THE EVALUATION OF CONSUMER BEHAVIOR INFLUENCE ON THE BUYING PROCESS OF DAIRY PRODUCTS IN MINAS GERAIS STATE, BRAZIL

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ABSTRACT – Data on the consumption and buying behavior of milk and dairy products, collected in Viçosa, State of Minas Gerais was used to predict the consumption profile of such products in an effort to better understand the dairy market. Most of the consumers (73%) would pay for a better quality, functional product, of which 58.48% attributed their answers to health concerns. "Low fat" and "cholesterol-free" were pointed out by 50% of the interviewed consumers as essential features of healthy products. Overall, most of these potential consumers buy milk (95%), yogurt (86.3%), and mozzarella (82.6%). Recommendations of doctors and nutritionists played a fundamental role in the buying intention of 70% of the consumers. Correspondence analysis was performed to verify the relationship between the favorite purchase locations and the studied dairy products. In addition, a Pearson correlation analysis (p<0.05) was applied to the reasons for buying intention and to the gender of the panelists, highlighting low to moderate correlations (r = -0.53).

KEYWORDS: dairy products; consumer; buying behavior; consumer behavior; healthy products.

1. INTRODUCTION

In recent years, milk production in Brazil has been growing at average rates of 4.5% per year, reaching 34.3 billion liters in 2013 (Sindilat, 2014). The per capita consumption of milk and dairy products in Brazil has increased from 123.9 liters in 2000 to 178 liters in 2014 (Sindilat, 2014). Still, this volume does not reach the recommendation of the Ministry of Health: 219 liters/person/year (Brazil, 2006).

In addition to the efforts that have been made to address this drawback, the food industry currently faces changes on consumer behavior. Reis et al. (2007) highlighted the increasing demand for high-quality dairy products, providing dairy industries with a gradual trend of adapting their products to the market needs. In the context of food choice a technologist, who is mainly in charge of product development and product innovation, places his focus on intrinsic sensory properties of the food. Social and business scientists, however, preferably scrutinize how the evaluation of a consumer is influenced, and how preferences are elevated by extrinsic cues such as brand, price, or packaging (Hoppert et al., 2014). While some consumers are more keen on the promotion of a healthy lifestyle and healthy food choices, changing the eating patterns of the general population is a very complex problem (Lalor et al. 2011; Miklavec et al., 2015).
Thus, this study was set out to identify the factors that influence the buying behavior of consumers whose demands are not fulfilled by the traditional dairy products. The preferences of consumers of dairy products in the region of Viçosa, Minas Gerais, Brazil were also studied in an effort to optimize the marketing strategies for increasing the competitiveness of small and medium-sized dairy industries.

2. Materials and Methods

2.1. Research Description

The methodology relied upon an interview-based descriptive research in accordance with Resolution n. 466 (12/12/2012) from the National Health Council due to the involvement of human beings (Brazil, 2012). The sampling population was established with a 95% confidence interval and approximately 6% of error, which required the minimum number of respondents (275) considering an undetermined population (Minim, 2013). The descriptive study assessed their attitudes and preferences, which play a crucial role on their buying behavior. The market research took place from Winter/2014 to Spring/2014, at different spots, in varying days and times, as well as to 18-year-old consumers or older.

2.2. Data Analysis

Data were tabulated in Microsoft Excel® Version 2013. Correspondence analysis was performed using the PROC CORRESP procedure in The Statistical Analysis System SAS®, version 9.4, licensed by the Universidade Federal de Viçosa.

Pearson correlation analysis (p < 0.05) was conducted in SAS® software using PROC CORR command. This analysis allowed us to identify correlations between the studied variables and gender.

3. Results and Discussion

3.1. Sample Characterization

The sampled population was based on 300 respondents, regular consumers of dairy products in the city of Viçosa, Minas Gerais, Brazil, 50.7% (152) of which were females and 49.3% (148) were males. Respondents were 39.7 years old in average. As for education, most of the respondents (25.0%) had incomplete higher education, and only 3.7% of the interviewees had incomplete primary education. Regarding family income, most of the respondents (36.8%) stated that they earned between 1 and 3 minimum wages, which was equivalent to US$183.00 at the time they were interviewed.

