

Micro Industries of Handmade Banana Candies in Paraná Coast, Brazil

Adilson Anacleto¹, Bruna Gonçalves Nunes², Bruna Renata e Sousa³ & Caroline Delfino Gonçalves⁴

Abstract

Banana is an important food in Brazil, and although the banana has an important position in the world ranking of production, the productive chain shows problems of production utilization due to the bad conditions of harvesting, processing and transportation for the commercialization. The main way to avoid this loss is to use the fresh banana in candies production, and in Paraná Coast there are dozens of small agrobusiness industries that transform the banana into candies, representing an important regional economic activity. Despite the relevance of this product, few studies have been carried out about this sector. Thus, this study aimed to promote a characterization of the micro industries that produce handmade banana candies in Paraná Coast, highlighting the main implications and the socioeconomic potential of the activity. A descriptive exploratory research was carried out from July to December of 2018, with seven managers of handmade banana candies micro industries with recognized leadership in the sector. The study showed that the micro industries in their totality, are handmade, are located in the rural area and the manufacturing process uses the family labor and an average two people work in the industrialization. The main implications observed were the non-professional management of the companies, the low production capacity, and the lack of capital in order to invest in technology and equipment acquisition. The main potentialities observed in the interviewees' perception were the family income from the activity, the quality of the product that makes easier the sale and the raw material available and with low cost. It was concluded that the adoption of rural management tools could promote significant improvements in the management of the companies, improving the efficiency of the handmade banana candies micro industries in Paraná Coast.

Key words: Manufacture, Typical products, Family production, Agrobusiness, Rural industry



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INTRODUCTION

Banana is a sweet and soft tropical fruit that has a variety of species. In addition to the direct consumption of the fruit, according to Nomura et al. (2013) it can be used for the production of several derived products. Donato et al. (2006) say banana is an important food worldwide, due to its quantity of vitamins and minerals it is highly consumed both for its versatility in consumption and for its flavor, aroma and hygiene.

The banana tree is native from the Southeast Asia and has been cultivated by ancient societies for several centuries and spread throughout the Middle East and Mediterranean Europe. The plants cultivated since the Christ time have presented genetic modifications that allowed them to adapt to different environments and fast dissemination (ASSAD; ALMEIDA, 2004).

This fruit was introduced in Latin America, in Santo Domingo in 1516, and, from the second half of the nineteenth century, showed importance in the world scenario due to the American and Caribbean production. The commercial production in Central and South America has great importance, demonstrating high socioeconomic significance, because it mobilizes a large contingent of labor, besides generating foreign exchange for the nations where they are cultivated (GANGA, 2002).

¹ Administration Department, Associate Professor, Paranaguá Campus/Professor from the Interdisciplinary Postgraduate Program - Society and Development - PPGSeD, Campo Mourão Campus, State University of Paraná, Paraná, Brazil.
E-mail: Adilson.anacleto@unespar.edu.br

²Administration Department, Scientific Initiation Researcher, State University of Paraná, Paranaguá, Paraná, Brazil.

³Administration Department, Scientific Initiation Researcher, State University of Paraná, Paranaguá, Paraná, Brazil.

⁴Administration Department, Scientific Initiation Researcher, State University of Paraná, Paranaguá, Paraná, Brazil.

According to FAO (2018) banana is considered the fresh fruit that holds the largest market in the world with a value of three billion dollars (CORDEIRO et al., 2014), the largest producer of banana is Asia followed by the Americas. The Brazilian production is approximately 6,764,324 tons annually (IBGE, 2016). Banana is the fruit with the highest per capita annual consumption in Brazil and it reaches 35 kg/consumption/inhabitant per year (MATSUURA et al., 2004).

The importance of banana farming in Brazil varies according to the regional characteristics and it can be planted as the main economic income in a rural property, however it is common to find farmers who use banana as supplement income or as family food (LIMA et al., 2002).

Although the Brazilian banana industry has an important position in the world production ranking, the productive chain faces problems of production utilization due to the bad conditions of harvesting, processing and transportation for commercialization (LIMA et al., 2002).

Paraná States produces an average of 205 thousand tons a year and according to the State Supply Center (CEASA, 2018), in Paraná the coastal region is the largest producer and it represents 1.3% of Brazilian production.

The banana cultivation in Paraná Coast according to Cordeiro et al. (2014) shows two serious problems with the crops annually harvested. The first problem is the fruit fast maturation, which demands rapid commercialization by the producer, because this fruit is considered highly perishable and if it is not consumed causes high losses. The second problem is the refuse which considers the parts of the banana clusters that have irregular size or other aesthetic defects that hamper the commercialization but has the same nutritional capacity.

