

Research Article

Main Hypermarket Meat Purchasing Drivers

Principais Direcionadores de Compra de Carnes em Hipermercados



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ABSTRACT

Objective: urbanization and migration to large centers has caused changes in the behavior of meat consumers, not only with regards to product choice based on product quality and safety, but also the purchasing process. In this sense, factors such as proximity, product availability, and price are also factors affecting the purchase choices. This work aims to analyze the main factors associated with the consumption of these meats in the Federal District, Brazil, in an attempt to broaden our understanding of what consumers consider important, and to provide guidance. **Method:** this research was carried out in three different hypermarket networks. A socioeconomic evaluation of the interviewees was carried out, followed by the application of a survey, through structured affirmative sentences that were categorized in sociocultural, economic, health/food and environmental dimensions. The sentences were evaluated using the seven-point Likert scale. Socioeconomic data pertaining the interviewees were analyzed by Chi-square tests and the responses obtained through the Likert scale were transformed into Mean Item Score (MIS). **Results and Conclusions:** the results indicate that the quality control of the meat exposed in supermarkets and the possibility of finding the same type of meat in several different places are the main factors influencing the purchasing decisions of consumers of these meats.

Keywords: consumer behavior; preferences; purchase; decision making.

JEL Code: L8, Q21, O18.

RESUMO

Objetivo: a urbanização e migração para os grandes centros tem provocado mudanças no comportamento dos consumidores de carnes, não somente no que se refere a escolha do produto, mas também, ao processo de compra. Neste sentido, fatores como proximidade, disponibilidade do produto, e preço são relacionados como fatores que definem compras. Na tentativa de ampliar o entendimento sobre o que os consumidores consideram importante, este trabalho objetiva analisar os principais fatores associados ao consumo das carnes bovina, suína e de frango no Distrito Federal, Brasil. **Métodos:** a pesquisa foi realizada em três redes distintas de hipermercados. Realizou-se uma avaliação socioeconômica dos entrevistados, seguida da aplicação de um *Survey*, através de sentenças afirmativas estruturadas, categorizadas em dimensões sociocultural, econômica, saúde/alimento e ambiente. As sentenças foram avaliadas através da Escala Likert de sete pontos. Os dados socioeconômicos dos entrevistados foram analisados por testes de Qui-quadrado e as respostas obtidas por meio da Escala Likert foram transformados em *Mean Item Score* (MIS). **Resultados e Conclusões:** os resultados indicaram que o controle de qualidade de exposição das carnes nos supermercados e a praticidade de encontrar o mesmo tipo de carne em vários locais são os principais influenciadores de tomada de decisão de compra pelos consumidores.

Palavras-chave: comportamento do consumidor; preferências; compra; tomada de decisão.

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INTRODUCTION

Brazilian agribusiness has been very successful, both qualitative and quantitatively, contributing to generate jobs and higher incomes. The average performance of agribusiness has surpassed that of the industrial sector, becoming very important in the economy, particularly for its ability to boost other sectors (Santos, Tavares, Vasconcelos, & Afonso, 2012).

Meat is a basic item in the Brazilian diet. Consistent with that, agrobusinesses stand out in the economy owing to their significant results in meat production and consumption. The following projections have been made about the Brazilian meat market from 2011/2012 to 2021/2022: pork meat will move to third place, with a consumption rate projected to grow only 1.8% per year; chicken will continue to be the most preferred meat, with a rate increase of 2.7% per year; and beef will have a rate increase of 2.0% per year (Ministério da Agricultura, Pecuária e Abastecimento, 2011).

The Ministério da Agricultura, Pecuária e Abastecimento (Ministério da Agricultura, Pecuária e Abastecimento, 2011) estimates an increase in the Brazilian meat production up to 20.5% for beef, 28.6% for pork and 33.4% for chicken, from 2017 to 2027. These percentages were calculated considering population expansion and market peculiarities.

According to Oshiiwa, Repetti, Temotoe, Labate, Pereira and Nunis (2017), consumers seeking longer life expectancy with better health see meat as an important food item with high nutritional qualities.

