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## **Firm Size, Contractual Problems and Organizational Decision-Making: Logistics for Perishable Goods**

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### **Abstract**

This paper examines formalized contracts between outsourcing logistics providers and companies in the perishable food industry by evaluating relationships with specificity and uncertainty. A sample of 55 outsourcing agreements were analyzed and found that exchanges are characterized by positive transaction costs arising from contractual problems such as investments in specific assets and information asymmetries. There are several types of specificity and the impact varies depending upon the company. Contractual agreements which are designed to address each type of specificity can provide firms a safeguard mechanism.

**Keywords:** outsourcing, transaction costs, specific assets, information asymmetry, contracts

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## Introduction

Logistics coordination is a key factor of success in the perishable food industry. An efficient supply chain brings added value to final products, as it addresses the time and temp sensitive characteristics of food safety. It therefore can potentially provide a competitive edge in the sector. Logistical services are increasingly outsourced to specialists, temperature-controlled logistics operators (TCLO). Outsourcing haulage and storage (basic logistical services) should ensure that products are handled appropriately and delivered on time. However, outsourcing services involves a number of issues, including the perishable nature of the product, investments in specialized equipment and ensuring quality standards from supermarkets are met. Consequently, this arrangement is characterized by positive transaction costs derived from contractual problems such as the investment in specific assets and uncertainty.

New institutional economics—especially the theories of transaction costs and agency provide a solid theoretical basis to explain organizational decision-making and the contractual challenges companies face. First, the provision allowing for in-house logistical services is discouraged by the legal framework that governs in Spain. Second, in order for logistical outsourcing to be successful (from an institutionalist perspective), it's important that contracts between the food companies and TCLOs are structured to reduce the impact of the above-mentioned contractual problems. These asymmetrical relationships between companies are significant with perishable goods, although the specifics and impact can vary from one company to another. This goes some way towards explaining the existence of different transaction governance structures. Contractual diversity infers that as transactions become more integrated or streamlined within a company, the contractual problems are likely addressed. This requires that contractual problems be ranked in terms of their importance to the parties.

The aim of this article is to explain why there are differences in the asymmetrical relationships among different sectors of companies in the food industry and to determine how these problems contribute to existing practices of various outsourcing agreements. This study examines the factors determining how outsourcing agreements are formalized by empirically comparing a sample of 55 outsourcing agreements in force during 2011.

This paper adds value to the empirical testing of the contractualist model. It concerns an original and recent study of a particularly complex business situation, examining the role of contracts between perishable food manufacturing companies and logistical service providers. It makes a contribution to an area which has received little academic attention: contractual relationships in the food industry, specifically in the haulage sector and temperature-controlled logistics. The main contributions of the paper are as follows:

- There are several types of specificity. Specificity is not the same for every firm nor does it affect them in the same way. Consequently, each type of specificity induces a unique response from companies in their choice of contractual forms and transaction governance. This novel application of the transaction cost theory and agency theory may be of interest to managers and other stakeholders of fresh products, value chains, and institutional economics researchers, worldwide.

- Given the difficulties in obtaining reliable, empirical data through surveys for agribusiness study, the data collected from this research potentially contributes to the existing literature. Spain has only recently developed a demand for services with high added-value, which explains why it has received so little academic attention. The Spanish food industry provides a rich backdrop of relatively unexplored territory. As food companies increasingly turn to outsourcing logistics services to get their products delivered to customers, a unique situation is occurring within the food industry and its suppliers. It requires an investment in specific assets which are diverse in nature, yet essential in the case of perishable products.

## Theoretical Background

Companies must invest in assets in order to operate in the market. Assets may be highly versatile or restricted when designed for specific purposes. The level of specificity is the degree to which an asset loses some of its value when used for another activity or buyer (Alchian and Demsetz 1972). According to Williamson (1996) investments in specificity, take many forms including: (1) *site specific* (2) *human* (3) *physical*—for a particular product or customer; (4) *dedicated*—which can become specific when developed for a particular customer; and, Masten (1991, 1996) added (5) *temporal* specificity to this list, making time an important, limiting factor in transaction governance.

