- [77] Cárdenas GG. Neuromarketing, as an effective tool for education in sales and advertising. Revista Latina de Comunicacion Social. 2019;74:1173–89.
- [78] Millones Rivalles RB, Barreno Vereau E, Vásquez Urbano F, Castillo Crespo CH. Estadística aplicada a la ingeniería y los negocios. 2016;
- [79] Murphy ER, Illes J, Reiner PB. Neuroethics of neuromarketing. Journal of Consumer Behaviour. 2008 Jul;7(4–5):293–302.
- [80] Sung B, Wilson NJ, Yun JH, LEE EJ. What can neuroscience offer marketing research? Asia Pacific Journal of Marketing and Logistics. 2020 Jun 23;32(5):1089–111.

- [81] Villacís B, Carrillo D, Martínez AG. Estadística demográfica en el Ecuador: diagnóstico y propuesta. Quito: Instituto Nacional de Estadística y Censos. 2011;1–74.
- [82] Pérez Gálvez JC, Torres-Matovelle P, Molina-Molina G, González Santa Cruz F. Gastronomic clusters in an Ecuadorian tourist destination: the case of the province of Manabí. British Food Journal. 2020 Oct 15;122(12):3917–34.

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