Chapter 5
The Impact of Inter-firm Cooperation on Performance: A Two-Region Experience

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1 Introduction

The management literature provides extensive coverage of the different motives and factors that encourage companies to cooperate and adhere to cooperative relationships. Nielsen (1988), who influenced a wide body of authors (Heide and Miner 1992; Parkhe 1993; Hagedoorn and Schakenraad 1994; Mohr and Spekman 1994; Gulati 1995; Browning et al. 1995; Holm et al. 1999; Afuah 2009), seeks to demonstrate that cooperative strategies may ethically boost organisational efficiency in various circumstances. Taking a multidisciplinary approach, he sets out the utility of cooperative strategies within the scope of concepts such as the environmental life cycle, generic strategies and aggregating value before concluding that strategies involving cooperation between major corporations may be more efficient than external market mechanisms. Hence, cooperative strategies are susceptible to enhancing organisational efficiency in various different market scenarios.

The majority of empirical studies approached the factors determining cooperation (Belderbos et al. 2004a, b; Fritsch and Lukas 2001; Hagedoorn and Schakenraad 1994; Heide and Miner 1992; Kleinknecht and Reijnen 1992; López 2008; Mention 2011; Mohr and Spekman 1994; Tether 2002; Ring and Van De Ven 1992). Ring and Van de Ven (1992) analyse the way in which cooperative relationships between organisations are actually structured and, based on economies in transaction costs, strive to demonstrate just which drivers lead

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organisations into seeking out cooperative relationships with other companies and which mechanisms are available for handling these types of inter-organisational relationships. Hagedoorn and Schakenraad (1994) seek to interrelate organisational performance and the adoption of cooperation-based strategies and seek to explain to what extent inter-company strategic technological partnerships impact on the profitability of those entities engaged in such joint efforts.

Mohr and Spekman (1994) deal with the characteristics of successful partnerships, focusing on the vertical relationships between companies and identifying four areas as of potential relevance to cooperation: flexibility, the exchange of information, shared problem solving and restrictions on the use of power.

The key finding of more recent contributions proposes that the factors determining the partnerships differ depending on the cooperation and partnership types (Belderbos et al. 2004a, b; Fritsch and Lukas 2001; Mention 2011; Tether 2002). Fritsch and Lukas (2001) conclude that innovative efforts targeting the improvement of processes display a greater probability of involving cooperation with suppliers, while product innovations are associated with cooperation with the clients themselves. Tether (2002) finds that cooperation is primarily the domain of companies seeking more radical innovation rather than that resulting from incremental innovations. In distinguishing between partnerships between competitors, suppliers, clients, universities and research institutes, Belderbos et al. (2004a, b) identify substantial heterogeneity in the determinants of cooperation between different partnerships. Mention (2011), meanwhile, places the emphasis on the propensity of cooperation practices to lead to companies launching new innovations into the market.

The core question as to whether cooperation has the positive expected impact on company (innovation) performance has remained broadly unexplored in the literature (Tether 2002; Das and Teng 2000). A series of research studies adopt a cooperation variable for empirical models explaining differences between the results of company innovation efforts (Klomp and van Leeuwen 2001; Lööf and Heshmati 2002; Monjon and Waelbroeck 2003). However, the majority of these studies were principally interested in the impact of R&D investment on performance and did not systematically examine the difference of the impacts generated by the various cooperation types. Management studies hitherto have restricted their analysis to specific performance indicators in particular industries, for example, the effect of alliances on the performance of hi-tech start-ups in the biotechnology sector (Baum et al. 2000), or the effect of alliance-based learning on performance in terms of market share in the global automobile industry (Dussauge et al. 2002).

Mention (2011) finds that companies involved in science-based partnerships designed to bring about product innovations are more likely to actually roll new innovations out into the marketplace, while information arriving from the competition seems to bear a negative influence on the actual newness of innovations. The probability of cooperation with a particular partner type generally rises in accordance with its perception of the other as an important source of knowledge for innovation processes, while knowledge deriving from universities and research institutes positively influences all these cooperation types.

According to López (2008), the sharing of cost risks was identified as the most important determinant to cooperation. This fact may potentially highlight a lack of private external financing for innovative activities and a shortfall in risk capital investment. He furthermore refers how company size and the availability of technological know-how inside companies return a significant and position correlation with cooperation. As regards cooperation with different partners, the results are not so clear as the majority of companies prove to have reached practically simultaneous agreements with different types of partners rendering identification difficult. Future research should thus deepen our levels of understanding about the knowledge transfer process and its respective effects on innovations produced by companies engaged in partnerships (Hernández-Espallardo et al. 2011).

