Shrimp Farming in São Paulo State: Evaluation of Possible Implementation Through Competitiveness Drivers.

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Abstract: Several scientific studies related to productive chain efficiency and competitiveness investigation are driven to agroindustrial sector, with emphasis on the supply chain. In this context, this paper aims to investigate the development of the aquaculture sector by evaluating the viability of shrimp farming in the State of São Paulo, Brazil. For this purpose, a methodology that analyses agroindustrial chain competitiveness was adopted. The methodology consists in electing and analyzing competitiveness and efficiency drivers for each chain stage (production, processing and distribution). This kind of analysis was, for the first time, applied to studies of business viability. Traditional viability analyses are based on cost-benefit analysis, which neglects a systemic approach of a supply chain. The analysis of chain environment permitted the identification of barriers and the factors that influence shrimp farming sustained development in the State of São Paulo. The results indicate that the methodology proposed was efficient for viability analysis on the productive chain level. It also indicated that the levels of processing and distribution presented barriers, which should be analyzed in order to improve chain competitiveness.

Key words: Marine shrimp farming, supply chain, viability.

Introduction

Brazilian agroindustrial sector has undergone deep changes in the last decade. The processes of competitiveness and globalization have induced the productive sector to search improvements in terms of modernization, productiveness and value addition, among others, in order to keep or increase its competitiveness. In this context, productive stages coordination and integration are very important.

BATALHA and SILVA (2001) affirm that reaching competitive condition improvement implicates in reaching efficiency of the whole productive system related to national agribusiness. According to the authors, productive system efficiency is related not only to agents' internal efficiency, but also to their coordination capacity.

Thus, studies that focus competitiveness in agroindustrial chains shall consider the competitiveness of economical and social agents who contribute to transform raw material into ready for consumption final products (systemic approach).

The literature revels a large number of researches related to potentialities investigation and factors related to agricultural sector efficiency and effectiveness. However, few scientific works have investigated the aquaculture sector and its chains.

Three agroindustrial complexes compose Aquaculture sector: marine shrimp farming, fish farming in estuarine waters, and marine fishing (ROCHA, 1999).

Aquaculture is defined as an aquatic production system that involves organism manipulation. Many species of fish, algae and mollusc are cultivated for market commercialization as carp, salmon, shrimp, mussels, oysters and marine algae (MELLO, 2002).

Marine shrimp farming has been considered the most important culture in the aquaculture sector. According to NUNES, 2000, it achieved over US$ 6, 1 billion per year by the end of the 90's , representing 12 % of world aquaculture industry.

Asian and Latin American countries are considered potential producers for this activity. Within theses countries, Brazil has presented production volume increase in the last years. That expansion is, specially, due to climate and soil conditions, which are favorable to shrimp farming.

Although the Brazilian potential for shrimp farming is clear, the activity is concentrated in some regions as the Northeast and the South of the country. There are other regions that present long costal boarder but with little produce volume. This research was performed in order to evaluate the activity competitive potential for other regions, as São Paulo State.

The methodology that analyses agroindustrial chain competitiveness was adopted in order to evaluate marine shrimp farming viability in the State of São Paulo. According to the literature, this methodology has been used for analyzing agroindustrial chains competitiveness, which were already established in a certain location. A different use for this methodology was proposed in this work, the evaluation of implementation viability of an agroindustrial chain in a certain location where this activity does not exist or is incipient. Thus, this research assumed that

sustainable development of any agroindustrial chain in a certain location is the result of several competitiveness factors that are beyond traditional cost-benefit studies.

This work is organized in five sections besides this introduction. The first one presents a general overall of marine shrimp farming in the world and in Brazil. The following section presents theoretical concepts used in the research. Then, the methodology is related. In the fourth and fifth section results and conclusions are discussed.

Research Objectives: The main objective of this research was to evaluate the viability of marine shrimp farming in the State of São Paulo by using supply chain competitiveness indicators. Analyses of the main stages of marine shrimp farming, as well as the institutional environment, are presented. The methodology potential for evaluating agroindustrial chain implementation viability with focus on regional development is also discussed.

