PRODUCT INNOVATION: THE CASE OF A SEARCH FOR GUAVA'S APPLICATIONS AND NEW USES

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Abstract:

Competitiveness, to many firms, and even to countries, depends on the maintenance of constant launch of new products. The objective of the present paper is to present a case of product innovation, resulting from the search of guava producers' association for applications and new uses for the fruit. In order to attain this objective, the method employed is the exploratory research, using secondary data analysis and qualitative research, through depth interviews with the president of this association. In the bibliographic survey, the context of product innovation in a small firm is underlined, emphasizing some critical issues on the new products development process, the characteristics that favor new products success, the influence of institutional factors on innovation and some questions related to innovation, exportation and association of small firms. By means of a model adequate to the situation portrayed in this paper, the association produced the first of six new products derived from red guava. In conclusion, it was seen that the idea to form the association facilitated the interactions and interdependencies among the producers. This new product reflects a gain of

competitiveness of Brazilian producers due to the higher quality level needed for exportation, and also to productivity gains, as these producers insert themselves in the constant innovation context of markets.

Key words: Innovation, producers association, new products development.

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1. Introduction

The last years have witnessed dramatic changes in the business environment, including: rapid and radical technological developments in telecommunications, computers, information sciences and the diffusion and impact of Internet and Intranets; the business globalization, including international increasing competition and the mergence of regional and global customers; mergers and acquisitions and strategic alliances that continually occur and that alter the competitive structure and practices of an increasing number of industries; the changes in population's demographics, values, expectations and behaviors; the increasing deregulation, privatization and cooperation between firms and governments; and the changes in administrative practices, such as downsizing, outsourcing, reengineering (WIND; MAHAJAN, 1997).

Despite these dramatic changes, Wind and Mahajan (1997) indicate that the new products development practices have gone through relatively few changes. The relative stability of the new product development methods would be acceptable if the success rate of development and launch of new products would be at acceptable levels. However, the new products' success rate has improved minimally.

Thousands of new products are introduced to the marketplace each year, and many fail. Even so, the quest for new products goes on, as evidenced by large amount spent each year in the world. Calantone and Cooper (1981) argument that the way the results of the studies on product successes are presented is not readily amenable to management action. This is one reason why the research insights have had so little impact on new products performance.

A possible explanation for the relatively poor success rate and for the difficulties found in the development of really new and innovative products may be the poor utilization of appropriate marketing research and models. Another explanation takes into account the fact that, given the dramatic changes in the business environment, the marketing research and modeling available approaches are ineffective.

Firms, and even countries, in order to stay competitive, have to keep a constant stream of new products. Some new products are new variations, and others revolutionize product categories or even define new categories. Really new products shift market structures,

represent new technologies, induce behavior changes and also require consumer learning (URBAN; WEINBERG; HAUSER, 1996).

2. Objectives and Methods

The present paper presents a case of product innovation, which resulted from the search of guava new uses and applications by an association of guava producers. In order to attain this objective, the method employed is the exploratory research, using secondary data analysis and qualitative research. The secondary data research comprehends a bibliographic survey, including previous done research on the topic under study, and, according to Malhotra (2001), helps define the research problem and identify key issues on the subject under study. The qualitative research method employed is the depth interview, in which the president of this association provided information on the development process of the innovation generated.

Before presenting the case, the context of product innovation in a small firm is underlined, emphasizing: some critical issues on the new products development process, the characteristics that favor new products success, the influence of institutional factors on innovation and some questions related to innovation, exportation and association of small firms.

3. New products development critical issues

Wind and Mahajan (1997) believe that the current methods and concepts related to new products are more focused on the solutions (products) for customers' current problems. Moreover, these concepts and methods tend to limit themselves to continuous innovations (those that require minimum change in customer behavior). The critical issues outlined by these authors that are relevant for the present paper are presented in the following paragraphs.