Changes in consumers' propensity to buy certain meats may impact the production chain, especially when trying to determine the quantity of the products that are on demand and/or are being offered. It is important to understand consumers and consumer trends for planning purposes, to organize sustainably-structured growth and to avoid wasting raw materials, inputs and energy (Horvat, Granato, Fogliano, & Luning, 2019; Zylberstajn & Neves, 2000). However, a projection of consumers' trends requires information on how products are used, how they are valued by consumers, how frequently they are used and the buying habits of consumers with respect to the market. For example, it is known that consumers will tend to buy a product, or a service, based on how much stimulation they get to do so. Therefore, if a company wants to be competitive, it must observe what goes into the consumers' decision-making process (Mazzachetti & Batalha, 2004).

Knowing how consumers think, how frequently they use a product, their purchasing habits with respect to where they buy, and their level of satisfaction with the product purchased are all very important in market research (Farm, 2017). The knowledge about human behavior with respect to the products being offered can also be used to motivate people to buy (Brown, Viriyavipart, & Wang, 2018).

In a market scenario, retail is very important and affects everyone, directly and indirectly. Retail is not only the main link with distribution channels, but it is also an important element of marketing. Retail allows the buyer to decide if he wants a product or not, while taking into account convenience and speed of service and delivery (Las Casas & Garcia, 2007; Martinez, Rodriguez, Mercurio, Bragg, & Elbel, 2018).

Although the Brazilian Midwest stands out in terms of animal units cattle (59,609,744), pigs (7,083,205) and chicken (206,633,506) produced, the total production in the Federal District (DF), compared to the other Brazilian states, is not impressive, 63,009, 154,257, 12,171,977, respectively. The DF has the highest demographic density in Brazil, with 444.66 inhabitants/km². In addition, it stands out for having an economically active population and the highest per capita income in the country (Instituto Brasileiro de Geografia e Estatística [IBGE], 2019). In this context, although DF is not a major producer of beef, pork and chicken, it has one of the largest consumer markets in the country.

Although there are published studies on meat consumption for other regions of Brazil (Brandão, 2013), this contribution is the first to address the issue in the DF, simultaneously covering beef, pork and chicken. To this end, we researched the practice of meat consumption and the challenges involved in meeting consumer satisfaction, thereby providing information to outline strategies for future plans that can be developed for new products and for the retail market. The objective here was to identify and to evaluate what drives consumers in the Federal District to purchase meat (beef, pork and chicken) and to provide an evaluation of the purchase process and other issues that affect consumers in their meat choices.

Consumer preferences

In view of the great variety of goods and services available in the market and the diversity of personal tastes, there is a specific term, Product Bundling, which refers to a list of distinct quantities of one or more goods with specific quantities of one or more goods. Consumer preferences can also be presented as Indifference Curves that represent all combinations of product bundling that provide the same level of satisfaction to a person who is, therefore, indifferent as to which basket is picked along the curve (Pindyck & Rubinfeld, 2012).

According to Aguiaris and Figueiredo (2015), offering a variety of meat products at different prices is relevant to the perception of quality and preference of consumers, especially product presentation. Therefore, information is tied to a choice that has consumer risks and prospects that impact on the market (Stiglitz & Walsh, 2003). Pindyck and Rubinfeld (2012) wrote that the factors that influence individual search are: price; consumer income; price of alternative products and individual preferences. For Medeiros and Cruz (2006) and Mazaheri, Richard, Laroche and Ueltschy (2014) all general aspects of the social reality can be summarized in the term Culture and present and future consumption habits interfere with family life.

Shirai (2017) showed that the perception of price is one determining factor in consumer choice and consequently in purchasing decisions. It is also important that everyone involved in the production chain of a product knows about the quality of the product to please the consumers seeking such information. When the consumer recognizes the quality standards of a product and sees that some information about it is published in the media, the product gains more confidence (Aschemann-Witzel, Giménez, & Ares, 2018; Santos et al., 2012).

Consumer behavior

The theory with focus on consumer behavior, with economic bias, comprises a progress of the processes involved, when selecting a purchase of products and / or services or experiences to meet their wishes. The attitude towards the act of buying focuses on the perceived consequences of it, revealing how consumers feel when buying a product, which often influences their relationship with the product itself (Solomon, 2016).

Babutsidze (2012) in *How do Consumers Make Their Choices?* stated that purchasing decisions can be influenced by internal (personality) and external (social) dimensions. There are two dimensions to the types of choices a consumer will face: (a) the consumer's previous experience with the choice in question (little / much experience) and (b) how easy or difficult it is to make the

choice. Above all, the consumers' previous experience with the product influences his or her choices.

