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Strategic plan for the Brazilian agro-industrial citrus system

Plano estratégico para o sistema agroindustrial citrícola brasileiro

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Abstract: The orange is the most cultivated, known and studied fruit in the world. Currently the Brazilian citrus industry has about 12,000 orange producers, spread over 800,000 hectares, cultivating 165 million trees and generating in 2009 a sector GDP of US$ 6.5 billion. Despite Brazilian superiority in orange juice production, the sector is going through some concerns. The study aims to present a strategic plan proposal for the Brazilian agro-industrial citrus system. To design it, the Strategic Planning and Management of Agro-industrial Systems (SPMAS) method was used. The study is characterized as exploratory nature, being a qualitative research, and analysis of secondary and primary data were collected through semi-structured in-depth interviews. The results of the study presents a specific strategic plan for the agro-industrial citrus system, in which eight macro strategic objectives for the agro-industrial citrus system have been proposed, and thirteen projects that will assist the search for strategic objectives and to mitigate the negative effects experienced by the sector and strengthen it.

Keywords: Strategic plan; Agro-industrial system; Citriculture.

Resumo: *A laranja é, das frutíferas, a mais cultivada, conhecida e estudada no mundo. Atualmente a citricultura brasileira conta com aproximadamente 12 mil produtores de laranja, espalhados por mais de 800 mil hectares, cultivando 165 milhões de árvores, gerando em 2009 um PIB setorial de US$ 6,5 bilhões. Apesar da superioridade brasileira na produção de suco de laranja, o setor vem passando por algumas preocupações. O estudo tem por objetivo apresentar uma proposta de plano estratégico para o sistema agroindustrial citrícola brasileiro. Para desenhar o plano foi utilizado o método de Planejamento e Gestão Estratégica de Sistemas Agroindustriais (GESis). O estudo caracteriza-se como de natureza exploratória, sendo uma pesquisa qualitativa. Foram realizadas análises de dados secundários e dados primários, coletados por meio de entrevistas em profundidade, baseadas em um roteiro semiestruturado. Como resultado, apresenta-se um plano estratégico específico para o sistema agroindustrial citrícola, no qual são propostos 8 macro-objetivos estratégicos para o sistema agroindustrial citrícola e 13 projetos que auxiliarão na busca de objetivos estratégicos e para mitigar os efeitos negativos vivenciados pelo setor, a fim de fortalecê-lo.*

Palavras-chave: *Plano estratégico; Sistema agroindustrial; Citricultura.*

1 Introduction

The macro environment where organizations are inserted is increasingly competitive and globalized, with changes happening at an accelerated speed, in an environment full of innovations, new products and increased competition, which requires great dexterity, flexibility and planning from organizations to highlight and adapt to these changes.

For Heleno (2009), in Brazil today the application of management science is absent, especially in agribusiness and more specifically, in rural production, which results in many losses for the national agribusiness.

The systemic approach has been an important theme in management studies, where the importance of understanding the environment in which an organization operates is highlighted. When it comes to the agribusiness context, this analysis is converted into studies of Agro-industrial Systems (AiS), Networks, Supply Chain, Inter-organizational Relationships and *Netchains* (Conejero, 2011).

In recent decades, research, methods, and issues relating to strategic management geared to companies has had major breakthroughs. According Neves (2004), the strategic management of supply chains has become

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crucial for the implementation, development and sustainability of production chains, a fact occasioned by the advent of globalization, which has led to the growing need to produce food more efficiently and the formation of transnational production chains (Neves, 2004). King et al. (2010) state that understanding and anticipating the dynamics of the global agribusiness environment will be increasingly critical. Neves (2008) complements by stating that strategic planning is essential to address the changes in the business environment for companies and increases opportunities for agro-industrial systems.

Brazilian citriculture has approximately 12,000 orange producers spread over 800,000 hectares, cultivating 165 million trees (Instituto Brasileiro de Geografia e Estatística, 2007, 2011). In 2009, the GDP of the citrus sector was US$ 6.5 billion and gross sales of the production chain were US$ 14.6 billion. Additionally, in 2009 citriculture raised approximately US$ 190 million in taxes for the Brazilian state (Neves et al., 2010).

Citriculture generates about 230,000 jobs for the country, both direct and indirect, thus moving a payroll of R$ 676 million (Neves et al., 2010). Furthermore, Brazilian production of orange juice represents 53% of world production and 98% of what is produced in the country is exported, giving Brazil 79% of world market share, which is to say that of each five glasses of orange juice consumed in the world, three were produced in Brazil (Neves et al., 2012).

Neves et al. (2012) discuss briefly some of the major events that have been experienced by Brazilian citriculture in the last decade. Among these facts the authors cite:

- Drastic drop of orange juice consumption in the United States, Germany, Japan and other traditional markets;
- Consumption of orange juice in emerging countries has increased, although on a small-scale;
- Large increase in the launch of innovative beverages;
- Retail concentration in large companies or purchasing centers;
- Bottling companies, which dominate the link in packaging and retail distribution, are multinational beverage companies;
- Due to lack of positioning, strategic vision and a harmonious understanding between links in the Brazilian chain, orange juice is sold at the same price as water in Europe for the end consumer;
- Large increase in agricultural and industrial costs.

From the above information this research is justified by the economic and social importance of the citrus chain for Brazil, being: the promotion of income for farmers; the generation of thousands of direct and indirect jobs; in tax collection; in collaboration for the growth of the economy of the country, among other benefits of a well-established and structured chain, and because of the difficulties that this chain has faced in the last decade. Addition to the economic and social importance of the citrus industry, another factor that justifies the importance of this research is the low management application in agribusiness and agro-industrial system citrus. Thus, this research seeks to fill the academic gap on a strategic planning method by applying it to the Brazilian citrus sector. Therefore the central question which this study aims to answer is: What are the main strategic projects necessary to strengthen the Brazilian citrus sector and mitigate the negative effects experienced both in the national and international scenarios?

According to the research question, the overall objective that governs this article is to present a strategic plan for the Brazilian agro-industrial citrus system, developed from the application of the method of Strategic Planning and Management of Agro-industrial Systems (SPMAS), to propose strategic projects for mitigating the problems faced by the agro-industrial system and strengthen the sector.

2 Theoretical reference

2.1 Approaches to agro-industrial systems, supply chains and networks

Two traditional and pioneering approaches to the concept of agro-industrial systems are found in the literature, the approach developed by Golberg (1968) and the proposal from Morvan (1985). Golberg (1968) developed the theory of the Commodity System Approach (CSA) in the USA, in studies of the productive systems of citrus, wheat and soybeans. The term CSA points to a commodity system that addresses all actors involved in the production, processing and distribution of a product, emphasizing the sequence of product changes in the system. The author's merit lies in changing the focus of the analysis, once restricted only to production within the farm, then starting to look at the system as a whole, looking at the agricultural sector from the global economy, not only considering the sector in isolation.

