Hedonic effects on coffee consumption in Brazil

[1]**Jonas Fernando Petry**
[2]**Gustavo da Rosa Borges**
[3]**Leonardo Aureliano-Silva**

Abstract

Objective: This study was conducted with the objective of evaluating the moderating effects of hedonism on the determinant factors that influence coffee consumption decisions in Brazil.
Method: A sample of 505 consumers from 25 Brazilian states was analyzed. The results of multivariate analysis – Multiple Linear Regression.

Originality/Relevance: Motivations for consumption of coffee differ between different consumers. Certain hedonic motives for consumption are discussed in the and it has been shown that they have moderating effects on relationships between physical factors of the environments where coffee is consumed and cognitive phenomena that occur during coffee consumption. However, it remains unknown whether hedonic motives have moderating impacts on the relationships between the physical environment and coffee consumption and between cognitive evocations and coffee consumption.

Results: Of the data provide empirical evidence that motivational factors of the physical environment and cognitive evocations are insufficient to explain coffee consumption.

Theoretical/ Methodological Contributions: This study presents an advance in the literature when the moderating effects that hedonic motives have on the relationships tested show that coffee consumption is not the result of utilitarian factors, but is dependent on the importance and satisfaction of different and multisensory factors such as: pleasure, excitement, joy, and other hedonic phenomena.

Keywords: Coffee consumption; Hedonic consumption; Cognitive evocation; Physical environment evocation; Consumption behavior.

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[1] Universidade Federal do Amazonas – UFAM, Manaus, Amazonas, (Brasil). http://orcid.org/0000-0002-8901-1990 E-mail: <jonaspetry@ufam.edu.br>

[2] Universidade Federal do Pampa – UNIPAMPA, Dom Pedrito, Rio Grande de Sul, (Brasil). https://orcid.org/0000-0002-9869-376X E-mail: <gustavodarosaborges@gmail.com>

[3] Universidade Anhembi-Morumbi – UAM. Escola Superior de Propaganda e Marketing – ESPM, São Paulo, São Paulo, (Brasil). https://orcid.org/0000-0003-0884-3849 E-mail: <leonardoaureliano@outlook.com>

1 Introduction

According to the *International Coffee Organization* (Ico) (2016), coffee consumption will increase worldwide over the next few years as potential for consumption in India and China and several Latin American countries is realized. Emerging markets currently account for 9 percent of global consumption, North America, Europe, and Japan are responsible for 53 percent, countries that are members of the ICO consume a further 30 percent, and the remaining 8 percent of consumption occurs in markets in countries that are not members of the ICO (Ico, 2016).

Coffee is an important product for many different countries, one of which is Brazil, where coffee plantations cover an estimated 2.25 million hectares and there are approximately 287 thousand coffee producers in around 1900 municipal districts, at different altitudes and latitudes, varying in terms of relief and climate, and distributed across 15 different states: Acre, Bahia, Ceará, Espírito Santo, Goiás, Distrito Federal, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Pará, Paraná, Pernambuco, Rio de Janeiro, Rondônia, and São Paulo. The country produces many different types of coffee, because of the diversity of the different regions where coffee is cultivated, with many different blends resulting in characteristics and compositions such as traditional yard-dried coffee, natural pulped coffee, washed coffee, mild coffee, acid coffee, full-bodied coffee, and aromatic coffee. It was estimated that the gross value of coffee production in 2016 was R$ 23.57 billion (Mapa, 2016).

Brazil is one of the three largest players in the world coffee market and alone is responsible for 36 percent of global production (Gonzalez-Perez & Gutierrez-Viana, 2012). According to the ministry responsible for agriculture and farming (Mapa, 2016), Brazil is the largest producer and exporter and also the second largest consumer of coffee in the world. Domestic consumption has grown over recent years and it is estimated that Brazilians consume around 20.3 million sacks, which is the equivalent of 6.12 kg of raw coffee beans or 4.89 kg of roasted coffee per capita, or an average of 82 liters/year for every Brazilian. Coffee is consumed in a variety of different forms, such as filter coffee, espresso cappuccino, and different combinations with milk (Consórcio Pesquisa Café, 2014). A report on domestic consumption published by the Brazilian

coffee industry association (Abic - Associação Brasileira da Indústria de Café) recorded a slight increase of 0.86 percent in 2015 and estimated that consumption in 2016 would be 21 million sacks (Abic, 2015).

Brazil is a major coffee exporter. In 2015, the main export markets for Brazilian coffee were the United States, Germany, Italy, Japan, and Belgium, and coffee export revenue was US$ 6.16 billion, 7 percent of Brazilian Agribusiness exports. This agricultural commodity reached a historic high with the exportation of the 2014/2015 harvest, totaling 37.11 million 60 kg sacks, which was a 6.9 percent increase over the previous year (Mapa, 2016).

In addition to its exports, Coffee consumption within Brazil has doubled since 1980 ~~in Brazil~~, but it was found that growth in consumption had been limited by concerns about the health effects of coffee, which demanded scientific investment in demystification and since the results showed that it has positive effects on health, this helped to stimulate consumption (Ico, 2016). More than 800 million people drink coffee daily, appreciating its characteristics such as flavor (Pereira & Ivamoto, 2014) and, primarily, the countless benefits it has for human health (Mussatto, 2014). Many studies have been conducted to investigate the determinants of consumption and consumers' attitudes in relation to their preferences for coffee as a drink. According to the literature, coffee consumption is related to health benefits (George, Ramalakshmi & Mohan Rao, 2008; Butt & Sultan, 2011).

In general, people drink coffee for its desirable bitter flavor and its medicinal benefits. The effect of coffee on human physiology varies from person to person and is also dependent on the quality and quantity of the coffee consumed (George, Ramalakshmi & Mohan Rao, 2008). Recent studies show that people who drink at least 3 cups of coffee a day have a lower risk of diabetes, liver cancer, and colon cancer and the results for coronary diseases are also optimistic (Wierzejska, 2016; Martinez, Keun & Siskos, 2016).

Studies that investigate coffee consumption behavior tend to focus on two types of variables: elements related to the physical environment or to cognitive evocation. Coffee consumption behavior can be affected by the sensory properties of the product itself (Kim, Lee & Kim, 2016) and also by a range of contextual factors including the setting in which coffee is drunk

(Stroebele & De Castro, 2004; Huang, Chang, Yeh, & Liao, 2014; García-Segovia, Harrington & Seo, 2015), social influences (De Castro & De Castro, 1989; Herman, 2015; Kim, Lee & Kim, 2016), and the motives for consumption (Labbe et al., 2015; Ares et al., 2016). These factors must be considered when attempting to understand consumption behavior. However, despite the research effort expended, no consensus has yet been reached on the determinants of and attitudes underlying preference for coffee consumption.