Consumer behavior in a particular buying process is extremely complex and understanding it involves interdisciplinary knowledge that includes: the consumers' buying preferences, perception of the value of the product, personality and lifestyle. In addition, it may involve loyalty to a product and socioeconomic issues (Polizei, 2011). When a consumer is faced with an easy choice and low involvement, the likelihood of him or her using the appearance of the product to make the decision is greater (Babutsidze, 2012).

A consumer is a person who has a need or a desire to obtain a product, makes a purchase and then discards the product throughout the consumption process. The consumer and the buyer of a product may not be the same person. An example is when a parent chooses clothes for a teenage child who may not appreciate the product and refuse to use it. In some cases, someone else who has no intention to purchase or use a certain product can act as an influencer by making recommendations for or against certain it (Rachmi, Hunter, Li, & Baur, 2018; Solomon, 2016).

Consumers usually do not use a single criterion to choose a product, but a set of criteria (Louro, 2000; Rahnema & Rajabpour, 2017). Even though the quality of a product is determined by the consumer (who in turn takes into account the functionality or the services it provides), the evaluation is never entirely objective, since it depends on individual perceptions.

According to consumer theory, the key dimensions related to purchasing a good or a service include better resource allocation, where the consumer chooses his/her products according to personal preferences, while also taking his/her income into account. However, other dimensions may influence the choice of a particular product (Pindyck & Rubinfeld, 2012). Brandão, Barcellos, Waquil, Oliveira, Gianezini and Dias (2015) observed that the purchase of beef by consumers is also influenced by religion, purchasing power, price, concerns with presentation, among other issues related to four main dimensions.

It is worth mentioning that social and cultural aspects may influence the consumption of certain types of animal protein, such as pork, which is not as representative in the meat market as beef or chicken. However, pork is used as a substitute and complementary food in the face of variations in the meat market, from price changes to other exogenous dimensions, which impact the satisfaction and welfare of its consumers (Montanari, 2008).

Paladini (2008) tried to identify what is relevant for consumers, for instance specific characteristics, manufacturing process and a variety of forms to present a product. In the same vein, food production and consumption are determined by social, economic, technological, institutional, cultural and nutritional elements.

METHODOLOGICAL PROCEDURES

Data collection

Data was collected in three distinct hypermarket chains in the Federal District, Brazil, in an exploratory, non-probabilistic manner.

Based on Park and Jung (2009), to determine sample size it is necessary to specify a confidence level ($1 - \alpha$), a relative tolerable error, D , a number of items, k , used for the Likert scale, a population coefficient of variation, C and a paired correlation coefficient, ρ . Considering $D = 0.5$, $C = 0.5$, $\rho = 0.5$ and the 7-point Likert scale, 220 interviews were required. Consequently, 220 interviews were conducted, three of which were disregarded because the respondents gave the same answer to all questions.

The sample obtained is characterized as a convenience sample, since the consumers were all interviewed at the supermarkets, participation was voluntary and without compensation. The only condition for participation in the research was that consumers were 18 years of age or older.

First, a socioeconomic evaluation of the interviewees was performed, followed by the application of the Survey through structured affirmative sentences, in which consumers evaluated the sentences through the seven-point Likert scale, as follows: 1 - I strongly disagree; 2 - I disagree a lot; 3 - I somewhat disagree; 4 - I am indifferent; 5 - I agree somewhat; 6 - I agree a lot; 7 - I totally agree.

The dimensions analyzed in the Survey were based on the conceptual model of Brandão et al. (2015): sociocultural, economic, health/nutrition and environment. Since their work was based on only on beef, those dimensions were extrapolated to consumers of pork and chicken.

The dimensions and respective affirmative sentences used in the Survey are described and coded in Figure 1.

