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Competition in the metallurgical area of the production of equipment for coffee roasting

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ABSTRACT

The competition in the metallurgical area of the production of equipment for coffee roasting is intense and impacts the market in several ways. With increasing global coffee consumption and demand for high-quality products, roasting equipment manufacturers need to differentiate themselves to remain competitive. Thus, the present study presents as problematization the respective questions: What are the actions that lead to the competitiveness of competitors in relation to the scenario of the production of coffee machinery production? How does competition among machinery manufacturers affect equipment prices? What is the environmental impact of machinery for coffee production? Is there a company that offers more sustainable solutions? In the search for answers to this problematization, this work has as general objective to analyze the scenario of the competition of the production of machinery for the marketing system of the coffee grower. As specific objectives we define: Identify the main manufacturers of machinery and evaluate the market concentration; How the technology used in the machinery impacts on coffee production and the competitiveness of competitors; Investigate how competition among machinery manufacturers affects equipment prices; Assess the environmental impact of machinery for coffee production and identify companies that offer more sustainable solutions. Thus, the methodological procedure undertaken in this work corresponds to bibliographic and electronic research that circulate the theme, providing studies and voices of authors who dialogue about this scenario. In this way, the content to be raised corresponds in the search of secondary data, as well as in the documentary research analyzing budget portfolios of some respective companies that produce such machinery. In view of this collection, the methodological link is related to a close look at the criteria adopted in these portfolios with a better visualization of the items and attributes that are made available by such companies. In short, competition in the metallurgical area of coffee roasting equipment production is intense and drives companies to constantly seek innovation, efficiency and differentiation. Manufacturers face challenges regarding both equipment prices and environmental impact. Those who can balance these aspects effectively are more likely to stand out and thrive in this competitive market.

Keywords: Competition, Equipment Production, Coffee Roasting, Metallurgical.

1 INTRODUCTION

The theme of the research observes the scenario of competition in the production of machinery for the marketing system of the coffee grower.

The research investigates competition in the metallurgical area, focusing on the manufacture of equipment for coffee roasting, in a city in the interior of São Paulo, whose city includes approximately 240 thousand inhabitants, and the research was conducted in the first half of 2023.

Thus, we point out as relevant the realization of this study because the production of coffee is an important economic activity in Brazil, which involves a series of steps and processes to ensure the quality of the product. In this sense, the use of specific machinery for coffee cultivation is fundamental to optimize production and ensure greater competitiveness in the market. However, the scenario of competition in the production of these machines is still little explored and studied. Therefore, it is important to investigate how this competition affects coffee production and the financial viability of producers, as well as to assess the environmental impact of this equipment.

Therefore, it is extremely necessary to carry out a study on the main strategies to circumvent the competition and how to stand out in the metallurgical market for the production of machinery for coffee roasting.

The methodological procedure undertaken in this work corresponds to bibliographic and electronic research that circulate the theme, providing studies and voices of authors who dialogue about this scenario. In this way, the content to be raised corresponds in the search of secondary data, as well as in the documentary research analyzing budget portfolios of some respective companies that produce such machinery. In view of this collection, the methodological link is related to a close look at the criteria adopted in these portfolios with a better visualization of the items and attributes that are made available by such companies.

Thus, to obtain such budgets, the "hidden customer" method will be undertaken as a way to ascertain the components, attributes and benefits that such companies through their budget portfolios make available in the face of the manufacture of such machinery and this market scenario.

For Candeloro (2012), the so-called hidden customer corresponds in the technique of testing the service and service provided by organizations, considering that it places strange people passing by buyers, in order to evaluate various aspects of the business environment.

The present study presents as problematization the respective questions: What are the actions that lead to the competitiveness of competitors in relation to the scenario of the production of coffee growing machinery? How does competition among machinery manufacturers affect equipment prices? What is the environmental impact of machinery for coffee production? Is there a company that offers more sustainable solutions?

In the search for answers to this problematization, this work has as general objective to analyze the scenario of the competition of the production of machinery for the marketing system of the coffee grower.

To achieve the general objective, we delimit the respective specific objectives: Identify the main machinery manufacturers and evaluate the market concentration; How the technology used in the machinery impacts on coffee production and the competitiveness of competitors; Investigate how competition among machinery manufacturers affects equipment prices; Assess the environmental impact of machinery for coffee production and identify companies that offer more sustainable solutions.

Thus, we begin a discussion about the object of study, in order to dialogue with possible answers about the problematization and aim at the objectives established in this study.

