

Vertical Co-ordination Structures: Mixing the Resource Based View and Transaction Cost Approaches for a Better Understanding of the Vertical Co-ordination Choices.

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Abstract

What are the causes and conditions that lead to the existence of different vertical co-ordination (VC) structures within the same industry? This study aims to identify, characterize and analyze the varying forms of VC practiced in the 11 firms that comprise the peach canning industry in Rio Grande do Sul (Brazil). The results reveal that the most relevant factors that influence the choice of VC structure are transactional and resources. Higher levels of uncertainty and opportunism (transaction factors) lead firms to adopt more hierarchical VC structures (own production). Organizational resources (capacities and competencies) are shown to have a strong impact on the adopted, more integrated VC structure. Greater capital availability moves firms towards hierarchical VC. Better quality intangible resources (managerial competencies) in firms facilitate the development of more integrated relationships with suppliers driving them to a supply chain management (SCM) type. The importance of supply chain problems, such as the instability of raw materials and its unexpected occurrence may also play a role in the vertical co-ordination definition.

Keywords: vertical co-ordination, agri-food industry, transaction costs, resources-based view, supply chain management, peach canning industry.

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1 Introduction

One of the most important paradigm shifts in modern management is that individual businesses are no longer competing in an isolated way, but with growing frequency are articulating with other business units in the same value chain. The survival of organizations within a context of permanent instability depends heavily on their capacity to interact co-operatively with suppliers, clients and sometimes, even with competitors. Organizational studies have often considered strategic alliances as an alternative to, on the one hand vertical integration, and on the other market relations. That is, for a given product or service, the firm may choose either: (1) to produce on its own account (make decision); (2) to acquire in the market (buy decision); or (3) to produce in conjunction with other firms (manage decision). These inter-organizational vertical relationships require differentiated co-coordinating structures. Broadly, there are, at least, three vertical co-ordination arrangements in business practice: i) at one extreme, there is price based co-ordination, that results from the negotiations on the spot markets; ii) on the other extreme, there is hierarchy in which there is vertical integration of the productive activities by an organization; and iii) along the continuum linking the previous two, there are hybrid governance structures (Williamson, 1985).

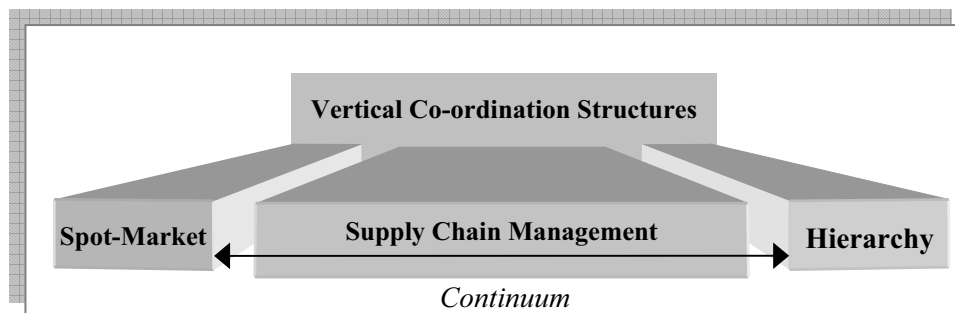
A number of papers have been written on the topic of the structuring of productive chains. These have mainly focused on identifying the motives for which agents organize supply chains (Boehjle et al., 1998; Beers, et al. 1998). Of the different approaches considered, two have received particular attention from researchers; Transaction Cost Economics (TCE) and Resource-Based View (RBV). The fundamental thesis of Transaction Cost Economic Theory is that organizations aim to reduce the costs of transactions by adjusting the governance structure to the principal attributes of the transactions (Williamson, 1985; Hobbs, 1996; Zilbersztajn, 1996). The choice between different governance structures is made through the use of comparative analysis, with the aim of assessing the relative efficiency between diverse governance structures within political systems and regulatory framework (Coase, 1937). The second approach that has gained ground in the study of inter-organizational relations is the Resource-Based View (RBV). Some authors consider transactions to be factors related externally to the company, and as such, would not be sufficient to explain the different vertical co-ordination initiatives. Hoyt & Huq (2000) and Madhok (2002) argue that when added to the transactions, the internal competencies and capabilities of firms have a fundamental role in the definition of the vertical co-ordination structure.