Another traditional approach to agro-industrial systems was proposed by Morvan (1985) in France, which defines a chain ("*filière*") as a set of related operations to transform a product. The author also states that analysis of *filière* is an important tool to describe systems, organize the integration of research, and analyze industrial policies, companies and collective strategies. Batalha (2001) complements by stating that the chain has complementary interdependence and is influenced by technology.

Zylbersztajn (2000) states that an Agro-industrial System (AiS), can be defined as a succession of operations of vertically organized production activities, from production to the final consumer (Figure 1), covering the following key elements: agents, sectors, their relationship, the institutional environment and support organizations.

For Batalha (2001) a production chain consists of sequencing activity that turns a commodity into a product for the consumer. Its representation is made in the form of a chain of necessary operations (technical, logistical and commercial) involving the production of raw materials into final consumption of the product.

Monteiro et al. (2013) state that governance relations in agribusiness have become more complex. The authors also state that the adoption of a systems approach to agribusiness requires knowledge of the internal dynamics of each agricultural sector in conjunction with the business environment of knowledge, i.e. knowledge of organizational and institutional environments as well.

For Neves (2004), the biggest challenge of supply chains is that often there are conflicting interests between the agents that compose it. However, what always requires improvement in Brazilian production chains are coordinated marketing efforts in strategic plans involving all links and agents of the chain, as well as collective actions that seek greater integration between the public and private sector.

2.2 Planning and strategic management methods

The concept of strategic planning in a more basic view is seen in Chiavenato (1979, p. 391):

> Strategic planning is related to the general concept of the firm in the future, and forecasts and distributions of total resources to the opportunities offered by the market and by the products, in order to realize the company's profit potential through the chosen strategies.

Lambin (2012) emphasizes that for the success of the organization, it is necessary for strategic management and strategic planning to organize all systematic information.

In the literature are found some authors who go beyond the strategy settings, strategic management and strategic planning, and further to concepts they proposed methods for the preparation of strategic planning. Among these authors highlight Campomar (1982), Westwood (1995), Las Casas (1999), Kotler (2000), Jain (2000), Wright et al. (2000), Lambin (2000), Wood (2004) and Neves (2004) can be highlighted.

Despite such diversity, Oliveira (2006) states that none of the methodologies are considered wrong, only more or less appropriate to the current moment experienced by companies to the internal characteristics of the company and the market in which it operates.

In this point of the study, some of the key strategic planning methods in the literature are analyzed, seeking to present them briefly (Chart 1).

The eight studied methods bring about the specific focus of their applications, and some methods with a focus on a particular segment and others being generic methods. It was summarized in Chart 2 the main focus and / or specificity of the methods.

Therefore, the choice of ChainPlan method for this research was based on its specificity for agribusiness systems and the success of their previous applications

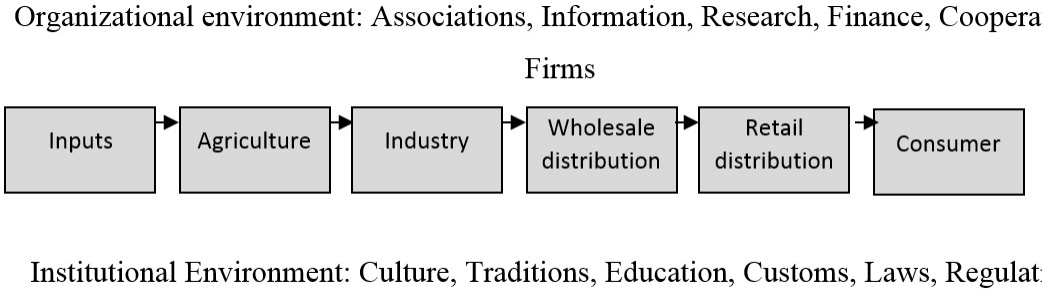

Figure 1. Agribusiness system and typical transactions. Source: Zylbersztajn (2000).

Chart 1. Stages of strategic planning methods studied.

Author/Common Steps	Lambin (2000)	Hooley et al. (2001)	Lyford et al. (2002)	Pearce & Robinson (2005)	Oliveira (2006)	Neves (2008)	Silva & Batalha (2010)	Soriano et al. (2010)
1	Vision statement	Define the purpose or business mission	Initiation of the process	Mission and social responsibility	Strategic diagnosis	Introduction and understanding	Awareness	Planning project
2	External analysis	Internal analysis	Situational analysis	External environment	Business mission	Market and consumer analysis in the systems approach	Mission definition	Definition of business mission
3	Internal analysis	Sectorial analysis	Vision determination	Internal analysis	Prescriptive and quantitative tools	Analysis of the internal situation and global competitors	Definition of the general objectives	Stakeholder analysis
4	Analyses and strategic choices	Definition of central strategy	Positioning of growth	Analysis and strategy choices	Control and evaluation	Objectives for the system	Diagnostic strategy	Strategy definition
5	Definition of marketing projects	Creation of competitive positioning	Principle industry improvement goals	Long term objectives		Strategies to achieve the proposed goals	Strategic segmentation	Definition of the strategic implementation plan
6	Marketing budget	Implementation	Specific strategies	General strategies		Production, product, research and development projects	Segment objectives	Determination of indicators and goals
7	Contingency plans	Organization	Implementation and coordination of strategies	Short term objectives		Communication projects	Identification of strategic options	Validation
8		Control	Strategy Review and Reassessment	Functional tactics		Distribution and logistic projects	Action plans	Monitoring
9				Policies		Training projects in the agro-industrial system/human resources	Implementation	
10				Organizational restructure		Coordination and adaptation to the institutional environment project	Control	
11				Control and continuous improvement		Consolidation of strategic plans		
12						Budget		

Fonte: Elaborated by the authors based Lambin (2000), Hooley et al. (2001), Lyford et al. (2002), Pearce & Robinson (2005), Oliveira (2006), Neves (2008), Silva & Batalha (2010) and Sorianoet al. (2010).

in several other agribusiness systems, including citrus. Besides this, the method has the characteristic of being flexible. Other methods studied here are not specific to agro-industrial system and focus on more strategic planning of companies, organizations, strategic marketing planning or strategic planning for industry, always with a focus on a particular agent, whereas ChainPlan method focuses on the system agroindustrial with all its agents; thus, there is a strategic planning method more accurate and specific to an agro-industrial system.

