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RESEARCH

Variables that influence the consumption of innovative healthy beverages in Hermosillo, Sonora, Mexico

Variables que influyen en el consumo de bebidas saludables innovadoras en Hermosillo, Sonora, México

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Abstract

Mexican culture stands out for a large number and variety of non-alcoholic beverages, the consumers look forward to get those with the necessary characteristics for their own satisfaction. Currently, a little-know beverage alternative has been implemented; some are commercial, offering a variety of flavor combinations for consumption. For the consumer, the intention is to try a novel product that is out of the market. However, there are influential variables in consumption, which are analyzed in this investigation. The objective of this article is to propose a descriptive model on the acceptance of innovative healthy beverages, as well as the effect of the consumer´s neophobia towards this type of products measured by the intrinsic and extrinsic quality variables and the intention of purchase in the city of Hermosillo, Sonora.

Keywords: Beverages, Acceptance, Neophobia, Purchase intent, Consumption.

JEL Classification: Q13

Resumen

La cultura mexicana se destaca por una gran cantidad y variedad de bebidas no alcohólicas, los consumidores procuran adquirir las que cuentan con características necesarias para su satisfacción. En la actualidad, ha sido implementada una alternativa de bebidas poco conocida; algunas son comerciales, que ofrece una variedad de combinaciones de sabores para su consumo. Para el consumidor su intención es probar un producto novedoso que se encuentre fuera del mercado. Sin embargo, existen variables influyentes en el consumo, las cuales se analizan en esta investigación. El presente artículo, tiene como objetivo plantear un modelo conceptual a nivel descriptivo sobre la aceptación de bebidas saludables innovadoras, así como el efecto de la neofobia que manifiesta el consumidor hacia este tipo de productos medido por las variables de calidad intrínsecas y extrínsecas y la intención de compra en la ciudad de Hermosillo, Sonora.

Palabras Clave: Bebidas innovadoras, neofilia, neofobia, intención de compra, consumo.

Códigos JEL: Q13

Introduction

Research background

Globally, patterns of fluid intake have also undergone changes, implying a shift in individuals' hydration profiles by incorporating a wide variety of beverages and infusions with stimulating, refreshing, and sweetening effects, offering new flavors, aromas, colors, and appealing presentations. Based on this new trend, various entities have in recent years issued recommendations on what constitutes healthy hydration (Aronow, M.I., Lavanda, I., Leal, M., Olagnero, G., 2014).

Recently, businesses offering healthy food and beverages have been established, leading to an

increase in the consumption of fruits and vegetables. Some of these restaurants serve preparations that are not only healthy but also pleasant and flavorful. The growth of this sector is only beginning to be quantified (CNPO, 2018).

Achieving a healthy diet begins with individual behavior that affects energy balance, though this is not purely individual, as people are shaped by the social and cultural environment in which they are immersed, as well as by economic options (Doval, 1970). It is commonly accepted that food can appear more or less appealing based on its appearance, even before tasting it (Díaz, E., Casa, L.G. de la; Ruiz, G., Baeyens, F., 2004).

Visual impact is determined by a product's appearance—in this case, natural and innovative food and beverages. People can classify a product as natural or synthetic merely by analyzing its appearance, as well as recognize the natural color of fruits and vegetables in a drink. The sensation that food or drink produces upon contact with the palate must be pleasant, leaving a positive impression of the product.

It is known that variables such as the intrinsic and extrinsic characteristics of foods, and individuals' beliefs about them, play a significant role in the acceptance, preference, selection, and intention to purchase food products (Iop, S.C.F., Teixeira, E., Deliza, R., 2006). Other factors, such as food neophobia/neophilia, are still in early stages of study.

For instance, a study conducted by Henriques A.S., King, S.C., and Meiselman, H.L. (2008), concerning products with novel flavor combinations, found that food neophobia did not affect the directional information provided by consumers through diagnostic attributes. This suggests that both neophobic and neophilic individuals perceive the sensory characteristics of products similarly, but exhibit different degrees of liking or affinity for the products.

Thus, addressing this gap in knowledge, an ad hoc investigation was designed and conducted to develop a theoretical-conceptual model capable of explaining the role of food neophobia/neophilia in consumers' perceptions, as well as their intention to purchase innovative healthy food products. This article presents and proposes the corresponding model.