The Supply Chain Management (SCM) strategy is an approach that focuses on the firm as a unit of analysis on the vertical co-ordination system. Organizations have understood what SCM means and have implemented it as the process of structuring and managing

upstream and downstream relations with suppliers and clients for the generation of higher value for the client through the chain as a whole (Christopher, 1998; Zuurbier, 1998).

As a result of the combination of external factors (transactions) with internal organizational factors (resources) (Madhok, 2000), the existence and even co-existence of a large number of vertical co-ordination structures within the same economic sector can be expected, from market relations (spot) through intermediate/hybrid co-ordination structures (here, considered SCM), to hierarchical co-ordination structures (full vertical integrated), as illustrated in Figure 1.

Figure 1 – Insertion of SCM along the *Continuum* Market-Hierarchy.



Finally, the above presented problem regarding vertical co-ordination delineates the research question this paper seeks to answer: what are the motivating and conditioning factors that lead to the existence of different vertical co-ordination structures within the same agri-food industry? In seeking to answer this question, the present study aims to identify, characterize and analyze the different forms of vertical co-ordination that exist between the firms operating in the peach canning industry in Rio Grande do Sul State (Brazil) and their raw material suppliers, identifying the motivating and conditioning factors behind the existence of different vertical co-ordination structures in this industry.

2 Theoretical and analytical framework

In this section the three conceptual bases explored in the construction of the analytical framework used in the collection and analysis of the research data are presented and discussed. As indicated in the previous section, two approaches have received particular attention in studies concerning vertical co-ordination. They are Transaction Cost Economics (TCE) and Resource-Based View (RBV). The Supply Chain Management (SCM) strategy is addressed concerning the different VC structures possible between spot-market and hierarchy.

The first, Transaction Cost Economic Theory, is part of the recent tradition of investigation of the New Institutionalism Economy (NIE). One of the pioneers of Institutionalism Economy, Coase (1937), argues that, assuming that a firm would be able to perform all these operations internally at a lower cost than that acquired in the market, it would be expected that such activities would be conducted within the large company. Thus, a firm tends to expand up to the point at which the costs of organizing an

additional transaction within the firm are equal to the costs of performing the same transaction through the market or even through its performance by another firm. What is learned, then, is that hierarchy (vertical integration) and markets represent different alternatives of vertical co-ordination and that they can have differentiated transaction costs. These costs are a relevant factor in explaining the organizational structure of firms and the way in which they interact with their suppliers throughout the productive system.

Three essential attributes of transaction are considered in the theoretical development of TCE: the specificity of the assets, the frequency of the transaction and uncertainty (limited rationality, informational asymmetry and opportunism) (Williamson, 1985). The specificity of assets refers to the degree to which the investment (asset) is specific to the activity and the cost of its reallocation for an alternative use (Williamson, 1985). When the assets are specific and difficult to allocate for other ends, the market relations (spot) are less effective against the opportunistic attitudes of the agents. The frequency of performance of the transaction has a double role, as the greater its frequency, the lower should be the average fixed costs associated with information collection and the elaboration of a complex contract that might impose limitations on opportunistic behavior. Higher transaction frequency offers more complex incentives and governance structures (Rindfleisch and Heide, 1997). In the case of less frequently performed transactions, market co-ordination may be seen to be more efficient. Within the framework of transaction cost economics, the question of uncertainty is seen as representing the limitation of individuals to foresee all the future conditions in a relationship (contract). The main problem arising from uncertainty is the possibility of the emergence of opportunistic behavior by some of the parties involved in the relationship. This kind of attitude can be reduced or controlled with the creation of systems of control and inspection allied to mechanisms of remuneration and incentives.

Also originating from the theoretical constructions of industrial organization, Resource-Based View (RBV) has gained space in the study of inter-organizational relations. From this perspective, the resources available to or developed by the firm are regarded as its main strategic source. According to this approach, it is the resources that the firm holds that will provide the base for its survival and success (Connor, 2002). RBV has its origins in Marshall (1890), and has been developed by Coase (1937), Andrews (1949) and Penrose (1959). This approach is understood to help explain the differences in performance between firms. The way in which each firm puts its resources into operation may in part explain how firms in similar economic environments present different levels of performance (Wernefelt, 1984; Barney, 1991; Bergh, 1995; Argyres, 1996; Barney, 2001).