2 CHARACTERIZATION OF THE MAIN MANUFACTURERS OF EQUIPMENT FOR COFFEE ROASTING

The main pole of manufacturers of machinery for coffee roasting is located in the state of São Paulo, where most of the companies that supply this equipment to coffee growers are concentrated, knowing this a survey of the main supplier companies of the state was carried out.

At this time, we will respect the identification of companies and thus, we characterize as companies that will be called by letters, example "A", "B", among others.

Organization A is a large company, with 75 years of experience in the market, as well as acting as an exporter of equipment to foreign nations.

Institution B is a small company and has been present in the market for a little more than 20 years, exporting equipment to other countries.

Entity C is a small company, has been in the market for 22 years, carrying out activities of exporting equipment to other countries.

Organization D is a small company, has been in the market for 10 years, supplying exclusively so far at the Brazilian national level.

Both are from the state of São Paulo and seek to serve the same target audience with increasingly technological and efficient machinery gaining strength in the consumer market of roasters.

2.1 THE IMPORTANCE OF THE TECHNOLOGY USED IN MACHINERY AND ITS IMPACT ON COFFEE PRODUCTION AND THE COMPETITIVENESS OF MANUFACTURERS' COMPETITION

Technology in coffee equipment has a significant impact on competition between manufacturers. Technological advances can provide manufacturers with a competitive advantage by creating more efficient, innovative and convenient coffee machines for consumers.

Technological advances allow manufacturers to develop coffee machines that are able to extract the maximum flavor and aroma from coffee beans. This can include features such as precise control of temperature, pressure, and extraction time. Manufacturers that offer an exceptionally good coffee experience can stand out from the competition and attract consumers who value coffee quality.

Technology can simplify the coffee preparation process, making machines easier to use and clean. Features such as detection of impurities at the time of coffee bean grinding, self-cleaning systems and intuitive controls can improve the roaster experience and reduce process complexity.

Accelerated technological advancement is redefining competition across multiple industries, driving innovation and operational efficiency. Companies that embrace and leverage emerging technologies have the opportunity to gain competitive advantage, improve customer experience, and drive sustainable growth.

Those organizations that are able to embrace and adapt to technological change are more likely to remain relevant and competitive in an ever-evolving marketplace.

Process automation and optimization, real-time data analytics, and the adoption of cloud-based solutions are just a few examples of how technology can increase organizations' efficiency, productivity, and ability to innovate.

2.2 COMPETITION BETWEEN MACHINERY MANUFACTURERS AND EQUIPMENT PRICES

Due to the fierce competition in the metallurgical market in the manufacture of these equipment can affect the same, manufacturers are encouraged to seek strategies to attract customers and gain market share. This can lead to pressure to lower equipment prices.

As such, this competition for better prices can lead to a quest for economies of scale.

According to the Suno Research website (2022), which was discussed in the article "Economy of Scale", the concept of economy of scale refers to a reduction in average production costs as production increases.

That is, if the equipment is manufactured in large quantities it is possible to lower the costs for the final consumer, thus increasing competition for lower prices.

It is worth remembering that many customers prefer the quality of the equipment than the price itself, thus being valued the confidence in the product offered, regardless of the value established by the manufacturer.

According to Mckenna (2005, p.24), "[...] There's nothing paranoid about being paranoid about the competition." That is, in the world of business and competition, being overly cautious and suspicious of competitors can be justified and even beneficial.

In a competitive environment, companies need to be constantly alert to protect their interests and avoid being outdone by competitors. Paranoia about the competition can lead to a proactive stance toward potential threats, allowing companies to adapt and innovate before real problems occur.

Distrust of the competition can motivate companies to conduct more in-depth analysis of their competitors' actions and strategies. This can lead to a more complete understanding of the market, identification of gaps and growth opportunities.

Paranoia about competition can also refer to the protection of intellectual property and trade secrets. In this sense, being overly cautious can be key to avoiding the loss of strategic information to the competition.

By adopting a paranoid stance, companies may be better able to anticipate potential threats to their market position. This can include early detection of competitors' aggressive strategies, such as lowering prices, launching new products, or expanding into new markets.

It's important to note that paranoia about the competition can have drawbacks, such as creating a stressful work environment, hampering internal collaboration and innovation, and leading to hasty decisions. Therefore, balance is key. Being cautious and being aware of the competition is important, but not to the point of compromising the healthy functioning of the company.

Companies are constantly worried about the price movements of their competitors and overreact to each price reduction, this can trigger a price war. This is detrimental to all the companies involved as it reduces profitability and ultimately can lead to substantial financial losses.

This excessive preoccupation with competition can lead companies to spend too much on advertising, promotions, and aggressive pricing strategies, even when it's not economically sustainable. This can inflate companies' operating costs, which can translate into higher prices for consumers of the equipment.