Theoretical Approaches

Cultural processes of eating

Hermosillo—the capital of the state of Sonora, located in northwestern Mexico—is a city characterized by its culinary traditions derived from long-standing customs. Nevertheless, modifications have been made to both dishes and beverages. These changes are increasingly noticeable in the market. The gastronomic offerings surrounding these foods tend to emphasize abundance; mixing and variety are indicators that define contemporary consumption practices. These foods reflect current culinary hybridizations due to the many alterations in ingredients and preparation methods, with results that are seldom found in other regions (Sandoval-Godoy, S., Domínguez-Ibañez, S., Cabrera-Murrieta, A., 2009).

Changes in eating habits

This is beginning to change consumers' nutritional habits toward more balanced diets, especially among those who choose to engage in physical exercise (Doval, H.C., 2013). Businesses offering healthy food have emerged, contributing to an increased consumption of fruits and vegetables. These restaurants provide not only healthy food, but also delicious flavors. Although this sector is only beginning to be quantified, in the last decade the number of organic producers in Mexico increased by 400%, according to the Consejo Nacional de Productores Orgánicos (CNPO). An increasingly large portion of the population consumes food produced entirely beyond their sight and immediate awareness. As a result, there is greater diversity in the contexts in which food is consumed (e.g., places, occasions, social settings), and consequently, a wider range of expectations regarding the qualitative characteristics of food products.

Intrinsic and extrinsic characteristics of food and consumer beliefs

Product quality is distinguished between intrinsic (or inherent) and extrinsic (or relational) characteristics. According to Wüster (1998), an intrinsic characteristic is one that can be observed through simple examination of the object and does not require further knowledge about its use or origin. An extrinsic characteristic is one that describes the object's relationship with other objects. Cabré (1992) defines intrinsic and extrinsic characteristics as follows:

intrinsic characteristics are those linked to the description of an object as a member of a class—for example, shape, color, or size. Extrinsic characteristics are those that are external to such classification, such as function, origin, location, or inventor.

It is widely accepted that food may appear more or less appetizing based on its appearance, even before tasting it. To date, some studies have examined expectations regarding acceptability (hedonic quality), the intensity of basic flavors or specific flavors, or the degree of artificiality attributed to samples depending on the color intensity (Díaz, E., Casa, L.G. de la; Ruiz, G., Baeyens, F., 2004).

Visual impact is determined by a product's appearance, in this case of innovative healthy beverages. In the food industry, color is a key parameter used to classify products (CRA) (Delmoro, J., Muñoz, D., Nadal, V., Clementz, A., Pranzetti, V., 2010). People can identify a product as natural or synthetic simply by analyzing its appearance and recognizing the natural color of fruits and vegetables in a beverage. Among the factors influencing consumer preferences and decision-making is, of course, taste (Romeo, J., Serrano, M., n.d.). The sensation that a food or beverage produces when it comes into contact with the tongue and palate should be pleasant, leaving a favorable impression. Product categories are represented through codes (e.g., colors, logos, shapes, sizes) that signal to consumers the qualities, attributes, and uses of the product. In this sense, it appears that colors and design help facilitate the purchase decision at the point of sale (Arboleda, 2007). Packaging plays a crucial role in the launch of a new product, as it is the first element presented to the public and the one most likely to attract attention (Coello García, M., Díaz-Berciano, C., Gómez-Pestaña, N., 2000).

Consumers rely on price as an indicator of quality and assign different levels of quality to identical products that vary only in price. Perceptions of value are also influenced by factors such as age and income level (Schiffman, L., Kanuk, L., 2005). Customer value depends on price sensitivity, that is, the degree to which price variations influence purchasing behavior. Price can be defined as the amount of money needed to acquire a given quantity of a good or service (Belio, J., Sainz, A., 2007).