In RBV, resources may be defined as “those semi-fixed assets linked to the company” (Wernefelt, 1984). These can be classified under the categories: land, capital, labor, knowledge and resources. From this perspective, the firm may be considered as an administrative organization and a set of productive resources (Caves, 1980). A firm may achieve results, not because it has better resources, but because it combines them or uses them in a more efficient way (Penrose, 1959).

In order to understand the concept of competitive advantage from the RBV approach, it is necessary to highlight the importance of the idea of intangible assets. While tangible assets (land, capital, machines, equipment...) may be more easily imitated and acquired, real difficulty is found in the imitation of advantages obtained from intangible assets. Hall (1992) and Hall (1993) pointed out the importance of intangible assets, such as know-how, competency, product reputation, culture and networks, as contributing factors to the success of a company. In this way the presence of asymmetries between firms may be explained by the presence of these intangible assets and how they are managed.

In the Supply Chain Management (SCM), the firm is the focus of analysis. This approach has contributed to the understanding of the process of construction, structuring and management of inter-organizational vertical relations. Supply Chain Management is the integration of the commercial and productive processes from the final consumer to the primary input supplier, seeking the addition of value for the consumers (Christopher, 1998). From this definition, it can be learned that the main factors of a supply chain are: inter-organizational relations; commercial processes; efficiency and the addition of value; the integration of functions, activities and resources; the integration of information systems; planning and control; and product development and marketing.

Considering the characteristics outlined above, SCM fits within a market-hierarchy continuum, at a level of vertical co-ordination where the main challenge is to administrate the processes involved in the production and commercialization of products in such an articulated way that they all seem to be under the same hierarchical co-ordination, without losing their individuality as autonomous business units. The different levels of SCM implementation would represent the different degrees of involvement existing between the participating organizations.

Today, the debate around SCM strategies is not centered on their potential benefits, but on the conditions necessary for, and ways of initiating the process of transition from market or hierarchical based relations to collaborative, partnership based systems. Questions, such as when, how, with how many and which suppliers, and furthermore, upon which bases these forms of co-operation should take place need to be answered (Cooper et al., 1997; Lambert & Cooper, 2000).

From the discussion presented so far, it is possible to identify areas of integration and complementarities between the TCE and RBV theories that help to define and understand the main drivers that influence a firm's vertical coordination structure. According to TCE, the configurations and relations between firms will be conditioned by the characteristics of their transactions and the institutional environment in which they act. These, in a certain way, determine how firms should organize themselves in order to achieve the level of efficiency necessary to compete in the market in which they act. In RBV, which focuses on the individual capabilities of firms in managing their activities, it is the internal competencies that will have to ensure that the results in terms of efficiency are maximized. The SCM approach, in a certain way, integrates the external factors of transactions and the internal resources in order to bring about, structure and manage alternative forms for the firm to co-ordinate its vertical relations in the search for the

creation of value for its clients. From the combination of the factors of transaction, resource allocation and the capacity to construct and manage supply chains, it is possible to identify the factors that would give rise to the diversity of vertical co-ordination (VC) structures found within the productive base, and even within the same economic sector.

3 Method and procedures

In consideration of the proposed research aims, the study has been developed in two stages. The first consisted of the preparation of a questionnaire, which was sent to the 11 firms that comprise the population of the peach canning industry in the state of Rio Grande do Sul (RGS) State in Brazil. The questionnaire was prepared from the factors that form the analytical framework presented in Figure 2. In this stage, the aim was to identify the vertical co-ordination structures adopted by the firms in their relations with the suppliers of raw material (peaches *in natura*). Once the data had been collected, it was possible to place each firm into one of the three models of vertical co-ordination: VC-Market, VC-SCM or CV-Hierarchy.

In this study VC-SCM is defined as a vertical co-ordination structure where the relationship purchaser-supplier (processing firm – rural producer) includes the sharing of some kinds of knowledge and information, and the establishment of some form of engagement and shared activity. VC-Hierarchy is defined as a structure where the peach canning firms own part of its source of raw material (peach orchards). VC-Market is considered a model of vertical co-ordination where the market determined the transactions related to obtaining raw material.

Once the 11 firms had been grouped into the three models of vertical co-ordination, in a second stage, interviews were carried out with the executive body of each of the firms. The interviews were based upon a semi-structured questionnaire, which was also elaborated from the framework shown in Figure 2. In this interview stage the aim was to obtain data and identify facts that would be of use in understanding the motivations and conditions for the adoption of the predominant model of vertical co-ordination in the relationships of the firm with its suppliers of raw material (rural producers). The discussion and final analysis of the data focusing on the goal of understanding the factors that would explain the diversity of vertical co-ordination structures within the peach canning industry in RGS.

