

Meat Supply Chains: How the retailers analyze the influence of consumer behavior in the meat sales?

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Abstract. The present paper describes the perception and influence of retailers over consumer behavior and examine the factors that affect the meat consumption in São Paulo, Brazil. A survey was conducted in 30 butcher shops between June and July 2014. The data were analyzed using Hierarchical Cluster and K-Means Analysis on to Statistica software. Results identify three different important players for the Meat Supply Chains in São Paulo city: butcher shops, mix retailers and trust retailers. The consumer behavior is influenced by price, flexible payment, origin, brand, know how and promotion (sales strategies, media and competition) ($p < 0.01$).

Keywords: Food industry, Meat products, Sales strategies.

1 Introduction

The consumer behavior plays an important role in the strategies of the food industry [1]. Currently, a new consumer is pressing the food industry to ensure the food safety of its products [2]. Especially in the meat supply chains a significant issue is the association of food safety with the risks to human health [3]. Therefore, the meat supply chains need to be prepare to meet new demands of global consumers, such as traceability and authenticity, the animal welfare, and the sustainable production [4], [5] and [6]. However, response these requirements is not an easy task because consumer behavior and cultural aspects are different in each region of the world.

The consumer behavior is affected by external factors as culture, religion, myths, lifestyle, and socioeconomic condition; and internal factors like experience, eating habits and psychological condition [7], [8] and [9]. Therefore, many researchers have addressed the problem investigating consumer preference in different regions of the world and meat supply chain strategies [6], [8], [9], [10], [11], [12], [13], and [14].

It's important pointed out that competitiveness in the meat supply chains concentrates on the ability of the supply chain to develop new initiatives to provide to the different markets products with good price and the expected quality [14].

The meat industries when deciding to compete in the different market strategy should be able to adopt higher price and brand value than their competitors, since both brand and price are indicators that product has high aggregate value for consumers. However, companies need to understand the psychological, sensory and market factors that affect the consumer decision [9]. Currently, cost is the most common generic strategies adopted by meat supply chains because they believe that meat consumers are sensitive exclusively to the price [14].

This study search to respond how Brazilian meat industries can increase the aggregate value of its products through understanding consumer behavior and their new requirements? So, the purpose of this study was to describe perception of retailers from consumer behavior and to examine the factors that affect meat consumption. In this study, we conducted a survey applied in 30 butcher shops in São Paulo, Brazil between June and July 2014. São Paulo city is the major market of the country.

From the data analysis, the software STATISTICA (StarSoft©, version 7.0) was used. Hierarchical Clustering and K-Means Analysis were applied searching to identify the main drivers of the meat market. This paper is organized into sections as follows: introduction, materials and methods, results and discussion, and finally conclusion and outlook.

2 Materials and Methods

The current research involved a sampling of 30 regular butcher shops located in São Paulo city (23°32'S, 46°37'W), Brazil. The interviews were conducted with managers that are responsible for supply planning and marketing strategies of retailers. The study was performed from June to July 2014. As mentioned previously the purpose of this research was identify the drivers that affect consumer behavior and its new requirements to acquire meat products.

We chose São Paulo because is the major city of Brazil, where live around of 12 million inhabitants [15]. In São Paulo, 30% of the household income are spent with meat products. Moreover, we opted to interview managers of butcher shops due to handle with many different types of clients and because they influence directly on what kind of meat product that is consumed.

2.1 Survey Procedure

The research identifies that butcher shops in the local market have managers responsible for sales planning and meat supplies. On the other hand, butcher shops into supermarkets managers are only responsible for meat supply planning. In this case, marketing strategies are responsibility of the general managers of the supermarket.

The interviews with managers were conducted using a questionnaire with twenty questions divided in two groups: the first one is composed of three open questions related to the kind of meat sold, main suppliers and type of meat products. The second one was performed by seventeen closed questions relate to meat marketing strategies such as product: quality, diversity, brand, appearance, availability, origin, and safety; price: value and flexible payment; place: place of purchase, hygiene, service, know how, opening hours; and promotion: sales strategies, media and competition.

All these factors might provide some positive or negative influence on meat products and consumer behavior [4], [5], [9], [13]. Each parameter was established using a Likert scale from (1) without importance to (5) very strong importance in purchasing decision [16]. To performed the interviews all managers were informed about the aims of the research. Moreover, the researchers explained the meaning of each variable of the work.