2.3 Strategic Planning and Management of Agro-industrial Systems (SPMAS) method

The method of Strategic Planning and Management of Agro-industrial Systems, SPMAS, began to be developed in 2004 by Neves (2004), and since its inception has been improved. The method has been applied several times in other agro-industrial systems such as wheat, milk, sugar cane, meat and cotton. The method was also applied in agro-industrial systems abroad, as in the milk chain and wheat and milk (2010) of Uruguay. This method is consolidated in the academic world and has been published in national journals such as Journal of Management at the University of São Paulo (RAUSP) and internationally recognized by the International Food and Agribusiness Management Association (IFAMA) and the European Marketing Academy (Emac).

The method for Strategic Planning and Management of Agro-industrial Systems (SPMAS), is a five-stage process, as shown in Figure 2 below.

Step 1 is the initiative of any existing organization in the industry (usually a trade group), and may be in conjunction with research institutions and universities and / or government that has the desire to organize a planning process and a future vision for the system . Search is also at this stage, identify who the key players participating in the system, which organizations, and associations, i.e., information on important topics on the agroindustrial system studied.

Chart 2. Specificity of strategic planning methods investigated.

Strategic Planning Method	Focus / Specificity of the method
Lambin (2000)	Focus on marketing, taking into account the marketing mix elements.
Hooley et al. (2001)	Strategic planning method of marketing
Lyford et al. (2002)	This method focuses on the strategic planning commodities industry.
Pearce & Robinson (2005)	Strategic marketing planning, focused in choosing leadership strategies in cost and differentiation.
Oliveira (2006)	The method addresses the strategic planning of a company, focusing its mission and vision.
Neves (2008)	Method of Strategic Planning and Management of Agroindustrial Systems (chain). Addresses the strategic management of an agro-industrial system in the long term.
Silva & Batalha (2010)	Generic strategic planning method, applicable to any organization.
Soriano et al. (2010)	Method helps organizations achieve sustainability targets by integrating sustainability in both planning tasks and strategic management of the organization.

Fonte: Elaborated by the authors based Lambin (2000), Hooley et al. (2001), Lyford et al. (2002), Pearce & Robinson (2005), Oliveira (2006), Neves (2008), Silva & Batalha (2010) and Soriano et al. (2010).

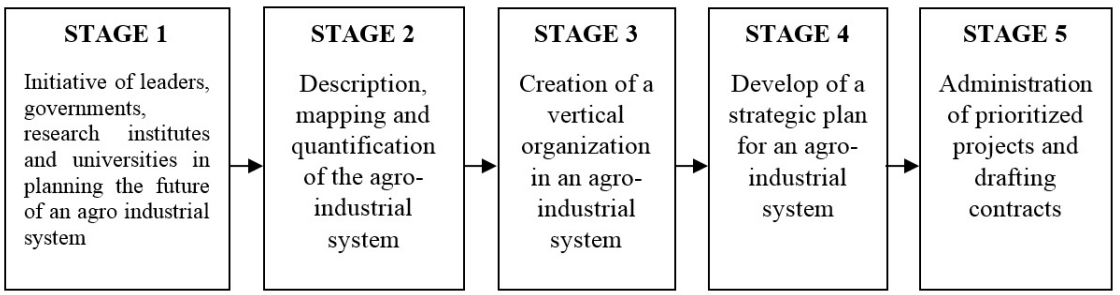

Figure 2. Method for Strategic Planning and Management of Agro-industrial Systems (SPMAS). Source: Neves (2008).

Step 2, aims to describe, map and quantify the agro-industrial system. This step has been an important topic of study for the enrichment of scientific knowledge in management as it brings a systemic approach and numbers that let you see the magnitude of the agro-industrial system.

Step 3 deals with the creation of a vertical organization in the agro-industrial system. Many Agro-industrial Systems are disorganized, usually having only horizontal associations (same associations as producer associations), and hardly found vertical associations (which involve all system links). Thus, the creation of a vertical organization could contribute to the achievement of certain objectives as an organization and exchange of existing information, the discussion of the agroindustrial system strategies in a forum, representing the agribusiness system with institutions and work on a positive agenda for the sector.

Sage 4 of the SPMAS method deals with the assembly of the strategic plan for the system and is the subject of this study. Neves (2008) proposes twelve steps that can be used to prepare the Strategic Plan, as shown in Figure 3.

The twelve steps for preparation of the plan are detailed in Chart 3, with this detail, you can have the vision of what should be done in each step.

Step 5 of the method aims at the management of priority projects and the preparation of contracts. From the Step 4 will emerge several projects and these projects should be worked out based on the traditional stages of a project, with description and analysis of objectives, actions, performance indicators, among other steps.

3 Methodological procedures

According to the study objective, which is to present a strategic plan for the Brazilian citrus agro-industrial system, this research was developed from the application of planning method and Strategic Management of Agroindustrial Systems (chain). Its about study is oriented for search and data discovery, helping the researcher to delve into the subject, therefore being a study characterized as an exploratory research, with greater focus on understanding the facts than in their actual measurement, is therefore an exploratory research and also a qualitative research (Hair et al., 2005; Selltiz et al., 1967; Lazzarini, 1997).

3.1 Research stages

This research was divided into three stages. The first stage consisted of the collection of secondary data, through desk research and document analysis. In the second stage, the primary data through in-depth interviews were collected. Finally, the third stage is the preparation of the strategic plan based on the information acquired in Stages 1 and 2.

3.1.1 Stage 1: Desk research and document analysis for understanding and collection of secondary data

At this stage of the research was conducted the survey of secondary data through desk research and documentary analysis. Initially it is important to distinguish bibliographic research (desk research) and document analysis. A literature review is a study

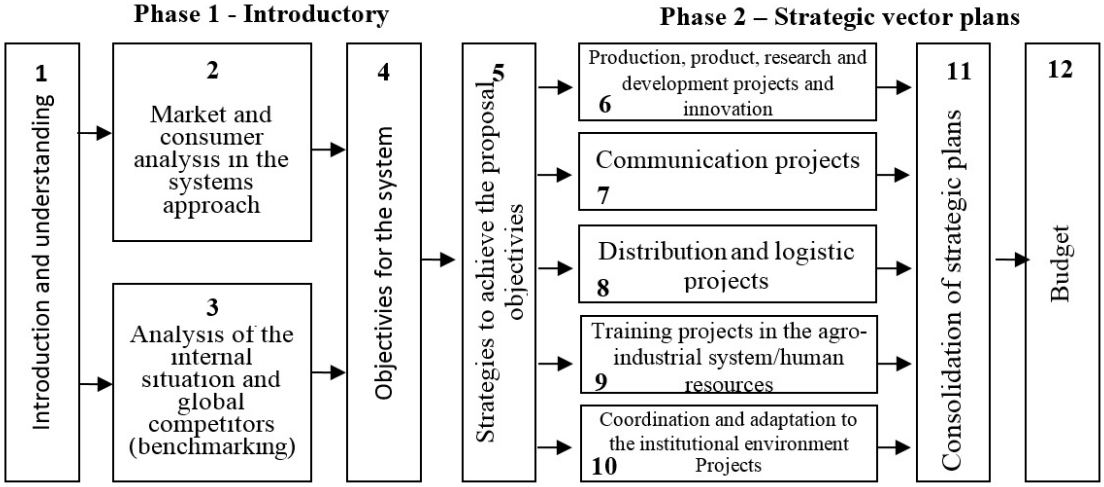

Figure 3. Summary of Stage 4 of the SPMAS method. Source: Neves (2008).