4 Results

4.1 Vertical co-ordination structures found in the industry

As indicated in the methodology of this study, the first stage of the study consisted of the identification of the firms that comprise the peach canning industry in Rio Grande do Sul and their main vertical co-ordination strategies and practices for obtaining raw material (peaches *in natura*). Table 3 shows the number of cans of peaches produced and the source of the raw material that was obtained in each of the 11 firms that took part in the study. The names of the firms have been substituted by names of varieties of peaches

cultivated in the region today in order to enhance the visibility of the data without compromising the identity of the firms included in the study. The order of presentation follows the criteria of the level of concentration of their models of vertical co-ordination (VC): Hierarchy (make), SCM (manage), Market (buy).

Table 1 -The Distribution of sources of raw material supply of the firms in the study according to their models of vertical co-ordination.

Firm	Production 2004 (thou/cans)	VC-Model of the Source of Raw Material (in thousands/cans and (%))					
		Market		SCM		Hierarchy	
Precocinho	14,200	3,550	25%	-	-	10,650	75%
Diamante	3,800	380	10%	2,470	65%	950	25%
Granada	6,100	5,185	85%	-	-	915	15%
Esmeralda	6,453	323	5%	6,130	95%	-	-
Magno	3,000	1,200	40%	1,800	60%	-	-
Cerrito	4,422	2,653	60%	1,769	40%	-	-
Jade	5,700	4,560	80%	1,140	20%	-	-
Riograndense	7,000	7,000	100%	-	-	-	-
Eldorado	3,000	3,000	100%	-	-	-	-
Vanguardia	950	950	100%	-	-	-	-
Ágata	900	900	100%	-	-	-	-
Total	55,525	29,701	53%	13,309	24%	12,515	23%

Source: Research results.

It can be seen from Table 1 that, though 50% of the raw material supply is obtained through market relations, there is also a clear participation in the industry of alternative models of vertical co-ordination (SCM-24% and Hierarchy-23%).

As can be seen, in order to obtain the raw material, different forms of vertical co-ordination are employed within the same productive sector. Furthermore, some firms employ more than one vertical co-ordination strategy. What reasons lie behind this diversification of co-ordination structures? What makes a firm engaged in the VC-Market or in the VC-SCM model also act in a vertical manner, for example?

Based upon this data the firms were grouped into the following categories:

VC-Market: the firms in which market relations represented the predominant form of obtaining raw material used a large and varied number of suppliers. We differenced this model from a “pure” CV-Spot-Market because these firms invested in acquiring some information relating to their suppliers and perceived the necessity of reducing the number of suppliers. This reduction is considered a means of diminishing the uncertainties in transactions with the rural producers. In order to do this, the technology used and the size of the orchards are considered the two most important variables in the selection of suppliers. The VC-Market model grouped six firms (Vanguardia, Riograndense, Ágata,

Eldorado, Cerrito, Granada and Jade) that maintaining predominantly market based relations with the rural producers. In this group, the firm Granada also obtains part of its raw material (15%) from its own production (verticalization). The companies Jade and Cerrito obtain a part of their raw material (20% and 40%, respectively) by means of more integrated relations with the rural producers.

VC-SCM: the firms in this group, though having relatively new projects still in the development phase, all made positive declarations regarding their results, while not all considered this model to be the only one to be followed. These firms offered varied forms of support to the suppliers responsible for the supply of their raw material. In relation to their position along the continuum Spot-Market / Hierarchy, this group of firms was placed to the middle-left of this continuum. This because the activities developed by the firms together with their suppliers were characterized as being more similar to production assistance and development than integration of resources and competencies. The VC-SCM grouped four firms (Diamante, Esmeralda, Cerrito and Magno) that act in intermediary systems of vertical co-ordination with their suppliers in order to obtain the greater part of their raw material (from 20% to 95% of their demand).