Marine Shrimp Farming in the korld and in Brazil: Marine shrimp farming was first performed in Southeast Asian in the XV century. However, it was only in the 30's that the activity was formalized in Japan due to post-larvae production scale. Techniques for commercial farming were diffused in subtropical and tropical countries during the 70' s. By the end of the 80' s the production was not efficient since it depended on extractive female capture (to lay the eggs in the laboratories) and post-larvae capture (to be stocked in raising ponds) (NUNES, 2001).

High production volumes are found in Asian countries (750,000 ton in 2000). According to FLAHERTY, VANDERGEEST and MILLER (1999), shrimp farming supplied 5% of world demand in 1982. By the end of the 90' s this amount raised up to 30%.

The main shrimp producers in the Occident are located in the South American coast. Equator is the most important (55.000 tons in 2000), followed by Venezuela, Panama, Peru and Colombia. Brazil and Mexico show a potential growth (PLATAFORMA, 2001). Developed countries as the United States and some European countries as Spain, produce marine shrimp in small scale when compared to South American countries.

In Brazil, marine shrimp production was first performed in the 70's . Only in the 80's the production became technically viable. Then the activity assumed profess. character. with proper technical innovation (ROCHA, 2001). The process of stabilization of Brazilian currency in 1994 turned possible several private investments in the agroindustrial sector as marine shrimp farming. Technical advances were observed as the development of balanced ration proper for semi intensive farming of an exotic species (*Penaeus vannamei*). This species is native of South American Pacific coast. When it was introduced in the country it presented a good performance when compared to native species farming in Brazil.

The shrimp production activity used to be considered a high-risk activity, but because of technical development the activity became an economically attractive investment opportunity. Such an activity is considered different from others since it can be performed during the whole year without a non-harvest season. Besides, it does not depend on rain regimes.

Different from other agroindustrial chains, the competition among shrimp farmers is observed among countries with similar social and economical condition. The main production countries, cited previously, are developing countries, frequently without technical advances. In this context Brazil has a competitive differential since continuous research investments are destined for this activity.

Nowadays, Brazil is the eighth producer of marine shrimp in the world. The main producers are Thailand, Equator and Vietnam. However, these countries do not present the comparative advantages Brazil does. As an example there are extensive coastal areas available in Brazil with high quality water, adequate soil, climate conditions and precocious productive cycle (EMBRAPA, 2001). The activity is also considered socially and economically important since it generates direct and indirect employments avoiding rural exodus.

However, there are questions that have negative impacts on shrimp chain competitiveness as the environment. Studies about limiting activity areas and about effluent treatment have been demanded. A national environment consul, Conselho Nacional do Meio Ambiente (CONAMA), through the resolution number 312 of December 31st 2002 (that elucidates about environmental licensing for shrimp farming businesses in the coastal zone), considers that theses zones are national patrimony and its use shall be sustainable. From the moment this resolution was published every shrimp farming businesses had to attend the specified demands (MINISTÉRIO, 2003).

The epidemic diseases that contaminated shrimp farms in Equator, Central American and Asian countries are focus of discussion in the whole world. Many production countries are studying alternatives to avoid epidemic diseases as well as alternatives to shrimp commercialization and demand regulation, since sanitary risk may turn industry unviable in the short term.

The actual situation of Brazilian marine shrimp farming revel growing potential in the three levels of the agroindustrial chain: production, processing and distribution. In the southeast, especially in São Paulo State, the situation is very different. Although it is the main consumer center in Brazil, presents a long coastal board, hosts research and development centers and disposes of adequate storage and distribution infra structure, shrimp production is still inexistent for commercial end.

Theoretical Concepts: Several methods and models for studying, evaluating and measuring firms and sectors competitiveness are cited in the literature. However, agroindustrial sector presents some specific characteristics that differentiate it from other sectors.

BATALHA and SILVA (2001) declare that the scope of analysis of agribusiness competitiveness studies is the agroindustrial chain, so there are coordination benefits from contractual structures existing among the agents involved in a chain. Another relevant consideration is that the interdependence of the agents involved in a chain is a particular factor of agroindustrial sectors, which is reinforced by the systemic approach.