Paraná Coast, according to Anacleto et al. (2008) annually discards about 35 thousand tons of fresh banana, whether due to the lack of buyers or high levels of discard. The main way to avoid this loss is to process of fresh banana in sweets or candies, according to Cordeiro et al. (2014), the banana sweet most made with the refuse is the candies, produced mostly in small rural agrobusiness industries.

The region has its economy based especially on the tourism that traditionally is also associated to the gastronomy of typical regional products, and in this context Cordeiro et al. (2014) highlights handmade products such as the banana candies produced in small agrobusiness industries, which according to Anacleto et al. (2008) is the preferred banana delicacy in Paraná Coast and may represent an important economic development alternative for the families involved in the production process. Thus, in this context, the industrialization of banana may represent an option in the use of surplus production and fruit with no quality standards for in natura consumption (SOUZA; TORRES FILHO, 1997).

According to Anacleto et al. (2008), handmade banana candies industrialization could be expanded, but many producers have difficulty in transforming the banana due to the lack of market knowledge, the ways of commercialization and in particular the lack of commercial strategies in order to increase commercial capacity.

Thus, the present study aimed to promote a characterization of the handmade micro industries that produce banana candies in Paraná Coast, highlighting the main implications and the socioeconomic potential of the activity.

MATERIALS AND METHODS

A descriptive exploratory research was carried out from July to December of 2018, with seven owners of handmade banana candies micro industries in of Paraná Coast, with recognized leadership in the sector, aiming to promote a sectoral panorama.

In order to verify the owners' perception on the implications and potentials of this sector in Paraná Coast, according to Gil (2007), semi-structured questionnaires were applied, and the perception and understanding of the implications and potentialities of the activity were obtained through a qualitative approach, from which individual data were initially obtained.

After the previous phase, similar what was proposed by Anacleto et al. (2017), a cross impact matrix was organized, following the propositions of Anacleto et al. (2018), who describes the matrix as the intersection of the implications among them, and later the opportunities among them.

The matrix uses percentage values from 0 to 100 to each opinion expressed by the interviewees in a collective way in relation to the other opinions expressed, comparing each item analyzed related to the influence practiced and the influence suffered in the activity of producing handmade banana candies in micro industries, then the higher the index, the greater the relevance and attention to be given to the solution of the problem suffered by the banana candies producers or the valuation to be given to the opportunities.

The impact matrix generates an index of relevance (importance to the development) that can be obtained by the equation:

$$IR = \frac{FA \times FB \times 100}{\sum SF}$$

IR= Relevance Index of the evaluated situation;

FA = Influence indexes received;

FB = Induced influence indexes;

$\sum SF$ = Sum of the indexes (FA x FB) of all questions analyzed.

Still according to Curvelo et al. (2016) after completion of the primary data collection, an interpretative and descriptive analysis of the contents obtained during the interviews was carried out using the triangulation technique between the observations of the researchers and the similar answers obtained from the handmade banana candies producers.

RESULTS

The handmade banana candies producers from the cities of Paraná Coast are in their entirety from the rural area, they are characterized by the manufacturing process in their production, because they do not have large industrial machines and in order to facilitate the manufacturing process, they basically use the family labor force, being on average two people for the production process and trade of banana candies.

The banana candies production for the majority of the respondents (n = 60%) is inserted in the concept of rural pluri-activity, where the farmer performs multiple tasks to have income, but a significant portion of the interviewees (n = 40%) already have the production and trade of these candies as an exclusive source of income.

The form of production is similar to that described by Anacleto et al. (2008), where the fresh banana when arrives in the rural micro industry is selected and transported to the peeling area (Figure 1A). The peeled banana is placed in stainless steel pans for baking until the point of gum to produce the banana candy (Figure 1B).

The already cooked banana pulp is partially hardened and passed in a cylinder equipment until it reaches the desired thickness in candies sheets (Figure 1C). After the candy mass is cut in small cubes of 1 cm³ acquiring the candy commercial format in standard sizes and thus passing in a vessel with sugar and then the candies will be taken to the prepackage (Figure 1D), with the candy already ready, the process of arrangement in packages begins where it is evident the handmade candy (Figure 1D).



Figure 1A. Peeling area.



Figure 1B. Gum cooking process.



Figure 1C. Banana candy sheets.



Figure 1D. Commercial candy form.

Related to the education, the majority of respondents ($n = 40\%$) had completed the high school, and all the interviewees learned to make banana candies by orality with relatives or close friends, and had no records of producers who had training courses to develop their activities.