Chart 3. Detailed sequence of Step 4 of Method SPMAS.

Stages	What has to be done
Phase 01 – Introductory	
1. Introduction and Understanding	▪ To verify if the system has other plans done and to study them; ▪ To verify how is the planning method of the studied system; ▪ To verify which teams will be taking part in the process; ▪ To search plans made for production systems (chains) in other countries, for benchmark; ▪ To find, in the team, a person who could be a relationship promoter with other systems (chains); ▪ Finally, it must be verified, in cases of systems (chains) with already sophisticated planning processes; how this model can help the existing model, and adapt, gradually, the system to this one.
2. Market Analysis on Chain Focus	▪ To rise threatens and opportunities from the so called uncontrollable variable (possible changes in the legal/political, economical and natural, socio-cultural and technologic environment) both in domestic as well as international market; ▪ To understand existing barriers (tariff and non-tariff) and check collective actions to reduce then; ▪ To analyze the final and intermediate (dealers) consumer's behavior and their purchase decision process; ▪ To analyze opportunities to fit environment, fair trade, sustainability and sustainable development goals; ▪ To analyze opportunities to fit the national and international labor institutional environment; ▪ Settling of an Information System so it can be always informed and taking decisions with base and support; ▪ Description of main national and international competitors.
3. Analysis of Internal Situation and Competitors (*benchmarking*)	▪ To raise all the strong and weak points of the system; ▪ Mapping of contracts and existing forms of coordination; ▪ To describe the existing structures of management, with the transaction characteristics; ▪ To make, also, this analysis in relation to its main competitors; ▪ Analysis of value creation, resources and abilities of the system; ▪ Analysis of the success critical factors of the system; ▪ To select, amongst the systems (chains) (which can or not be competitor) which areas and where will be benchmark (good ideas sources).
4. Objectives fort the chain	▪ Define and quantify the key objectives in terms of production, sales, import, export, seeking sustainable growth and mitigating the weaknesses of the system.
5. Strategies to Reach proposed Goals	▪ Define the main strategies (actions) in terms of positioning, export, market segmentation and capture value that will be adopted to achieve the objectives proposed in Step 4.
Phase 02 – Plans of Strategic Vectors: Production, Communication, Distribution Channels, Qualification and Coordination (Institutional Adequacy)	
6. Production, Products, Research and Development Decisions, and innovations	▪ To analyze the productive potentials and production capacities; ▪ Mapping and planning for production risks (sanitary and others); ▪ To analyze products and product lines, as well as complementary product lines for expansion decisions; ▪ Raise innovation opportunities in the production system, new products launching; ▪ Opportunities to settle national and international innovation networks; ▪ University partnerships and with medical area; ▪ To detail all offered and to be offered services; ▪ To take decisions related to the joint mark construction and labels for the system use; ▪ To analyze and implement the certification process for the production system; ▪ Product adequacy to the rules and institutional environment; ▪ Environment sustainability; ▪ To take packing related decisions (labels, materials, design); ▪ Calculate recurrent investments at this stage.

Fonte: Neves (2008).

Chart 3. Continued...

7. Communication Projects	▪ To identify the target public who will receive the communication(messages from the production system); ▪ To develop desired goals for this communication(product knowledge, product reminders, persuasion, among others); ▪ Try to reach unique positioning and message generated by the system; ▪ To define the communication to be used; that is ; ▪ Define an advertisement plan, public relations and advertising promotion on sales, among others. -To make film's and international material's benchmark already used in other production systems (chains); ▪ To reckon communications actions and possibly determine annual promotion budget involving all the network agents; ▪ To indicate how communications results will be measured so the system learns more and more what the best tools are to use and have the investments revenue.
8. Logistic and Distribution Projects (Including Exports)	▪ To analyze the product distribution channels and to search new, definite distribution objective, such as: market-share, type and number of Point-of-purchase, services to be offered, market information, product promotion and incentives; ▪ To analyze the possibilities of value capture in distribution channels; ▪ To identify possible wishes of international dealers and consumers to suit the provided services; ▪ To define the entrance way to the markets, if these will be through franchising, joint-ventures or other contractual forms, or even, vertical integration; ▪ To determine annual budget for distribution; ▪ To verify how distribution actions can be done along with other systems (chains).
9. Capacitating Decisions in the Productive Chain/ Human Resources	▪ Training in management for the production system; ▪ Manpower technician Training; in control of costs; for use of Technologies; ▪ Training in national and international sales; ▪ Transmission and access to the information from technological centers/research; ▪ Training in food production; ▪ Technical assistance improvement in properties; ▪ Others.
10. Institutional Environment Coordination and Adequacy Projects	▪ Bureaucratic reduction project in order to get credit; ▪ Basic infra-structure improvement project; ▪ Fee and incentive homogenization project; ▪ Project to increase consume in government programs; ▪ Program for isolated productive areas; ▪ Tax reduction in the production system project; ▪ Export Activity Strengthen trough export promotion agencies; ▪ Laws to incentive the use of technologies (fiscal incentive, etc); ▪ Product and product name standardization project; ▪ More transparence in legislation referring to products and processes project; ▪ System proposals for conflict solution; - Coordination proposals.
11. Consolidation of strategic plans	▪ Do the consolidation of all projects generated in steps 6 to 10 and set priorities according to the needs of the system.
12. Budget SPMAS	▪ Set the budgets of all the projects that bring costs and work out the total budget ChainPlan for agro-industrial system.

Fonte: Neves (2008).

of scientific sources and can be used for books, periodicals and scientific articles as a source of research. Already a documentary research has the feature of searching for information in documents that do not have scientific treatment as executive reports, releases materials, among others (Oliveira, 2007). Both forms of research are integrated and complete this survey.

The survey of secondary data for this research was done through scientific articles (databases, scientific journals, national and international journals), newspaper articles, journals in the industry, books, industry insights database and governments, among other sources. We sought to further analyze previous strategic plans, or even guidelines and strategic agendas of government agencies and industry. Data collection occurred from March 2014 to January 2015.