2.2 Statistical Analysis

In the first step, a descriptive statistics were processed to understand the individual performance. The software STATISTICA (StarSoft©, version 7.0) was used for data analysis. After, the Hierarchical Clusters Analysis was applied preliminary in order to select the number of clusters.

The Hierarchical Cluster Analysis (CA) was made using a unweight pair-group average employing Euclidean distance to determine the number of clusters and to reflect the variation in purchasing decision based on market importance to meat and meat product consumption. The number of the cluster was selected from the dendrogram observing homogeneity within clusters and heterogeneity between them, as well as suggested by [13].

In addition, K-means Cluster Analysis were applied into three distinct clusters. Techniques from multivariate statistical analysis were obtained in order to identify the significant changes in the relationship among variables. Many researchers studying consumer preference apply these techniques usually [3], [7], [17], and [18].

3 Results and Discussion

3.1 Research summary

Our results showed that 80% of the meat was sold by the butcher shops in the local market, and 20% by butcher shops located in supermarkets. The study revealed that retailers are the most important part in the

meat supply chains. They are responsible to manage the structure of distribution channel. This result is in agreement with the observations reported by [8]. In addition, we observe that all retailers offered meat beef, poultry and pork, but less than 10% offered fish to the costumers. Our results reflect the reduction in fish consumption in Brazil, that is consistent with previous findings [18].

A total of 67% of the butcher shops reported that the order of sales is the first is beef, the second poultry and the third is pork. Unlike, others 33% percent informed that order of sales is the first beef, second swine and third poultry meat. Our results differ from [19] and FAO [20] which indicate poultry meat with the consumption of 40.6 kg/capita/year, followed by beef (39.1 kg/capita/year) and pork (12.6 kg/capita/year). This data is probably because poultry meat is less expensive and do not because of consumers preference. The preference of consumers in Brazil is beef, which is the most expensive meat. This behavior is reflected in areas where household income is higher, such as the case of city of São Paulo. However, meat consumption prognostics in Brazil show a growth in the next ten years. Beef will grow 42.8%, followed by poultry (26.2%) and pork meat will remain in third range (18.9%) [20].

According to 49% of the retailers, beef is the best-selling during the end of the year (Christmas and New Year periods). A total of 32% indicated eating beef during other holidays (Carnival, Mothers Day, Father Days, etc.). Another 19% informed that sales present a growth in weekend and 4% affirmed that beef has high demand during all days of the week. However, the most retailers reinforce that meat market shows sales fall during the Easter period. This is a reflection of the catholic religion on consumer habits.

The present study identifies that retailers received meat of 31 suppliers (slaughterhouse, wholesaler and distributor). Seven of them control 70% of the meat market. These suppliers have a strong brand that incorporates their products and they have an important contribution to a global meat market, exporting poultry, beef, pork, and meat products. In general, the internal meat market is headed by poultry industry, followed by beef and pork with a production of the 11.5, 9.3 and 3.4 million of tons respectively [20]. Brazilian agribusiness by commodity value (1000 \$), the export meat market is also dominated by poultry, beef and pork with internal rank 4, 6 and 13 respectively [20].

Table 1 presents a description of the marketing variables surveyed from 30 butchery (local butchery and butchery into supermarket).

Table 1. Mean scores for purchase decision for variables in meat market across cluster groupings.

Variables	Average	SD	Minimum	Maximum	CV%
Quality	4.90	0.40	3.0	5.0	8.1
Diversity	4.30	0.82	2.0	5.0	19.1
Brand	2.97	1.47	1.0	5.0	49.6
Appearance	4.23	1.05	1.0	5.0	24.9
Availability	3.87	0.99	1.0	5.0	25.6
Origin	4.07	1.09	1.0	5.0	26.9
Safety	2.63	1.35	1.0	5.0	51.4
Price	3.33	1.42	1.0	5.0	42.7
Flexible payment	4.57	0.76	2.0	5.0	16.7
Place of Purchase	4.97	0.18	4.0	5.0	3.6
Hygiene	4.77	0.50	3.0	5.0	10.4
Service	4.20	0.87	2.0	5.0	20.8
Know How	2.30	1.35	1.0	5.0	58.5
Opening hours	4.13	0.96	1.0	5.0	23.1
Sales strategies	4.27	0.85	2.0	5.0	20.0
Media	3.77	1.33	1.0	5.0	35.4
Competition	3.33	1.62	1.0	5.0	48.6

SD = standard deviation; CV% = coefficient of variation.