A crucial problem with specificity investments is that buyers and sellers will ultimately form *ex-post* bilateral monopolies when incentivized to trade only between themselves rather than involving third parties. This occurs when either the seller cannot find alternative buyers for the asset or when the buyer does not have time to find a new seller. In a bilateral monopoly<sup>1</sup>, each party wants, *ex-post*, to benefit from the “quasi-rent”<sup>2</sup> generated by the investment. That can endanger the efficiency of the exchanges and the efficient quantity of specific investments *ex-ante*. If the investing company is not providing *ex-ante* guarantees on the distribution of *ex-post* benefits, no investment will be made. If this occurs, a hold-up, or market breakdown, occurs. As Williamson (1975, 1989) argued, exchanges which are subject to the influence of opportunism will only be efficient if, *ex-ante*, safeguard mechanisms are put in place to reduce the risk of *ex-post* opportunism. The design of these contractual mechanisms is thus an essential task for the participants in an exchange (Klein 1992).

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<sup>1</sup> Coase was the first to put forward the idea that there are *costs for using the market*, which he called the “costs of market transactions” in his article “The Problem of Social Cost” (Coase 1988). In this article, Coase argues that, in order to undertake a market transaction, it is necessary to “discover who it is that one wishes to deal with, to inform people that one wishes to deal and on what terms, to conduct negotiations leading up to a bargain, to draw up the contract, to undertake the inspection needed to make sure that the terms of the contract are being observed and so on” (Coase 1988, 114).

<sup>2</sup> Arruñada (1998) insists on the advisability of clarifying the difference between the economic concepts of “rent” and “quasi-rent”. “Rent” can be defined as the excess of price above that would need to *attract* a resource for a particular purpose; whereas the term “quasi-rent” is used to refer to the excess amount it would be necessary to pay to *retain* it.

### *The Principal, the Agent and Information Asymmetries*

An agency relationship exists whenever there is a contract with one or more persons, known as the principal(s), who hires another person—the agent, to carry out an activity or make decisions on their behalf in exchange for payment (Ross, 1973; Salas, 1996). The problem for the principal resides in the fact that the agent possesses greater specific knowledge on the task to be performed, leading to an asymmetrical situation between the two contracting parties. The agent has a certain amount of room to maneuver, and their actions are difficult to monitor, as the activities cannot be observed closely. Even if they could, the costs of collating this information would be too high. The central dilemma for this scenario, known as the *agency theory* is how the principal can motivate the agent to defend the principal's best interests and not their own personal gains. Thus, the theory predicts that it is necessary to design a contract that provides incentives that will induce the agent to choose the best possible actions and decisions from the principal's point of view. Information asymmetries are a consequence of the fact that every participant usually has more information about one or other of the relevant variables. This situation can occur both before or after hiring takes place, giving rise to two different types of problems: if the asymmetry exists before hiring, negotiation problems and adverse selection transpire (Akerlof 1970)<sup>3</sup>; if the asymmetry only appears after hiring, then a moral hazard arises (Fama 1980)<sup>4</sup>.

Therefore, in the case of the outsourcing perishable food logistics, one would expect the following propositions:

- a) Investment decisions in specific assets will be protected by contractual safeguard mechanisms that reduce the risk of ex-post opportunism.
- b) There are different types of assets and their impact varies from one company to another.
- c) Each type of specificity requires a different type of contractual response.
- d) As the contractual safeguard used becomes more integrated into the company, investment specificity is most relevant to the company.

### *Empirical Applications in the Food Industry*

Food industry research provides some interesting recent studies on primary production worth highlighting. Focusing on avocado production, Arana et al. (2013), show how decisions made by producers adopting private quality certifications directly correlate to higher levels of asset specificity and prices received for products. Studies regarding milk production from Bakucs et al. (2013) and Abdulai and Birachi (2009) found that specific investments and firm size are the

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<sup>3</sup> Research undertaken in the industry has demonstrated that the TCLOs are interested in maintaining a good reputation. This is achieved by fulfilling promises made and by providing customers with quality service that exceeds agreements, etc. This “good image” possessed by the operator provides an implicit guarantee of the trustworthiness of the service they provide. In turn, this means that the company is able to transmit, by means of the name or brand which differentiates the company from its competitors, a clear signal of its reputation or “good name” to potential customers. In practice, this resolves the problem of *ex-ante* information asymmetry. Frequency transaction acts in the same direction.