The systemic approach choice for agroindustrial studies is explained by the recognition and emphasis on components interdependency and their relations with the systems. SILVA and BATALHA (2000) affirm that competitiveness systemic factors tend to displace competition among isolated firms or industries to competition among systems. As example for the shrimp chain is the competition between farming versus extractive activity. Thus, the theoretical approach in this work is based on Commodity Systems Approach (CSA) and it is complemented by a more recent approach, the Supply Chain Management (SCM). The adoption of the second approach is justified since Supply Chain Management is adequate for improving coordination mechanisms and competitive position (SILVA and BATALHA, 1999).

HUTT and SPEH (2001) define SCM as a tool for obtaining competitive advantage. It is related to the benefits resulting from cooperation and coordination of the members involved. The authors suggest that the concept definition is related to relationship management, information and product flow aiming to reduce costs and improve transactions. However, business process management and integration will only be successful if it makes sense for all the agents involved.

Thus, considering that the specific characteristics of the agroindustrial sector are the basis for competitiveness studies, the definition adopted in this work comes from VAN DUREN, MARTIN and WETGREN (1991:729): "the sustained ability to profitably gain and maintain market share". For the agribusiness, such competitiveness concept is the result of a systemic approach, that is, competitiveness is built along the supply chain.

When conducting a study on competitiveness comparison among five food-processing industries in the United States and Canada, VAN DUREN, MARTIN and WESTGREN (1991) adopted market share and profitability as indicators capable to monitor competitiveness.

The studies performed by those authors were the departure point for the development of a methodology. As factors integration indicates controllability level, it creates competitiveness drivers, determining the specific cause for the competitiveness results of a certain chain. Competitiveness drivers proposed by the authors are based on neoclassical economics, industrial organization (structure-conduct-performance) and strategic management literature. As an example, technology, productivity, inputs, costs, industrial structure and demand conditions are factors related to economical theories and to industrial organization. Considerations about product and market relationships are related to strategic management literature.

VAN DUREN, MARTIN and WESTGREN (1991), affirm that the ability of a firm to be competitive in a changing market is proportional to the attention that agroindustrial firms pay to the mentioned factors and drivers. Thus, the authors reinforce the idea of driven public politics adoption in order to attend specific market development opportunities. The private politics should be driven to market segmentation aiming on firms' individual talent.

Materials and Methods

The methodological structure adopted in this research was based on VAN DUREN, MARTIN and WESTGREN (1991) studies. The authors established market share and profitability as fundamental performance indicators. However, since there is a lack of statistical data available and in order to reduce costs involved in the research, the statistical treatment that characterizes competitiveness indicators quantification was considered unviable.

Although the cited methodological structure is pertinent for studies that analyze competitiveness in agroindustrial chains, some modifications were added by SILVA and BATALHA (2000) intending to measure competitiveness and identify the factors that determinate competitiveness and propose improvement politics for the studied chain. In this sense, the authors developed an alternative competitiveness measuring procedure. It was applied on a study about economical efficiency and competitiveness of cut cattle agroindustrial chain in Brazil. Such procedure is presented now.

The performance of a supply chain can be affected, in a positive or negative way, by several competitive factors that are involved in a chain and its relationships (SILVA and BATALHA, 2000). In order to evaluate these factors the main competitiveness drivers were analyzed for production, process and distribution stages. Besides, systemic factors were also considered.

Six competitiveness drivers were adopted: technology, inputs, firm management, institutional environment, market structure and market relationship. Each driver was composed by sub factors, according to the specificities of each chain level. The sub factors were classified according to their controllability.

From the information obtained during personal interviews with marine shrimp chain key-agents, the sub factors