VC-Hierarchy: this group is composed of three firms. Of these, one (Precocinho) stands out, as it controls approximately 75% of its annual requirement of peaches *in natura*. These firms argue that full vertical co-ordination (CV-Hierarchy) plays a positive role in ensuring the supply of raw material in harvests where the yield is low. None of the firms in this group obtained 100% of their supply needs from their own production structures; on the contrary, they counted on alternative sources of supply from the market. The other two firms that joined this model (Diamante and Granada) obtain a small part (25% and 15%) of their raw material from their own production and were joined this model because of their experience and commitment to run part of their business like an orchard producer, and understand the rationality of this process is part what we were looking for.

Once in possession of this characterization of the forms of vertical co-ordination adopted by the firms for obtaining their raw material, the second stage of the study was initiated. This consisted of in-depth interviews within each company, aimed at identifying the factors that motivated the adoption of such co-ordination structures.

4.2 Identifying the factors that have an impact on the vertical co-ordination structure

While maintaining the analytical framework constructed from the Transaction Cost Economy (TCE) and Resource-Based View (RBV) approaches as a basic framework (see Figure 2), it is possible to investigate to what degree characteristic factors of both transactions and internal resources of the organizations would be involved in influencing the choice and implementation of vertical co-ordination structures in the firms under study.

The first element of the analytical framework of this study is linked to the impact of transactions on the choice and implementation of vertical control structures. With the observation of the factors of transactions, such as asset specificity, transaction frequency,

uncertainty and opportunism, it is intended to assess their impact on the choice and implementation of vertical co-ordination structures in the firms studied.

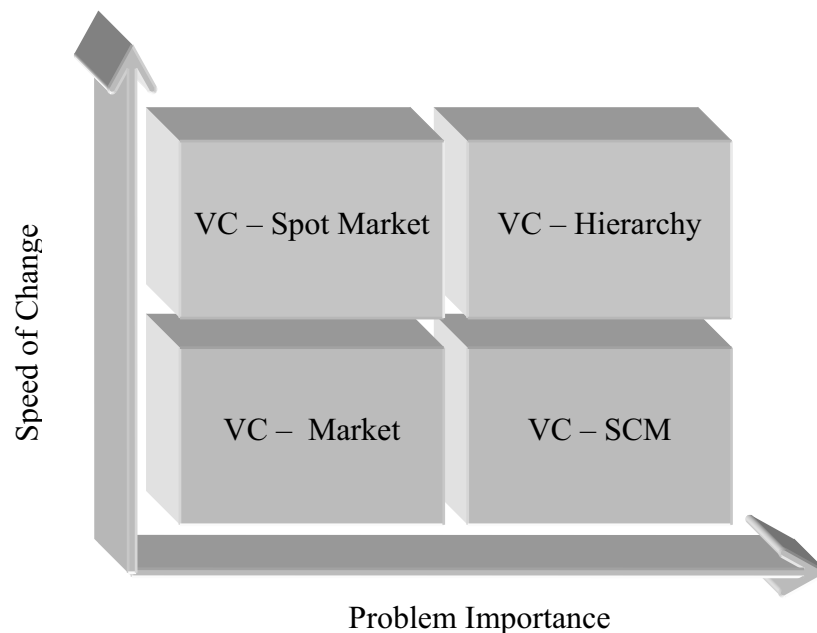
The research findings reveal a wide variety of possible undesirable factors in the transactional process within the peach canning industry, specifically, in relation to the management of the supply of raw material. These range from the quality of the fruit to the stability and guarantee of supply in the quantities necessary for the efficient operation of the processing plants.

Although the processor-producer relations present a relatively specific model, the natural disputes that characterize a market system are found. Disputes and changes of supplier do not occur only because of the actions of the rural producers, but also in accordance with the necessities and interests of the peach canning firms. The practice of changing suppliers or purchasers gives rise to a great deal of uncertainty and instability in the peach-canning industry. Cases of non-fulfillment of contract/agreements resulting from non-payment of the agreed prices by the processor or the failure, on the part of the producers, to supply agreed quantities and qualities of fruit are quite common in the industry. As well as the simple commercial relationship, aspects related to the quality of the raw material are seen as a cost and earnings factor in the industry. Some firms are seeking to minimize these costs reducing the number of suppliers, which has led to gains in scale of production and quality of the fruit, as well as enhancing control and management. On the other hand, there are firms that seek, through vertical integration (i.e. their own production), the means to supply themselves with the quantities and qualities required for the continuity of their businesses.