<sup>4</sup> Trust consists of a reduced suspicion that the other party involved in the transaction will behave opportunistically, or an expectation that they will not. Thus, if trust exists, the contracting parties will be convinced that they will not fall victim to behaviours such as moral hazard or other types of contractual vulnerabilities.

main predictive factors for the choice and design in contracts between primary producers and the processing industry. Further important empirical research concerns the exploration of contractual relationships between farmers and agro-industrial companies working on a contract farming basis with professional farmer co-operatives and the adjoining link in the commercialization chain; and between farmers and supermarkets. In these cases formal contracts are positively correlated with the scale of production, while public certification of quality and safety attributes are contract substitutes in the regions where certification is effective (Jia and Huang 2011; Guo and Jolly 2008; Ruben et al. 2007).

## Material and Methods

### *Data Generation*

The focus of this study concerns the contracts governing outsourcing services for the provision of perishable food logistics. The propositions were tested on a representative sample of 61 companies<sup>5</sup>, 55 of which belonged to the food industry, with six being TCLOs. The methodology employed for the collation of corresponding information from each company consisted of detailed interviews<sup>6</sup>, using open-ended questions to enable the company to reveal its experience more authentically. In every case, the interviewees were executives with direct responsibility for managing outsourcing agreements. Information on the following issues was collected:

**Table 1.** Type of Data Collected from Food Firms and TCLOs

TCLOs	Food Companies
Company overview	Company overview
Relationship development with clients	TCLOs capacity to meet company needs
Contracts and contractual problems	Mechanisms used for monitoring and controlling goods
Mechanisms used for monitoring and controlling goods	Development of relationships with TCLOs, contracts and contractual problems
TCLO capacity and cost structure	Cost of outsourced logistic
Improving the quality of service	Improving the quality of service received

To design the study sample, companies continued a process which consisted of several stages: 1) gathering information on existing firms, 2) debugging information; and 3) selecting companies to be interviewed (Hernández et al. 2003). The information was prioritized to contain every possible case of contractual problems and outsourcing agreements existing within the transaction, including companies with the following:

- Different sizes, depending on criteria used by the European Commission.
- Different subsectors: frozen fish, meat products and frozen precooked, frozen pastries, frozen vegetables, ice cream, fresh meat products, fruits and vegetables, sausages and hams, fresh fish, juices, dairy products, eggs, “horchata”, candy.

<sup>5</sup> According to the National Institute of Statistics, the turnover of the companies in the sample represents 27 percent of the regional food industry. The sample of 61 companies gives a sampling error of 9.5% and a confidence level of 95.5%.

<sup>6</sup> The interviews were conducted between January and July 2011.

- Products with different characteristics: chilled, frozen, frequent replacement.
- Different destinations: wholesalers, supermarkets and hypermarkets, groceries, bakeries, restaurants, hotels.

A single procedure was followed to collect information. Company managers were contacted by telephone explaining the purpose of the investigation, a supplication for cooperation and a request for a meeting. Of the 72 firms contacted, 61 responded positively— a success rate of 85 percent.

A wide range of information was collated from the interviews questions which were compiled into different formats and grouped into the following categories:

- a) dichotomous questions: the interviewee chose between two options, then was able to freely express their reasons for doing so;
- b) questions containing a wide range of possible answers offered in order to determine all that were important to the interviewee and why. Applicants could also add to the list of options presented to them;
- c) questions for which the interviewee was given complete freedom in their answers, regardless of the qualitative or quantitative nature

Many of the quantitative questions were measured using established numerical indicators. However, if the variables included a subjective component—such as asset specificity (typical of new institutional research), difficulties were encountered when assigning numerical values. Therefore, these were measured using qualitative indicators (high, medium and low). Over the course of the interviews, each company was requested to provide information on the number of different types of contracts used. It was then determined that it was not possible to record this information, since companies were unable to accurately determine how many transactions were carried out in the spot market and how many by means of a signed contract, or even the volume of merchandise concerned in each case<sup>7</sup>. Consequently, the unit of analysis in this study is not the transaction, but the company, and so only the main contractual formula used in transactions occurring in 2011 for each manufacturing company was recorded.