The first issue is related to incremental innovation versus breakthrough innovation. Only a small percentage of all new products are considered "new to the world" products. Considering the relative small number of breakthrough products and the disproportionate contribution they can make to profitability, the challenge is to figure out how to increase the ability of an organization of developing these products. Due to the risk associated and the large amount of investments needed to develop breakthrough products, firms are often reluctant to undertake them. With regard to the marketing research and modeling required for breakthrough innovations, the major necessity is to develop means to inform and educate potential consumers about the capabilities of this innovation and the probable impact on their

lives (WIND; MAHAJAN, 1997). According to Chandy e Tellis (2000), breakthrough innovations are machines for the economic growth and a source of superior products. Furthermore, they have the role of changing the industry general shape and of making the difference between life and death for many organizations.

The second critical issue presented by Wind and Mahajan (1997) is the speed and quality one. The benefits of new product development cycle time reduction include not only increased profitability but also advantages associated with pioneering, and the fact that it reduces the chances that the market has changed between the development and launch period. The main challenge is to reduce the development cycle without affecting the product quality and price. Many organizations, in their zeal to cut development time, simply eliminate important marketing research steps and other required development stages, resulting in poor quality products. New approaches should allow for the evaluation of consumers needs and their probable reactions to the new concepts and prototypes within a few days or even hours. Another way to speed marketing research projects involves using the Internet to get customers reactions to concepts.

The third new products development critical refers to the products' standardized design for several countries versus products designed to meet the local market needs. Products with global design marketed at world and nearest neighbor export markets achieve market shares that are almost twice the ones attained by products with domestic design that are targeted to the same markets. Because of the increased globalization of markets and the proliferation and impact of global media, it can be expected increased needs for global product design and regional design. The globalization has also led to the development of electronically linked multi-countries R&D teams (WIND; MAHAJAN, 1997).

The genius inventor and the organizational efforts to innovate are the fourth critical issue concerning new products development. Much of the new products development literature focuses on creating an organizational architecture that increases the chances of successful development. The real challenge is how to project the organizational architecture as a flexible and adaptable system that can support the organizational aims to develop new products. At the same time, it should ensure a role for the genius inventor. Some organizations build their new products development around a genius inventor, but they fail to deal with the imperative of balancing the genius needs with the rest of the organization's. While conventional marketing research for the development of new products assume that it is the dominant source (or the only one) of market knowledge, working with genius inventors

shifts the focus to validating assumptions and testing reactions to ideas, concepts, or products developed by these genius (WIND; MAHAJAN, 1997).

The fifth issue relates to the isolated new products development effort and a total organizational commitment to innovation. According to Wind and Mahajan (1997), the major part of firms give little attention to the role of marketing research and modeling in creating a total organizational commitment to innovations. Thus, the challenge is how to redesign the marketing research and modeling to ensure their integration with the innovative organizational culture, and not just their occasional use as specialized tools in isolated new products development products. This requires the development of new processes for the continuous use of marketing research and modeling as part of the firm's decision support system and decision making process.

The executive foresight (push) and the customer insight (pull) are the sixth critical issue related to new products development. The executive foresight is important and should be encouraged. However, it does not mean that the consumer should be ignored. Consumers and prospects can provide valuable insights to the new product development process. But this may require new marketing research approaches that avoid the customer's short term and current experiences bias and that allow consumers to identify their actual needs and desires in future scenarios (WIND; MAHAJAN, 1997).

Many of the dramatic development in new product development are due to two recent trends: database marketing and flexible production as part of an integrated supply chain. These factors are related to the seventh critical issue for the development of new products. To Wind and Mahajan (1997), these developments allow for a shift from an economy driven by mass production to one shaped by mass customization. From a new products project perspective, the organizations are no longer searching for the best product, but for the development of capabilities that enable customers to customize a desired products from thousands or millions of possible products. The deliver the mass customization over the World Wide Web (WWW) offers customers the opportunity to design their ideal products and services, including the delivery mode, financing, and other service options.

The eighth critical issue is the product proposition versus value proposition. Customers do not buy a set of product characteristics, but instead a bundle of benefits that include the physical product and the extended service offer. Many times, the products create value by settling partnerships with other complementary products. Therefore, it is critical that the new products development process incorporates, as soon as possible, a product concept

based on a value proposition, that is, how the product creates value for its target segment. This requires that the positioning analysis and the strategy have to be conducted as early in the new products development process (WIND; MAHAJAN, 1997).