The average of the meat marketing variables found are around of four. These results suggest that the variables assessed have an important and contribution to perception of retailers in relation for meat product in São Paulo market, with exception of brand, origin and butcher opening hour (average below 3.0).

Coefficient of variation showed that hygiene and quality variables are most strong variables in consumers' decision to buy beef, poultry and pork (average 5.85%). Follow, the butchery service, place of purchase and product diversity presents (average 15%), while marketing flexible payments, butchery know-how, marketing sale promotion, product appearance, availability, price, media (28,5%) of variation and butchery competition, origin, butchery opening hour (average 53%) represent the most dispersion among sample studied.

3.2 Hierarchical Cluster Analysis and K-means Cluster Analysis

How to differ a commodity product in a market and to take success towards acceptance of costumers? Marketing strategies are available to help companies to establish a relationship between industry and market. Therefore, is essential for meat supply chains to investigate market preference and the factors involved in consuming process such as psychological (individual factor), marketing (environment factor) and sensory (product factor) [9].

Nowadays, an active power of government and consumers are driving meat supply chains to use sustainability process, animal welfare concepts, certificate of authenticity, and quality management systems in order to ensure the product safety. However, these factors have been more demanding by market in developed countries. European governments and consumers are more involved with this issue than nationals in developing countries [13]. Due to the necessity of these countries exports meat products to developed countries, they are trying to adequate the operations to meet international requirements and rules.

As mentioned early, consumer preference varies to account of different factors relate to product, marketing and psychology of consumers [9]. Hence, a better comprehension of the these factors may help the meat supply chains improving the competitiveness and aggregate value of the products [12].

The K-means Analysis of the research data showed three distinct clusters with similar perception of the meat market. Overall, the profiles of three clusters were associated with regional suppliers and kind of retailers, Figure 1.

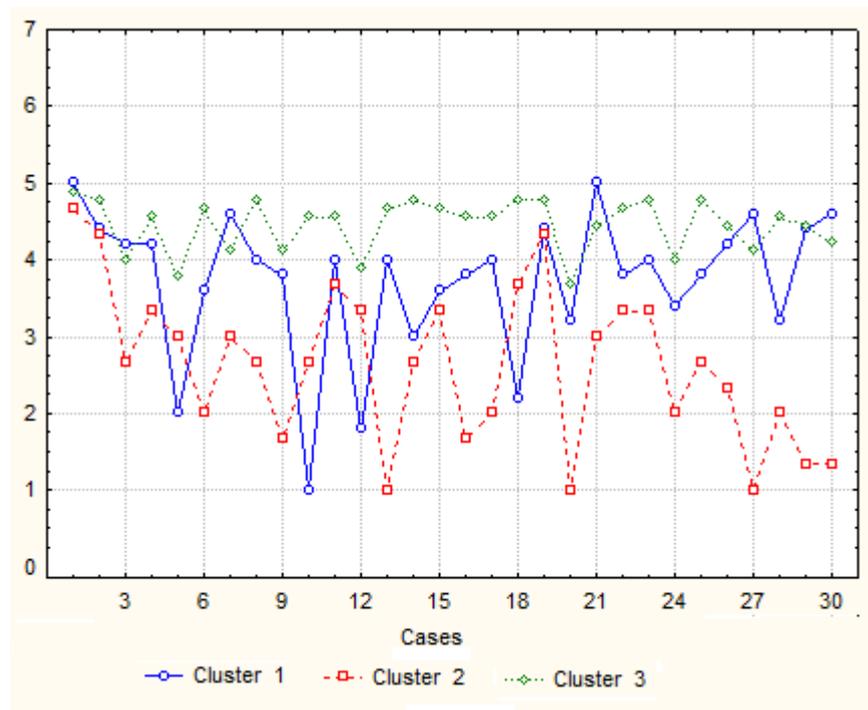


Figure 1. Plot of means for each cluster

The cluster 1 grouped retailers classified as butcher shops in local market (37%); the cluster 2 joined butcher shops in local market and supermarkets, as a mix meat retailers (50%), with similar region and a large variety of meat suppliers (without strong relationship); the cluster 3 linked butchery shops in local market and supermarket (13%), with similar region and few meat suppliers. The Table 2 presents the variables that have the most influence in purchasing decision.

Table 2. Mean scores for purchase decision for variables in meat market across cluster groupings.