## **Results and Discussion**

### *Characterization of the Contractual Problems*

#### **Specific Assets and Consequences**

An analysis of specificities reveals various types of specific assets. At the TCLO, the human management and food handling team must have sufficient experience, led by trained staff and

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<sup>7</sup> The numbers involved varied according to the time of year (food distribution is subject to significant seasonality) and even according to the recipient of the goods. It is also worth noting that, due to the high number of verbal agreements in place in the sector, there was generally no paper or electronic record of the information we were looking for.

adhere to the customer service philosophy defined by the TCLO<sup>8</sup>. Despite these requirements, TCLOs investments in human assets were rated low by the companies in the sample. Although all staff, including drivers, can function in different capacities as necessary, to assist customers without any notable reduction in service, an element of specificity beyond the scope of primary service is the training is required to handle perishable food appropriately, i.e. the skills necessary to ensure temperatures are strictly controlled.

Vehicles and facilities handling the storage of goods must at all times meet customer specifications<sup>9</sup>. Under the category of physical assets, companies interviewed rated heavy goods vehicles and cold storage facilities at medium-low specificity. It is the refrigerating capacity of such equipment that gives them their specificity, although they could be used for other transactions with different customers without suffering value reduction. However, the number of different products such equipment can be used to transport and store is limited. Another essential physical asset is an IT system capable of *real time* management of information generated from start-to-finish processes, including: receipts, storage, order preparation, delivery and incident reporting. Integrated systems interfacing with customers' IT systems ensure inventory integrity<sup>10</sup>. Although IT systems of this type are specifically designed for a particular logistical activity, they can be installed on any platform across various industries (food, drinks, detergents, domestic electronic appliances, toys, pharmaceuticals, cosmetics, etc.) and be used with any customer. Therefore, its level of specificity is considered medium-low intensity.

Dedicated assets, including those designed exclusively for a particular customer, play major roles. TCLOs may dedicate a substantial portion of human or physical assets to a particular customer. The investment risks are high should the relationship collapse, leaving TCLOs to process excess capacity, including additional staff, equipment and fleet expansion investments—creating unforeseeable and problematic concerns.

Such assets in this case are considered to have a medium-low level of specificity. However, the situation is drastically different when TCLOs invest in creating logistical platforms which only serving a single (and normally large) customer. If the customer goes elsewhere, the platform no longer has a clear use making it difficult to find other customers with similar needs and remain profitable. These are therefore high-intensity dedicated assets. A similar case involves the location of a TCLOs logistics hub near the customer's or the consignees' facilities. If the

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<sup>8</sup> The staff must also possess the right skills for the appropriate use of the equipment used in warehouses for the movement, handling, safety, and monitoring of goods and the fleet of vehicles. The preparation and processing of goods must be carried out while keeping delivery errors to a minimum. In addition to each staff member possessing the right skills, they must also possess mental flexibility and significant ability to adapt and react to changes taking place in a short space of time.

<sup>9</sup> Their use for several customers at the same time will enable the synergies offered by shared use to be passed on to customers, but they must also fulfill the functions that each customer demands of them. They must possess the necessary permits and be appropriately authorized and certified.

<sup>10</sup> This communication between the customer's and the TCLO's systems enables both to make direct use in real-time of all the information generated and managed during the logistical process. The TCLO's software must permit all the logistical management tasks to be undertaken and linked directly to the administrative and billing systems, as well as providing the statistics necessary for the measurement of service performance. It must also enable accurate stock levels of a particular item to be checked, provide information on where and at what stage each order is at any particular time, while also making possible the reporting, processing and monitoring of any incidents.

customer cancels the contract, the hub's geographical location no longer practical due to the difficulty in finding new customers able to use it. Therefore, site-specific resources can be classed as having a high intensity.