Typically, new products development activities are internally focused. To Wind and Mahajan (1997), this fact relates to the ninth critical issue: internal and external R&D. The increased complexity and cost of developing truly innovative products and the advances in new technologies often require expertise that the firm does not have. Thus, R&D strategic alliances have emerged, and R&D consortia have been created, in order to fulfill this need. The external link is especially important for organizations that develop multi-country researches and that use different time zones, cost structures and competences to create an integrated R&D operation.

The tenth new product development critical issue is the customer focus versus input of suppliers, distributors and other stakeholders. According to Wind and Mahajan (1997), the exclusive focus on customers does not provide an advantage for the product in the market. Each product is a bundle of components, and each component plays an important role in the products' advantage creation. Therefore, the challenge is to develop procedures and models that help to obtain relevant inputs from all stakeholders, including suppliers and distributors. These inputs have to be obtained during the new products development process. The consumer involvement is critical, but is only one of many required inputs from all relevant stakeholders. In designing the consumer input, organizations should obviously consider the innovators and the lead users, but not restrict the inputs to these segments, since the characteristics and needs of innovators are not the same as the needs of other segments in the marketplace.

The eleventh issue regards the stage gate process versus the concurrent development. During turbulent times, characterized by a complex, uncertain, nonlinear and interactive market environment, the traditional stage gate process is cumbersome and not appropriate. Moreover, there exist a demand for a faster development cycle, indicating that the solution is a concomitant development process, instead of a sequential one. Yet, this healthy cross-functional shift to a concurrent process can lead to loss of the disciplinary depth offered by some of the more traditional stage gate process. Wind and Mahajan (1997) believe that the key for effective new product development is, thus, the incorporation of the two approaches.

The functional depth and cross-functional integration are the twelfth critical issue. New products development requires the involvement of most of the management disciplines,

including, R&D, marketing, operations, human resources and finance. To completely integrate these several perspectives is a must. Thus, the majority of new product development efforts is centered on teams and, increasingly, the organizations seek people that can work effectively with other members of the multi-disciplinary teams. Although the inter-functional integration is a necessity, it cannot be ignored the need for functional in-depth expertise. Each of the management disciplines has increasingly sophisticated its concepts and methods, and requires mastery of this knowledge (WIND; MAHAJAN, 1997).

The thirteenth and last critical issue relevant for this study is the question of being first to the market and the market readiness. In many industries, the pressure to speed the new product development process is so great that companies rush with their new products as soon as they are ready, disregarding the optimal time to enter the market. In other industries, however, the management can choose when to introduce their products, offering great opportunities for the development of marketing research and modeling approaches for timing of new products entry. One critical issue, to Wind and Mahajan (1997), relates to the readiness of the market. Is the market ready for the new product? One of the determinants of new product failure is that the product was introduced prematurely to the market.

4. Characteristics favoring new products' success

Since the resources directed to research and development activities are scarce and the risks are too high, it is becoming increasingly important to know which new products to select for development. Calantone and Cooper (1981) have identified nine groups of new products, each one with its own success probability. This categorization scheme can be useful in assessing the merits and dangers of various types of new product projects.

The first group of products is called "the better mousetrap with no marketing". These products are particularly new to the firm, taking it into new technologies and a new product class. They also involve new distribution or salesforce, new advertising and promotion methods, and new competitors. The product itself is innovative, offering unique features for consumers, in a highly competitive and growing market. However, there is a lack of marketing and managerial synergy and also a complete lack of product/company fit in the areas of marketing research skills, salesforce/distribution resources, advertising and promotion skills, and financial resources. The result is deficient marketing communications and launch efforts. Such products are generally found in smaller firms, with restrict R&D budget, and weak marketing research and promotions abilities. Not surprisingly, Calantone

and Cooper (1981) found that this group presents a low success probability.

The second group of products is "the innovative mousetrap that really isn't better", made up by really innovative products. Despite this characteristic, they are not better than others in satisfying customers needs and probably fail for this reason. Moreover, they do not offer any economic advantages. The market for these products is small, stable, with many competitors and homogeneous products. In general, there is a lack of market knowledge and competence in the new product development process. The success probability for this group is remote (CALANTONE; COOPER, 1981).