As outlined briefly above, people's decision-making tends to be influenced by elements related to the physical environment or by cognitive evocation. Physical elements that have been studied within the field of marketing encompass those that are related to the ambience of consumption (Sharma & Stafford, 2000). Sensory aspects affected by sight, hearing, smell and touch influence the behavior of consumers, including coffee coinsurers (Campbell, 1983; Giancristofaro, Bonnini, Corain & Vidotto, 2015). Cognitive elements are related to attributes that correspond to tastes and the cognitive priorities of a product, especially foods, including coffee (Sepúlveda, Chekmam, Maza & Mancilla, 2016).

It is important to point out that behavioral decision theory is based on rational and emotional influences (Benoit, Schaefers & Heider, 2016), of which the rational elements are more focused on utilitarianism and the emotional on hedonism (Jones, Reynolds, & Arnold, 2006). In general, people whose motivations are utilitarian primarily concentrate on instrumental values, whereas those whose motivations are hedonic place greater value on the pleasures of the moment (Chang, Liu & Chen, 2013).

Deliza and Macfie (1996), and also Stroebele and De Castro (2004), point out that consumer perceptions of food products, including coffee, are influenced by taste (cognitive evocation) and by environmental aspects. In relation to the environment, Oldenburg (1997) describes how in general people have three places: home, work and public places, citing cafes as an example of a public place.

Since it is understood that coffee is a product that is consumed in all three of these environments, and that, in addition to environment, cognitive evocation also influences consumption of this product, and since, moreover, it is also understood that coffee can be

classified as a hedonic product because it affords multisensory experiences (Bhumiratana, Adhikari & Chambers, 2014), this paper attempts to answer the following question: Does hedonism have an effect on the influence of physical environment and cognitive evocation on coffee consumption?

The primary objective of this study is therefore to investigate the effects that hedonism has on the influence of physical environment and cognitive evocation on coffee consumption.

Our most important contributions gravitate around this theoretical limitation. From a practical point of view, this study should help to delineate the process through which Brazilian consumers construct their symbolic and emotional attachment to coffee consumption. The results of a multivariate analysis reveal different consumer perspectives that may demand different strategies, which could help coffee companies to understand how their consumers take ownership of the consumption experience and how firms can capitalize on this. From the theoretical point of view, this study helps to bring the literature up to date with relation to consumer experience, highlighting additional forms of manifestation, particularly in coffee consumption.

Including the introduction, this article is divided into six sections. Section 2 is devoted to a literature review and to presentation of the hypotheses. Section 3 describes the methodological procedures employed. In section 4, we present and discuss the main results. In section 5, we present additional analysis. In section 6, we discuss limitations and make some considerations, and the paper closes with the list of references.

2 Literature review and hypotheses

2.1 Coffee Consumption

Coffee is one of the most important raw materials traded internationally and is appreciated all over the world (Alves, Casal & Oliveira, 2009). Traded since the fifteenth century, coffee is

currently the second-most traded commodity in the world, after petroleum (Joo, Stoeberl & Fitzer, 2009; Gonzalez-Perez & Gutierrez-Viana, 2012). There are 55 coffee-producing countries, but 57 percent of global production is concentrated in three leading players: Brazil, Vietnam, and Colombia (Gonzalez-Perez & Gutierrez-Viana, 2012). Global coffee consumption, measured in thousands of 60 kg sacks, was 151,303 in 2016. South America accounted for consumption of 24,717 thousand sacks, while Brazil exported 20,500 thousand sacks (Ico, 2017). The coffee industry is not only interesting, it also presents many challenges, since it is becoming ever more competitive, and efficiency in all areas of operations is obligatory for success (Joo, Stoeberl & Fitzer, 2009).

Coffee consumption is central to many debates and consumption of this product can become part of a culture. Initially, coffee was appreciated purely for its taste. As time passed, coffee companies worked to improve the taste of their product to attract customers. Working from this premise, cafeterias developed, with the aim of providing places where coffee lovers could meet to drink a high-quality product and enjoy pleasurable moments (Roseberry, 1996). The excellence of the product and the ritual of coffee drinking thus became cultural issues, which, in some cases, even came to be more important than the taste of the product, since drinking coffee became a reason for meeting – an element of what is known as social comradeship (Karababa & Ger, 2011).

Quintão and Brito (2017) also support the idea that taste and ritual are reasons for coffee consumption, very often leading to ritual consumption of the product, precisely because of the pleasure that it affords, in that the consumer wishes to experience both sensory and cognitive sensations. The interest in consuming coffee therefore becomes rooted in seeking pleasurable, hedonic sensations. Coffee consumption is thus capable of provoking hedonic perceptions in consumers (Karababa & Ger, 2011).

Seen from this perspective, it can be perceived that the social environment contributed to the spread of coffee consumption culture, since the place of consumption has social and personal significance. As a result, many companies seek to create public places for the consumption of coffee as a means of attracting people and making them feel good (Thompson & Arsel, 2004).

It can thus be observed that the motivations underlying coffee consumption are related to the effects of people's social and physical environments (Stroebele & De Castro, 2004), more specifically the physical environment and cognitive evocations (Kim, Lee & Kim, 2016). The physical environment will be analyzed first.

2.1.1 Physical environment

Development of hypotheses on the determinants of coffee consumption will be theorized within two dimensions; the consumption environment and shape and taste, combining interactive elements with hedonism (see Fig. 1). In the first block of the coffee consumption model, we rely on marketing studies in which the physical environment and importance are analyzed.

The term *environment* is usually employed in marketing research investigating clients and services in which the atmosphere of a store is investigated (Sharma & Stafford, 2000) as a means for creating surrounding effects and influences (Stroebele & De Castro, 2004) in which automatic exposure to a specific environment influences consumers' purchase behavior (Cardello, 1994). The principal sensory channels affected by the environment are visual, auditory, olfactory, and tactile. Colors, sounds, smells, and textures in the environment can directly stimulate visceral reactions that have a favorable impact on coffee consumption behavior (Campbell, 1983; Giancristofaro, Bonnini, Corain & Vidotto, 2015). Empirical studies recognize that among the different contextual factors, the physical environment has a positive relationship with consumption of foods and of coffee (Meiselman, Johnson, Reeve & Crouch, 2000; Petit & Sieffermann, 2007; Walter & Edvardsson, 2012; Sester et al., 2013; García-Segovia, Harrington & Seo, 2015).