Dimension	Sentence
A - Sociocultural	1. You buy this kind of meat because you can find it in several supermarkets; 2. You buy this kind of meat because the size of the cut is adequate; 3. You buy this kind of meat (including frozen ready-made derivatives) because it is easy and fast to prepare; 4. You buy this kind of meat (including frozen ready-made derivatives) because you work outside of your home and do not have time to cook; 5. You buy this kind of meat because it is adequate for your occupation; 6. You buy this kind of meat because your religion allows you to; 7. You buy this kind of meat because it is a family tradition; 8. You buy this kind of meat because your family influences your choice; 9. You buy this kind of meat because you did research on its' nutritional benefits.
B - Economic	10. You buy this kind of meat because it is cheaper than other meats; 11. You buy this kind of meat because "meat substitutes", for instance, legumes (soy, beans, garbanzo ...) are more expensive; 12. You buy this kind of meat because fruits and vegetables cost more; 13. You buy this kind of meat because you can pay for it; 14. You buy this kind of meat because the supermarket often has sales on it; 15. You buy this kind of meat because it's substitutes generally cost more; 16. You buy this kind of meat because your family's income has increased; 17. You buy this kind of meat because supermarket prices are higher; 18. You buy this kind of meat because it is exported.
C - Health/ nutrition	19. You buy this kind of meat because quality control of animal rearing practices is better; 20. You buy this kind of meat because quality control of animal slathering and fridge meat preservation are better; 21. You buy this kind of meat because quality control in the markets is better; 22. You buy this kind of meat because it does not transmit diseases to consumers; 23. You buy this kind of meat because it is healthy.
D - Environments	24. You buy this kind of meat because producing it does not increase production of greenhouse gases (climate change); 25. You buy this kind of meat because producing it does not worsen deforestation; 26. You buy this kind of meat because producing it does not affect the city's water re-sources; 27. You buy this kind of meat because its production complies with environmental legis-lation.

Figure 1. Dimensions and respective affirmative sentences used in the Survey.

Survey validation

After the sentences were elaborated, the Survey was evaluated by 12 experts from Marketing, Statistics and Business Administration. Their observations were considered when elaborating the last version of the Survey.

A pre-test was performed in three hypermarkets, using a sample of 17 respondents. The results were tabulated and validated using the Cronbach alpha coefficient (Cronbach, 1951). According to Campo-Arias and Oviedo (2008), the minimum value for alpha must be 0.70 for the questionnaire to be acceptable. Below this value, the internal consistency of the scale used is low and the questions in the questionnaire must be reviewed. In this study, Cronbach's alpha test indicated the following coefficients for the dimensions: Sociocultural: 0.7021; Economic 0.7731; Health / Food: 0.8636 and Environment: 0.9155. Since all values met the minimum requirement of Cronbach's alpha test, the questionnaire was used.

Analysis procedure

The socioeconomic data of the interviewees were analyzed by associating different qualitative variables using Chi-square tests after the Shapiro-Wilk normality test showed that the criteria for normality in the data were not met (Miot, 2017). The Chi-square test is used to analyze the association between different qualitative variables. The basic principle of this method is to compare proportions, that is, the possible divergences between the frequencies observed in the sample and the frequencies that would be expected under the hypothesis of independence (Levene, 1960).

The results obtained through the seven-point Likert scale were transformed into Mean Item Score (MIS) for each of the statements obtained in the affirmative sentences. MIS aims to measure and prioritize the most relevant dimensions and sentences defined by consumers. The Mean Item Score (MIS) was derived from Equation 1 (Aigbavboa, Thwala, & Eke, 2014; Mashwama, Aigbavboa, & Thwala, 2016).

$$MIS = (1n1 + 2n2 + 3n3 + 4n4 + 5n5 + 6n6 + 7n7) / N \quad (1)$$

Where:

n1 - number of respondents who answered I totally disagree;

n2 - number of respondents who answered I disagree a lot;

n3 - number of respondents who answered I somewhat disagree;

n4 - number of respondents who answered with indifference;

n5 - number of respondents who answered I agree somewhat;

n6 - number of respondents who answered I agree a lot;

n7 - number of respondents who answered I totally agree.

N = total of interviewed

Correlations between sociocultural, economic, health / nutrition and environmental dimensions were analyzed by the Pearson's coefficient (ρ), since the data failed the normality test by the Shapiro-Wilk.

The Pearson's coefficient (ρ) ranges from -1 to 1. If both variables are in perfect linear relationship, the correlation coefficient is 1 or -1. The signal depends on whether the variables are positively or directly (inversely) correlated. As the correlation coefficient approaches zero, there is an indication of independence or nonlinear relationship between the variables. In addition, the P values were calculated to accept (reject) the statistical significance of the correlation between these two variables considering the significance of alpha = 0.05 (Ruigar & Golian, 2015).