Variables	Cluster 1 ⁺ (Butcher Shops)	Cluster 2 ⁺ (Mix Retailers)	Cluster 3 ⁺ (Trust Retailers)	P - Value
Quality	4.81±0.6	4.93±0.2	5.0±0.0	ns
Diversity	4.27±0.7	4.33±0.7	4.25±1.5	ns
Brand	1.72±0.7	3.80±1.2	3.25±1.7	*
Appearance	3.90±1.1	4.60±0.9	3.75±1.2	ns
Availability	3.63±0.8	4.06±0.8	3.75±1.8	ns
Origin	1.45±0.6	3.26±1.2	3.50±1.2	*
Safety	3.27±1.3	3.80±1.3	1.75±0.9	**
Price	4.54±0.8	4.20±0.6	2.25±1.5	*
Flexible payment	4.63±0.5	4.33±0.8	3.0±0.8	*
Place of Purchase	4.54±0.6	4.80±0.4	3.75±1.5	**
Hygiene	5.0±0.0	4.93±0.2	5.0±0.0	ns
Service	4.63±0.5	4.80±0.5	5.0±0.0	ns
Know How	3.45±0.9	4.60±0.5	4.75±0.5	*
Opening hours	1.45±0.6	2.80±1.4	2.75±1.7	**
Sales strategies	4.54±0.5	4.20±0.8	2.75±1.2	*
Media	3.90±1.1	4.40±0.5	1.0±0.0	*
Competition	3.09±1.6	4.13±1.1	1.0±0.0	*

⁺ mean score out of 5; ^{ns} no significant; * $p < 0.01$; ** $p < 0.05$

Drivers of consumption to meat retailers were found, and these drivers were price and flexible payment; origin, brand and know how; and promotion (sales strategies, media and competition) ($p < 0.01$). The perception of these factors may affect the decision of purchasing meat products. On the other hand, the safety of product, place of purchase and opening hours are factors that also may influence consumer decision according retailers perception ($p < 0.05$).

Indeed, price and origin of the beef, poultry and pork products are relevant to consumers' acceptance in a developing country; similar results about origin are reported by [12] and [13]. These authors disagree in relation to the price because it is third factor most important to Chile and European consumers, respectively.

Researches in Brazilian meat market showed that consumers complain of the meat products are expensive, and associated with low household income decrease consumption of meat. Statistics reported that the most meat consumption by Brazilian is poultry (40.6 kg/capita/year), following by beef (39.1 kg/capita/year) and pork (12.6 kg/capita/year) [20]. However, this statistic not represent the Brazilian consumers' preference towards meat that like more beef than poultry. This scenario represent that poultry meat in Brazil is cheapest meat, hence the most sold. Meat consumption prognostics in Brazil show a growth in the next 10 years. Beef represent a growth of 42.8%, followed by poultry (26.2%) and pork meat will remain in third range (18.9%) [21].

Thus, provide a good price to market is a challenge for meat industry in a developing country that requirement a change in production and operation conception and politic aspect. Increasingly, the commodity product has been customized and added more value that involves extrinsic and intrinsic features. The price strategy present a direct association with sales promotion strategy that involves media and condition of payment.

An overview of meat supply chains showed that the price is related to costs of production and from viewpoint of consumers, it is linked to their purchase power (household income).

The dynamics of the meat supply chains leads to sophisticated analysis in Brazil, due to high costs of meat production, which involves feeding stage, farmer, transportation, transforming process, distributors, and taxes of Brazilian government. Studies in Brazilian meat market conclude that consumers believe that meat products are so expensive, and this situation is associated with low household income [18], [19].

4 Conclusion

The factors that affect consumer behavior for meat products in São Paulo, Brazil was studied. We conducted a survey of butcher shops established in local market and supermarkets. The consumer behavior of buying meat products was analyzed using the retailers' point of view that led directly to them. We identify three different kinds of the meat market as butcher shops, mix retailers and trust retailers. The main drivers that affect consumer behavior for buy meat products is price and flexible payment; origin, brand and know how; and promotion (sales strategies, media and competition).

Our studies reveal that consumers of São Paulo had a different behavior of consumers in Brazil, Europe and Chile for different reasons. Therefore, more studies in others butcher shops need to be carried out to confirm the findings of our study. However, we believe that this study could explore the meat market in São Paulo, Brazil and it may contribute to improvement of this supply chain.

The challenge for meat supply chains in a developing country is the answer to the consumers' requirement and added more value for the products using extrinsic and intrinsic features.

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