The American style of coffee drinking has revolutionized the world's coffee consumption habits and has become a familiar sight in streets, bars, stations, malls, and bookshops, offering an amazing variety of specialty coffees, of flavors, aromas, and acidities, with varieties from many different countries, and other characteristics that are offered to consumers (Gray, 1998).

Oldenburg (1997) has stated that people tend to spend their time in three different types of places: home, work and public places. Home is a place for rest and family life and is not always an ideal place for meeting friends. The workplace is productive and competitive, unsuitable for informality. In contrast, public places are appropriate for social gatherings, ideal for conversation, since they tend to develop human relationships and social interaction.

It should be pointed out that among the traditional places for meeting, cafeterias are generally frequented by people who wish to meet for longer periods of time and interact with a certain liberty of expression (Oldenburg, 1997). This is possibly one of the reasons for the emergence of new cafeterias.

For example, Starbucks Coffee Company is the leading retail coffee chain in Taiwan and Huang et al. (2014) conducted a study in 12 of its coffee stores to determine how price promotions influence customers' assessments of products in coffee stores and the factors that influence this process. Their results suggested that Starbucks' price promotion activities had a favorable effect on customers' perceptions of quality and had positive influences on purchase intentions, on coffee consumption and customers' intention to return. The determinant factor of consumption is centered on the atmosphere of the environment. In addition to ensuring the quality of the coffee, cafes specialized in serving a wide variety of different publics are also alert to the influence that sensory signals have on people's expectations of the flavor of the coffee (Van Doorn et al., 2017). However, demographic factors such as sex, did not exhibit moderating effects.

The British consume around 70 million cups of coffee in cafes, restaurants and other retail establishments daily (Howie, 2012). A study conducted by Van Doorn et al. (2017) investigated consumers in three countries, China, Colombia, and the United Kingdom to test whether shape-taste cross-correspondences influence consumers' expectations with relation to coffee. In other words, whether expectations about coffee are influenced by changes in cup shape. Their results revealed that the diameter and height of the cup influenced expectations of aroma, bitterness, intensity, and quantity, and affected the amount the participant would be willing to pay. Cup diameter also affected expected sweetness. One interesting cross-cultural discovery was that

participants from the United Kingdom expected the cups to be hotter than participants from China or Colombia. These results demonstrate that cup shape influences people's expectations of the taste and the quantity of the coffee served in them. The shape and volume influenced how much participants were willing to pay. Factors such as cup diameter and height directly affect the aroma, bitterness, sweetness, and intensity, and are small details that are related to greater or less coffee consumption. Based on the literature review and on the arguments presented so far, we propose testing the following hypotheses with Brazilian coffee consumers:

H_1: the consumption environment has a positive impact on coffee consumption.

H_2: the elements form of presentation and flavor have a positive relationship with coffee consumption.

In general, it has been shown that differences in the physical environment influence coffee consumption (Stroebele & De Castro, 2004; Huang et al., 2014; García-Segovia, Harrington & Seo, 2015). However, hedonic factors have not been tested in relation to the physical environment. Therefore the following hypotheses will be tested:

H_3: hedonism positively moderates the relationship between the environment and coffee consumption.

H_4: hedonism positively moderates the relationship between shape-taste elements and *coffee consumption.*

2.1.2 Cognitive Evocation

Development of the hypotheses in the second block (see Fig. 1) of the coffee consumption model rests on a combination of three dimensions comprising sensory properties, social influence

and motivations influenced by cognitive evocations. The studies on which these hypotheses are founded, outlined below, are concerned with cognitive elements.

Consumers' demand for products with attributes that match their tastes and cognitive priorities has driven growth in product differentiation throughout the food industry. The same tendency has created growth in coffee consumption (Sepúlveda, Chekmam, Maza & Mancilla, 2016). In Brazil, Camelo, Thomé and Junqueira (2018) found that coffee consumption can be explained by functional value, price, and social and individual values.

With relation to coffee consumption, variations that can be used to conduct consumer segmentation exist in relation to taste, intensity of flavor or sensory profiles (Varela, Beltrán & Fiszman, 2014), social influence (Herman, 2015; Kim, Lee & Kim, 2016), and the most varied range of motives for consumption (Labbe et al., 2015; Ares et al., 2016).

Notwithstanding, consumption habits can differ greatly between countries and consumers because of diversity of types of coffees, blends, origins, preparations, and modes of consumption (Cristovam, Russell, Paterson, & Reid, 2000; Varela, Beltrán & Fiszman, 2014). Consumers can have different preference patterns for certain products because of their different hedonic responses, forming groups with shared hedonic patterns. This is known as consumer segmentation (Varela, Beltrán & Fiszman, 2014).

Coffee is a product that can be drunk alone or mixed with various ingredients, including sweeteners and milk and dairy products or analogues, and these have traditionally been used in varying combinations to add flavor to coffee (Kwesi Saalia, Mankanta, Budu & Essilfie, 2013). For example, creams and dairy products or simply milk are generally used to give a creamy-white appearance and to reduce or eliminate bitter and acid tastes (Kolar, Cho & Watrous, 1979), making coffee a typical segmented product for which groups with very different consumption patterns can be identified (Varela, Beltrán & Fiszman, 2014).

This study's fifth hypothesis is based on this evidence:

H₅: sensory properties have a positive relationship with coffee consumption.

Coffee consumers are spread across a wide age range, and their reasons for consuming coffee differ, depending on the individual, since consumption is related to lifestyle factors. Such as, for example, provision of emotional, mental, and physical comfort; coffee can act as a mental relaxant, or stimulant when we need an impulse of energy to start the day; it stimulates the circulation and has a heating effect; it is psychologically comforting and its pleasing aroma and flavor stimulate agreeable associations (Kanjanakorn & Lee, 2017). Consumption is related to lifestyle and is prompted by coffee's numerous benefits for human health (Mussatto, 2014).