PRESENTATION AND DISCUSSION OF THE RESULTS

The data from the questionnaires were recorded and organized in Microsoft Excel spreadsheets, version 2016 and the Language R Program, version 3.4.4, for further analysis.

We interviewed 217 people whose socioeconomic parameters are described in Table 1.

Table 1. Socioeconomic evaluation of beef, pork and chicken consumers interviewed in the Federal District.

Evaluated variable	Parameter	N (number of individuals)	% (percentage)
Sex	Male	102	47.00
	Female	115	53.00
Age	Younger than 20	09	4.15
	20 to 40 years old	148	68.20
	40 to 60 years old	53	24.42
	Older than 60 years old	7	3.23
Education	Elementary School Incomplete	13	5.99
	Elementary School Complete	38	17.51
	Middle School Incomplete	64	29.49
	Middle School Complete	58	26.73
	College Ed. incomplete	44	20.28
	Graduated from College	0	0.00
Do you have a religion?	Yes	200	92.17
	No	17	7.83
Do you practice a religion?	Sim	170	78.34
	No	47	21.66
Family income	Up to two minimum salaries	5	2.30
	From 2 to 4 minimum salaries	164	75.58
	From 4 to 10 minimum salaries	36	16.59
	From 10 to 20 minimum salaries	9	4.15
	Above 20 minimum salaries	3	1.38
How often do you consume meat?	Once a week	21	9.68
	Twice a week	129	59.45
	Three times a week	52	23.96
	More than 4 a week	14	6.45
	Once every 15 days	1	0.46
	Once a month	0	0.00
	Once every two months	0	0.00
Most consumed meat	Chicken	87	40.09
	Beef	73	33.64
	Pork	57	26.27

Note. Source: research data.

The results (Table 1) revealed that there was no gender or age bias among the respondents, who were between 20 and 40 years old. Regarding their level of education, the percentages of respondents who had completed high school, high school incomplete and higher education incomplete were relatively homogenous, totaling 76.50% of the total sample. However, no person with complete higher education was interviewed. Most respondents followed some religion, but of these

only 78.34% confirmed that they were practicing that religion. The income of most respondents ranged from 2 to 4 times the minimum wage. Regarding the frequency of meat consumption, most respondents indicated consuming meat twice a week. In general, consumers preferred, in decreasing order of consumption, chicken, beef and pork.

Table 2. Relationship between socioeconomic variables using the Chi-square test (χ^2), with significance of 5%.

	Age	Education	Do you have a religion?	Do you practice a religion?	Family income	Most consumed type of meat	Frequency of meat consumption
Sex	5.664 ^{ns}	9.362 ^{ns}	0.584 ^{ns}	0.018 ^{ns}	0.889 ^{ns}	2.928 ^{ns}	8.435*
Age		36.619***	3.268 ^{ns}	0.307 ^{ns}	15.797***	1.947 ^{ns}	2.752 ^{ns}
Education			13.658**	29.844***	80.643***	48.073***	36.169***
Do you have a religion?				61.801***	3.985 ^{ns}	1.373 ^{ns}	1.496 ^{ns}
Do you practice a religion?					7.898*	12.324**	5.007 ^{ns}
Family income						14.850**	32.077***
Frequency of meat consumption							39.675***

Note. ns- not significant ($p > 0.05$); * significant ($p < 0.05$); ** significant ($p < 0.01$); *** significant ($p < 0.001$). Source: research data.

According to Table 2, the variable Age was positively correlated with Education and Family Income, demonstrating that older respondents have higher education and family income. There was also a positive relationship between Level of Education and Do you Practice a Religion, Family Income, Type of Most Consumed Meat and Frequency of Meat Consumption. Thus, there was a positive and significant relationship between the level of education of the respondents who were finishing or had finished high school and higher education, with family income, a greater distinction in the choice of meat type and a higher frequency of meat consumption.

The variables Do you Follow a Religion?; and Do you Practice a Religion?; were closely related (Table 2). Mokhlis (2006) and Heiman, Gordon and Zilberman (2019) argued that religious people evaluate the world through principles of their beliefs, integrating aspects of their religion into their daily lives.