were evaluated in the following way:
→ The way each subfactor implicated the drivers was qualitatively evaluated by using a "linkert" scale. It ranged from "very favorable", when there was a significant positive contribution, to "very unfavorable", when there were bottlenecks or even barriers to reach or sustain competitiveness. The intermediate conditions were classified as "favorable", "neutral" and "unfavorable". Then the scale is transformed into unitary gaps that ranged from −2, for "very unfavorable" to +2 for "very favorable". Consequently, the classification allowed a graphical representation of the evaluation.
→ Each sub factor was scored with a value that indicates the capacity to influence the driver it belongs. This procedure was relevant since there are different levels of importance for the sub factors when considering the aggregate effect. Each competitiveness driver was also pondered in function of its contribution to the overall competition. Thus, D score is result of the driver contribution for the overall competitiveness, considering all the States that produce shrimp. The evaluation refers to "linkert" scale values, ranging from +2 to −2, given to each sub factor of São Paulo State shrimp chain. Finally, S score indicates how representative a sub factor is, considering São Paulo State, relating to the other sub factors. This insight was given by BATALHA (2002), who concluded that D score should be given according all produce states and S score should be given to analyze a particular case.
→ The sub factors were classified as factors controlled by the firm, factors controlled by the government, quasi-controllable factors and non-controllable factors.
Since there is a great diversity of objectives and interest questions, there is not a standard methodology for data collection in agroindustrial chain researches. However, precise data collection (survey) is generally expensive and time demanding for this kind of research. Because there are several studies objectives and the limited period of execution, a rapid assessment or quick appraisal method was adopted. DUNN (1994) elucidates that this terminology implicates a research qualitative method based on secondary data, together with non-probabilistic samples and semi-structured interviews with chain key-agents. The schedule used was built in such a way it was possible to obtain the required information for competitiveness sub factors analysis for each stage agents for the chain in question. Such interview guides were applied to key-agents in the states of São Paulo, Santa Catarina, Bahia and Distrito Federal (institutional environment). Twenty key-agents were identified and interviewed. The interviews were performed from April to July 2002. Since shrimp farming was an incipient activity in São Paulo State, other productive states were studied as Santa Catarina and Bahia. These States are the main shrimp suppliers for São Paulo State. Considering the country production, São Paulo would have these states as the main competitors. A workshop aiming to validate the scores given to competitiveness indicators and sub factors was performed. Chain key-agents were part of the workshop where the research results were discussed. The event was placed in the city of Ubatuba, São Paulo in July of 2002.

Results
The current section illustrates the results obtained with the described methodology. The results are related to the evaluation of the potential competitiveness of marine shrimp farming in the State of São Paulo.

Competitive Capacity Evaluation for the Productive Stage in the State of São Paulo : The competitive performance evaluation for the productive stage in the State of São Paulo was considered negative when compared to other States in Brazil, which have accumulated experience. However, some competitiveness drivers show favorable conditions for shrimp farming in the State coast (Fig. 1).
Since commercial shrimp production in São Paulo State is under experimental phase, technology competitiveness driver was considered negative for this stage. However, technology exchange among Northeast and South regions farmers would be an opportunity to turn São Paulo State into a productive State.
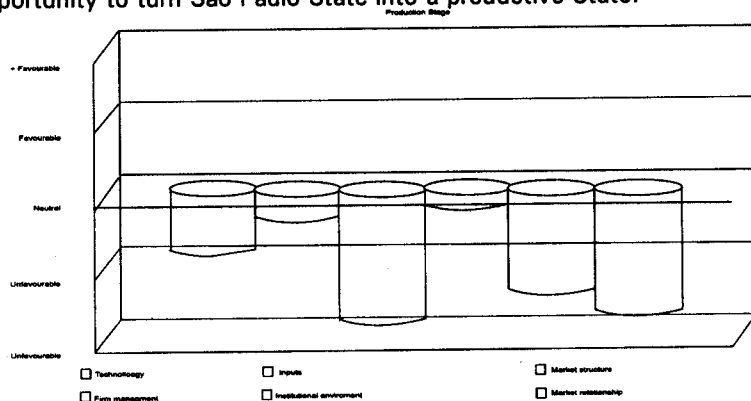

Fig. 1: Production stage competitiveness drivers

The input driver is composed of several sub factors, being area cost considered the most negative one for chain competitiveness in the State. The prices of farming areas are high; besides, areas are mostly unavailable because of speculative real property. São Paulo coast geography contributes to the unfavorable evaluation because of the proximity of the *Serra do Mar* as well as the existence of several environmental protection areas.

Climate conditions were considered another negative sub factor since the temperatures are relatively low during fall and winter. These conditions will permit one to two production cycles in the State, what is similar to Santa Catarina State. In the Northeast region the high temperatures permit up to three cycles of shrimp production.

The inexistence of qualified operational hand-labor was considered the major problem when firm management driver was analyzed. The small scale of shrimp production in the State can explain this fact. Specialized hand-labor was considered favorable when considering the universities, research centers and technical schools located in the State of São Paulo can provide such hand-labor.