While caffeine can cause dependence (although the health risks are minimal compared with other substances), if used correctly it can also offer health benefits, such as attenuation of headaches, and reduction of diseases such as Parkinson's, Alzheimer's, depression, kidney stones, type II diabetes, asthma, and alcoholic cirrhosis (Alves, Casal & Oliveira, 2009). Rumors of harm from coffee consumption have been demystified by scientific research (ICO, 2016). In West African countries, 60 percent of the population prefer coffee to other drinks because of health benefit considerations, and in these countries it is associated with the benefits that it offers for human health (Kwesi Saalia et al., 2013). For example, the results of a study conducted in Ghana investigating coffee consumption patterns showed that health concerns were a significant factor in the choice to consume coffee rather than other drinks and did not have a relationship with the cost to the consumer of purchasing the coffee (Kwesi Saalia et al., 2013). In general, regular consumption of the drink in moderation offers benefits for the majority of people, can reduce the risk of several diseases, as already mentioned (Taylor & Demmig-Adams, 2007), and potentially has anti-aging effects. Furthermore, among the elderly population, coffee consumption has a positive effect on behavioral energy and lipid metabolism (Takahashi, Yanai, Shimokado & Ishigami, 2017).

Coffee has become a popular drink in Korea. The coffee consumption culture became common in Korea as Westernized diets were adopted and has grown continuously and rapidly over recent years (Song, Oh, Lee & Cho, 2016). Lee, Bonn and Cho (2015) conducted a study designed to reveal consumers' motives for purchasing coffee. Data were collected using a self-report questionnaire administered to 482 coffee consumers in seven metropolitan cities in South Korea.

The results observed by these researchers documented health and environmental protection as elements predictive of coffee purchasing attitudes.

Coffee is consumed by the majority of the population, but the consumption profile is not uniform. In general, people drink coffee because of habit, for pleasure, and with the family and friends and at work (Arruda, 2009). Richelieu and Korai (2014) attempted to identify the dimensions associated with the consumer experience and delineated different methods for accessing and appropriating the experience of customers of the Tim Hortons chain in Canada. This chain[4] is known for its coffees and doughnuts. The study results showed that people associated coffee consumption with ritual, happiness, joy, travel companions, long-lasting relationships, business meetings, and meeting places. These categories were related to mystique (ritual); pleasure (happiness and joy); travel (travel companion); love (family-like relationship); and business (relationship).

In order to understand the probable reasons for coffee consumption, other factors that could be involved must also be considered, such as the effect of national cultures and gender, and the health effects of consumption (Aguirre, 2016). Studies conducted in Brazil have found that men consume more coffee than women (Arruda, 2009; Sousa, 2015). A possible explanation for this was offered in a study Aguirre (2016) conducted to identify the effects of culture, gender, and health effects as perceived by coffee consumers in Central America, more specifically in Costa Rica. The results observed in that country have practical implications that provide useful information for coffee marketing strategies. The factors that influence coffee consumption in Costa Rica were put in order of importance. In first place was gender, followed by family as an information source – men consume more coffee than women. in second place was health and in third the amount spent. Aroma was in fourth place, the anti-migraine effect in fifth, family tradition was sixth and, finally, flavor and energizing effect.

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[4] Consumption of coffee in cafes dates back to the end of the seventeenth century, when cafes spread all over Europe, including to Great Britain, where these establishments became important meeting places and centers of trade, especially in London, where some became famous institutions such as the stock exchange and Lloyd's Coffee House (Gray, 1998).

Cognitive evocations are the first source of information through which consumers have access to the quality of coffee and they modulate the real consumption experience (Labbe, Sudre, Dugas & Folmer, 2016). The following hypotheses can therefore be raised for Brazilian coffee consumers:

H₆: social influence has a positive relationship with coffee consumption.

H₇: the motives for consumption have a positive relationship with coffee consumption.

The phenomenon of cognitive evocation has been demonstrated in several different experiments with coffee (Mussatto, 2014; Richelieu & Korai, 2014; Lee, Bonn & Cho, 2015; Aguirre, 2016; Takahashi et al., 2017). However, to date, the effect of hedonic interaction on cognitive evocation relationships has not yet been tested. Therefore, the role of the hedonic expectations generated will be tested as a factor of interaction in the relationship between cognitive evocations and coffee consumption. To achieve this, tests will be conducted of the following hypotheses:

H₈: hedonism positively moderates the relationship between sensory properties and coffee consumption.

H₉: hedonism positively moderates the relationship between social influence and coffee consumption.

H₁₀: hedonism positively moderates the relationship between motives for consumption and coffee consumption.
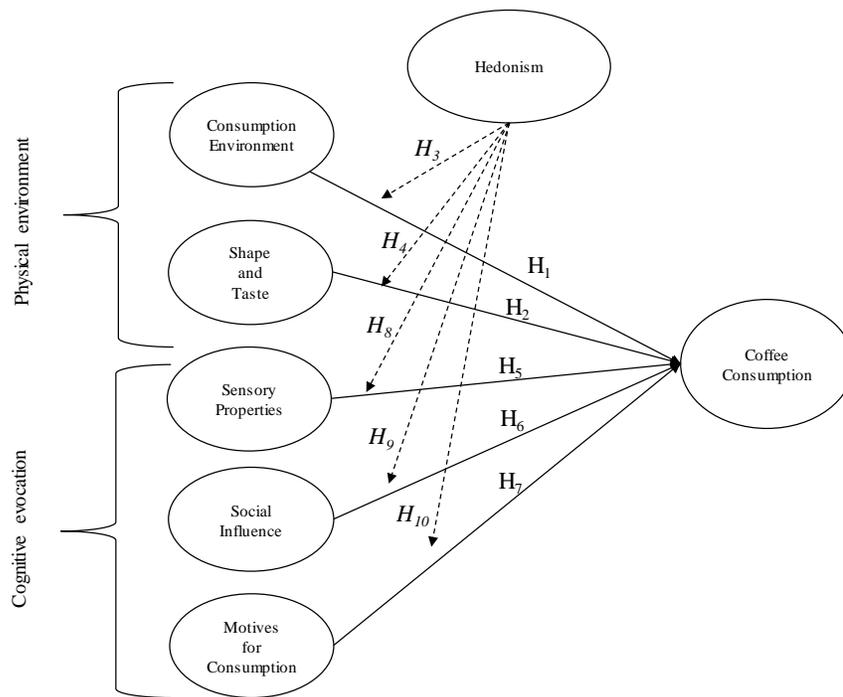
Figure 1 illustrates the general framework of the research hypotheses.

Figure 1: Proposed Theoretical Model

Source: the authors

Figure 1 illustrates the theoretical model encompassing the hypotheses that will be tested. The next section describes the methods that will be used to conduct these tests.