The variable Family Income (Table 1) was positively correlated with Frequency of Meat Consumption, demonstrating that family budget influences the frequency of meat consumption. Daniel, Cross, Koebnick and Sinha (2011) and Milford, Mouël, Bodirsky and Rolinski (2019) pointed to a positive correlation between the

demand for meat and income in developing countries.

The results of the Mean Item Score (MIS) analysis of the various types of meat obtained from consumer survey responses are described in Table 3, which categorizes the answers to the questionnaire into the following: high importance; medium importance, low importance and unimportant.

Categorization using MIS aims to assess how much the consumer considers each requirement for choosing the type of meat. It should be noted that there is no guidance on how to classify MIS values. Thus, in this study, the following MIS values were used for the categories: extreme importance (score equal to and above 6.0), very important (score 5.0 to 5.9), regular importance (score from 4.0 to 4.9), low importance (score from 2.0 to 3.9) and unimportant (score less than 2.0).

Table 3. Importance of the dimensions and sentences used in the Survey as a function of Mean Item Score (MIS) values for the various types of meat.

IMPORTANCE	ALL MEATS		BEEF		PORK		CHICKEN	
	Dimension / Number. of affirmative sentence used in the Survey	MIS	Dimension / Number of affirmative sentence used in the Survey	MIS	Dimension / Number of affirmative sentence used in the Survey	MIS	Dimension / Number of affirmative sentence used in the Survey	MIS
Extreme	C/ #21	6.558	C/ #21	6.577	C/ #21	6.594	C/ #21	6.606
	A/ #1	6.106	A/ #1	6.103	A/ #1	6.073	A/ #1	6.095
Very	C/ #23	5.401	C/ #23	5.419	C/ #23	5.543	C/ #23	5.341
	C/ #22	5.249	C/ #22	5.242	C/ #22	5.500	C/ #22	5.176
Regular	B/ #10	4.793	B/ #10	4.786	A/ #3	4.775	B/ #10	4.859
	A/ #3	4.714	A/ #3	4.707	B/ #10	4.652	A/ #3	4.671
	A/ #9	4.327	A/ #9	4.321	A/ #9	4.355	A/ #9	4.300
	A/ #2	4.240	A/ #2	4.228	B/ #11	4.196	A/ #2	4.282
	B/ #11	4.217	B/ #11	4.205	A/ #2	4.058	B/ #11	4.235
	D/ #26	4.000	D/ #26	4.000			D/ #27	4.012
Low	D/ #27	3.853	D/ #27	3.847	D/ #26	3.891	D/ #26	3.971
	A/ #8	3.825	A/ #8	3.823	D/ #27	3.841	A/ #4	3.812
	A/ #4	3.724	A/ #4	3.712	A/ #4	3.688	A/ #8	3.765
	B/ #14	3.687	B/ #14	3.674	A/ #8	3.688	B/ #14	3.718
	D/ #24	3.599	D/ #24	3.595	D/ #25	3.63	D/ #24	3.612
	D/ #25	3.581	D/ #25	3.577	B/ #14	3.464	D/ #25	3.588
	C/ #19	3.452	C/ #19	3.447	D/ #24	3.42	C/ #19	3.553
	B/ #12	3.171	B/ #12	3.163	C/ #19	3.29	B/ #17	3.271
	B/ #17	3.171	B/ #17	3.163	B/ #12	3.261	C/ #20	3.171
	B/ #15	3.166	B/ #15	3.158	B/ #15	3.232	B/ #12	3.165
	C/ #20	2.871	B/ #16	2.809	B/ #17	2.935	B/ #15	3.041
	B/ #16	2.82	C/ #20	2.674	B/ #16	2.775	B/ #16	2.906
	B/ #13	2.429	B/ #13	2.414	C/ #20	2.601	A/ #5	2.541
	A/ #5	2.415	A/ #5	2.395	A/ #5	2.341	B/ #13	2.529
	A/ #6	2.143	A/ #6	2.126	B/ #13	2.239	A/ #6	2.171
			D/ #27	3.847			D/ #27	3.971
			A/ #8	3.823				
Unimportant	A/ #7	1.843	B/ #18	1.981	B/ #18	1.957	A/ #7	1.941
			A/ #7	1.823	A/ #6	1.913	B/ #18	1.900
					A/ #7	1.681		
					A/ #8	1.681		

Note. The dimension and respective affirmative sentences used in the Survey are described in the methodological procedures in Figure 1. Source: research data.

