

A PROJECT PROPOSAL FOR A TRUFFLE MICRO- ENTERPRISE

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The present work uses knowledge obtained in the course of Production Engineering, with the purpose of presenting a proposal of factory project of a handicraft truffle microenterprise. The study proceeds in the factory design area, as well as in the general administrative area, especially entrepreneurship. For this, market information, layout proposal, raw material used material costs, a good location, basic equipment were presented, in order to bring knowledge that helps to visualize what you need for the opening of a small homemade factory, of truffle production. All data were collected through bibliographic research, and through academic knowledge acquired during the course of Production Engineering. The study aims to collect information that help the entrepreneur to start his own business, efficiently and effectively, in view of quality and productivity, so that you can obtain a satisfactory financial return.

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A PROJECT PROPOSAL FOR A TRUFFLE MICRO-ENTERPRISE

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Abstract

The present work uses knowledge obtained in the course of Production Engineering, with the purpose of presenting a proposal of factory project of a handicraft truffle microenterprise. The study proceeds in the factory design area, as well as in the general administrative area, especially entrepreneurship. For this, market information, layout proposal, raw material used material costs, a good location, basic equipment were presented, in order to bring knowledge that helps to visualize what you need for the opening of a small homemade factory, of truffle production. All data were collected through bibliographic research, and through academic knowledge acquired during the course of Production Engineering. The study aims to collect information that help the entrepreneur to start his own business, efficiently and effectively, in view of quality and productivity, so that you can obtain a satisfactory financial return.

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1. Introduction

For the opening of a micro enterprise, it is necessary first of all planning, alignment of ideas, market research, as it is necessary to identify opportunities and risks to be taken, thus facilitating decision making and the emergence of new ideas.

Since the late 1970s and early 1990s, Western economies have given greater importance to micro, small and medium-sized enterprises (MSMEs) in economic growth and job creation [1]. Increasingly, entrepreneurial activity has been valued by the Brazilian government, as it is one of the ways to solve the

unemployment crisis, and because it is a growing source of job creation. Nowadays, chocolate has become a promising market in Brazil and worldwide, because it is constantly growing, is seen as a good business option, after all, it is difficult to find people who do not like chocolate.

To start a business is necessary planning, obtaining market information, having financial resources, human and materials. A whole study is essential, so that the venture will flow, it is not enough just will, it takes quality and dedication for the micro enterprise to succeed.

This paper aims to present a proposal for a factory project for the implementation of a micro truffle manufacturing company, aiming to assist the micro entrepreneur in visualizing the profile needed to open a successful business.

And through this study, it will be possible to see the ideal location, layout proposal, cost analysis, raw material, among others. The information that will be presented will certainly be of great value to the individual who dreams of starting his own business.

2. Literature Review

2.1 Entrepreneurship Development

According to [2], entrepreneurship is the involvement of people and processes that, together, lead to the transformation of ideas into opportunities. To be a good entrepreneur requires thinking high, forward thinking, being innovative, because all these characteristics are essential to the success of the venture. Entrepreneurs are individuals who discover market needs and start up new businesses to meet those needs.

[3]

They are the ones who take risks, bring about changes that drive the economy, generate new ideas, jobs and new talent.

The entrepreneur is the person who starts and / or stimulates a business to carry out a personal idea or project, taking risks and responsibilities and continuously innovating. [4]

The entrepreneur is a product of the environment in which he finds himself (time and place), thus being a social being. If a person is exposed to an environment where being entrepreneurial is seen as positive, then they will be motivated to start their own business. [5]

2.2 Artisan Bombs

Candy is a product made of chocolate mass or a core of various fillings made from fruit, pieces of fruit, oilseeds, sugar, milk, butter, cocoa, liqueurs and other foodstuffs, coated with a layer of chocolate or sugar frosting.[6]

Homemade chocolate candies are made from industrial chocolate with various variations depending on the type of candy produced and the recipe followed by the manufacturer. [7]

Among the main raw materials used in the manufacturing process of artisan truffles are chocolate, butter, sour cream, flavoring beverages and various spices.