3 Methodological procedures

3.1 Data and description of the sample

This paper is based on a study of primary data collected from people in Brazil who stated that they consume coffee. The criteria for inclusion of participants in the experiment were as follows: Facebook users who drink coffee; users who have some responsibility for buying coffee to be prepared at home in the traditional way; users of the social network who consume coffee at cafes, restaurants, and bars, i.e. those who consume coffee away from home. Using sites and social

networks, in particular Facebook, has been validated as a tool for analyzing and understanding elements of consumers' perceptions of a target market (Castro & Marquez, 2017).

A questionnaire was posted on the social network from 20th February to 26th March of 2017. A sample of 505 people took part (64% were male and 36% were female), with a mean age of 44.2 years, from families with a mean number of members of 2.93 people who consumed an average of 2 kg of coffee per month at home and 26.5 cups of coffee away from home. Additionally, 97.2% of the coffee consumers stated they were Brazilian nationals and just 2.8% were foreigners living in Brazil. The sample was drawn from 25 states (Brazil has 26 states plus the Federal District). There are five administrative regions in Brazil and 42.4% of the sample were from the South, 22.0% from the Southeast, 14.9% from the Mid-West, 11.7% from the North, and 9% from the Northeast administrative region. In response to a question on family income, 36% stated their monthly income was R$ 5,000 or less, 29% had incomes from R$ 5,000 to R$ 10,000 and 33.9% stated that their monthly family income exceeded R$ 10,000. Finally, 45.9% of the sample stated that they had a higher education qualification and a postgraduate certificate or diploma, 42.5% had a Masters or Doctorate, and 11.6% had only completed secondary education. This defines the study as using the technique of convenience sampling of a target population of interest (Singh et al., 2015).

The questionnaire employed in operationalization of the variables uses seven-point Likert psychometric assessment scales, which are an important tool for data collection in marketing research (Weijters, Cabooter & Schillewaert, 2010).

3.2 **Variables**

Dependent variable

Several different studies have demonstrated that consumption of coffee as a drink is associated with contextual variables (Stroebele & De Castro, 2004; Huang et al., 2014; García-Segovia, Harrington & Seo, 2015; Kim, Lee & Kim, 2016, and others), that it is consumed throughout the day, every day of the week, and that this provokes different emotions depending on the time of day (Kanjanakorn & Lee, 2017). Peak consumption times are early in the morning and after lunch (Brice & Smith, 2002). Daily consumption is normally associated with coffee's health effects (George, Ramalakshmi & Mohan Rao, 2008; Butt & Sultan, 2011; Ico, 2016). Coffee is a drink that provides a source of satisfaction through smell and taste (Desmet & Schifferstein, 2008; Labbe et al., 2015).

Subjective measures may provide information on the context of coffee consumption. Jaeger et al., (2017) conducted a study to assess consumer perceptions using hedonic scores and sensory characteristics of eleven foods and drinks. Their construct did not specifically measure coffee consumption, but asked about consumption of hot drinks at breakfast together with other foods, or asked questions about foods and drinks individually. In the absence of consensus in the literature and of preexisting constructs that include items appropriate for measurement of specific attributes, a process of adaptation and operationalization of an instrument is recommended (Creswell, 2008). Therefore, since this construct offered hedonic scores and sensory characteristics, it was adapted to exclusively capture their effects on coffee consumption, taking care to ensure that the elements of the construct did not lose their underlying form (Sperber, 2004). The construct used for consumption as a dependent variable was therefore adapted from Jaeger et al., (2017), who evoked contexts by requesting consumers to think of the last time they drank coffee and to imagine a specific consumption situation in which they drank coffee (for example, at breakfast, after lunch, at work, in the afternoon at the weekend). For example, considering consumption of coffee, the interviewee is asked to express an opinion (agreement/disagreement) on daily coffee consumption

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as part of a family meal; coffee consumption after lunch with the family at the weekend; coffee consumption when meeting friends; during the work shift; coffee consumption in bookshops, at airports; restaurants, coffee shops; or even in a shopping mall.

Independent variables

The questionnaire was developed on the basis of empirical and theoretical studies. Two constructs were conceptualized: physical environment and cognitive evocations. Chart 1 shows how the independent variables were operationalized.

Chart 1 - **Operationalization of variables**

Dimension	Variables	Operationalization	References
Physical environment	Consumption Environment	Seven-point Likert scale (ranging from1 = totally disagree to 7= totally agree)	(Stroebele & De Castro, 2004; Huang et al., 2014; García-Segovia, Harrington & Seo, 2015)
	Shape-taste Interactions		(Van Doorn et al., 2017).
Cognitive Evocation	Sensory Properties	Seven-point Likert scale (ranging from1 = totally disagree to 7= totally agree)	(Kim, Lee & Kim, 2016)
	Social Influence		(De Castro & De Castro, 1989; Herman, 2015; Kim, Lee & Kim, 2016)
	Motives for Consumption		(Labbe et al., 2015; Ares et al., 2016).

Source: the authors

There are two variables related to the physical environment, the first is intended to capture elements of the Consumption Environment and the second to detect whether elements of the physical environment have a relationship to shape and coffee flavor. The second block of variables, Cognitive Evocation, comprises three sets of questions, on Sensory Properties, Social Influence and Motives for Consumption.

Consumption environment

This item refers to the physical environment attributes that could have an influence on consumption and on the perceived quality of the coffee (Stroebele & De Castro, 2004). It reflects exposure to a particular environment and its effect on consumption behavior (Cardello, 1994). This is not only related to the influence of cognitive evocations on coffee consumption, but also to factors of the context in which coffee is consumed (García-Segovia, Harrington & Seo, 2015). In other words, this item includes the countless variables of environments in which coffee is consumed away from home that make it more or less likely that coffee will be drunk (Stroebele & De Castro, 2004).

Shape and taste

This item relates to attributes of the physical environment that can impact on perceived quality (Stroebele & De Castro, 2004). More specifically, utensils and receptacles can modulate the perceived quality of the coffee (García-Segovia, Harrington & Seo, 2015). Along the same lines, presentation and the color of the cup can change acceptance of coffee (Piqueras- Fiszman & Spence, 2012).

Sensory properties

Sensory attributes are related to visual appearance, flavor and aroma. Normally, a good coffee should have a flavor that is balanced between bitter and acid, a robust body, a strong and fine aroma, and lasting foam with a compact texture (Albanese, Di Matteo, Poiana, & Spagnamusso, 2009). All of these sensory variables are influenced by the quantity and type of

chemical substances that are extracted from the coffee during the process of percolation by hot water (Andueza et al., 2002).