Commercialization of healthy beverages

Natural beverages began to be marketed in the 20th century. Throughout human evolution, dietary habits have undergone numerous transformations. Since ancient times, a nutrient-rich diet has been regarded as essential to maintaining health and vitality. Due to the importance of fruit in nutrition, it was once considered food of the gods, attributed with magical and divine properties. Numerous historical accounts reference offerings of fruit to the gods and temples filled with fruit. Even today, offerings of fruit are still made to deities in certain cultures, such as in India. Over time, various methods have been developed to preserve the properties of fruit, such as fermentation, and today, through the use of modern technology (D., n.d., El zumo a trav).

Patterns of liquid consumption have changed, affecting individuals' hydration profiles as the global market has introduced a wide range of beverages and infusions with stimulating, refreshing, and sweetening effects—bringing with them new flavors, aromas, colors, and attractive presentations. Based on this new trend, various entities have in recent years issued recommendations regarding healthy hydration (Aronow, M.I., Lavanda, I., Leal, M., Olagnero, G., 2014).

Properties of natural beverages

The Secretaría de Salud de México convened a group of national and international researchers with experience and prestige in nutrition studies to develop recommendations on beverage consumption for a healthy life in the Mexican population, based on the best available scientific evidence (Villalobos, 2008).

Another reason for the development of such beverage recommendations is the potential to help consumers make informed choices and for the government to promote a variety of healthy drinks, with the goal of replacing the currently unhealthy beverage consumption pattern (Rivera, J., Muñoz-Hernández, O., Rosas-Peralta, M., Aguilar-Salinas, C., Popkin, B.M., Willett, W.C., 2008).

According to Rivera et al. (2008), nutritional guidelines in Mexico have so far focused on food, despite the fact that energy intake from beverages represents 21% of total energy consumption among Mexican adolescents and adults—a major public

health concern in Mexico.

During hot seasons such as summer, high temperatures increase the need for hydration. It is important to remember that thirst is not always a reliable indicator of hydration needs. Natural juices are a good option as they aid digestion, provide simple sugars for healthy energy, strengthen the immune system, and support hydration.

One advantage of these beverages is that they allow for the intake of fruits and vegetables in a single serving, providing the body with its daily recommended portion. Drinking these healthy beverages helps maintain proper hydration levels. Adequate fluid intake supports better digestion, toxin elimination, and overall bodily function. These beverages offer a wide variety of combinations, incorporating multiple food items.

Food innovations

Food and beverage products are constantly evolving and becoming more prominent in the market. Fischler, C. (1995) explains that dishes are becoming more diverse, and it is increasingly rare to find two restaurants offering the same specialty under the same name. Creativity is reflected in naming conventions (often leading to new clichés). Ingredients are multiplying, and innovative combinations abound.

By definition, food innovations are characterized by more or less significant differences from known products. The process is far from complete, as food technology continues to develop new products, and the latest applications of biotechnology promise numerous novelties for the near future (Contreras, J., 2005).

New products may raise certain doubts or issues and tend to be less tolerable the greater the difference or distance from already familiar products. The lack of knowledge regarding how foods are produced and the raw materials used adds to this confusion, leading consumers to develop a distrustful attitude toward the food supply. Although eating habits can evolve over time, change often encounters consumer dissatisfaction, particularly when facing industrial foods that are perceived as tasteless, lacking flavor, or even dangerous (Hernández, 2005).

The global expectations surrounding functional foods are not only due to their impact on nutrition and consumption habits, but also because they involve critical areas such as health, the economy, scientific research, legislation, commerce, and market development. A functional food or food component may be a macronutrient with a specific physiological effect or an essential micronutrient, but it can also be a component that, while not highly nutritious or essential, modulates some bodily function when consumed (Roberfroid, 2000).

Neophobia and Neophilia

These are generally characterized as personality traits that lie along a continuum of a person's tendency to accept or avoid new foods (Shepherd, R. & Raats, M., 1996). Food neophobia is the fear of consuming or trying new products or including them in one's diet, and those who experience it tend to reject such foods. It is not a permanent aversion to new foods; acceptance can be promoted through repeated exposure or modeling the consumption of previously rejected foods (Pliner & Hobden, 1992). Food neophobia acts as a barrier to consumption intention. Relatively little attention has been paid to the neophobic consumer and the potential impact this may have on the guidance provided to product developers during the new product development process.