When the firms are faced by such problems, it is the question of non-fulfillment of contracts/agreements between processing firms and rural producers that is shown to be the most relevant transactional element (uncertainty and opportunism) influencing the choice and implementation of structures of vertical co-ordination. The greater the frequency and more unexpected the occurrence of a problem of this nature, the greater is the propensity towards vertical-integration (VC-Hierarchy) on the part of the firm confronting the problem. If it occurs suddenly, the need to overcome the problem will induce the firm to rapidly seek out new sources of raw materials. The significance or seriousness of the problem may also influence the type of reaction. The greater the severity of the problem (e.g. the interruption of the supply of a large volume of raw material), the greater will be the propensity of the firm to integrate vertically its activities in an effort to meet the demand for raw material. In the case of less significant problems, often considered normal within the business environment, the reaction may be less emphatic in terms of change. The firm may get around the problem by a simple improvement in the management of the VC-Market model, supporting some strategic suppliers on an informal basis.

Figure 2 shows the probable alternative reaction movements in terms of the structuring of the vertical co-ordination models, based on the intensity of two variable transactional factors: problem importance and speed of change.

Figure 2 - Relation of speed of change vs. problem importance in the determination of a vertical co-ordination structure.



Source: Research results.

As shown in Figure 2, when the change occurs gradually (less speed), but represents a problem with a prejudicial influence on business performance, the reactions tend towards the development and implementation of VC-SCM models. When faced with a problem, such as instability in the quantity or quality of raw material, which requires and can be dealt with over time, a policy of continuous improvements, firms can apply the SCM models. However, if the problem has little impact on the results of the company, and its speed of occurrence is rapid, the reaction will favor direct disputes in the market in order to meet the demand for supplies with the suppliers of third parties. In order to differentiate this conduct from that previously defined in this paper as VC-Market, it has been denominated “VC-Spot Market”, characterizing it as an action that includes more components of opportunity than convenience in commercial relations. However, when faced by significant problems (e.g. non-fulfillment of contracts) that may arise suddenly, the companies have identified vertical integration (VC-Hierarchy) as the best way of overcoming them.

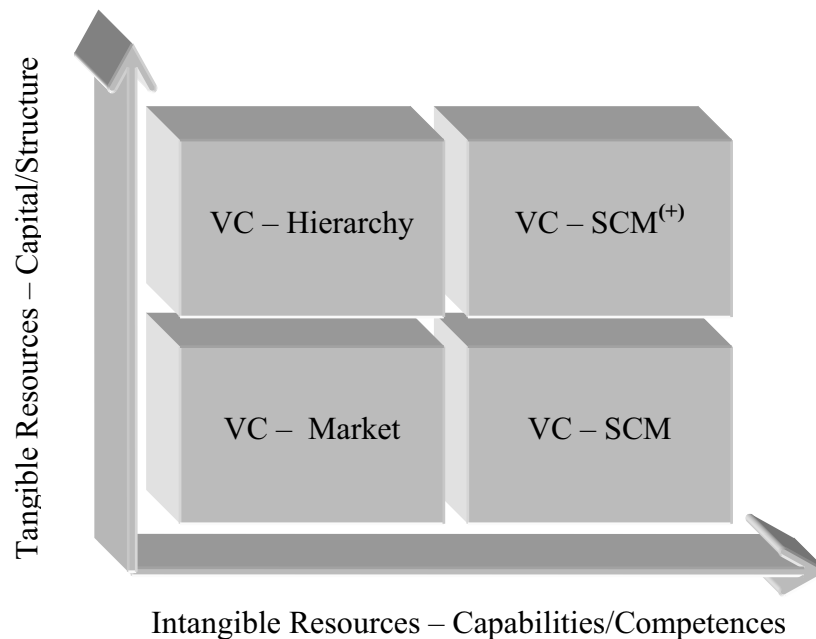
The second element of the structural framework used in this study is linked to the impact of resources on the choice and implantation of vertical co-ordination structures. From the factors investigated in the firms, it was found that the organizational resources and capability exert influence on the definition of the vertical co-ordination structure adopted by the firms studied. It was noted that managerial as well as financial capability contributes to the determination of VC-Market models of vertical co-ordination. While maintaining typical market relations, the less capitalized firms focused on maintaining a policy of good remuneration to the suppliers of the delivered produce, while the more

capitalized firms went a stage further, offering financial support for the operating costs of those orchards considered to be of strategic value.