Social influence

Social influences on coffee consumption are related to the behavioral perspective. Environmental determinants are related to social interaction as a determinant of consumption (Caudill & Marlatt, 1975). Social interaction can be more important than the coffee itself (Cova & Cova, 2001). There is an effect of social facilitation when drinking coffee with family members, friends, work colleagues (García-Segovia, Harrington & Seo, 2015). These are attributes of coffee consumption related to social interaction (Ares et al., 2015).

Motives for consumption

The independent variable related to motives for consumption measures Cognitive Evocation related to the pleasurable stimuli provoked by ingesting the drink on a day-to-day basis and on the improved performance that coffee may unlock. Coffee is the main source of caffeine in the Brazilian diet and is consumed regularly. Caffeine is a mild stimulant that acts on the central nervous system, increasing alertness and excitation (James, 1991). Regular coffee consumption may be positively associated with better cognitive performance in humans (Johnson-Kozlow et al., 2002). Motives for consuming coffee may derive from sensory pleasure or stimulation (functional motivation) (Labbe et al., 2015). Normally attributes of motivation for coffee consumption are related to sensory appreciation of flavor, psychological stimulation provoked by caffeine (Hsu & Hung, 2005), health-related benefits (George; Ramalakshmi & Mohan Rao, 2008; Butt & Sultan, 2011) and lifestyle factors (Mussatto, 2014).

Control Variables

In addition to the variables described so far, there are other factors that may be related to coffee consumption, such as, for example, demographic factors (age, gender, size and type of family, and economic class), health status, and lifestyle of the consumer can all be associated with consumption patterns (Hewlett & Wadsworth, 2012). A study conducted by Hewlett and Wadsworth with 30,000 people in South Wales (2012) reported results that suggest that patterns of coffee consumption are related to the following control variables, in order of importance: demographic factors, consumer's age, sex, and age group.

Moderation Variable

The literature recognizes that coffee consumption is to a great extent dependent on expectations related to the physical environment (Meiselman et al., 2000; Petit & Sieffermann, 2007; Walter & Edvardsson, 2012, and others) and cognitive evocations (Mussatto, 2014; Richelieu & Korai, 2014; Lee, Bonn & Cho, 2015, and others). Drinking coffee away from home, in particular, creates different hedonic and sensory expectations and changes coffee consumption (Deliza & Macfie, 1996; Stroebele & De Castro, 2004). Chart 2 shows how the moderating variable was operationalized.

Chart 2: **Operationalization of the moderation variable.**

Dimension	Variables	Operationalization	References
Hedonism (HE)	Emotion positive Escapism Preference for coffee Satisfaction	Seven-point Likert scale (ranging from1 = totally disagree to 7= totally agree)	(Grappi & Montanari, 2011)

Source: the authors

No research studies have examined whether attributes of hedonism may act as a factor of interaction in the relationship between the physical environment and cognitive evocation, thereby interfering in coffee consumption. Since coffee consumption may be more strongly influenced by the physical environment than by cognitive evocation (Walter & Boakes, 2009; Jimenez et al., 2015), an interaction effect makes a substantial contribution to explaining the capacity to predict consumption, in that the effects of consumption depend on the levels of interaction between predictive and moderating variables (Fairchild & Mackinnon, 2009).

3.3 Estimation Methods

Since the constructs were adapted from other studies, exploratory factor analysis was conducted to test whether the measures chosen for the model grouped together in line with the proposal. As expected, measures of the Physical Environment formed two groups. The Cognitive Evocation measures formed three groups. The first grouping, two factors, explains 70% of variance and the second explains 85%. Confirmatory factor analysis based on the latent factors indicated values over the recommended minimum cutoffs (Hair, Anderson, Babin & Black, 2014), so the constructs exhibited valid measures for the model.

The theoretical relationships were tested with multivariate analysis with multivariate linear regression techniques. The following steps were performed after the descriptive statistical analysis: (i) exploratory factor analysis; (ii) multivariate linear regression, and tests of (iii) normality, (iv) linearity, (v) multicollinearity, (vi) homoscedasticity, and (vii) autocorrelation (Hair et al., 2014). Data were analyzed using SPSS 23.0 to estimate the following equation:

$$y_i = \beta_0 + \beta_1\beta_{1i} + \beta_2X_{2i} + \beta_3X_{3i} + \beta_4VI.Mod\dots + \beta_pX_{p1} + \varepsilon_i$$

As part of the exploratory factor analysis, communalities were calculated to indicate the total variance explained by each of the indicators used in the analysis. In general, practical considerations dictate a value of 0.50 as the minimum acceptable cutoff (Hair et al., 2014). Values with low communalities (< 0.50) (PS02, PS03, PS05 and HED02) were excluded from the model

(Figueiredo Filho & Silva Júnior, 2010). In line with the basic assumptions of the model, Bartlett's test of sphericity returned a p-value of 0.000, i.e. significance to $p < 0.001$, so H_0 is rejected and we conclude that the indicators are significantly correlated. The results of Kaiser-Meyer-Olkin (KMO) tests ranged from 0.70 to 0.80, showing the model has moderate to good correlations between variables and so factor analysis is appropriate (Maroco, 2011). Values for Cronbach's Alpha were above the minimum recommended by Hair et al. (2014) for all scales. All measures exhibited KMO (0.5 to 1.0) and Measure of Sampling Accuracy (MSA) (≥ 0.5) values above the cutoffs recommended by Maroco (2011). It is worth pointing out that the MSA test is calculated with factor means, while the other tests are conducted using factor scores.

4 Results and discussion

Table 1 lists the regression results. We start by listing the results for the test of linearity, ~~is~~ represented by R^2. The collinearity statistic is represented by the Variance Inflation Factor (VIF), where values ≤ 10 are considered indicative that problems of collinearity are insignificant or nonexistent (Marquaridt, 1970). With the exception of models 9 and 10, all other models shown in Table 1 have VIFs that fulfill the assumptions of regression, assuming that the hypotheses were not violated.

The results for Model 1 shown in Table 1 reveal that there is a relationship between consumption environment and coffee consumption (Sig. $0.000 \leq 0.001$). This indicates that, for an individual analysis, motives for coffee consumption are related to the effects of consumption environment. Similar results were observed by Stroebele and De Castro (2004), Huang et al. (2014) and García-Segovia, Harrington, and Seo (2015). Control variables were included to avoid biases from effects not included in the model. The control variables age, sex, and family income are all related to the dependent variable. The variable sex shows that men have a stronger relationship with motives related to consumption environment than women. Therefore, hypothesis H_1 is supported by the information provided by the consumers in the sample.