Hypotheses

Based on the theoretical background previously presented, it is pertinent to show the relationship involving extrinsic and intrinsic attributes, as well as belief factors among consumers of healthy beverages. Therefore, the following hypotheses are established:

Derived from the above literature review, the following working hypotheses were proposed (Figure 1):

- H1: Intrinsic quality variables such as: color and flavor directly, positively, and significantly influence the purchase intention of healthy beverages among consumers in Hermosillo, Sonora.
- H2: Extrinsic quality variables such as: packaging and price of healthy beverages directly, positively, and significantly influence the purchase intention of healthy beverages among consumers in Hermosillo, Sonora.
- H3: Belief attributes such as health and trust,

directly, positively, and significantly influence the purchase intention of healthy beverages among consumers in Hermosillo, Sonora.

• H4: Neophobia/neophilia moderates the relationships between intrinsic and extrinsic quality variables, belief attributes, and the consumption intention of innovative beverages among consumers in Hermosillo, Sonora.

Research approaches

The quantitative approach is sequential and confirmatory. It begins with an idea, which becomes increasingly specific; once defined, research objectives and questions are derived, literature is reviewed, and a theoretical framework or perspective is constructed. Based on the research questions, hypotheses are formulated, and variables are defined. A plan is developed to test them (methodological design); variables are measured within a specific context; the obtained measurements are analyzed (often using statistical methods), and a set of conclusions is drawn regarding the hypotheses (Hernández Sampieri, R., Fernández Collado, C., Baptista Lucio, M., 2014).

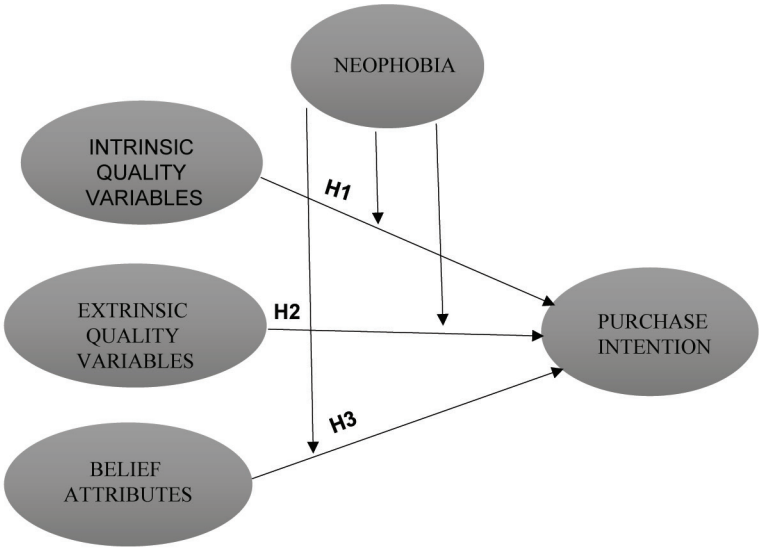
The qualitative approach is also guided by significant areas or research topics. However, instead of having clearly defined research questions and hypotheses before data collection and analysis (as is typical in most quantitative studies), qualitative studies may develop questions and hypotheses before, during, or after data collection and analysis. These activities often serve, initially, to discover the most relevant research questions and, later, to refine and answer them. The investigative process moves dynamically in both directions—between facts and their interpretation—making it a "circular" process, with sequences varying depending on the specific study (Hernández Sampieri, R., Fernández Collado, C., Baptista Lucio, M., 2014).

The qualitative approach mainly seeks the "dispersion or expansion" of data and information, whereas the quantitative approach intentionally seeks to "narrow" information. In qualitative research, reflection acts as a bridge linking the researcher and the participants (Mertens, 2005).

Both approaches allow for the use of multiple data collection techniques. For example, in quantitative research: closed questionnaires, statistical data records, standardized tests, physiological measurement systems, among others. In qualitative studies: in-depth interviews, projective techniques, open-ended questionnaires, focus groups, biographies, document reviews, and observation, among others (Hernández Sampieri, R., Fernández Collado, C., Baptista Lucio, M., 2014).

The combination of qualitative and quantitative methodologies—multi-method research—is supported, among other arguments, by their complementarity, defined as "the mutual contribution of what each lacks" (Polit, D., Hungler, B., 2003).