The institutional environment driver was considered favorable only for the sub factor research and development. The State of São Paulo has strict and active coastal environmental law. Environmental preoccupations implicate in restriction and control of mangrove boundaries use. Licenses for use of production areas are difficult to obtain since there are not activity support programs, class associations and cooperatives (that could contribute to sustainable activity development).

Competitive Capacity Evaluation for the Processing Stage in the State of São Paulo : Fig. 2 presents the results of the competitiveness drivers' analysis for the processing stage.
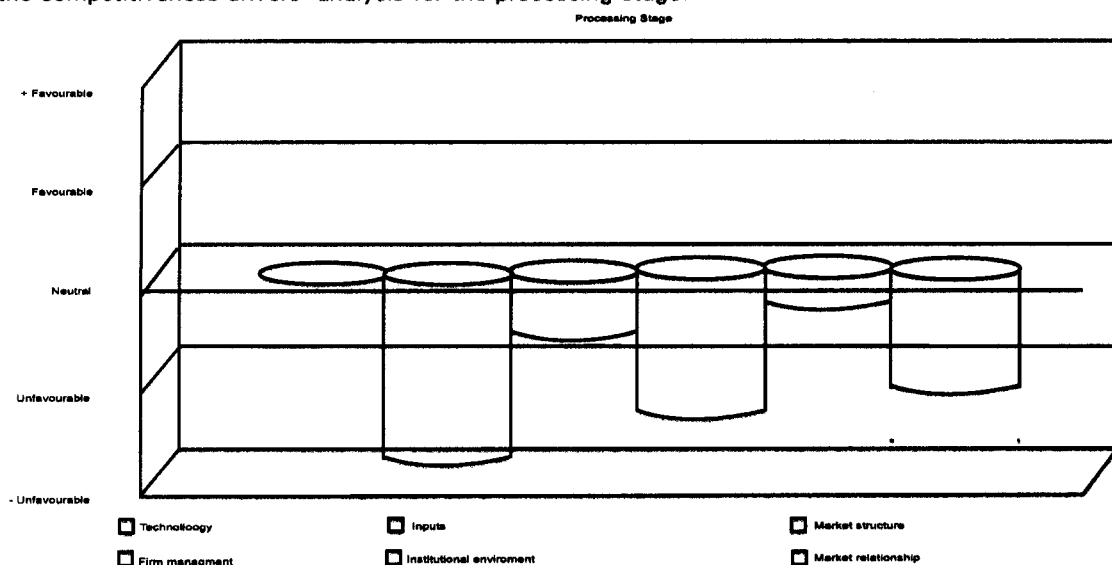

Fig. 2: Competitiveness drivers for the processing stage

Since there were not processing plants for farmed shrimps in the State of São Paulo by the time the research was performed, competitiveness drivers and sub factors evaluation as well as controllability degree determination were applied to existing extractive shrimp processing plants. It was not perceived any significant difference on processing extractive or farmed shrimp.

The technology driver was considered neutral for chain competitiveness since the region presents a good processing and equipment infrastructure. Special freezing chambers are examples, since they promote shrimp fast freezing process permitting longer shelf life to the product. It was also noticed the existence of an efficient cold chain, which provides product transportation to the market under appropriated conditions. Thus, the neutral evaluation of the driver can be turned into positive if modernization investments are made.

The input driver presented a negative evaluation because of the instability of raw-material availability. Since raw material is the most important input in the processing stage, this instability impedes constant product availability in the market. Farmed shrimp production stimulus would be a solution for extractive shrimp offer seasonality.

Other problems noticed were the lack of alternatives for sub products utilization (peels) and the lack of campaigns about water treatment demanded during shrimp processing. The processing firms that treat the effluents use sulfate, chlorine, sodium and potassium carbonate, and must submit samples for chemical and microbiological analysis every semester.

The firm management driver also presented a negative evaluation. The low product offer does not stimulate marketing actions, strategic planning, cost control and even investments on hand-labor qualification. The interviews

reveled that the processing firm located in São Paulo state selling to internal market did not adopt Hazard Analysis and Critical Control Points (HACCP) while processing firms located in the Northeast, which export the product, did. Institutional environment sub factors analysis displayed the existence of an 18% tribute tax for internal market shrimp commercialization, while other ocean products are free of taxes. Such tribute was justified by the high value of shrimp when compared to other products (LUCCHESE, 2003). Considering credit, the interviewed firm used own financial resources.