3.1.2 Stage 2: Field research: interviews with industry experts and data tabulation

At this stage a semi-structured script with open questions was organized, which sought to raise through its application to industry experts the main difficulties faced by the chain, and how in the opinion of these experts, these problems can be mitigated. The authors conducted a pre-test script, introducing him to two citrus industry experts for script validation. We opted for the semi-structured interviews because, through it, you can define the amount of information, giving respondents the possibility of discorrerem on the topic, and achieve greater direction and intervening so that the objectives are achieved, with a good technique to collect primary data from interviews with experts (Boni & Quaresma, 2005).

For this research a non-probabilistic intentional sample of respondents was used because according to Mattar (1996), a non-probabilistic intentional sample is a population chosen by the researcher in order to obtain a sample that is satisfactory for the need for research and whose responses obtained will be of profound knowledge. Seven interviews with experts were conducted. As announced at the beginning of the research the names of the experts were not disclosed, but the choice of these specialists was related to their position in the citrus agribusiness system. seven in-depth interviews were conducted, which occurred between April and May 2014. The positions occupied by the respondents in the agroindustrial system are in Chart 4.

As a result of the interviews we found information about the current scenario of the Brazilian and global citrus production and future prospects of the sector. They were also identified actions needed to strengthen the sector.

After interviews with the experts the objectives and strategic projects were consolidated by the author and then the results proposed for the chain were sent to experts to evaluate and validate. These objectives and projects were submitted to the respondents so that they evaluate and validate the proposals made by the authors. At this time it was also carried out by experts the prioritization of projects. The prioritization was carried out using two variables: Relevance, which says that the importance and impact of the project, and the urgency, which is on the need and no position can not be postponed. For each variable (Relevance and Urgency) was attributed by experts a note, ranging from 0 to 10, 0 being a project without relevance and urgency and 10 an extremely important and urgent project. The marks awarded for each variable were multiplied to obtain the final score (core) of the project.

3.1.3 Stage 3: Strategic plan elaboration

For the construction of the strategic plan, as proposed in the objectives of this research, we used the SPMAS method, developed by Neves (2008). The SPMAS method, as described in the literature review, consists of 5 steps, of which the Step 4 is the 12 phases for the assembly of the strategic plan. Therefore, the results of this research will be presented in accordance with the 12 stages of the method.

4 Results

4.1 Introduction and understanding

Since its establishment the sector has gone through several crises and also of more profitable times. According to Neves et al. (2010), there is a clear perception that the industry is in need of permanent organization, a plan and a policy developed by all links and all links . This lack of planning, clearly defined strategies and an organization of the agro-industrial system, as well as economic and social

Chart 4. Occupation of interviewed experts.

Expert	Occupation
Expert 1	Researcher important research center in citrus production in the State of São Paulo
Expert 2	Researcher and university professor in agricultural economics at the University of São Paulo and an expert on citrus
Expert 3	Association Chair of agricultural inputs link (specific of citrus)
Expert 4	Association president citrus producers and director of orange juice industry
Expert 5	Consultant and expert in economics and management in citrus
Expert 6	Farmer citrus, consultant and specialist citrus market
Expert 7	Representative of citrus industries

Fonte: Authors.

importance of citrus production for Brazil is that justifies the motivation for this research.

4.2 Market and consumer analysis with a systems approach

In recent years world production of orange juice has been shown to have fallen. According to the USDA (United States Department of Agriculture), the last 20 years, the fall in world juice production was 11,6% (equivalent to 247,000 tons) It is largely responsible for reductions mainly Florida (325,000 tons) and the Brazilian citrus belt (48,000 tons). Even with the reductions, these two regions account for about 82% of world production of orange juice, and the Brazilian citrus belt produces about 57% of all world production and Florida 26%.

With respect to consumption, according to data provided by CitrusBR, the orange flavor had a 33% stake in relation to other fruits in 2013. In the period 2003-2013, in the juice category a diversity of flavors there was a reduction in demand for orange flavors of 17%, in the case of nectars and soft drinks, orange flavor increases the volume consumed by 30% and 73% respectively.

Analyzing data from Tetra Pak (2012) on global consumption of orange juice in FCOJ (frozen concentrated orange juice) equivalent to 66ºBrix, note that the consumption decreased 10.8%, from 2,406 000 tons in 2003 to 2,146 000 tons in 2013. This decline is most pronounced in the main consumer markets, the United States, Germany, France and the UK, which fell by 381 000 tons in consumption. Despite the major consumer markets are falling, there are still opportunities, as emerging countries are increasing their consumption of orange-flavored drinks. Only countries belonging to the BRICs (Brazil, Russia, India and China) added to Mexico increased their consumption by 71%, from 174 thousand tons in 2003 to 298,000 tons in 2013.

Continuing the theme of the dynamics of the international market, the concentration of the agro-industrial system links can be observed. According to data from Planet Retail (2014), the top five retailers had an average share of total sales from 48.5% retail United States, 62.9% in the UK, 72.8% in France and 75.6% in Germany. In addition to the concentration of large retail chains, there is also focus on smaller retailers. These smaller retailers are organizing into purchasing pools or purchasing organizations. Accordind to expert, this retail concentration affects orange juice negotiations, as it gives greater bargaining and negotiation power to retailers, thus it puts pressure on prices and also decreases the alternative distribution channels as they have a higher share of the sale of food and beverages.

Not only retailers, but also bottlers are involved in this time of concentration. According to data from Tetra Pak (2012), in 2009, 71% of the juice produced in the world was bought and bottled by only 30 bottlers, and of this total, the top 10 bottlers accounted for 52% of the entire market. Accordind to expert, the bottling companies are often multiproduct companies and bottlers are giving preference to products with higher turnover and better profit margins, opting for products with lower raw material cost.

In Chart 5, we can note the key facts and actions mentioned by experts in the analysis of the external environment.

Therefore, the analysis of external market, the main problems are the decline in global demand, increased competition with other products, change in juice consumption profile and the concentration of the links. According to experts, the big opportunity is in the increase of consumption in less traditional markets.

Chart 5. Analysis of the opportunities, threats and actions for the agro-industrial system citrus.

Opportunities	Strategic actions
▪ Increase in the consumption of soft drinks and nectars; ▪ Increasing consumption in emerging countries; ▪ Economic growth in developing countries; ▪ Increased installation Brazilian processing industries abroad; ▪ Product with healthy appeal and good nutritional characteristics;	▪ Concentration of marketing efforts aimed at recovering consumption in key markets downturn; ▪ Project development of emerging markets; ▪ Diversification of distribution channels and development effort of the major brands; ▪ Implementation of inventory replenishment policy to generate income and Consecitrus to distribute income; ▪ Diversify buyers markets; ▪ Encouraging the use of NFC in markets with greater purchasing power.
Threats	
▪ High dependence on external market; ▪ Increasing launch of innovative beverages; ▪ Concentration of the retail sector and bottlers; ▪ High tariff barriers imposed by major buyers markets.	