Figure 1. Conceptual model



Source: Own elaboration based on literature review (2018).

To carry out this research, both approaches were employed. On one hand, the qualitative approach, which refers to the non-numerical exploration of data; and on the other hand, the quantitative approach, which refers to the study based on quantities—namely, a numerical process involving statistical foundations.

Research design

Prior to conducting the research, the problem statement was specified, the approaches were defined, and the hypotheses were formulated. An experiment is conducted to analyze whether one or more independent variables affect one or more dependent variables and why (Hernández Sampieri, R., Fernández Collado, C., Baptista Lucio, M., 2014). The experimental design was selected and developed to analyze purchase intention as the independent variable and the relationship of neophobia with the influence of intrinsic, extrinsic, and belief-based attributes as dependent variables.

Qualitative methodology

According to Taylor, S. and Bogdan, R. (2000), the objective of qualitative research is to provide a methodology that enables an understanding of the complex world of lived experience from the perspective of those who live it. This implies that the research process involves interacting with participants and the data to seek answers to questions centered on social experience.

In this study, it was important to identify, through observation using the mystery shopper technique, individuals who meet the descriptive profile criteria, particularly those with a habit of purchasing healthy beverages or cold infusions in their daily lives, as well as age range, education level, and socioeconomic status. Additionally, variables related to openness to change—namely neophilia and its opposite, neophobia—were considered.

Results of the qualitative methodology

A descriptive research study based on observation was developed to determine the consumer profile and the target market segment. Once the information was gathered, an appropriate questionnaire was designed for application to potential consumers.

The descriptive research process was conducted through an indirect or unstructured observation technique. The observation involved recording consumption habits and behavioral patterns of individuals; this information was obtained by analyzing consumers in various settings and establishments offering similar commercial products. As a result, common traits and characteristics of consumers were identified and used as the basis for the questionnaire design.

According to Malhotra, N. K. (2008), in probability sampling, sampling units are selected at random. It is possible to predefine every potential sample of a given size that may be drawn from the population, as well as the probability of selecting each sample. It is not necessary for all potential samples to have the same probability of being selected, although it must be possible to specify the probability of selecting any given sample of a certain size.

In cluster sampling, the target population is first divided into mutually exclusive and collectively exhaustive subpopulations or clusters. A random sample of clusters is then selected using a probability sampling technique, such as simple random sampling. For each selected cluster, either all elements are included in the sample or a probabilistic sample of elements is taken. If all elements within the selected cluster are included, the procedure is called single-stage cluster sampling. If a probabilistic sample is drawn from each selected cluster, the procedure is referred to as two-stage cluster sampling (Malhotra, N. K., 2008).

The sampling technique applied was cluster probability sampling, given that there was no list of the individuals to be analyzed. However, the sector in which they live and their socioeconomic level within the city of Hermosillo, Sonora, was known.

To determine the target sector, the socioeconomic levels C and C+ (middle and upper-middle) were selected. The PIEDHMO platform was used to define the population universe. This is a digital economic information platform that provides data on total population, industrial zones, housing by sector, company locations by industry, and other advantages specific to the city of Hermosillo, Sonora.

On the PIEDHMO platform, a map of the city is displayed for research purposes. Hermosillo, being the capital city, offers extensive information that describes neighborhoods by socioeconomic level—high, middle, and low. The program's available tools are used to select zones within the city that

fall under levels C and C+, where the fieldwork will be conducted.

When constructing an attitude scale, it is often advisable to first test it with a pilot sample in order to detect deficiencies and correct items that have not performed well (Morales, 2011). A pilot test or cognitive pretest usually involves administering the draft questionnaire to 30-50 individuals, who ideally resemble those in the actual study sample (Arribas M., 2004).

The pilot test was conducted over a two-week period in Hermosillo, from February 27 to March 12, 2018. A team consisting of seven interviewers and one field supervisor administered 36 surveys to gather information and allow for future modifications to the questionnaire design. The pilot test results highlighted intrinsic characteristics, with most respondents placing primary importance on flavor, followed by color. Regarding extrinsic characteristics, price was found to be important but varied based on income level and age. Additionally, participants indicated that they pay attention to product packaging at first glance. Another observation from the test was that while most people do not trust new foods, they are nonetheless willing to try them.