When analyzing the marketing relationship driver more attention should be paid to shrimp demand seasonality. Climate variations during the year and specific special dates explain the negative evaluation of this sub factor. Thus, when the demand is high, in the summer and during the Lent, the industry depends on extractive shrimp offer.

Competitive Capacity Evaluation for Distribution Stage in the State of São Paulo : BARNI et al. (2002) accomplished a market research about aquaculture products consumption in three Brazilian capitals. The authors concluded that São Paulo State presents potential consumers for these products. However, it was noticed that a greater number of researches should be stimulated in order to present diversity about shrimp distribution points, preparation instructions and brand investment. According to this research the consumers do not associate the product to a brand that transmits safety. Besides, the consumer considers the variety of distribution channels inefficient.

During the field research, the authors perceived that because of the inexistence of a product that transmits quality and safety, shrimp buying decision is discarded or replaced by other product. Such decision was explained by the appearance state of the shrimps in the market. Another motivation is the elevated amount of ice contained in the packages. The real weight of the unfrozen product is lower than specified.

High prices and few marketing actions in the sales sites were considered barriers for shrimp commercialization. As market prices in internal market follow international market prices, exchange taxes variations influence internal market prices.

The products that are commercialized in São Paulo are proceeding, in great majority, from the South and Northeast regions. The agents interviewed confirmed that the suppliers were from the cited regions since the amount of São Paulo State extractive shrimp is not enough to attend the demand. The interviews revel that, in the State of São Paulo, the extractive shrimp collected presented lower quality when compared to the shrimp from Santa Catarina. The lack of grades and patterns and hygiene poor conditions from fishing to commercialization, are the main reasons of São Paulo low quality product.

Among different retail formats, emporiums or specialized stores were identified as a new retail format where shrimp could be offered. The emporiums are considered adequate since they can offer differentiated services and a wide variety of products that can be used for shrimp preparation.

Fig. 3 presents the competitiveness drivers for the distribution and consumption stages.

Distribution Stage

Legend:
□ TECNOLOGY   □ MARKET STRUCTURE   ▣ FIRM MANANGEMENT
▨ INSTITUTIONAL ENVIROMENT   ■ INPUTS   □ CONSUMPTION
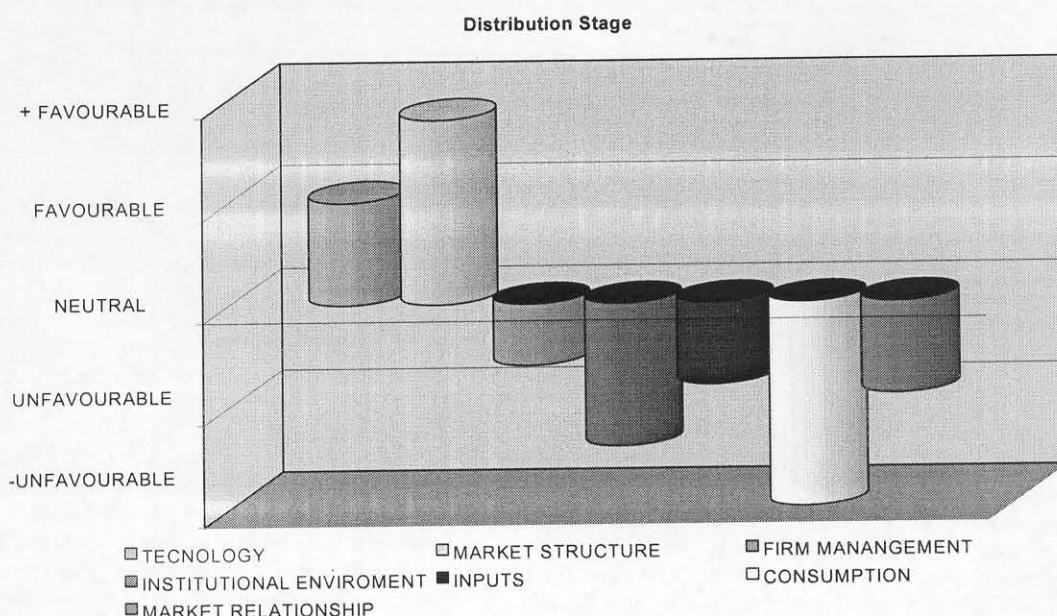▨ MARKET RELATIONSHIP