Source: Prepared by the authors from interviews.

We need to focus on and invest in communication in these countries so that consumption will continue to increase and also in traditional markets to resume consumption.

4.3 Analysis of the internal situation and global competitors

In the 2013/14 harvest Brazil produced 1,078 000 tons of orange juice (equivalent to 66ºBrix), about 57% of world production. In average years the country has maintained stable orange juice production, with some production peaks. On the other hand, orange processing increased by almost 35 million 40.8 Kg orange boxes, the country started to process more orange in a 120-year period. This orange processing increase and stable production of juice, reflects a decrease in industrial output in Brazil. In the season 1995/96 248 40.8 Kg orange boxes were needed to produce a ton of juice to 66°Brix, in 2013/14 282 40.8 Kg orange boxes were required (Neves et al., 2012; Associação Nacional dos Exportadores de Sucos Cítricos, 2014; United States Department of Agriculture, 2015).

Another important point regarding the Brazilian citrus industry is the fact that competitiveness of the Brazilian orange juice industry has declined over the years. According to the study by Neves et al. (2010), industrial average costs for processing and disposal of orange juice in Brazil jumped from US$ 347.54 per ton of FCOJ in 2003 to US$ 534.28 in 2010, an increase of 54% in the period.

Not only industrial production had cost increases, but also agricultural production faced a similar experience. According to operating cost of the orchard industry doubled in the period, with an increase of 120%, which led to the cost increase from R$ 3.30 for an orange box in 2000/01 to R$ 7.26 in 2009/10.

When analyzing the stratification productivity band, 2012/13 crop (MBAgro Consultoria, 2012), it appears that in 59% of the average hectare yield is 594 box per hectare. Kalaki (2014), realized profitability simulations and came to the conclusion that in only 40% of the hectares or 58.7% of the production would get positive financial results in the citrus industry.

According to experts interviewed other problems devastate the citrus industry as the high fluctuation in juice prices on the stock market, which in turn brings fluctuations in the price of the fruit to citrus producer, the low turnover rate of orchards and aging, leading to a lower productivity, lack of research and development of new products, legislative instability and protection through tariff and non tariff barriers in importing markets. Respondents also pointed to opportunities such as the operation of the internal market of orange juice is a great potential. In Chart 6, the main strengths, weaknesses and strategic actions identified by respondents were raised.

In the analysis of the internal environment, SPMAS method brings in its recommendations important tools of analysis and points to analyze. The authors incorporated in this work, a summary table, made from the interviews, which identifies the main strengths and weaknesses of the sector and from

Chart 6. Analysis of strengths, weaknesses and actions for the agro-industrial system citrus.

Strengths	Strategic actions
▪ Many of the groves have high productivities; ▪ Brazil is beginning to diversify export markets; ▪ Agroindustrial system has great social importance, since 87% of producers are small; ▪ Agricultural and industrial production costs are lower than other producing countries; ▪ Has control of all links in the internal market to delivery in international ports.	▪ Increase productivity in order to remain competitive in the market; ▪ Renewal of production, investment in research, strengthening of agricultural insurance, expansion of citrus into new areas with the possibility of high technology and even social inclusion; ▪ To encourage practices of collective action among producers; ▪ Strengthen class organization by the producers; ▪ Improving agronomic technical training, executive and management processes and costs of growers; ▪ Develop customized credit lines for revitalization of the citrus industry, research and development, extension activities for the dissemination of technology to producers and mechanization; ▪ Put the orange juice to the Brazilian and international consumers; ▪ Investments in infrastructure.
Weaknesses	
▪ Lack of positioning in the consumer markets; ▪ Exports is concentrated in a few markets; ▪ High increase in agricultural costs, industrial and logistics; ▪ 59% of groves have suboptimal productivity to have return on invested capital; ▪ Infrastructure agricultural and industrial runoff is insufficient.	

Source: Prepared by the authors from interviews.

them draw actions to mitigate the weaknesses and strengthen the forces of the agro-industrial system. The authors believe that this framework allows a quick view of the main facts that the industry experiences and propose actions that helped in the design of strategic projects.

4.4 Strategic goals for the agro-industrial system

This topic of study shows the strategic objectives that seek to mitigate the negative effects experienced by the sector and improve its strengths in seeking to take advantage of market opportunities, thus providing greater competitiveness for the sector. The objectives were defined by the authors based on external and internal analysis of the agro-industrial system and in interviews. These objectives have been assessed and validated by experts interviewed, are presented in Chart 7.

4.5 The strategies adopted to achieve the objectives

In this research topic are described which are the main strategies to be adopted by the Brazilian agro-industrial citrus system. Ansoff (1965) related the concept of objectives and strategies, defining the objective as being where it wants to go and the strategy being the way to achieve the objective. Based on the theory proposed by Ansoff (1965), Kotler (2000) and Grant (2002), and as well the results of interviews with experts, three strategies have been defined for citriculture in Brazil: differentiation and market positioning strategy, the strategy for growth and development, and the strategy to sustain competitive advantage.

4.6 Strategic projects

The proposition of the projects was made from the analysis of external and internal environment and interviews with industry experts. These proposed strategic projects aimed at achieving the objectives set for the agro-industrial system. The projects are designed containing their specific objectives and the actions required to achieve specific objectives, as proposed in SPMAS method. The projects proposed by the authors have been assessed and validated by experts interviewed. Chart 8 presents the strategic projects, objectives and key actions.

The SPMAS method provides suggestions of the types of actions and information projects should and / or can contain. The suggestions made by the method covered all the facts and needs encountered by citrus agribusiness system. In this research the authors have adapted the method inserting a new strategic vector with a sustainable development project agroindustrial system.

4.7 Consolidation of strategic projects

According to the methodology the projects were prioritized for the expert according to their importance and urgency. In the sequence the final scores, the projects were ranked in descending order of score and prioritized and separated didactically into three phases, called three waves, which are equivalent to projects to be realized in the short, medium and long term. The result of this classification is shown in Figure 4.

The SPMAS method does not provide clearly how projects should be prioritized. The authors chose the criteria described above, because it had good empirical results in other agroindustrial systems in which the method was applied.

Thus, with the objectives, strategies, strategic projects and prioritization of defined projects, the authors designed the Strategic Map for the agro-industrial citrus system (Figure 5).