There are many consumers who tie price to quality are those who believe that more expensive products or services are automatically of better quality than those with lower prices. Which is not necessarily true because we know that there are expensive products that do not offer the expected quality and affordable products that can be of high quality.

Competitive strategy plays a critical role in differentiating a company, when it is effective it puts customers at the center of the company's operations. This involves understanding customers' needs and wants, creating products or services that meet those needs, and developing lasting relationships with customers.

For Porter (1989), the strategy encompasses the construction of defenses against competitors or the highlighting of theses in the sector whose competitive forces are less vulnerable. The basic purpose of developing a competitive strategy is to determine how the company will compete in the market. The definition of this positioning is strongly influenced by the structure of the industry, understood here as the set of companies that manufacture substitute products among themselves. The objective of the strategy is to establish a profitable and sustainable position, based on competitive advantages, against the onslaught of competitors.

According to Ries and Trout (2009), positioning is the "space" that the company intends to occupy in the market and in the "mind" of its customers. The posture adopted plays a key role in the prosperity of a company, since it directly impacts the ability to differentiate itself in the market, satisfy

customer demands and establish a solid foundation for development and profitability, thus helping to have a greater credibility in the current market.

3 COMPETITION AND THE ENVIRONMENTAL IMPACT OF MACHINERY FOR COFFEE PRODUCTION

With this look at competition in the metallurgical industry is a common phenomenon in many sectors, including the production of equipment for roasting coffee. The academic literature on the subject highlights that competition can be influenced by several factors, such as the entry of new competitors, changes in the market and technological advances.

For Porter (1980) *apud* Almeida and Pinho (2020), competition in the industry can be influenced by five forces: the threat of new entrants, the bargaining power of suppliers, the bargaining power of customers, the threat of substitute products and the intensity of rivalry between existing competitors.

In the specific case of the production of equipment for coffee roasting, the entry of new competitors may be hampered due to the need for specialized technical knowledge and investments in technology and infrastructure. In addition, the bargaining power of suppliers can be significant, since the production of metallurgical equipment requires specific, high-quality raw materials. On the other hand, customers' bargaining power may be lower, since the market for coffee roasting equipment may be relatively limited.

The threat of substitute products may also be a relevant factor in the competition in the metallurgical industry of coffee roasting equipment. For example, replacing conventional roasting with capsule roasting processes may affect the demand for traditional roasting equipment. Finally, the intensity of rivalry between existing competitors can be influenced by market concentration, product differentiation and the existence of barriers to exit from the market.

Throughout this work we address some negotiation techniques that we can use to break the competition in the metallurgical environment of production of machinery for coffee roasting, evidencing how important it is to adopt strategic negotiation techniques that can highlight your company and show the differentials that it has in relation to its competitors.

The competitive strategy is fundamental for companies in the metallurgical sector, since it is a highly competitive market, with several companies vying for customer preference. In this context, the adoption of an appropriate strategy can be the differential that leads the company to stand out among the competition. To this end, Porter (2004) states that:

> [...] The most important influence on rivalry between strategic groups is their interdependence in the market, or the degree to which different strategic groups are competing among the same customers or competing for customers in different market segments. When strategic groups

> have a high interdependence in the market, differences in strategy will lead to a more vigorous rivalry (Porter, 2004, p.145).

This is because, in these cases, the actions taken by one strategic group can directly affect the others, and each seeks to maximize its competitive position. It is necessary to understand the competitive dynamics of a market and the importance of competition analysis and strategy for the success of a company, with this it is necessary to adopt strategies that aim to strengthen the organization in the metallurgical market.

We currently live in an increasingly digitally connected world, with most people using smartphones and social networks to communicate and inform themselves. In this context, businesses need to adapt to connect with their customers in a more effective and personalized way, and that's where marketing 4.0 comes into play. Traditional marketing is no longer enough to meet the demands of modern consumers, who seek personalized and relevant experiences.

Marketing 4.0 is a marketing approach that focuses on personalizing the product and service, building a strong brand through creating relevant and engaging content on social media, brand communities, and establishing a strong digital presence. This approach is driven by increased digital connectivity and growing consumer demand for personalized and relevant experiences. Companies that adopt Marketing 4.0 are more flexible and agile, able to respond quickly to market and consumer needs, and create a strong emotional bond with their customers through a more humanized marketing approach.

Metallurgical industries can use technology to create more efficient products, automate production processes, and improve product quality. In addition, the technology can be used to monitor product quality and provide technical support to customers.