In the category of extreme importance (Table 3), **Dimension C: health / nutrition** stood out - **21. Quality control in the sales market drives you to buy this type of meat** was determinant in the decision process of consumers of all types of meat,

separately or together. These results show that consumers attach special importance to the presentation of products on the shelves of supermarkets. Similar results were obtained by Chandon, Hutchinson, Bradlow and Young (2009), who analyzed how the position of a

product on the shelves and the presentation of the product influence the time involving in making a decision to buy. In this sense, Louro (2000) and Ngapo, Lozano and Varela (2018) emphasized that consumers choose a product either based on its perceived quality when it is exposed, or on how useful it is. Consumers can also choose based on a number of other reasons, while taking into account the quality of the product. According to T. Hansen (2005), consumer perception involves the expectation of quality of the product and issues associated with price. According to Banović, Fontes, Barreira and Grunert (2012) and Papanagiotou, Tzimitra-Kalogianni and Melfou (2013) the visual appearance creates expectations and the visual characteristics of the product are used to assess the quality of the food at the place of purchase.

Still in the category of extreme importance (Table 3) there is **Dimension A: Sociocultural - 1. You buy this type of meat because you can find it in several supermarkets** also decisively influenced the process of meat purchase by consumers. According to Machado, Santos, Albinati and Santos (2006) and A. Hansen (2018), the more a product is consumed, the more it becomes common in the diet of a population. This must be considered by the meat industry and distribution networks, not only to create but also meet the demands of consumers.

In the very important category (Table 3) we highlight the predominance of **Dimension C - Health / Nutrition**, as follows: **23. You buy this type of meat because it is healthy and 22. You buy this type of meat because it does not transmit diseases to the people who eat it.** Regarding item 23, consumers realize the importance of meat for their health. McAfee et al. (2010) concluded that meat supplies different nutrients and is also a source of many healthy components. Mann (2018) described that in addition to vitamins and minerals, meat also contains various bioactive nutrients and antioxidants.

Despite the fact that some studies (Bovalino, Charleson, & Szoeki, 2016; Fogelholm, Kanerva, & Männistö, 2015; Pacheco et al., 2018) indicate red meat as a precursor of cardiovascular disease, the consumers of this Survey, through item 22, did not associate the consumption of any kind of meat with disease transmission. This lack of association between meat consumption and disease transmission may be related to the low frequency of weekly consumption reported in this Survey, since only 6.45% of the respondents (Table 1) reported eating meat more than four times a week and 59, 45% reported consuming meat twice a week. This proportion is within the recommended range to avoid diseases associated with meat consumption (Bovalino et al., 2016; Fogelholm et al., 2015; Pacheco et al., 2018).

Regarding the regular category, the dimensions **A - Sociocultural** and **B - Economic** (Table 3) prevailed in all types of meat: beef, pork and chicken.

Consumer responses are associated with similarities in sales tactics adopted by Hypermarkets. Shirai (2017) and Merlino, Borra, Girgenti, Vecchio and Massaglia (2018) reported that the perception of price is significant in a consumer's buying decision, but this perception is influenced by tactics developed by manufacturers and retailers to create the perceptions of a favorable price. If retailers exhibit similar sales behavior, consumer price perception will be similar. The choice of meat based on ease of preparation may be related to changes in the habits of the Brazilian population in general. Men and women who work outside of their homes may prefer the easy preparation route. The research results of Oliveira et al. (2015, 2017) also indicate that the choice of a particular food is influenced by the practicality of preparation, in addition to concerns with health and daily routine.

Table 4. Pearson correlation and significance comparing Likert scale values, between dimensions, in regards to meat consumption.