2.3 Micro Enterprise

Small businesses are considered essential to the growth and maturation of the economy. In the development

process, the contribution they make in generating opportunities for harnessing a large portion of the workforce and in stimulating business development is significant [8]. Microenterprise is defined as a legal entity that reaches an annual turnover of R \$ 360,000.00 or less, concept presented by the complementary Law 123/2006.

2.4 Manufacturing and Layout Design

For any type of company to achieve competitiveness and to remain in it, a solid path must be worked out for the Factory Project, which in turn is not a simple task, since it is directly linked to the improvement of structural and non-structural decisions, which are vital to the good performance of the production unit.

The factory and layout project integrates a wide range of knowledge from various areas involved in the rational planning of production activities with long-term effects, aiming at making possible the competitive advantages that the companies intend to offer to their customers and thus increase their efficiency market share [9].

2.5 Layout

According to [10], the purpose of the layout is to present the textual and visual elements in a way that the reader receives them with minimum effort. Through the layout is seen in detail where will be positioned each machine, equipment, raw material and support services.

There are two relevant aspects in the study of layout, which are economical and scientific from an economic point of view, when working with effective layout it is possible to achieve a considerable reduction in production costs.

2.6 Production Equipments

Firstly, to acquire the equipment it is necessary to define which size will be the chocolate factory, after that the most appropriate type of material to be used is taken into account. Before purchasing the machinery, you have to see what kind of service will be offered and the quality required so as not to risk spending more than you need. In addition, it is essential to use accessories that are not directly linked to production, and which are crucial to any business structure, such as computers, printers, phones, air conditioning, among others, which meet your business requirements.

2.7 Company Location

Choosing the place where the company will be installed is undoubtedly one of the most important and complex decisions to make, as it directly implies the success of the enterprise. For this reason, choosing the right location requires strategic decisions so that the business can generate sustainable competitiveness, as the opposite can create a huge market disadvantage.

It is very important to define the geographical area of business, ie the market where customers are located or where products and services will be marketed [11].

This definition will give the company the size of its distribution and customer service needs, as well as the resources needed to get products and services to their destination [12].

2.8 Commercial Market

The market is composed by the environment where the company (and what it does) is located, by the competition and consumer profile. The industry analysis should provide information on its size, growth and structure in which the company operates, and can serve as a basis for monitoring changes and thus seizing opportunities [11].

Market analysis is extremely important for those considering starting their own company, as it aims to guide entrepreneurs in relation to the compatibility with the environment in which the company is placed.

2.9 Production Costs

Productive costs are the quotations of goods and services managed in the production of other goods and services, it is of great value to companies, because it is a concept that supports decision making in relation to the survival of a company.

It is expenditure related to the good or service in the production of goods and services, ie, it is the expense made in the manufacturing area (production) of the organization. As an example of cost, we can cite the raw material used in the production process, labor used in the manufacturing area, the electricity consumed in the manufacturing area and all other expenses incurred in the manufacturing area [13].

3. Tools and Methods

The work contains a marketing analysis, which included information about the product segment.

It presented costs related to production, raw material and labor, where data were collected on the site of the Brazilian Micro and Small Business Support Service (SEBRAE). A flowchart was presented that showed in a simple and easily interpreted way the productive process of handmade truffles. And presented layout proposal, which helps precisely how to set up the establishment, specifying the positions of each machine utensils, equipment and others. It showed the choice of the location of the production unit, which is classified as one of the most important strategic business decisions.

4. Study Application

4.1 Productive Process

The truffle manufacturing process is represented in figure 1, a simple flowchart that clearly shows the sequence of activities, which are:

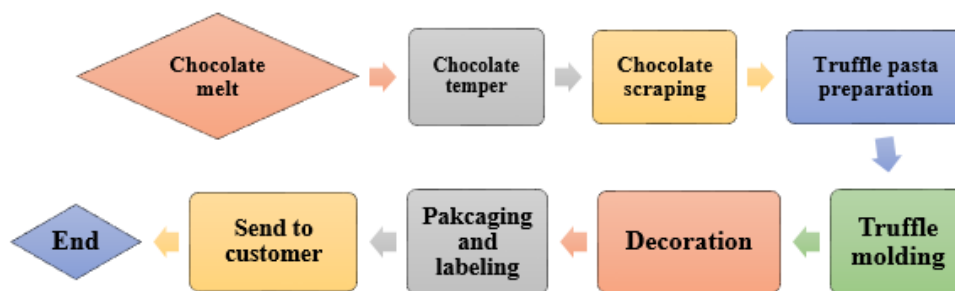


Figure 1 - Production process flowchart

Source: Author

4.2 Process description

- ◆ Melting chocolate: A step in which chocolate is melted at a melting temperature of 45 ° C. To check the temperature the culinary thermometer is used.
- ◆ Chocolate tempering: A step that requires specific attention to obtain a good quality of products, as well-tempered chocolate generates a higher brightness, hardness and contraction properties. Once seasoned, the chocolate is refrigerated to dry for approximately 10 minutes.
- ◆ Chocolate scraping: it is made after chocolate is seasoned and dried in the refrigerator, in this step the scraping machine is used.
- ◆ Elaboration of the truffle mass: put the water bath on the fire, letting the water boil, and after heating the top container is put, adding the cream, butter and glucose, mixing until turning liquid, then the When the container is removed from the water bath, the shaved chocolate is added, when it begins to melt it should be removed from the heat and stir until it becomes a homogeneous mass. The rest of the ingredients should be put when the dough is cold, it must be cold after 24 hours in the refrigerator before being molded.
- ◆ Truffle molding: For this step two spoons or a rotary molder are required to obtain a rounded and irregular shape. When chocolate is melted and in the ideal condition, the truffles are glazed with the help of a fork and placed on a smooth surface, covered to dry.
- ◆ Decoration and packaging: Immediately after being dry and crystallized (6 to 6 hours), the burrs of the candies should be removed. In addition, after the packaging process begins, packaging can be made of colored and specific papers that do not damage the product, the use of aluminum foil or insuflim is not recommended.
- ◆ Send to customer: After going through all the steps, products are shipped to customers.

4.3 Team Technical Profile

Prioritizing the optimization of its processes, all personnel will be trained according to the need required for the truffle industry to avoid possible human errors. Moreover, in the area of production will be prioritized professionals who have specific experience and skills in the area of production of artisan truffles.

4.4 Productive capacity

In the production of truffles, the factory will work 1 shifts of 8 hours, with a minimum cycle time of 1.20 min, the total productive capacity of the company will be 400 units / day.

$$TC = \frac{TD}{D} \quad TC = \frac{480 \text{ min/day}}{400 \text{ unit/day}} = 1,20 \text{ min/unit} \quad (\text{Eq 01})$$

$$TX = \frac{D}{TD} \quad TX = \frac{400 \text{ unit/day}}{480 \text{ min/day}} = 0,83 \text{ unit/min} \quad (\text{Eq 02})$$

TC = Cycle time in minutes per day.

TX = Production rate in units per minutes.

DT = Time available for production in minutes per day.

D = Average demand in units per day.

The expected average demand per day is 400 truffle units, the production time has to be balanced to a cycle time of 1.20 minutes per unit, which equals a production rate of 0.83 units per minute.

4.5 Location of the production unit

The truffle candy microenterprise is located in the northern part of the city of Manaus at Avenida Camapuã – Cidade Nova. The Company is initially made up of five employees, Chocolatier, Stuffer, Packer, Administration, Sales and Service.

After going through the appraisal stages the site was chosen because it has a reasonable cost rent and documents, and because it is a main avenue has a lot of visibility, logistics is easy to access, and there are no competitions nearby.

4.6 Process Equipments

Each new company that seeks to consolidate itself in the market, to which it is employed, has the need of new technologies that serve the customer as best as possible. The main equipment and utensils used to manufacture truffles are presented in Table 1:

Table 1- Equipaments

	VALUE UNIT
ELETRIC MELT	R\$ 500,98
CHOCOLATE MILLING MACHINE	R\$ 249,90
FIXED COOKER 25L	R\$ 352,00
FIXED CHILLER 25L	R\$ 352,00
APPLIANCES (573 REFRIGERATOR 12L MIXED INDUSTRIAL BLENDER)	R\$5.793, 55
INDUSTRIAL STOVE	R\$1.137, 60
ELECTRONIC BALANCE	R\$202,31
ELECTRIC WATER BATH	R\$896,5
ELECTRIC WATER BATH	R\$353,58
CULINARY THERMOMETER	R\$13,00
CUTLERY	R\$211,25
SHAPES / MOLD	R\$231
CABINETS	R\$760,50
TOTAL	R\$11.054,17

Source: Author

Table 1 contains the equipment that will be used in the company, together with their unit values, which in the total of an investment of approximately R \$ 11,054.17.