The company can utilize technology to create an experience of buying and using roasting equipment that is enjoyable and easy for the customer. This can include a well-designed ecommerce website, video tutorials, and other tools that make the process of buying and using the equipment more intuitive and enjoyable.

In addition to being able to use marketing 4.0 to highlight its concern with sustainability, offering roasting equipment that consumes less energy and produces less waste, as well as promoting sustainable practices in its own operation.

In recent years, the evolution of the metallurgical market in the production of coffee equipment has been driven by a number of trends and innovations.

One of these trends is the search for lighter and more durable materials for the production of coffee equipment. This includes the use of metal alloys that are more resistant to corrosion and wear, as well as the development of new heat treatment processes that increase the durability and fatigue resistance of metals.

According to Sun Tzu (2010, p.58), "[...] An army has no constant formation, the same as water has no constant form: it is called genius to the ability to obtain victory by changing and adapting according to the enemy." Thus emphasizing the importance of flexibility and adaptability in competitive situations, and the need to adjust to the ever-changing conditions of the market and the competitive environment.

In another aspect, coffee production involves the use of machinery that can have a negative environmental impact. Some of the main environmental aspects related to machinery for coffee production include energy consumption, the generation of waste and emissions, and the use of natural resources.

Machinery used in coffee production, such as roasters, mills, and packaging machines, often require electricity to run. Energy consumption can contribute to greenhouse gas emissions and the use of non-renewable resources, depending on the energy source used.

During the coffee production process, the machinery can generate solid waste, such as coffee grounds, plastic packaging and materials discarded during the manufacture of the equipment. In addition, some machinery can emit air pollutants, such as gases and particles, especially if not properly controlled.

The manufacture of machinery for coffee production requires the use of materials such as metals, plastics and electronic components. The extraction and processing of these materials can have environmental impacts. Therefore, some companies in the market are already working to use more energy-efficient technologies, seeking to reduce electricity consumption.

Implementation of appropriate waste management systems, such as the recycling of packaging and the proper treatment of solid waste.

Adoption of more sustainable manufacturing practices, such as the use of recycled materials or low environmental impact in the production of equipment.

Investment in research and development of more sustainable machinery that minimizes the consumption of natural resources and reduces pollutant emissions.

4 FINAL CONSIDERATIONS

The competition in the metallurgical area of the production of equipment for coffee roasting is intense and has a significant impact on the market. With increasing global coffee consumption and demand for high-quality products, roasting equipment manufacturers face the challenge of differentiating themselves to remain competitive. In this context, companies are constantly seeking to develop innovative and efficient equipment capable of offering precise temperature control, customized roasting profiles and additional features such as automation and sustainability.

One of the main consequences of fierce competition is the search for economies of scale, which leads manufacturers to invest in more efficient production processes and reduce costs. In addition, technological innovation plays a crucial role in this sector, with companies constantly looking for new solutions to meet market demands and gain competitive advantage.

Differentiation is also a strategy adopted by manufacturers, through the development of specialized equipment for different market segments, such as micro roasters and artisanal coffee shops. By offering customized solutions and meeting the specific needs of each customer, these companies are able to stand out from the competition.

However, fierce competition can also put pressure on equipment prices. Manufacturers need to strike a balance between offering quality products and financial sustainability to ensure the profitability of their business. It is essential to offer high quality products that meet customer expectations, but also adjust prices in order to ensure competitiveness in the market.

In addition, the environmental impact of equipment for coffee production is a growing concern. Manufacturers are looking for more sustainable solutions that consume less energy and produce less waste. The demand for eco-friendly equipment is on the rise, and companies that are able to offer more sustainable solutions have a significant competitive advantage.

In short, competition in the metallurgical area of coffee roasting equipment production is intense and drives companies to constantly seek innovation, efficiency and differentiation. Manufacturers face challenges regarding both equipment prices and environmental impact. Those who can balance these aspects effectively are more likely to stand out and thrive in this competitive market.

The pursuit of marketing strategies, such as Marketing 4.0, can also be an effective approach to connecting with customers and meeting their demands in a digitally connected world. Careful analysis of competition, adoption of advanced technologies and incorporation of sustainable practices are key elements for success in the metallurgical sector of coffee roasting equipment.

Thus, this study highlighted answers to the questions that reflect the problematization, as well as achieved the established objectives, analyzing the scenario of competition in the production of machinery for the coffee grower's marketing system.

We also emphasize that this study did not contemplate the intention of exhausting the theme, but rather to open doors for new looks and developments in the face of this theme, with the intention of new and better studies on the scope of competition in this rich Brazilian segment. In addition, we discuss here a brief look at the current market and seeking theoretical support on the subject.

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