All respondents also reported that they considered their products different from others traditionally found in the market, especially industrialized banana candies, but they recognize that other factors can help in the sales process, such as tradition, brand, quality, price. The minority of respondents ($n = 40\%$) reported that they knew the profile and behavior of their clients, but the totality reported that they did not promote formal production planning.

A relevant factor is that only the minority ($n = 10\%$) promoted some type of divulgation of their products, and others reported that they did not know how to proceed with this action efficiently.

The average monthly production among producers was approximately 1500kg/month and during the summer season it was up to 6000kg/month.

The set of implications (Table 1) reveals that most of the limiting factors are embedded in the internal context of the micro industries, so even though they show a degree of difficulty, they can be solved since it depends on internal actions, often associated to the management. In this context, all the opportunities described in the perception of the handmade banana candy producers (Table 1) show a positive overview for the activity, where the family income obtained from production and trade, the secular quality of the product, the supply of the raw material facilitated and with low cost, linked to the great acceptance of the consumer results in a favorable scenario when compared to the set of implications.

Table 1. Implications and potentialities of handmade banana candies micro industries in the perception of the producers in Paraná Coast.

Implicações	IR	Potencialidades	IR
1 Non-professional management of the companies	17,22	1 Familiar income	21,55
2 Low production capacity	15,36	2 Product quality	16,17
3 Lack of capital for investment in technology and equipment acquisition	14,36	3 Available raw material and with low cost	15,17
4 Insufficient family labor	10,92	4 Brand and identity of regional product	15,17
5 Unknowing about marketing and customer profile	9,20	5 Increase of sales in summer season	9,14
6 Distance from urban and commercial centers	8,74	6 Product competitive price	7,32
7 Line-up limited to traditional banana candy	7,29	7 Partnership among producers	6,05
8 Lack of access to financing	6,51	8 Use of family labor	4,37
9 Lack of cash flow control	5,40	9 Demand for natural products	3,51
10 Lack of capacity building	5,00	10 Secular empirical knowledge of banana candies production	1,55

The industrialization promotes the increase of the product longevity after processing and adds value to the product. Under the social perspective, it is an activity that generates jobs and income, however, currently less than 2% of the bananas produced in Brazil are used in the industrial process (SOUZA; TORRES FILHO, 1997), thus there is a large gap in the activity in Brazil.

The banana candy is an easily accepted delicacy among the residents and tourists of Paraná Coast and represents an important market niche, the success of this product in the perception of the producers interviewed among many factors, occurs due to the quality of the product and the affordable price when compared to other competing sweet delicacies, and the data obtained in the present study were similar to those previously reported by Cordeiro et al. (2014) who emphasize that price and quality are still in the Brazilian reality the main factors of the market mix, being decisive as a strategy of market penetration and bargaining with the consumer.

The commercialization of banana candy in Paraná Coast by this set of factors is classified by Anacleto et al. (2008) as a mature market, however, according to the authors, there is still the possibility of expansion and development of this agrobusiness industrial activity, only with the coverage of the regional population, without taking into account the increase in consumption coming from tourism. However, the study revealed that the banana candies producers in Paraná Coast need important adjustments in the management of the production and trade, while keeping a watchful eye on the competitive force actions in the market.

Thus, Brisol and Castro (2005) point out that the global competitiveness of agrobusiness establishes new standards in Brazilian rural areas, imposing on farmers and rural entrepreneurs the need to visualize their properties holistically, not only in a segmented way. This new vision requires that rural man increases his managerial capacity in order to evaluate under an organized economic vision the productive activities that can be more efficient in the sense of income generation.

According to Assad and Almeida (2004), considering the capacity of agriculture in generating direct and indirect jobs and in contributing to the containment of migratory flows, favoring accelerated and disorganized urbanization, the great challenge of the current agriculture is to improve existing production systems and that these can ensure the generation of family income with good working conditions with remuneration compatible with its importance in the production process. Then, under this approach, banana candy production as an agricultural activity deserves attention in management and

organization, since the study showed that in the perception of the interviewees that despite the longevity of the activity, the problems of managing their companies still generated the main implications for development.

The study found that although banana candy producers knew the production processes deeply, the empirical efficiency of production was not reflected in production management processes as well as in the commercialization, so it is possible to state that most of the observed implications that impeded the correct development of the activity was associated to the management issues of this rural activity.