Next, following the order of increasing resources availability is the VC-Hierarchy group. These firms believe in the good performance and profitability of their own production structures, rarely posing the possibility of altering them. The members of this group are not inclined to make use of more elaborate managerial instruments in their business. While being far from what might be considered a cause-effect relationship, the components associated with resources and organizational capability is clearly linked to the decision to adopt a VC-SCM structure. This is due, in part, to the recognition that the model has received as firms have developed it and also benefited from its results. The fact that they have sought support and made use of available capabilities and competencies within the institutional environment in order to support their vertical co-ordination actions shows that these firms optimize their results with the good use of factors related to their managerial capabilities. This group includes the two most professionalized (executives) firms in this industry apparently having, at the same time, the best information management systems and presenting the greatest diversification in their activities, not concentrating only on peaches. Moreover, these firms affirm that the VC-SCM model is the most appropriate for their businesses and demonstrate their intentions to increment it in the short to medium term.

From the factors presented above it is possible to discern some causal relations worthy of consideration, which may be judged opportune to record and discuss here. It was noted that the availability of tangible resources (e.g. financial capability) may influence the decision to opt for the VC-Hierarchy and VC-Market models. While the greater or lesser availability of intangible resources (e.g. capabilities and managerial competencies) will determine the decision to adopt or not to adopt VC-SCM models. When present in greater proportion, intangible resources, independent of the level of availability of financial resources, for example, tend to influence firms in evolving from VC-Market models towards VC-SCM models. Two firms illustrate this latter behavior. These firms are at the same time the best capitalized in the industry and have the best and most professional management staff (capabilities) in the industry, resulting in a more sophisticated SCM strategy in the industry, which we highlight here as VC-SCM(+). Figure 3 illustrates what can be learned from the relationship between the availability of organizational resources (tangible and intangible) and the vertical co-ordination structures sought by the firms in the study.

Figure 3 - The relationship tangible vs. intangible resources when defining the models of vertical co-ordination for the supply of raw material.



Source: Research results.

Figure 3 reveals some alternative organizational behavior in the definition and implantation of vertical co-ordination structures. The greater the limitations in terms of resources, the greater will be the possibility of firms organizing themselves in structures of the VC-Market model. As the availability of tangible resources increases (e.g. capital), while that of intangible resources remains limited, the greater the probability that firms tend to structure themselves in VC-Hierarchies. In the proportion that these widen the availability of intangible resources, such as capacities, competencies and skills, the more firms, independent of their available tangible resources (capital), tend to organize their vertical co-ordination structures towards models characterized as VC-SCM and VC-SCM(+). The study reveals that pre-conditions such as the availability of capacities, recognition of its potentialities over those of other models, competence in its implantation and management are the determining factors in the effective adoption of the SCM co-ordination structure.

4.3 The dynamics of the vertical co-ordination structures

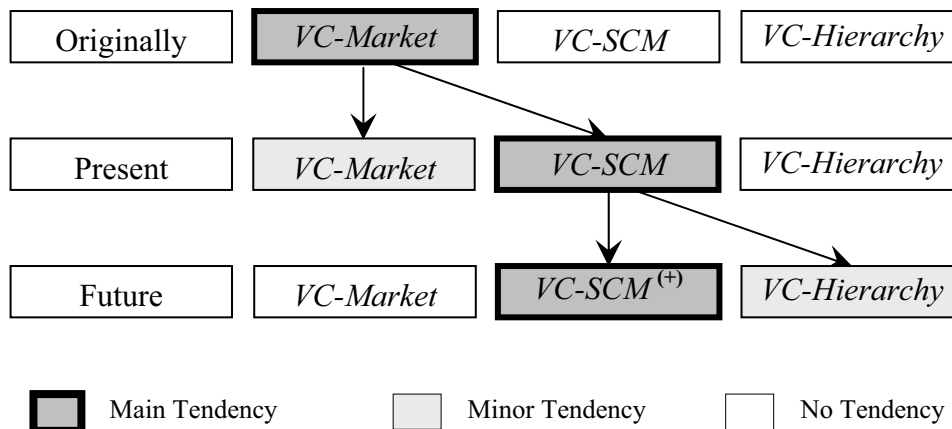
What follows is a discussion of the dynamic found in the transformation of vertical co-ordination structures in the peach canning industry, the aim of which is to analyze the influence of factors linked to transactions and resources. It is important to point out that the processor company – supplier relations defined in this study as VC-Market are present in all the companies in the study. Without exception, all the cases have at some point been structured within a VC-Market model. However, in situations of uncertainty