Finally, temporal specificities are crucial. In addition to the usual shipment protocol required for moving highly perishable goods in a time-sensitive supply chain, food shipments have limited shelf life and demand special handling, both in storage and in transport. Time lost in transshipment translates at best to a shortened selling window; at worst to dead inventory or unsatisfied consignees and consumers. For all these reasons, the timeframe for performing these tasks are important as penalties will be imposed if demands are not met. Therefore, there are two temporal specificities which have been characterized as being high intensity, given the importance they have for the companies interviewed.

### *Information Problems*

The second contractual problem stems from the presence of *ex-post* information asymmetries. Conflict arises when TCLOs deliver products with lower than expected quality. Some of the causes are displayed in Table 2. Problems occur when a food company is unaware of the quantity and quality efforts made by the TCLOs. Although the final result is observable, this may have occurred through uncontrollable exogenous factors. Thus, the TCLO may be able to justify a poor result by alleging the problem and explaining the circumstances, but the food company is unable to verify the truth. Therefore, this element of the relationship must be contractually safeguarded in order to ensure that the transaction is protected from opportunistic behaviours which may manifest after the hiring has taken place. Firm managers need assurances that high quality standards will be met to prevent waste while logistics operators are equally concerned stimulating increased demand.

**Table 2.** Types of Incidents Leading to Interrupted Service

	<b>Point of Origin</b>	<b>Transit</b>	<b>Destination</b>
<b>Manufacturer Errors</b>	Poor identification		Incorrect address
	Poor packaging		Consignee refusal of the goods
	Defects in the goods		
	Not picked up	Accident on route	Late delivery
<b>Operator Errors</b>	Wrongly identified	Delays	Delivery to the wrong address
	Wrongly classified	Left in the warehouse	Incomplete delivery or damaged goods
	Product left at the warehouse	In transit	Non-delivery: loss, theft, etc.

**Source.** Authors' own based on the empirical evidence.

## **Contractual Problems and Appropriate Contract Choices**

A key factor for companies migrating supply chain risk is to design contracts which will avoid problems regarding specific asset investment and ensure TCLOs provide the quality of service promised. The fieldwork reveals that the parties employ explicit and implicit contractual



formulas, but not with the same intensity, given that implicit contracts were more common. For only 36.4% of the food companies in the study secured a written contract<sup>11</sup>. In cases where explicit or formal contracts were used, four formulas were found to regulate the transactions: a long-term formal contract (10.9%, i.e. 6-food companies); a joint-venture contract (1.8%, i.e. 1-food company); an incomplete formal contract (16.4%, i.e. 9-food companies); and the use of an internal contract with provisions for haulage services in order to manage part of the production of outsourced goods combined with other options (7.3%, i.e. 4-food companies). In cases where the contracting was implicit (63.6% of the food companies studied), a verbal agreement was used. The logic behind all of these agreements is summarized in Table 3.

Long-term contracts<sup>12</sup> are used for outsourcing services, facilities or equipment for the exclusive use of the particular food company. The TCLO is required to make an investment in specific assets of such a size that the future continuity of the relationship must be guaranteed. Such an investment may involve a logistical hub, where management and electronic communication systems, facilities and human resources are made available to a single customer; or it may involve the creation of routes for a particular customer, with vehicles exclusively dedicated to them, etc. These are *dedicated specific* or *site-specific assets*.

The joint-venture contracts<sup>13</sup>, found in the dairy product sector, are used when *temporal specificity* is important. Thus, joint-venture is employed for fresh products which have a very short shelf-life. Food with such characteristics requires sophisticated logistical networks offering temperature-controlled services with delivery timeframes of around twenty-four hours, with up to 50,000 places product delivery (not unusual for a market leader). This requires a highly strategic distribution system in order to maintain a certain level of control, thus food companies seek joint ventures with TCLOs capable of providing a range of services including: long-distance haulage, local distribution, product storage and order preparation. A joint venture contract helps food companies influence the management of logistics providers, thus ensuring quality control levels are achieved without having to deal with the rigidity of vertical integration.