	Dimension A - Sociocultural	Dimension B - Economic	Dimension C - Health/nutrition
Considering all types of meat			
Dimension B - Economic	0.580 ***		
Dimension C - Health/ nutrition	0.033 ^{ns}	0.039 ^{ns}	
Dimension D - Environment	0.147 *	-0.007 ^{ns}	0.184 **
Considering only beef			
Dimension B - Economic	0.643 ***		
Dimension C - Health/ nutrition	0.215 ^{ns}	0.049 ^{ns}	
Dimension C - Environment	0.210 ^{ns}	0.096 ^{ns}	0.066 ^{ns}
Considering only pork			
Dimension B - Economic	0.173 ^{ns}		
Dimension C - Health/ nutrition	-0.033 ^{ns}	0.290 *	
Dimension C - Environment	0.072 ^{ns}	-0.020 ^{ns}	0.066 ^{ns}
Considering only chicken			
Dimension B - Economic	0.641 ***		
Dimension C - Health/ nutrition	-0.227 *	-0.017 ^{ns}	
Dimension C - Environment	0.104 ^{ns}	-0.111 ^{ns}	0.329 **

Note. ^{ns}- not significant (p>0.05); * significant (p <0.05); ** significant (p<0.01); *** significant (p<0.001).

There were high and significant positive correlations (Table 4) between the **A - Sociocultural** and **B - Economic** dimensions, for the variables All types of Meat, Beef and Chicken. This indicates a strong association between product price and sociocultural status. This significant correlation may be associated with the contemporary living habits of the economically active population, whose professional activities determine a shorter time for meal preparation (Oliveira, Ferreira, Santana, Santos, Brito, & Mendes, 2015; Oliveira et al., 2017). Although this association was not significant for pork, it is also the least consumed meat by interviewers (Table 1).

The dimensions **C - Health / Nutrition** and **D - Environment** also positively and significantly correlated with chicken meat and all types of meat (Table 4). The association between these two dimensions can be attributed to consumers being increasingly aware of the effects of slaughterhouses on the environment and who are demanding regulations from the authorities. This means that people with greater sociocultural status have more insight about the negative effects of their food choices on the environment and their health. In this sense,

several environmental performance indicators can help. Among the most commonly used indicators are water and energy consumption, food production, use of chemicals and packaging materials, wastewater discharge and waste treatment (Skunca, Tomasevic, Nastasijevic, Tomovic, & Djekic, 2018).

Differences in the proportion of intake of different types of meat are largely the result of economic inequality, but also reflect differences in production efficiency. In the industrialized world, major advances in breeding, nutrition and breeding practices have greatly increased the efficiency and reduced the cost of animal production. This is particularly true when it comes to the chicken and pork industries, which through a combination of genetics, the formulation of high-quality diets and improved management techniques, have drastically improved production efficiency and achieved competitive prices (Salter, 2018). This association is expressed in the present study through the correlation between dimensions **B - Economic** and **C - Health / Nutrition** for pork (Table 4).

Latvala et al. (2012) described that changes in meat consumption are related to several dimensions, highlighting sociodemographic changes that affect consumers. Taste, safety, health and price rule, and changes in consumption patterns point to the fact that consumers increasingly prefer leaner meats without hormones and are concerned with animal welfare. Additionally, Graça, Calheiros and Oliveira (2016) emphasized changes in meat consumption due to changes in the cognitive mechanisms that are altered throughout life. Finally, Pohjolainen, Tapio, Vinnari, Jokinen and Räsänen (2016) described changes in meat consumption behavior due to increased environmental and problem awareness. Thus, the inverse relationship found in the present study between dimensions A - Sociocultural and C - Health / Nutrition for chicken meat (Table 4) can be at least partly attributed to the isolated or combined influence of all these changes in consumers' meat consumption, possibly omitted in questions related to sociocultural parameters.

FINAL CONSIDERATIONS

This research showed that consumers in the Federal District have similar behaviors when they choose and purchase chicken, beef and pork. Chicken meat was the most consumed, followed by beef and, lastly, pork.

Although consumers in the Federal District consume more chicken than beef and pork, their

choice behaviors when buying all types of meat is similar.

Additionally, it was observed that issues related to price and offer were not considered important in the decision-making process of meat purchase. However, consumers consider the quality of the meat displayed on the shelves and the ease of finding the same meat in different hypermarkets as determining factors in the buying process. Our results indicate that meat processing companies must develop strategies for making different points of sale available and presenting their products. In the first case, an inventory analysis and receipt logistics should be considered. Product presentation should consider organization, hygiene, shelf lighting, as well as safety aspects and packaging presentation.

Considering that this study was developed in the Federal District, which has specific socioeconomic characteristics with respect to other regions in Brazil, it is important that future studies that aim to contribute to the issue of meat production and commercialization in Brazil, are conducted in other places in the country.

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