"The close to home 'me too' product" is the third group of products presented by Calantone and Cooper (1981). These products are noninnovative products and are anything but unique and superior. They have no unique features, are not superior to competing products in meeting customers needs, do not do a unique task, have average product quality and provide no economic advantage to the user. Such products are not new to the firm, are directed to existing customers, use existing facilities and suffer from weaknesses that exist in the marketing area (specially launch and promotions). However, the weak marketing efforts do not prove disastrous largely because of market conditions; good preliminary market assessment, a nondynamic market and a noncompetitive, dissatisfied market. This combination of production strength, marketing weakness and a me-too product launched in a noncompetitive market can yield almost average results.

To Calantone and Cooper (1981), the fourth group of products is "the innovative high technology product". These products are innovative and unique in the market. The firm is the first to enter the market with this type of product, while the product itself has unique features for the customer and is superior to competing products in meeting customer needs. Such products are in general technically complex and tend to be customized. Besides, they have a higher price, comparing to competitors' offerings. New production processes and new technologies are needed for the fabrication of these products, and the firm has strong marketing knowledge and abilities. These products present a high success rate due to their innovative character, supported by an adequate marketing knowledge.

The fifth group of products is "the 'me too' product with no technical/production synergy". They are very similar to the ones available on the market, and are not superior or unique. They are very similar to the "close to home 'me too' product" presented previously, without the production synergy. There is a very poor fit between the firm/product and the R&D areas, engineering and production, the technology required is new to the company and

the company has serious gaps in technology, product design, production costs, and production process and technology. Many of the steps in the new product development process are performed in an inefficient way. Moreover, the market has many competitors and the customers are satisfied with them. Therefore, the companies with this type of product present a very low level of new products success (CALANTONE; COOPER, 1981).

The so-called "old but simple money saver" is the sixth group of products presented by Calantone and Cooper (1981). These are low technology, technically simple products. Relative investment in the project and perceived risk are both low. The main strength is the cost reduction advantages to the customer, because the production is efficient. Other advantages are: the product has marginally unique features for the customer and is somewhat better in meeting customer needs. The market for this type of product is intensely competitive. In spite of this fact, these products are mostly successful.

The next group of products is "the synergistic product that is new to the firm", representing products very new to the firm, but nevertheless having high degrees of synergy. Among the possible synergies, there are: a strong marketing and managerial synergy, including financial resources, market research skills, advertising/promotion and managerial skill, and a positive technical and production synergy. To Calantone and Cooper (1981), this group of products has the highest proficiency in terms of the activities of the new product process. Besides being very new to the firm, these products tend to be small, simple products, with low technology, not big ticket and technically simple. They also meet customer needs better than competitors. Such products are in general found in firms with new product programs extremely successful.

The "innovative superior product with no synergy" is the eighth group of products presented by Calantone and Cooper (1981). These products have the following particular strengths: unique product features, superior in meeting customer needs and reduced customers' costs. Moreover, these products also involve a very high level of technology, are big-ticket products and are mechanically and technically complex. Unfortunately, these breakthrough products lack synergy with the developing firms. There is a lack of technical and production synergy, market knowledge is missing, there is low synergy between management and marketing and the financial analysis is poorly done. The factors that favor this type of new products are: nonintensive competition, little price competition, a small number of competitors, some customer dissatisfaction with little loyalty to competitors and few new product introductions in a market with relatively static customer needs.

The last group of products is "the synergistic 'close to home' product", which is the most successful type of products, among the groups presented. These products do not involve new markets, technological processes and marketing efforts for the company. They also present a high level of technical and production synergy and proficiency, and are high technology ones. The advantages of this group are: products have unique features for the customers, they meet the customers' needs better than competition, the steps of the new product development are well performed, as well as the launch on the market. The market is a growing but competitive one, there are many competitors, product introductions are frequent and needs change rapidly.

Other researchers propose that there is an indirect but positive impact of market orientation on firm profitability via new product success and sales growth (VENKATRAMAN, PRESCOTT, 1990; COOPER, 1984). In this regard, it is possible to conclude that market orientation in firms is positively associated with new product success, according to an empirical study made by Kwaku (1997), which presents, with statistic methods, a clear evidence of this affirmation. In this study, market orientation has a significant and positive impact upon new product success.