and opportunism, those firms with more capital available seek to overcome such problems through full vertical integration (VC-Hierarchy). On the other hand, those companies with greater availability of intangible resources (management competence) seek to guarantee their supply of raw material by forming more integrated relations with the rural producers (VC-SCM). As one of the research objectives is to explore the evolution of these systems, what follows below is a succinct description of their recent dynamic in terms of origins and future perspectives, emphasize the transformations that are taking place in the movement from VC-Market to VC-SCM, which are the most widely seen in this industry.

Those firms belonging to the VC-SCM group, not only operated in the past but also currently make use of the market model in order to attend part of their total supply needs (Table 1). However, in seeking to overcome uncertainties in the supply of their raw material (peaches) and taking advantage of their more qualified intangible resources, these firms are implementing more integrated relations with their suppliers and for the most part claim they have the intention to broaden and qualify even more their present VC-SCM models.

Figure 4 shows the origins and future perspectives with regard to the position of the firms that currently conform to the VC-SCM model when obtaining part of their raw material. The light-shaded squares show that, for these firms, there is a tendency towards a reduction in the use of the currently exploited VC-Market and VC-Hierarchy models, which are giving way to more integrated relationships between rural producers and processors that are already implanting VC-SCM structures.

Figure 4 – Dynamic of vertical co-ordination model for the present VC-SCM group.



Source: Research results.

While recognizing that none of the firms studied operate a consolidated system that incorporates the full characteristics that define a SCM, the fact that they are taking the initiative of implementing them has contributed to recognition of their results and the valuing of their potential. The preference for a position between the extremes of Market and Hierarchy, though incipient, shows that a number of firms recognize the potentiality

of VC-SCM as a possible vertical co-ordination model for firms in the middle of the model.

5 Concluding remarks

This study has sought to characterize and analyze the vertical co-ordination structures adopted by the Brazilian peach canning industry. The study identified the presence of different vertical co-ordination structures (VC) in the relations between the processing firms and their raw material suppliers (rural producers). Basically, three behavior types were observed, that vary along a Spot-Market/Hierarchy continuum: the VC-Market (53% of the raw material consumed), the VC-SCM (24% of the raw material consumed) and the VC-Hierarchy (23% of the raw material consumed). As the study involves a single industry within the economy, there are many similarities between the firms and the ways in which they react to variants in the market. However, the degree of diversity between them, in terms of the strategies adopted for the organization and co-ordination of their relations with suppliers, indicates the existence of asymmetries in relation to which VC structure represents the best way of optimizing the supply of raw material.

The reasons for the co-existence of different models of vertical co-ordination between the extremes of buying in the market and producing ones own raw material find echo, according to the findings, in the two main theoretical pillars that support this theme: Transaction Cost Economics (TCE) and Resource-Based View (RBV). While the transaction factors impact the firms in generally similar ways, the resources determine the reaction to these in an individual and particular manner in each company.

The most relevant transactional factors in the choice of vertical co-ordination structures are uncertainty and opportunism, demonstrated by the breaking of contracts/agreements between processing firms and rural producers. The more quickly and unexpectedly this problem occurs, the more the firms seek the solution of the problem in the production of their own raw material (VC-Hierarchy). The significance or seriousness of the problem confronting the firm (e.g. the interruption of a large volume of raw material), the greater will be the propensity of the firm to integrate vertically the supply of raw material. In the case of problems of less significance, the reaction may be less emphatic in terms of changes, as the firm can get along with the simple improvement of the VC-Market model.

When confronted with significant problems that develop gradually, firms seek to develop activities that are more integrated with their suppliers (VC-SCM) in order to overcome them. With regard to the role of the organizational resources, these appear to have an impact on the form of the vertical co-ordination adopted by the firms. When the firm faces a significant problem of interruption to its supply of raw material, it will tend to react in one of two ways: if the availability of structural resources (capital) is far superior to those ones intangibles (such as management capability) the movement will tend towards vertical-integration (VC-Hierarchy) of raw material supply. While if the balance between tangible and intangible resource were favorable to the latter, the reaction will tend towards that of approximation with the suppliers, aimed at the construction of mechanisms (like VC-SCM) that diminish the risk of an eventual break in supply.

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