Chart 7. Strategic goals for the agro-industrial citrus system.

Strategic Objectives
▪ Increase the competitiveness of Brazilian citrus production
▪ Strengthen and encourage research and development of new technologies such as plant improvement, development of new molecules, new management tools, new industrial products, among others.
▪ Continuously promote the development of citrus sustainability.
▪ Search for the increased demand of the agro-industrial citrus system products and the diversification of markets and products.
▪ Increase the volume and dissemination of information and transparency for the whole agro-industrial system.
▪ Improve the distribution structure of agricultural and industrial production.
▪ Qualify and create conditions to attract human resources into citriculture.
▪ Increase the coordination of the agro-industrial system and improve the business environment.

Source: Prepared by the author.

Chart 8. Strategic projects for the agro-industrial system citrus.

Strategic Projects	Project Objectives	actions necessary to achieve the objectives
Competitiveness of Brazilian citrus production	Increase the competitiveness of Brazilian citrus production, mainly through productivity gains with improvements in fruit quality, reduced sanitary problems and improve and stabilize the profitability of the activity to the Brazilian citrus producer aiming for continuity in the activity.	- Improve and increase the technical assistance received by producers; - Increase the renewal rate of the orchards; - Perform benchmark program among producers seeking to achieve better cost controls and management techniques through the exchange of information between them.
Development of Research and Technology	Strengthen and encourage the development of research and diffusion of new technologies.	- Increasing funding of public funds for research on citrus; - Search partnership with private companies for investments in research and new technologies; - Strengthen research institutions as Fundecitrus, APTA, universities, and GTACC e GCONCI.
Phytosanitary improvement	Seek to improve phytosanitation in the orchards and mitigate the problems that have plagued Brazilian citriculture.	- Encourage the practice of collective action between farmers, through joint applications for plant protection; - Increase supervision of groves about health issues; - Encourage private institutions to research new pesticide molecules registered for citrus.
Sustainable Development of Agro-industrial System	Promote and permanently seek the sustainable development of the agro-industrial citrus system by stimulating sustainable practices along the entire chain.	- Creation of new certifications and regulations on conscientious and responsible production and adherence to existing ones; - Implement an impact management of natural resources and residues from the agricultural and industrial production.
Communication in the Internal Market	Encourage through communication and marketing, increased consumption of processed orange juice and orange-flavored drinks, with higher juice content in the internal market.	- Stimulate the industrialized orange juice consumption habits in the internal market; - specific communication for makers opinions as doctors, teachers, journalists, about the nutritional benefits and the importance of the development of citrus couple agro-industrial system in Brazil; - Insert the orange juice in school meals; - Creation of a new product and specific juice brand for the domestic market - The Consortium Consecitrus.
Communication in the International Market	Carry out marketing and communication efforts to increase and recover the consumption of citrus products in the main falling markets and seek to increase consumption in potential markets.	- Creating a communication fund and marketing between industries, growers, government and other agents of the agroindustrial system; - Reposition the Brazilian citrus chain products as high-quality and sustainable; - joint partnerships orange juice promotion between Brazil, bottled and international retail industries, seeking the resumption of juice;
Intelligence Center of Brazilian Citriculture (CICB)	Develop a Citriculture Permanent Intelligence Center that aims to create a centralized platform and dissemination of information of all the agro-industrial citrus system, the purpose of which is to provide a greater volume of information, transparency and intelligence gains for the system permanently, so that all agents can have the same level of information.	- Agency Creation - Brazilian Citrus Intelligence Center (CICB). - Install a surveying system of the information; - Carry out strategic reports, market analysis.

Fonte: Authors.

Chart 8. Continued...

Strategic Projects	Project Objectives	actions necessary to achieve the objectives
Distribution and Logistics	Promote improved logistics and distribution infrastructure and constant maintenance and conservation of distribution infrastructure.	- Articulate with the federal, state and local government, more resources for investment in infrastructure, especially in ports; - To promote the conservation and permanent maintenance of the main roads of transportation of production; - Improving port infrastructure and access to ports.
International commercialization	Seek a better international marketing environment and conditions and forms of marketing, also aiming to increase the value exported by citrus companies and diversify the products and target markets.	- Diversify juice marketing channels, also seeking to negotiate with smaller bottlers and decrease the concentration of sales of current bottlers - promote tax exemptions for exports of other citrus products, aimed at encouraging the consumption and export of these products; - Search bilateral agreements between buyers markets, aiming to provide better trading conditions.
Qualification of agents of the Agro-industrial System	Qualifying and training the various human resources working in the agro-industrial system, to promote increased system productivity and conditions to attract human resources to work in citriculture.	- Creating a training and development fund for citrus; - Search incentives to attract active agents in the chain order that they do not migrate to other sectors; - Strengthening of existing specific educational courses for the citrus industry such as the master's course offered by Fundecitrus and the creation of new courses.
Coordination of the Agro-industrial System and Business Environment	Provide a better business environment in the agro-industrial citrus system and seek a more coordinated system, with a closer relationship between links and system agents, working jointly and in a coordinated way to benefit the sector, seeking to improve commercialization conditions in the agro-industrial citrus system.	- Strengthen organizations representing classes; -Find a close relationship between the class representative organizations; - Working collective actions between the links of the chain; - Encourage associations and cooperatives especially among small producers seeking higher competitive-for them; - implement the Consecitrus system ever designed, aimed at equitable distribution of results between producers and industries and the improvement of marketing conditions between the links;
Credit in Citriculture	Make more resources available to the agro-industrial citrus system thus aiming to encourage greater investment in the sector.	- Develop special lines of credit for the renewal of groves in old age and implementation of new groves with minimum grace period of four years; - Develop specific lines of credit for investments in new technologies in citrus; - Review and systematically assess credit policies for the sector.
Improvement of Tax in Citriculture	Provide tax incentives for the agro-industrial citrus system to increase its competitiveness. Thus, seeking to decrease the tax burden of the Brazilian citrus chain and coordinate improvements in tax policy.	- seek from the federal and state governments to reduce the high tax of citrus products; - Search tax incentives for drinks more orange juice content. - Review and coordinate continuous improvement in tax policies incidents in the citrus chain.

Fonte: Authors.