Quantitative methodology

For the questionnaire design and determination of the question content, the consumer profile and intrinsic, extrinsic, and belief-related attributes were taken into account. The questionnaire consists of a total of 20 questions using a 7-point Likert scale (where 1 means "Strongly Disagree" and 7 means "Strongly Agree"). To ensure accurate results and eliminate errors, 35 questionnaires were used in the pilot test. The respondents matched the selected profile and were over 15 years of age, all residing in Hermosillo, Sonora.

n= sample size

σ= confidence level

N= population size

p= probability in favor

q= probability against

e= sampling error

$$n = \frac{\sigma^2 N p q}{e^2 (N-1) + \sigma^2 p q}$$

Fieldwork

Data collection

The data collection was carried out by groups of four members who were previously trained and familiarized with the topic to clearly guide respondents in evaluating the questionnaire items and to prepare them for challenges in the field, such as participant unavailability or unwillingness to respond.

Content validity and face validity

In terms of content validity, an exhaustive review of specialized literature in agri-food and service marketing was conducted. Face validity was also verified, ensuring that the measurement scales genuinely reflect the intended concepts. As such, the initially proposed measurement scales were refined through expert judgment of the statistical instrument (García, E., Cabrero, J., 2011).

Individual reliability of the causal model of quality attributes that influence consumer behavior in the consumption of healthy and innovative beverages

To assess the individual reliability of indicators within a reflective construct, the criterion established by Hair et al. (1999) was applied, where the factor loading (λ) should be equal to or greater than 0.550. Factor loadings indicate that the shared variance between the construct and its respective indicators is greater than the error variance.

Limitations and future research directions

The primary limitation is that the research only reached the questionnaire design stage, thus specific conclusions cannot yet be drawn—only final considerations. Future efforts will continue with the study to generate results via the application of the designed survey. Once the fieldwork is completed, statistical analysis will be conducted to test the working hypotheses.

Structural Equation Modeling (SEM) will be used with the Partial Least Squares (PLS) method, employing the SmartPLS software, version 3.2.7 (Hair et al., 2017).

Business considerations and implications

Based on the information obtained from the pilot test and observational research, potential

Table 2. Measurement model

Causal model of quality attributes that influence consumer behavior in the consumption of healthy and innovative beverages.

Construct indicators	Factor loadings (λ)	Communality (λ)
Intrinsic attributes		
VI-1	0.673	0.452
VI-2	0.480	0.230
VI-3	0.746	0.559
VI-4	0.689	0.474
VI-5	0.211	0.044
VI-6	0.559	0.312
Intrinsic attributes		
VE-1	0.763	0.582
VE-2	0.776	0.602
VE-3	0.517	0.267
VE-4	0.546	0.298
VE-5	0.681	0.463
Belief attributes		
AC-1	0.685	0.427
AC-2	0.699	0.488
AC-3	0.338	0.114
AC-4	0.748	0.559
AC-5	0.760	0.588
Purchase intention		
ICI-1	0.624	0.389
ICI-2	0.629	0.395
ICI-3	0.724	0.524
ICI-4	0.670	0.448

*** t-value > 2,576 (p < 0,01), ** t-value > 1,960 (p < 0,05), * t-value > 1,645 (p < 0,10), n.s. = not significant. N/A = No applicable

Source: Own elaboration based on the designed statistical instrument (2018).

consumers are determined to fall within the age range of 20 to 40 years and belong to the middle and upper-middle socioeconomic classes. The results show that intrinsic variables are most relevant to consumers, as taste and color are essential factors for those considering the consumption of innovative healthy beverages.

Given the research results, it is advisable for healthy beverage companies to pay attention to physical aspects (such as packaging and labeling), since consumers place significant value on these factors when making purchase decisions.

This research has important business implications; its development can help innovators create new, distinct, and health-beneficial products. Entrepreneurs will be able to introduce products to the market and commercialize them within the healthy beverage segment, taking into account consumer habits and the variables that influence consumption intention.

Regarding government institutions, it is crucial to create awareness campaigns so that consumers have new beverage alternatives that benefit their health. This can be achieved through conferences, talks, and high-impact advertising media.

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