Fig. 3 : Competitiveness drivers for distribution and consume

Another channel can be characterized when vertical integration initiatives are observed. National food franchising chains as some fast-food chains are examples of this channel. Upstream vertical integration option has been considered an alternative in order to improve offer regularity of the main menu ingredient, the shrimp. Most of the integrated shrimp production is exported. These chains direct only 20% of the production for internal market. According to the franchise chain interviewed the farmed shrimp is commercialized as the basis of the dishes in the restaurants, besides it is sold as frozen ready-to-eat dishes, which are sold in auto-service retail under a different brand.

According to the interviews, large retail formats are not the focus of the industry in the shrimp chain. Thus, the shrimp is distributed to large, medium and small retails. That situation was observed during the interviews, when medium and small retail were satisfied with industries service offered to the stores.

Horizontal rivalry can be observed among restaurants, fisheries and supermarkets. Such rivalry, considered favorable to chain competitiveness, is evidenced by different means of competition among the interviewed retail formats. Thus, small retail competes by offering services while large retail competes by offering lower prices, shrimp based cookery courses and recipe books.

Considering vertical rivalry, different from other agroindustrial chains, a collaborative behavior involving the different agents of marine shrimp chain is necessary in order to raise produced volume, to develop adequate packing (prolong shelf life) and to promote shrimp consume stimulus campaigns. However, a lack of coordination within chain agents is noticed, so individuals, instead of the whole chain, perform the cited actions.

Thus, when supply chain management strategies (characterized by cooperation relationship among agents) are unavailable, then the responsibility for the problems and barriers for chain development is attributed to the previous stage. An example of responsibility transference was observed during the interviews, when a retailer attributed shrimp supply irregularity to the industry, which had attributed the problems to the production stage.

The inspection, considered an institutional environment sub factor, presented a negative evaluation in the distribution stage. The negative evaluation was due to the same problem described in the processing stage, that is, even though inspection is essential for product legalization and certification, a significant percentage is illegally commercialized, especially in street markets. That fact leads to an uneven competition between illegal and legal products. Considering restaurants located in malls food courts, an inefficient internal inspection and punishment were observed, especially related to sanitation in the places the food was handled.

Competitiveness Capacity Evaluation for the Institutional Environment in the State of São Paulo : The negative evaluation of the agents' coordination driver presented almost every sub factor as negative. That fact could be explained by the inexistence of the shrimp farming activity and lack of incentives to implement it in the State of São Paulo. For that reason, collective actions, chain representation and institutional marketing were classified as very unfavorable to chain competitiveness.

If marine shrimp farming is established in the State of São Paulo some decisions should be taken regarding local politics elaboration and public assistance service availability, which was considered unfavorable since it is inexistent in the State.

Fig. 4 presents the results of institutional environment competitiveness drivers.
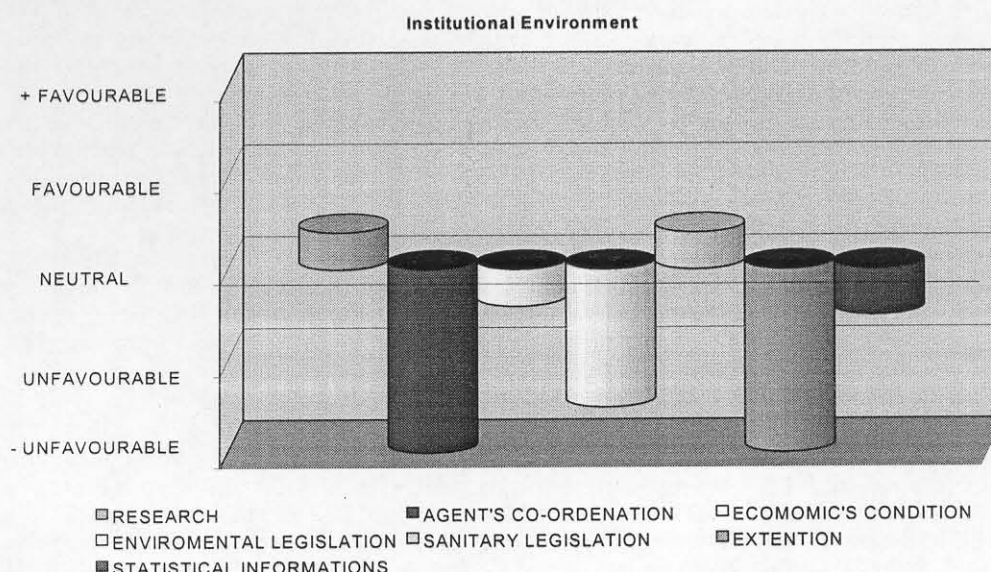