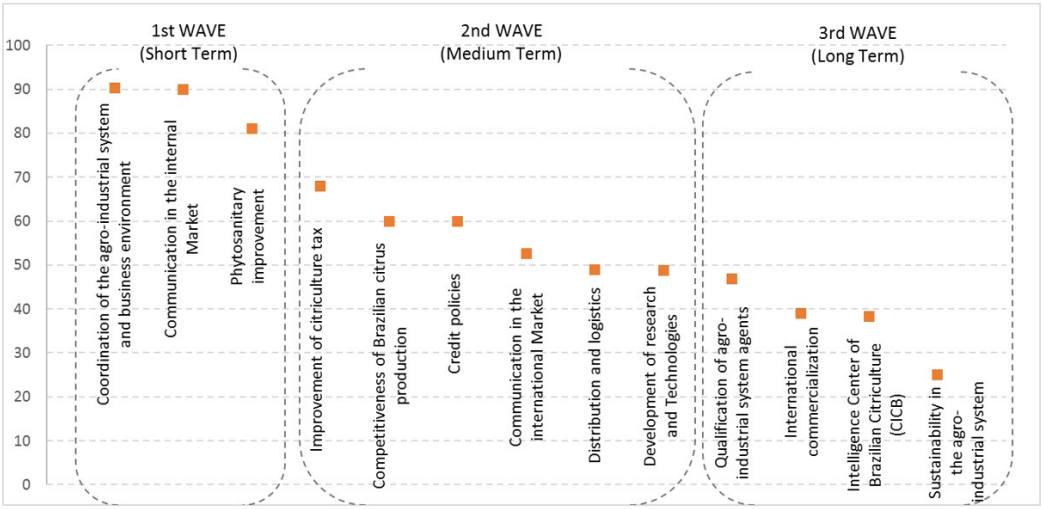

Figure 4. Prioritization of strategic projects. Source: Elaborated by the author.

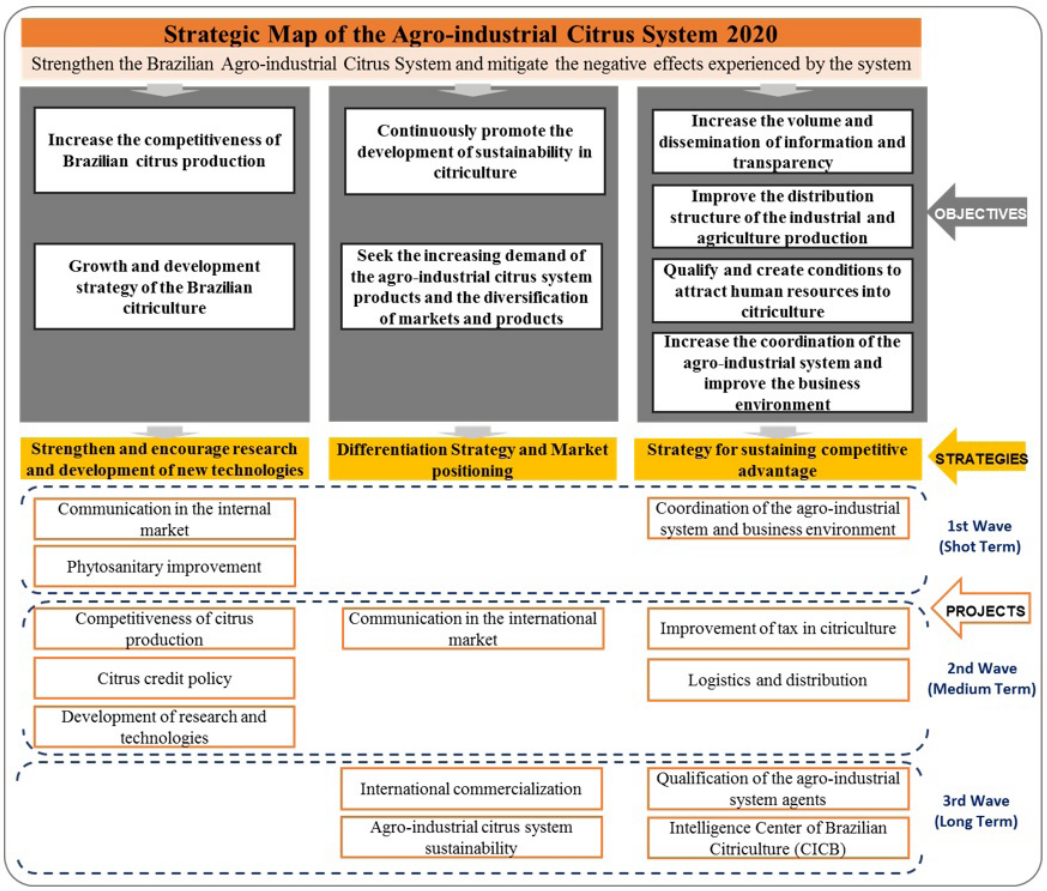

Figure 5. Strategic Map of the Agro-industrial Citrus System 2020. Source: Prepared by the author.

5 Conclusions

The Brazilian agro-industrial citrus system is a consolidated system and important for the development of the economy. It is a clear perception that the industry is in need of permanent organization addressing all links of the agro-industrial system, a plan, and a policy developed for all links and used by all links. Peterson et al. (2000) emphasize that to obtain the success of the entire chain,

the planning of this chain it is necessary, and all members must be involved in the planning process. Thus, this study contributes to the sector as a way of seeking greater organization and coordination in the agro-industrial system. The study also contributes to a better understanding of the system and can be a tool to assist in decision-making. This study may enable the stimulation of future strategic plans for the sector, as well as future research on the needs and necessary actions to increase the competitiveness of the agro-industrial citrus system.

The study had some limitations such as the number of interviews, because it is not a quantitative study. In future studies would be optimum to increase the sample and carry out a quantitative study. Another limitation of the study refers to the budget plan, which was not done because it was not defined by each link financial contributions to the plan's activation. In this direction, it can not get to an action plan to implement the plan since it was not raised the resources available for each link.

The SPMAS method for preparing a strategic plan used in this study proved to be a good method, thus being an important agro-industrial management systems tool. Some adjustments were necessary at certain stages, which demonstrate another strong point of the method, which has easy applicability, allowing possible adaptations. Another positive point is for the method to use primary and secondary sources, which facilitates regular review, update and continuous improvement. The methods also showed its validation empirically as its application in agro-industrial citrus system.

This study generated some contributions to improving the SPMAS method, especially when applied to the citrus industry. The method did not have the need for sustainable production projects, with specific actions for sustainability in agricultural and industrial production as well, and this study was proposed a specific project for the theme. The study also brought the frame construction of the contribution made from interviews with experts, in which the main opportunities were identified, threats, strengths and weaknesses of the agroindustrial system and also have the proposition of actions by respondents, to mitigate or strengthen the sector. In this research it was observed that the prioritization of projects using the urgency and relevance variables was approved empirically as a way to project prioritization.

In conclusion, the study generated contributions to improve the Strategic Planning and Management of Agro-industrial Systems (SPMAS) method as well as contributions to the citrus sector, providing increased knowledge and information.

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