3.2. Buying Behavior of Dairy Products Consumers

Consumers were asked about the purchase profile of dairy products. Most of the respondents were used to buy milk (95%), yogurt (86%), cream cheese (82%), and mozzarella (82%). The least purchased dairy products were moldy fine cheese (not consumed by 93% of the respondents), mold-free fine cheese (86%), ricotta (66%) and fermented milk (63%).

The respondents were also questioned about the features that should be presented by products in order of importance. The consumers prioritized: low fat content (64%), cholesterol-free (63%), fat-free (58%), low sugar content (56%) and low salt content (56%) (Figure 1). This can be mainly related to health concerns, since 80% of the respondents over the age of 46 prioritized these factors.
Reduced or low fat food products development is often challenging because functional and sensorial attributes of the foods can be affected after removing fat from numerous food items (Johnson et al, 2009; Sattar et al., 2015).

Figure 1 – Factor influencing the valuation of dairy products by consumers (%) (Source: Author’s Computation).

Lower frequencies were observed for the aspects “gluten-free” (28%), “addition prebiotics/probiotics” (26%), “organic food” (23%) and “lactose-free” (17%). Such terms may not be as common to the consumers as “fat”, “sugar” and “cholesterol”. Furthermore, consumers may be more prone to purchasing and consuming functional foods included with functional ingredients that are familiar to them (Ares, Giménez & Gámbaro, 2009). This result contradicts the ongoing fad of gluten- and lactose-free products.

Therefore, grocery retailers could encourage consumers to perceive the benefits of purchasing organically grown foods by addressing what nutritional contents the food contains, how its nutritional contents help consumers stay healthy, and how it contributes to environment protection and animal welfare (Lee & Yun, 2015).

The most important ways by which consumers become aware of unknown dairy products were also examined in this work. The “indication of friends” was highlighted in 47.7% of the responses. This finding could be associated with the sense of reliability, since consumers believe in products recommended by people from their social circle. In addition to the “indication of friends”, 70.7% of respondents valued the “medical and/or nutritionist recommendation”. This is due to the reliability aspect above mentioned showing that specialists give safety when recommending a product. This denote a challenge for the industry, which needs to ally with health professionals who strongly influence consumer behaviour.

3.3. Statistical Analysis

The correspondence analysis was used to evaluate the correlation between dairy products and preferred buying places (Figure 2). Therefore, two dimensions were considered to explain the variability of the data.
Figure 2 – Correspondence analysis of dairy products and preferred buying places. Each point of purchase is shown in blue while dairy products are shown as red points. First group (supermarket, market and bakery): M-milk, Y-yogurt, MF-fermented milk, R-ricotta, MO-mozzarella, B-butter, CC-cream cheese, MC-'frescal minas’ cheese, D-dry milk, DL-dulce milk, CO-condensed milk, CR-milk; Second group (‘emporio’and fairs): CWM-mold fine cheese, CNM-mold-free fine cheese; Third group (others): IC-ice cream (Source: Author’s Computation).

The dimension 1 explained 55.94% of the variation of the data while the dimension 2 explained 23.25%. The sum of the two dimensions was 79.19% which is sufficient to explain most of the data variability. The spatial separation of the 15 dairy products suggests the formation of three groups: a first group of supermarket, bakery and market, a second group of emporium and fairs, and a third unspecific group characterized by the “others” option. In Figure 2, the products correlated with the dimensions analysed and showed a relationship with their corresponding buying places. The groups “buying places” were well distributed throughout the plot, reflecting their differences in terms of type and attractiveness of the environment, displaying of products, proximity to consumers and other peculiarities inherent to the business.

Two subgroups were observed within the group “emporium and fairs”, which were the places preferred by the consumers of fine cheeses with and without mold (20%). The fairs were cited by most of the consumers of fine cheeses in Viçosa because these sites are well visited mainly due to the attractive prices, and not because the availability of fine cheeses. From the collected data, it is possible to observe that among the main milk products, the fine cheeses are preferably bought at emporiums, since these stores have the distinction of offering handmade products and gourmet.

The group formed by “supermarket, bakery and market” is preferred for the purchase of most dairy products, including the most cited with larger purchase frequency by the majority of respondents (milk, yogurt, cottage cheese and cheese "mozzarella"). It is worth mentioning that these places are easily accessed, have broad variety of products, present better price flexibility when compared with bakeries, in addition to allowing a higher movement of people, thereby satisfying most of the consumer demands. The data collected showed that milk was the product with the highest purchase frequency at bakeries (20.4%), followed by mozzarella (13.4%), which suggests that this place is equally important to provide dairy products to consumer.