5. Influence of institutional factors on innovation

Hernard and Szymansky (2001) show some questions related with the relevance of the use of functional diversity in the new product development teams. These authors believe that, even though it is important to have functional experts able to generate a great amount of new products, the accumulated experience indicate that the functional diversity team is not related to the product performance itself. That means that, although the functional diversity may play an important role in the new product creation process (like the ideas generation phase), the integration of new functional areas may not be a good solution to directly improve the new product performance.

When it comes to small business, Chandy and Tellis (2000) affirm the tendency of these firms to innovate based on radical innovation more than the incumbents firms do. Incumbents firms are characterized by huge structures and by tradition in producing just one product or kind of products. Normally, they have high investments intensity in the R&D area. There are plenty of factors that make this kind of firm hesitate in accomplishing the goal of innovating.

Firstly, there are no perceived incentives; these firms intensely use only one

technology and develop many products derived from this technology. Therefore, in the long range, they cannot visualize advantages in turning their technology obsolete. Chandy and Tellis (2000) research shows that, even when a radical innovation is apparently more profitable and its production fixed cost is zero, incumbent firms tend to hesitate in the new product introduction. Beyond that, the organizational filters emerge to reaffirm this tendency; there are cognitive structures that isolate information not related to managers' day-to-day activities, keeping them away from new challenges and concentrating them every day more in the company's technology.

The incumbents firms also insist on the organizational routines to optimize their repetitive activities. This phenomenon reinforces the incremental new product way of innovation, because new technologies demand new routines. There is a kind of myopia that leads incumbents to reject radical innovation. Finally, huge structures generate a communicational and informational rigid system flow, which means that the small companies can take advantage in developing their dynamism and flexibility.

Thus, according to Chandy and Tellis (2000), large firms have higher technological, financial and marketing capacity in using and maintaining an existing technology, whereas small firms are prone to introduce radical innovations in their products. Alternative ways of a small firm to sustain its innovative process are: being subcontracted as experts and research partners of other firms possessing more resources, or simply raising money from the government or risk capital enterprises. However, it is undeniable the growing necessity of new products introduction by small firms to keep competing with the larger ones in the current market.

6. Innovation, Export and Small Business

Empirical research on innovation has tended to focus on large organizations and limited researches have been conducted on small businesses. Small businesses can be understood as firms with fewer than 500 employees (MEGGINSON, BYRD, MEGGINSON, 2000). Besides, statistics studies suggest that the majority of innovation comes from the small business sector (KURATKO, HODGETTS, 2001).

According to Gudmundson, Burk Tower and Hartman (2003), a report produced by the SBA (1998) stated that small firms are an integral part of the renewal process that pervades and defines market economies. This report considered that new and small firms play a crucial role in experimentation and innovation, which leads to technological change and

productivity growth. In short, small firms are about change competition because they change market structure (SBA, 1998). These pieces of information demonstrate that there are many differences between small and large firms, thus it is very inappropriate to assume that results from studies of large firms will apply to small firms (DANDRIDGE, 1979; SMELTZER, FANN, NIKOLAISEN, 1988).

Some literature on small businesses suggests that small firms are more innovative than large firms; other theorists have pointed out that not all small firms are the same (GUDMUNDSON, BURK TOWER, HARTMAN, 2003). According to Daily and Thompson (1994), small firms are classified into four different categories - family firms, entrepreneurial firms, owner or manager firms, and professionally managed firms. However, their study did not find significant differences in firm growth among small firms in the four categories.

Other authors, like Donckels and Frohlich (1991), found some differences among the four groups. To these researchers, strategic activities of family businesses are rather conservative and the owners or managers of these firms are less profit and growth oriented than their counterparts in non-family firms. Therefore, they concluded that most family businesses are rather risk-averse. Thus, they are more inclined to find that innovation involves too much risk. In addition, creativity and innovation are considered less important in family businesses than in non-family businesses.

Although family businesses, that are considered a small business type, have received even less attention from researchers, recently researchers have begun to acknowledge the importance of family businesses (WESMEAD, COWLING, 1998). Research examining the relationship between innovation and ownership structure appears to be nonexistent.