Model 2 in Table 1 tested whether shape and taste have a relationship with coffee consumption (Sig. $0.000 \leq 0.001$). The results revealed that shape and taste do influence consumption expectations. Additionally, the control variables age and family income have a relationship with the dependent variable. A similar result was reported by Van Doorn et al. (2017) for coffee consumers from China, Colombia, and the United Kingdom. The relationship between shape and taste and consumption in this sample therefore supports hypothesis H_2.

Contextual factors such as the consumption environment may be associated with hedonic factors, such as consumers pursuing a lifestyle dedicated to pleasure seeking (Campbell, 1987) and/or simply places associated with relaxation (Hirschman & Holbrook, 1982). Hedonic factors have been studied in relation to consumption by Hopkinson and Pujari (1999), Alba and Williams (2013), and Triantafillidou and Siomkos (2014). However, hedonism has not been investigated as a moderating variable in the relationship between environment and coffee consumption. The results for Models 3 and 4 shown in Table 1

Table 1: **Regression Results**

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Additional Tests			
											Model 11	Model 12	Model 13	Model 14
Consumption Environment - CA	2.405*		-0.790*											
Shape and Taste – ST		0.482*		-0.634*										
Moderation 1 (CA X Hed)			0.156*											
Moderation 2 (ST X Hed)				0.152*										
Sensory Properties – SP					0.288*			-0.643*						
Social Influence – SI						0.575*			-0.310*					
Motives for Consumption – MC							0.305*			-0.800*				
Moderation 3 (SP X Hed)								0.132*						
Moderation 4 (SI X Hed)									0.119*					
Moderation 5 (MC X Hed)										0.154*				

U. Phy. Cons. Env – UPCE												0.474*	-0.670*	
Moderation (UPCE X Hed)													0.157*	
Cognitive Evocations – CE													0.715*	-0.295***
Moderation (CE X Hed)														0.123*
Control Var. Age	0.024*	0.025*	0.019*	0.018*	0.024*	0.010**	0.028*	0.019*	0.011***	0.019*	0.025*	0.018*	0.022*	0.018*
Control Var. Sex	-0.267****	-0.140	-0.190	-0.131	-0.284***	-0.199****	-0.259****	-0.218****	-0.149	-0.184	-0.186	-0.148	-0.198****	-0.160
Control Var. Family Size	0.000	-0.002	0.009****	0.012	0.015	0.036	-0.011	0.019	0.027	-0.002	0.003	0.013	0.029	0.023
Control Var. Family Income	0.091****	0.076****	-0.790*	0.046	0.090****	0.062	0.089	0.049	0.046	0.076****	0.081****	0.047	0.068***	0.052
Control Var. Educational Level	0.054	0.064	0.049	0.037	0.058	-0.012	0.025	0.029	0.020	0.010	0.062	0.044	0.013	0.010
R^2	0.150	0.203	0.413	0.452	0.144	0.441	0.207	0.425	0.546	0.399	0.207	0.457	0.391	0.515
Change R^2			0.263	0.249				0.281	0.105	0.192		0.250		0.123
ANOVA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Durbin-Watson (DW)	1.943	1.911	1.942	1.896	1.934	1.923	1.938	1.853	1.864	1.892	1.938	1.925	1.988	1.904
VIF	1.005	1.149	5.890	3.938	1.014	1.069	1.024	3.771	10.052	10.521	1.000	4.245	1.020	6.295
VIF MODERATION			5.909	3.925				3.778	9.964	10.438		4.250		6.321

Notes: U. Phy. Cons. Env: Unique Physical Consumption Environment, $*p < 0.001$: $**p < 0.01$; $***p < 0.05$; $****p < 0.1$

indicate that the **variable hedonism does exert a moderating effect** that makes a substantial contribution to the regression model's explanatory power. In the interaction relationship, the signs of the βs invert (consumption environment: $β = -0.790$, *p-value* $= 0.000 ≤ α = 0.001$ and shape and taste: $β = -0.634$ *p-value* $= 0.000 ≤ α = 0.001$) and the moderating variable hedonism complements the relationships between consumption environment, shape and taste and coffee consumption. This means that inclusion of the third variable hedonic factors as a moderator in the relationships between consumption environment and coffee consumption and between shape and taste and coffee consumption affects these relationships. In other words, hedonism is an important dimension that affects the direction of the effect of the evocations of consumption environment and of shape and

taste. In summary, hedonic consumption is more powerful than the physical environment. As such, hypotheses H_3 and H_4 are supported.

These results demonstrate that coffee consumption does indeed provoke personal meanings, as described by Thompson and Arsel (2004), which, in this case lean towards hedonism (Karababa & Ger, 2011). It is thus found that coffee consumption provokes pleasure, demonstrating a preference for emotional aspects (Benoit, Schaefers & Heider, 2016) and momentary pleasure (Chang, Liu & Chen, 2013). This indicates that while coffee may be a simple product, it can provide its consumers with moments of pleasure, in addition to recalling positive memories.

Model 5 in Table 1 is related to sensory properties that can contribute to coffee consumption behavior. The results observed (Sig. $0.000 \leq 0.001$) agree with findings reported by Campbell (1983) and Giancristofaro et al. (2015). The control variables age, sex and family income exhibit relationships with the dependent variable consumption. As a consequence, hypothesis H_5 is supported.

Model 6 in Table 1 tests social influence as an independent variable in the relationship with coffee consumption (Sig. $0.000 \leq 0.001$). Similar studies have investigated diverse characteristics of coffee and the results indicate that social influence has a considerable impact on coffee consumption (Herman, 2015; Kim, Lee & Kim, 2016; Kim & Jang, 2017). Here too, H_6 was supported by the information contained in the data from the sample.

Motives for consumption are covered in Model 7 in Table 1. The results show that the sensory appreciation model is statistically significant (Sig. $0.000 \leq 0.001$). Some previous studies have investigated motives for consumption related to health effects (George, Ramalakshmi & Mohan Rao, 2008; Butt & Sultan, 2011). According to Hsu and Hung (2005), motives for coffee consumption are related to the psychological effects, whereas an investigation by Mussatto (2014) concluded that the motives for consumption are related to lifestyle. The findings of the present study support hypothesis H_7.

It is therefore concluded that there is evidence that coffee consumption can also be explained by sensory and social aspects. In allusion to the hedonic aspects commented on above, it can be perceived that consumption of this product does in fact represent a symbology, a ritual

that makes people feel good and interact with their social environment. Thus, the product offers individual and social benefits, since it can serve as an aggregatory element, giving satisfaction to individuals and to people close to them.