While food companies may use TCLOs to supply some of their logistical needs, they may choose to fill a percentage of activities using their own internal resources, and drivers. In-house resources can be an efficient alternative when a firm's own less specialized resources do not justify the associated costs. Providing internal services makes sense with new customers or when local distribution networks are complex. It may involve delivering very small quantities of goods to multiple consignees, revealing a problem of high asset specificity. The study detected concern for new customers in the meat industry, while, in the sub-sector of frozen bakery products, the importance of an exhaustive local distribution network was also a factor<sup>14</sup>. When a new customer is contracted, it is especially important that the products arrive in pristine condition and transmit a sense of quality, both in terms product excellence and logistical efficiency. In the case of the

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<sup>11</sup> This percentage is consistent with those found on the food industry (Jia and Huang, 2011; Abdulai and Birachi, 2009).

<sup>12</sup> When services are exclusively provided to a specific customer or the service provider must invest in equipment or facilities, the duration of the contract is usually set at two to five years. When the investments are highly specialized (such as a logistical hub for a single customer), the optimal situation is a contract for a minimum period of ten years.

<sup>13</sup> These are *ad-hoc* in nature, i.e. they concern a unique, particular area of business. They are therefore limited in time to the success or failure of the project for which they were created.

<sup>14</sup> It is worth noting that seasonality in production or consumption is not important in either case. If it were, it would not be profitable for the manufacturing company to maintain their own fleet of vehicles.

latter, a multitude of daily small-scale deliveries (supermarket and hypermarkets, traditional grocery stores, bakeries, cake shops, bars, restaurants and hotels) require a number of personal transactions and negotiation agreements increasing the odds of unforeseen or consequential disturbances prompting food companies to keep control in order to mitigate risk. In summary, the basic idea is to resolve a temporal specificity problem associated with product quality (the service is adapted to specific needs) and safety (the ability to guarantee the cold chain) demanded by consignees.

The incomplete contract<sup>15</sup>, or “letter of agreement”, is a document which records standard operational procedures that TCLOs must follow when providing services. It is a generic contract, adapted specifically to meet customer requests. Once the procedures have been accepted by the customer, the document is signed by both parties. It is used in cases where specific investments in dedicated or site-specific assets are not required, but in conditions of uncertainty and customer wariness. The signing of the contract provides customers an explicit safeguard, protecting them from legal action concerning goods. The need for explicit protection arise from the fact that the manufacturing companies supply goods to supermarkets, hypermarkets and other establishments operating on a zero-inventory basis, necessitating strict adherence to timetables for the receipt and unloading of goods. Consignees of this type are especially strict regarding the fulfilment of product delivery timeframes and impose financial penalties when requirements are not met. In this context, food companies want assurances they can transfer these penalties to TCLOs when the delay has been caused by the latter. This stipulation must therefore be agreed upon by all concerning parties and recorded in writing. Such contracts are also used when food companies agree to specific product pricing for volume goods, but wish to insert clauses so they can renegotiating prices should they subsequently want to increase delivery volumes. Obviously, this should be agreed to by concerned parties and recorded in writing. Therefore, a basic concern surrounds the lack of sufficient information to reassure the customer that the TCLO will defend the company’s financial interests rather than its own.

In most cases, relationships are based on verbal agreements<sup>16</sup>. By using such agreements, food companies does not take on any obligations, ties or attachments to the TCLO. This means that food companies possess complete freedom to change operators<sup>17</sup>, if it’s in their best interest. Companies interviewed also stated that they use verbal agreements when transactions do not involve high-intensity specific investments. The lack of transaction details is a basic characteristic of verbal agreements and can cause problems resulting from unanswered accountability and risk. For example, a TCLO may expect a food company to provide a certain amount of goods to transport, but the latter may terminate the relationship after receiving a better offer. Or, the food company expects the TCLO to provide services, but the TCLO finds a better customer and fails to show up for scheduled deliveries. Given that no written commitment has been signed, parties may be more inclined to behave opportunistically when not suffering from penalties. In that case, how can informal compliance agreements be ensured? Empirical evidence shows that compliance levels are relatively high<sup>18</sup> due to inherent mechanisms which act to resolve problems. Those which are significant include: trust, reputation, the threat of relationship termination and repetition of transactions.