Besides the findings reported above, small businesses also face the challenge of keeping themselves competitive in an aggressive and highly competitive global market. This situation gets harder when it is compared the larger firms' scale and financial capacity to the small companies'. The export capacity can be a strong differential to them and usually it is followed by innovation. To export, all small businesses are obligated to innovate, no matter their location (urban or rural), product type or segment. The innovations can appear concretized as new products development, management practices or even as solutions to product distribution. The small businesses problems are based on the lack of international marketing information, weak marketing tools and distribution operations familiarity and absence of financial resources (MARTINELLI; JOYAL, 2004).

In parallel, there is a clear ideas evolution on innovation in small firms in the business

literature. The innovation and technical progress concepts (FREEMAN, 1987; LUNDVAL, 1995) are associated with small firms arrangements and clusters (CASSIOLATO: LASTRES, 1998). Small firms are more vulnerable in the global market, so they are prone to search for new possibilities of product exporting and innovating. One of the most successful ideas is the association (companies groups) or local association (clusters or LPAs – Local Productive Arrangements) among small firms. This idea facilitates interactions and interdependence, creating many kinds of competitive advantages, such as increase in economy scales and vulnerability reduction. (CEZARINO; CAMPOMAR, 2004).

However, the experiences described in literature indicate that the conditions for the success of such strategies are not trivial. As a rule, significant efforts in the long range are demanded to all small firms involved. Their awareness of the benefits involved in the partnership is, in many cases, superficial. To construct a solid group with solid agreement of the participants, it is extremely necessary the formation of a controller organization.

Within this context, this conceptual proposition of association for innovation can offer specifics advantages, in some circumstances, to the understanding of the innovation process, considering the differences found among the participant firms. Therefore, no matter the innovation process approach to be used, to assume an international dimension is an effective way to small firms innovate and consequently export their new products. One of the greatest challenges of these associations is to adequate an ideal model of innovation. Due to its complexity, the management of these associations is a hard task.

7. The Guatchup Case

Differently from a large food producer firm, the company under research consists in a guava producers association, the Goiabrás, that was founded in 1994 in the city of São José do Rio Preto (São Paulo state). In 1998, the company established its headquarter in the city of Brotas (São Paulo state). The company's vision is to develop an innovative thinking on the guava producers. It has national range, but it focuses the production in the state of São Paulo and in the Northeast region of Brazil. It is formed by only small rural producers, and its main objectives are:

- To turn guava into an important fruit to Brazilian agriculture;
- To conscious producers and consumers of the guava commercial potential and to disseminate it as a strong segment in the national fruit production. Consequently, investments will be attracted and revenues will be generated;

- To discuss in the present the solutions to the future, trying to formalize the association's strategic planning. Moreover, through a precise diagnosis of the current market situation, the association will be able to see future ways;
- To search for an organizational model to the guava sector, building a structure that supports all the association activities and that allows for coordinated control. In this way, it will be possible the cooperation among the players that will share benefits from the association. Therefore, it is important to know how to build the structure, practices, operations and activities that favor the intended behaviors and that result in effective coordination of conjoint decisions;
- To implement the Goiabrás quality program in the production of Brazilian guava;
- To represent all guava producers;
- To get new products and new international markets.

The guava advantages

The association searched for research institutes and universities to look for the main fruit's characteristics. In the American website www.cspinet.or/nah/fantfruit.htm, they found out that guava is one if the best fruits in nutritional terms to human consumption. They have given to guava a gold medal, when compared to others fruits. For example, guava has a vitamin C level just below acerola, in a superior position when compared to kiwi, orange and papaya (all well known fruits for the vitamin C content). When it comes to calcium concentration, guava gets the fifth position, and in all vitamins concentration it gets third place in the fruit ranking. Guava gets the first place in fibers content, vitamin E and lycopene. This last substance prevents many kinds of cancer. A study from UNICAMP in 2002, a Brazilian university, confirmed that guava would really have high lycopene levels and even after the technological production process, the guava industrial products maintained the substance content. This fruit also has high levels of niacin, zinc and others micronutrients.