Fig. 4: Competitiveness drivers of the institutional environment

The State of São Paulo has a long coastal shore with several environmental protection areas. Such characteristic is considered a barrier for the establishment of farming areas in the State since there are not limited zones or areas proper for farming use.

Other factors that contribute to São Paulo marine shrimp farming competitiveness decrease when compared to other productive states are the high value of the land located in estuarine areas and the pressure exerted by speculative real property.

A set of rules about the sanitary legislation and the inspection system has been applied to shrimp farms and processing plants in the Northeast. The use of HACCP has been demanded by Brazilian government and by import countries. In consequence, in order to turn the State of São Paulo into a farmed shrimp exporter, even though only processing is currently performed in the State, the industry should invest in more efficient quality control systems.

By the time the research was applied, public institutions were performing researches about marine shrimp farming in the State of São Paulo, so the sub factor public research was considered favorable. However, public research initiatives were not observed.

The absence of tribute incentives and credit access facilitation, frequently observed in the Northeast region, were not noticed in the state of São Paulo leading to a negative evaluation of the competitiveness.

Conclusion

This work aimed to evaluate the viability of marine shrimp farming in the State of São Paulo. This objective was achieved by using supply chain competitiveness indicators, which had not been used for viability studies before. One of the main advantages of the methodology applied was to make possible the analysis on the supply chain level. In this sense, the methodology permitted the evaluation of the main stages that characterize the marine shrimp farming chain, economical agents identification in the productive stage and their coordination role in the supply chain. This methodology also permits a viability evaluation study and agroindustrial chain institutional environment analysis. Considering the objectives proposed the analyses exceed the results that could be reached by a traditional cost-benefit analysis, another advantage that justify the option for this methodology.

The interviews with the chain key-agents – especially the ones related to institutional environment – revel that marine shrimp farming face serious barriers for commercial establishment in the State of São Paulo. The barriers are related to several existing environmental protection areas along the coast of the State and to the barriers imposed by Environmental Legislation (with special attention to mangrove protection areas). Other impediments to farming areas establishment are the high value of the land located in estuarine areas and the pressure exerted by local speculative real property.

Thus, as a way to obtain and sustain chain competitive advantages, the State of São Paulo should concentrate efforts in coordination strategy development related to processing and distribution stages.

The processing stage demands specific research focused on the implementation of efficient processing systems (that could be characterized by water and sub products quality control), on industry management, on hand-labor qualification and on improving offer regularity, which was considered the major barrier for chain competitiveness. Contracts or partnership with shrimp farms located in other States could be an alternative to improve offer regularity (increase of shrimp offer would contribute to lower prices and consumption increase).

Another alternative related to offer regularity would be the option for upstream vertical integration. Brazilian franchising firms that commercialize shrimps in restaurants and in frozen ready-to-eat dishes, which are sold in auto-service retail adopt this governance structure.

Considering shrimp exportation, national firms that export their production adopt HACCP quality control mechanism as a safety demand of their clients. In this sense, São Paulo State processing plants should find alternatives for assure product quality if they intend to export processed farmed shrimp and be competitive in the market.

The adoption of identification seal for farmed shrimp would be a strategy in order to improve competitiveness for internal and export market.

The strategies related to distribution should include physical infrastructure support, communication and transportation (cold chain) in order to extend product shelf life. Other competitive strategies for this stage require researches about shrimp commercialization practices evaluation in the State of São Paulo, about potential consumption markets and about potential alternative distribution channels, which are able to promote farmed shrimp.

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