The control variables age and sex were statistically significant for Models 6, 7, and 8 with relation to the dependent variable. Models 8, 9, and 10 in Table 1 analyze the perspective of relationships between sensory properties and coffee consumption, between properties of social influence and coffee consumption, and between motives for consumption and coffee consumption and their relationships moderated by hedonism. We are therefore interested in looking at the impact of the predictive variable as affected by the moderating variable. The results show that the insertion of the moderating variable in the interaction relationship inverts the sign of β, which signifies that pleasure and happiness conferred by coffee (hedonic effect) consumption are more important intrinsic goods to the consumer than the perspectives of the relationships with sensory properties, social influence, and motives for consumption. Consequently, these results demonstrate that in Brazil coffee is consumed for hedonic reasons, (when analyzed with a moderating variable in the relationship), because it affords affective benefits of pleasure (Lim & Ang, 2008), which is the motivation provided by pleasure and happiness – states that reside at the heart of human wellbeing (Alba & Williams, 2013). In other words, hedonic consumption of coffee consists of facets of consumer behavior that are related to elements of the consumer experience with the product that are linked to multiple senses, fantasy, and emotion (Hirschman & Holbrook, 1982). Models 9 and 10 exhibited a degree of multicollinearity, which could affect the interpretation of the predictive variables individually. This gives greater weight to the thesis that cognitive evocations cannot be analyzed individually, but must be considered in conjunction in relation with the dependent variable. As a consequence, the results of this study support hypothesis H_8, but hypotheses H_9 and H_{10} cannot be upheld since they had VIFs ≥ 10, which could affect interpretation of the results.

5 Additional analysis

In order to extend the data analysis, certain additional tests were conducted to confirm the results and ensure their integrity and robustness. It is worth emphasizing that the theoretical component of this study employs behavioral decision theory to understand Brazilian coffee consumption and that elements related to the physical environment and to cognitive evocations are recognized in the literature as having positive influences on consumption (De Castro & De Castro, 1989; Stroebele & De Castro, 2004; Huang et al., 2014; García-Segovia, Harrington & Seo, 2015; Labbe et al., 2015; Herman, 2015; Kim, Lee & Kim, 2016; Ares et al., 2016). Each of these studies employed different perspectives to understand consumption. However, no records of investigation of hedonic factors as moderating factors in this relationship were found.

The results shown for Model 11 (under the heading Additional Tests in Table 1), demonstrate that the analysis of the relationship between physical environment and coffee consumption is statistically significant (Sig. $0.000 \leq 0.001$) and that the dependent variable is controlled by age and by family income. However, the same relationship moderated by hedonism (Model 12) exhibited (Sig. $0.000 \leq 0.001$, $\beta = -0.670$ and $\beta_{moderated} = 0.157$). These results are similar to the results for Models 1, 2, 3, and 4.

The results for the predictive relationship between cognitive evocations and coffee consumption (Model 13) (Sig. $0.000 \leq 0.001$) were similar to the results for Models 5, 6, and 7. However, insertion of the moderating variable into this relationship (Model 14) returned results showing that cognitive evocations must be analyzed in conjunction, which is a significant contribution to the literature. First, if cognitive evocations are analyzed in relation to coffee consumption, the relationship is statistically significant. Second, if the moderation variable hedonism is inserted into the relationship, the interaction factor alters the strength of the relationship (Sig. $0.000 \leq 0.001$, $\beta = -0.295$ and $\beta_{moderated} = 0.123$). These results offer additional support for the arguments presented earlier in this paper.

6 Final comments

The objective of this study was to investigate the moderating effects of hedonism on determinants that influence Brazilians' coffee consumption decisions. Theoretical relationships were analyzed and tested using multivariate regression. The results observed show that coffee consumption in Brazil is not only related to the physical environment and to cognitive evocations, but that hedonic factors are actually more important to consumers. In other word, facets of consumer behavior related to factors such as pleasure and happiness overcome cognitive evocations and environmental factors in their relationship with coffee consumption by Brazilians.

Coffee can be classified as a hedonic product because it provides consumer satisfaction that is related to multisensory experiences. Coffee provokes emotions that vary according to the sensory properties of coffees (Bhumiratana, Adhikari & Chambers, 2014). Thus, although the product is simple, it is capable of making a person feel good, which is reflected in a sense of personal satisfaction, caused by aspects that are subjective and social, since consumption can be understood as seeking for moments of pleasure, fulfilling individual objectives and the social relationship.

An analysis of the different attributes investigated individually reveals that both the physical environment, characterized by aspects that allude to the product, taste, shape, and ambience, and also cognitive evocation, characterized by sensory properties and social influence, contribute to coffee consumption; which, as pointed out above, is a moment of pleasure and of social interaction.

The moderating effects of hedonism suggest important realignments to the literature. In other words, perspectives based on the physical environment and cognitive evocations are not sufficient to explain coffee consumption by Brazilians and the results show that coffee is a hedonic consumption and not a utilitarian consumption good. Although this study provides an initial investigation of the subject, it should be stressed that further research is needed to understand the factors that influence Brazilians' coffee consumption decisions. Future studies are needed to replicate these findings of the relationship between hedonic and utilitarian goods in understanding coffee consumption. In other words, the results reported need to be studied further in order to confirm the conclusions presented here.

This study's contributions lie in its expansion of knowledge about the factors that lead Brazilians to consume coffee. It is the first study to simultaneously test in a single model the moderating effects of hedonism on relationships between the physical environment and coffee consumption and between cognitive evocations and coffee consumption. The study also identifies the relative importance of the perspectives of each predictive dimension to evaluation of coffee consumption. Perspectives that are not alone sufficient to explain coffee consumption directly. Thirdly, understanding the moderating role of hedonism in predictive relationships with coffee consumption helps to elucidate the general conclusions made in earlier studies and provides information for managers that could help entrepreneurs in the industry to achieve competitive advantages by exploiting hedonic factors to a greater extent.

It is therefore concluded that consuming coffee involves much more than merely tasting it. It is a special moment during which coffee drinkers often seek moments of pleasure, whether alone or in the presence of other people. Coffee is an aggregatory product and meaning, allying palate with pleasure, and cannot be explained by its taste alone, but also by the surrounding environment, and the meanings conveyed by the product.

This study has certain limitations related to selection, since sampling was conducted by convenience using social networks, especially Facebook, and resulting in 62.90% of the sample consisting of people from the middle class with family incomes greater than R$ 5,000. Secondly, 54.10% of the sample had either a Masters or a Doctoral qualification.

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