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<sup>15</sup> The duration is open-ended.

<sup>16</sup> This makes it a spot market purchase.

<sup>17</sup> The main reasons for doing so are repeated deficiencies in the service provided and the price factor.

<sup>18</sup> For this reason, North (1990) refers to informal contracts as *self-enforcing contracts*.

**Table 3.** Specific Assets and Choice of the Contract

Type of Specificity	Associated Contract	Degree of contract integration within the company
Temporal specificity (consignee requirements)	Internal contract	Maximum
Temporal specificity (highly perishable goods)	Joint-venture contract	High
Dedicated assets	Long-term formal contract	Medium-high
Site-specific assets	Long-term formal contract	Medium-high
Physical assets	Incomplete contract	Medium
	Verbal agreement	None
Human assets	Incomplete contract	Medium
	Verbal agreement	None

**Source.** Authors' own based on the empirical evidence.

## Conclusions

This study examined logistics outsourcing agreements in the perishable food industry, posing a series of propositions regarding the main factors determining contract choices. First, the influence of asset specificity on the use of explicit contracts was considered. Next, uncertainty was arise as a factor that increases the costs associated with the drafting formalized contracts, and the substitution effect that trust has when choosing between formal and informal contracts was also analysed. The comparison was made from a sample of 61 companies and 55 outsourcing agreements in force during 2011. The results identify a set of situations in which the spot market is inadequate and companies must use more complex coordination mechanisms in order to ensure that transactions take place at a reasonable cost. Two sources of conflict were detected using the hypotheses of contractualist theory. If the assets are adapted to the needs of the food company, both will suffer a loss if the exchange does not occur after the investment has been made.

The analysis of specificities reveals the existence of specific assets types. Human assets were of a low specificity, related to abilities, skills and awareness of those who must appropriately handle the perishable food details which are only useful for jobs related to products with those characteristics. Thus, specialized training was the most specific component of the human factor. Physical assets presented a medium-low level of specificity, mainly due to their capacity to provide refrigeration. The dedicated assets were more important. These concerned increases to previous capacity by which TCLOs make and are only useful to serving one particular customer. Typically, it is TCLOs which invest in physical and human resources needed to provide a service to a single customer, if the latter is large enough. Obviously, these assets will fall idle, at least in the short term, if the food company cancels the service. The same occurs with site-specific assets. When the TCLOs hub is located near the customer's premises, transport costs are lower, but the location descends in value when used to serve more distant customers. Finally, temporal

specificity is also decisive, when the most important attribute concerns the time. Perishable food and short shelf-lives demand that products get delivered quickly. When a commercial relationship is formerly established, a second source of conflict manifests itself when TCLOs provide services at a quality below that which was agreed. The cause of the quality-related problems resides in the information asymmetry existing between the parties: TCLOs possess more knowledge regarding the conditions by which the service is provided than its customers, who are unable to verify the level of quality until the exchange has already taken place and, if the customer is dissatisfied, determining whether the TCLO is ultimately to blame may not be an easy task.

These reasons explain why the parties need to safeguard resources in order for the transaction to take place, ensuring that asset specificity and information asymmetry does not lead to opportunistic behaviour. The results show that the parties employ explicit and implicit safeguards, although not with the same intensity, as implicit contracting is more widespread. In those cases in which explicit or formal contracts were used, four types of contract were found to regulate the transactions: long-term formal contracts, joint-venture contracts, incomplete formal contracts and internal contracts with which to manage a certain part of production in combination with one of the other options. When contracting was implicit, verbal agreements were used. The links are as follows:

- a) Dedicated and site-specific assets are safeguarded by means of detailed long-term contracts. Complete contracts protect the financial investment made by the TCLO because the food company cannot rescind the contract without incurring costs; the penalty represents compensation to the TCLO for the damage caused by the unexpected termination of the relationship, given the specificity of the investment made.
- b) When the significant specificity is temporal, associated with the highly perishable nature of the products, the companies employ joint-venture contracts because the timeframe of the logistical operations is a key factor for the food companies.
- c) When the problem concerns the need to closely monitor all of the quality-related attributes of the product in order to comply with the consignees' requirements, the food company faces a situation in which it cannot allow errors to occur in the provision of the service as the costs of this taking place would be too high (the loss of customers, for example). The method chosen to achieve this is simply for the company to carry out these activities itself, using internal contracts for the management of that part of production which is subject to rigorous demands from the consignees. The goal is to resolve a problem of temporal specificity associated with demands made by the end-customer related to quality (the service is adapted to specific needs) and safety (in order to ensure the cold chain).
- d) Incomplete contracts are signed when no specific asset plays an important role but the food company needs to protect the financial conditions of the agreement in a situation of information asymmetry, which may discourage the TCLO from defending the economic interests of the customer rather than its own. It is for this reason that, although contracts of this type are not detailed, they do allow for relevant particular conditions to be

included in the agreement (financial penalties, renegotiation of prices due to increases in volume, etc.).

- e) Verbal agreements are used in situations in which there are not specific assets and a written document is not deemed necessary to protect the economic conditions of the agreement. How can the information problems be resolved? This contract works on the basis of the implicit trust-based mechanisms ensuring fulfilment: the food companies rely on the fact that the TCLOs are concerned with maintaining their reputation and this encourages them to act in the most favorable manner with the customer, without the need for a formal contract.

The empirical evidence associates long-term formal contracts, joint-ventures and internal contracts with a particular specificity, and incomplete and verbal agreements with information problems. However, the theoretical framework does not show that a direct relationship is necessary, nor does the secondary evidence provided by other authors<sup>19</sup>. The latter suggests the existence of organizational options other than outsourcing which can also be of use when seeking to protect high-intensity specific assets. Then, when considering the relationship between the TCLOs and the food companies, it can be seen that the connection between the type of contract binding the parties and the type of specificity of the assets in question intensifies. This suggests that not only is that level of specificity as the explanatory variable important, but also that the type of specificity has some significance. In this sense, the study supports the importance of specificity problems and moral hazards as the main explanatory factors in the choice of contract and points out that the firms involved are typically involved in several different types of relationships and they are handling multiple types of specificity simultaneously. These problems are significant with perishable food products, they can be of different types and the impact they have can vary depending on the company concerned, leading to the existence of different transaction governance structures.

The above results lead us to conclude that the more integrated in the company is the contract, the contractual problem which the contract is to address is most relevant to the company<sup>20</sup>. This enables contractual problems to be ordered in terms of their importance to the parties. In this way, the top-ranked problem would be the temporal specificity associated with the demands of the consignees, as this is linked to internal contracts. In second place is the temporal specificity associated with the highly perishable nature of the product, compelling the manufacturing company to maintain control over the management of the logistical activities by setting up a joint venture. Third are the specificities of dedicated and site-specific assets, which enable the outsourcing of the logistical services by means of a formal long-term contract. These are followed by economic information problems which are associated with formal but incomplete contracts. Finally, are the information problems related to the inherent quality of services provided, and these are resolved informally without the need for the signing of a contract.

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<sup>19</sup> Masten, 1996.

<sup>20</sup> This relationship is consistent with the findings of other studies, especially with those concerning the same industry (Arana *et al.*, 2013; Bakucs *et al.* 2013).

We would like to highlight some outcomes and strategies that food manufacturers can use when contracting services offered by TCLOs:

1. Logistics outsourcing entails significant difficulties affecting competitiveness. The situation particularly serious in the perishable sector, whose characteristics are highly sensitive to handling required. Consequently, food companies must properly select the TCLO they hire.
2. Given the problems associated with failures in service, food companies can negotiate more complete contracts that act as a safeguard against possible breaches of the TCLO.
3. Companies must be able to handle different types of government responses simultaneously; this will give them opportunities to improve product distribution and adapt to the specific needs of their customers and achieve cost reductions.
4. Food companies should know that the pricing strategies of TCLOs are different depending on the type of contract (formal or verbal).

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