In this context, the first question to be analyzed by the producers involved in the production and trade of the banana candy in Paraná Coast, is the need for training. Training can be considered as a mean of developing people skills so that they can become more productive, creative and innovative, in order to contribute to the company efficiency. Too often people fail to realize that they need training and qualification due to the excess of day-to-day activities, which often end up demanding immediate action, and the producer does not analyze the process as a whole.

According to Gil (2001) the training and capacity building aim to encourage people to seek better and more adapted solutions for their personal and professional growth, and describes that through appropriate opportunities and incentives, people start to work with greater motivation and enthusiasm, therefore it is imperative to know the human beings needs implicit in each producer and to associate them to the existing scenario and resources, thus maximizing the efficiency of actions based not only on what is priority at the moment but also in the medium and long term.

The correct adoption of the rural management tools can also be classified as an essential alternative of development in the sector because in the perception of the producers most of the problems and implications were tied to management issues. Anacleto and Negrelle (2015) describe that the professionalization of the rural producers should be guided by business management models with business characteristics, without, however, abdicating the concepts of sustainable rural development that is a regional characteristic.

Thus, the insertion of simplified management tools that can organize economic flows, while controlling production and trade, may result in significant improvements in the lives of those involved in the production, increasing the benefits also for social, economic and ecologic.

Anacleto and Negrelle (2015) describe simplified models successfully adopted in the management of rural companies such as the PDCA cycle (Plan, Do, Control, Action) which is a management system that does not present a need for computer resources, and then with easy adaptation to the conditions of the field. This tool establishes that the producer defines his objectives and goals in relation to the volume of production and especially considers the questions that aim to minimize the undesired effects of the existing trade-offs (Table 1).

Still at this stage, the tool requires the producer to think about the resources available and in the search for new forms of control and management of production and trade. Therefore, it is considered as a success factor that the deep knowledge about the management processes allied to the empirical experience of decades lived by these producers, can result in presumed, controlled and gradual changes, as well as what forms and resources will be necessary to reduce the impacts on production or if it is possible to eliminate them.

Anacleto and Negrelle (2015) report that the information needed for planning and how to transpose the current situation to the desired situation can be obtained through conversations with other producers who have more organized production control systems or with greater level of technology adopted, technicians from the public service, in addition to self-training using books, didactic films and internet.

In the next phase (Do) the activities are performed according to the planning and action plan. In this way, each activity is executed following a model designed and idealized in advance, which aims to increase product quality and reduce costs. During this phase, simultaneously occurs the data collection in order to monitor the efficiency (Check) of the running plan, the focus should be to verify if the actions are in fact combating the causes and not the effects caused by the tradeoffs. The last phase of the process (Action) provides an internal corrective action and also it is assessed the need for external help in each of the desired solutions.

Still according to Anacleto and Negrelle (2015) the implementation of the management system based on the PDCA cycle in Paraná Coast, has had results with the adoption of a worksheet that follows the action plan in the 5W2H model (What, Why, Where, When, Who, How, How much). The use must be complementary to the PDCA cycle, in this case once the PDCA cycle has identified the limiting conditions in the production, the producer evaluates what are the main problems to be attacked and quantifies in the form with dates and deadlines of execution.

The 5W2H can be prepared in a spreadsheet form manually and forces the producer to think about what will be done in each one of the actions. Initially it is analyzed what will be done (What), and simultaneously who will be responsible for the activity (WHO), later it is defined when will initiate the activities (When) and where it will be done (Where), it should also be delimited the reasons (Why) for each action proposed and finally how it will be done (How) and what will be the cost (How much). The adoption of these simplified practices reduces the risks and uncertainties experienced by the producer and helps in the support of the activity.

Thus, it can be verified that the adoption of rural management tools by banana candies producers in the region of Paraná Coast is urgent, so they can provoke changes in the current situation in relation to the strategic decisions for the business, among them it is urgent to define the vision of the business future, and from this point on, define strategic objectives with growth targets, return on investment, equipment needed to increase production, courses for improvement and profitability goals.

FINAL CONSIDERATIONS

The study showed that the micro industries that manufacture the banana candies in Paraná Coast, in their totality, are handcrafted, are located in rural area, and in the manufacturing process, basically, it is adopted the family labor available in the properties of on average two people per micro industry.

The main implications observed were the non-professional management, the low production capacity, and the lack of capital to invest in technology and equipment acquisition.

The main potentialities verified in the interviewees' perception are the family income from the activity, the quality of the product that facilitates the sale, and the raw material available and with low cost.

The adoption of simple management and rural management tools such as the PDCA cycle and 5W2H could promote significant improvements in the efficiency of the handmade banana candies micro industries in Paraná Coast.

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