The third group formed by the “others” option represented the places preferred by the consumers of “ice cream”, a product that is not considered as a milk derivate but often mentioned as
such by consumers. A percentage of 20.4% of the respondents of ice cream marked the option “others” for ice cream, that is, without specifying of buying place.

A Pearson correlation analysis ($p<0.05$) was applied to the reasons for buying intention. In Table 1 it is observed the correlation between the variables and their respective probability values of random occurrence, being a diagonal used as a tool to separate the values by gender. In case of the male respondents, the interest in the variable “nutritional” showed a very low and not significant positive correlation with the variable “healthy” ($r = 0.15, p = 0.06$). Thus, there is no linear relationship between these variables meaning that they are statistically independent. For the females respondents there was a similar but opposite trend; it was evidenced a very low correlation and not significant negative correlation between the variables “nutritional” and “healthy” ($r = -0.001, p = 0.8984$). A possible explanation for this behavior is that the sources of nutrients taken into account by both genders are not necessarily healthy for them.

Table 1 – Pearson’s Correlation – Men and Women.

<table>
<thead>
<tr>
<th></th>
<th>Women</th>
<th>Nutritional</th>
<th>Convenience</th>
<th>Healthy</th>
<th>Habit</th>
<th>Tasty</th>
<th>Source of Calcium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutritional</td>
<td>1.00</td>
<td>-0.25</td>
<td>-0.01</td>
<td>-0.31</td>
<td>-0.026</td>
<td>.11</td>
<td></td>
</tr>
<tr>
<td>Convenience</td>
<td>-.38</td>
<td>1.00</td>
<td>-0.32</td>
<td>.06</td>
<td>.003</td>
<td>-0.36</td>
<td></td>
</tr>
<tr>
<td>Healthy</td>
<td>.15</td>
<td>-.29</td>
<td>1.00</td>
<td>-0.39</td>
<td>-0.33</td>
<td>-0.36</td>
<td></td>
</tr>
<tr>
<td>Habit</td>
<td>-.53</td>
<td>.13</td>
<td>-.31</td>
<td>1.00</td>
<td>-0.11</td>
<td>-0.52</td>
<td></td>
</tr>
<tr>
<td>Tasty</td>
<td>-.25</td>
<td>.08</td>
<td>-.50</td>
<td>.02</td>
<td>1.00</td>
<td>-.14</td>
<td></td>
</tr>
<tr>
<td>Source of Calcium</td>
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<td>-.38</td>
<td>.14</td>
<td>-.44</td>
<td>-.38</td>
<td>1.00</td>
<td></td>
</tr>
</tbody>
</table>

Source: Author’s Computation.

Conversely, when the variable “nutritional” was correlated with the variable “habit”, negative and statistically significant relationships were found regarding both genders. With respect to the male gender, the correlation was moderate ($r = -0.53, p < 0.0001$) and greater than that observed for the female gender ($r = -0.32, p < 0.0001$). This suggests that the consumption of dairy products could be decided by habits rather than their nutritional facts. It was also observed a low and not significant correlation between the variables “calcium source” and “nutritional” for the female gender ($r = 0.11, p = 0.1682$).

When the variable “healthy” was compared with the variable “calcium source”, there was a positive and significant correlation for the female respondents ($r = 0.19, p = 0.0205$). This finding seems to be contradictory to the “nutritional”- “calcium source” correlation, that is, there are a percentage of women more concerned about the intake of calcium from dairy products as an essential factor for their health.

4. CONCLUSION

This work identified that consumers of dairy products are becoming more aware and demanding. As a result, they are willing to spend more money for buying healthier, more nutritious, and tastier products. In this context, the use of advertisements to highlight product quality, especially regarding fat, sugar, and cholesterol reductions can be a valuable tool for the dairy businesses to reach a broader audience, even if consumers needs to pay more for products of superior quality.

The nutritional education of the population stands out as a valuable tool for disseminating terms that are still unknown to consumers. In situ tests allow consumers to taste and buy at the same
place, making them decided about the sensory quality of the products. This could be a strategy to increase the awareness and the importance of fine cheeses, ricotta, fermented milk, prebiotics, and probiotics.

5. REFERENCES