The micro-company of candy truffles through deep investments in the development of its products has as culture the investment also in new technologies, but that mainly seeks to attend the production process, as machines that improve the manufacturing process and increase productivity and avoid waste from outdated equipment.

4.7 Process Layout

Figures 2 and 3 show the floor plan of the microenterprise facilities, indicating the sectors where the production process stages occur.



Figure 2- 2D floor plan

Source: Own Author

Figure 2 represents the floor plan of the installations in 2D format.



Figure 3- 3D Floor Plan

Source-Own Author

Figure 3 represents the floor plan in 3D format, generating a better view of the company, which has the size of 165m², containing raw material arrival and departure area, production area, raw material deposit, finished product deposit, cloakroom, ladies' and men's toilets, buying and selling department, financiers, and retail store.

4.8 Company Production Costs

Table 2 provides a simplified summary of the main monthly expenses that should be taken into account for the truffle microenterprise:

Table 2- Monthly Costs

COSTS WITH:	VALUE
LABOR	R\$4.000, 00
TRANSPORT	R\$1.000,00
TAXES	R\$1.800,00
RENT, CONDOMINIUM, AND PROPERTY TAX	R\$1.500,00
WATER, LIGHT AND PHONE	R\$450,00
MAINTENANCE AND UPKEEP	R\$250,00
CLEANING MATERIAL	R\$100,00
OFFICE SUPPLIES	R\$80,00
TOTAL	R\$ 9.180,00

Source: [14]

Table 2 lists some of the expenses that are imposed to operate a small chocolate factory, which is equivalent to a cost of R \$ 9,180.00 per month.

4.9 Company Operating Market

The market to which the company will focus is local, specifically for the supply of products to the Manaus region. However, after consolidation of the local market, there will be plans for supply to the entire northern region.

5. Results and Discussions

Starting a new business is not a simple task, it requires effort and dedication, not only wanting it, but it takes financial, human and material resources. Through this work it was possible to visualize the most relevant steps that are indispensable to start a small artisan truffle factory, from the layout to the ideal location, and potential consumer market. The advantage of being a microenterprise is that because of its small size, the amount of business-related documentation and paperwork is relatively smaller. Your legal duties are also simplified.

In the manufacture of truffles it is possible to observe through the flowchart that the production process is simple and versatile, the study had the description of each production step that begins with the verification of the quality of the raw material until shipping to the customer. It was possible to identify the main equipment used and its unit values, the raw materials used the monthly costs.

In relation to costs, expenses with labor, transportation, taxes, rent, water, electricity, telephone, cleaning supplies and office were generated, generating an approximate amount of R\$ 9,180.00. Values equivalent

to equipment were also verified, obtaining an approximate amount of R\$ 11,054.17.

The layout presented is a simple and sequential process, in order to avoid interference between areas.

The location was chosen based on rent evaluation, documents, visibility, and competition.

The company's productive capacity reaches 400 und / day, with a cycle time of 1.20 minutes per product.

Therefore, it is seen that entrepreneurship has become an outlet for the Brazilian, being a viable and promising alternative source of income. Among the possible ventures, small truffle factories are an affordable option.

6. Final Considerations

Considering the current economic crisis in the country, the proposal of a factory project is an essential part for the visualization of a new venture, although in short, it is essential for the future of a new business. The project proposal refers to a small chocolate factory that aims to be implemented in the Amazon market.

Based on this proposal, the entrepreneur will be able to visualize the basic structure of the truffle factory, being able to understand its operation, from the production to the choice of the location. It is also included the equipment costs and monthly expenses, giving a primordial investment margin. The layout proposal gives the glimpse of how to organize the manufacture of the product, all this information can help in the organization of the company.

Therefore, it can be considered through the project proposal presented, that the opening of the venture is something achievable and promising, that at first start as a small company and in the long run can become a large organization, and reference in manufacturing of truffles in the Amazon and national market.

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