Brazil is the biggest international producer of red guava, followed by India, Pakistani and Egypt. Brazil's productivity is the highest. The worldwide production average is of 20 ton/h, whereas this figure in Brazil is about 40 ton/h.

The Innovation

Because of these fruit's qualities, the association started to look for solutions to new products development. Through a model adequate to the conjuncture conditions mentioned, the association produced the first of the six red guava derived industrialized products. It is a sweet and salty sauce that respects the healthy concepts without conservants. Its main

competitor is the ketchup. The product was developed as a natural condiment focused in the American taste, with Quest International natural essences. The main selling arguments are: benefits compared to tomato sauce, diverse uses and lycopene presence. Moreover, it can be used by people sensitive to tomato sauce's acid. Since guava can be cultivated with a minimal level of agro toxics, the final product is considered beneficial to human body. The product is exclusively Brazilian and broadens the export horizons of the country, counting on the help of APEX, the Brazilian Agency for Exports Promotion.

Guatchup *versus* ketchup

When it comes to the comparison of guava and tomato, there are several advantages for the guava, as it is shown in table 1.

Table 1 – Comparison between Tomato and Guava

Characteristics	Tomato	Guava
Health Benefits	Restrictions	Yes
Ecologically Sustainable	No	Yes
Constant Cultivation	No	Yes
Agro Toxics Use	Many	Few
Brazilian Exclusive	No	Yes
Lycopene	3,5 mg	5 mg
Vitamin B6	0,07 mg	0,2 mg
Calcium	3 mg	19 mg
Vitamin C	160 mg	10 mg

Source: Adapted from http://www.goiabras.org.br

Guatchup was considered less caloric than ketchup, with 33% less calories and 26% less salt in the ITAL (Brazilian Food Technology Institute) test. In the market research performed during FISPAL (Fair of Industry Processes and Packaging), 90,70% of people liked Guatchup; 55,7% preferred it in comparison to ketchup; 81,4% would pay up to 30% more for Guatchup and 81,4% stated that it was good to know that Guatchup was made by guava. In 2002, these numbers improved: 96% liked Guatchup; 77% of people that do not consume ketchup showed themselves prone to consume Guatchup; 89% of ketchup consumers would change to Guatchup and 54% of people considered it very good. The

ketchup consumption is about 950 mil tons in USA, 450 mil tons in Europe and 100 mil tons in Japan, which denotes a highly potential market for Guatchup.

8. Conclusions

The changes in business environment, specially the impact of operating in the dynamic and ever-changing global age, pose major challenges to new product development. The identification of emergent trends and technologies in a given technological filed results in a special advantage to organizations. Employed and perfectly converted into products, it becomes unquestionably a great competitive business protagonist. The search for news ways to innovate and create new products is surely an important source of business in the long range.

By the information described in the present paper, it can be concluded that the product Guatchup can be considered a product new to the world, i.e. a breakthrough innovation, which was developed by a small firms' association. This fact reflects the theory presented in this paper, in which it was seen that large companies have more expertise in technical, financial and marketing capacity in the utilization and maintenance of their current technology. It also indicates that the Guatchup phenomenon is happening because small firms are prone to introduce more radical innovation products.

Among the nine types of new products described in this paper, Guatchup is closer to "the synergistic product that is new to the firm", which represents products very new to the firm, but nevertheless having high degrees of synergy. Besides being new to the association, Guatchup can be considered as being technically simple, using low production technology, it can be sold at low prices and it better satisfies consumer needs. Goiabrás has succeeded in developing a value offer to its customers, because Guatchup has high levels of vitamins and fewer calories than ketchup, its main competitor. The association was able to incorporate a product concept based on a value proposition.

Finally, it has to be stressed that Goiabrás is an association of small producers. These producers, when working alone, would have never been able to develop this kind of innovation. Therefore, it was seen that the idea to found the association, even if it does not reach in the future the interactions and higher commitment levels necessary to be considered a real LPA (local production arrangement), it certainly facilitate the interactions and interdependencies among producers. This fact stimulated the creation of a new-to-the-world product with success potential. This new product reflects a gain of competitiveness of

Brazilian producers due to the higher quality level needed for exportation, and also to productivity gains, as these producers insert themselves in the constant innovation context of markets.

9. References

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