Within this context, this empirical study makes a dual contribution. Firstly, we seek to analyse the practical nature of cooperation across different sectors in accordance with their respective specific characteristics. Secondly, we simultaneously explore the role of the different cooperation types deriving from the various sources driving the propensity of companies to improve their performance levels. In summary, this research aims to examine just which acts and practices of cooperation undertaken by companies in border regions are able to impact on performance.

The rest of the article is organised as follows: Sect. 2 puts forward a review of the theoretical and empirical literature discussing the impact of cooperation on company performance. Section 3 describes the research, the methodology and the empirical model adopted. Section 4 discusses the empirical results before Sect. 5 sets out our key conclusions, limitations and suggestions for future lines of research.

2 Literature Review

2.1 Relational Networks

Given the difficult prevailing economic conjuncture in addition to the pressures imposed by competition and the constant changes taking place in the surrounding environment, organisations seek to foster relational networks able to boost their innovative capacities and generate new business opportunities.

According to Håkansson (1987), the concept of organisational networks, while embracing a broader concept, refers to two or more organisations involved in long-term relationships with the key objective of optimising different organisational processes to drive the level of competitiveness in increasingly turbulent environments.

In general terms, we may define an organisational network as a structure within which companies participate as otherwise, due to scale, structural and financial

limitations, they would not be able to ensure their own survival and future sustainability. Networks display the greatest variety of configurations, portraying the specific characteristics and the objects involved. From Håkansson's (1987) perspective, the network dynamic derives from two core processes: structuring/heterogeneity and hierarchy/externalisation. Through the first process, the network is structured according to the investment necessary with relationships established in accordance with the heterogeneity of the resources. Networks gradually evolve over both a long series of initiatives and adaptations of their activities and resources and over the scope of the mutual commitment between actors.

According to Ernst (1994), the majority of activities undertaken in the most important economic sectors are organised into one of five different network types: supplier networks, producer networks, client networks, coalition-standard networks and technological cooperation networks. Each of these network types characterises the diverse range of network utilisation formats in effect.

Networks also involve a broad process of joint activities and covering a great range of variations and applications to the organisational context, ranging from the flexible networks of small- and medium-sized companies, top-down networks (or subcontracting/outsourcing), relational networks, information networks, communication networks, R&D networks, innovation networks and strategic networks, among others (Ernst 1994).

Reputation is recognised as an important asset, fostering relationships of trust, confidence and reciprocity. Within the framework of the analytical narratives of organisational analysis put forward by Reed (1999), network theory may be approached within the framework of the market model, taking into perspective the theory of firms, the institutional economy (Brock 2002; Coase 1937, 1960, 1998; Commons 1931), transaction costs (Coase 1937; Williamson 1975, 1979, 1981, 1985, 1991, 1994), resource dependency (Pfeffer 1987; Pfeffer and Salancik 1978) and population ecology (Hannan and Freeman 1977; McKelvey and Aldrich 1983). This throws into emphasis the issues surrounding the adaptive adjustments ongoing at organisations within the objective of coping with the pressures to maximise efficiency in their internal and external transactions in addition to the competitive pressures that drive companies into selecting and maintaining relationships with certain organisational types.

According to Powell (1987), the cooperation established inside a network may lead to important organisational transformations at participant entities. The presence of a dense network of cooperative relationships may change perceptions about the competition. Organisations may reach the conclusion that they no longer need private and exclusive ownership over an asset to extract value from it. Network participants begin to be perceived as partners and no longer as competitors.

Correspondingly, there is a need for methodologies guiding the creation, definition, implementation and maintenance of networks. Hence, this once again highlights the role of new approaches to the management of networking organisations. Clearly, this new form of company interaction, across both its internal and external facets, takes place with the objective of becoming more competitive.

The factor most commonly referenced in the literature as explaining why companies opt to set up and develop diversified networks and also with greatest impact on organisations is certainly access to a range of information, skills, capacities and knowledge that would otherwise be difficult to develop or acquire (Hall 2005; Uzzi and Dunlap 2005). As a consequence, networks prioritise the development of coordination and cooperation between companies (Nahapiet and Ghoshal 1998; Gopalakrishnan et al. 2008), enabling better, easier and cheaper access to the resources necessary for ongoing activities (Nahapiet and Ghoshal 1998), avoiding making the mistakes that other network members have already made (Gopalakrishnan et al. 2008), helping leverage the creativity of new products and their marketing programs (Kirwan et al. 2007), thus improving company performance levels (Wicks et al. 1999), and helping develop more efficient financial strategies (Uzzi and Dunlap 2005).

Networks also foster other advantageous factors for companies that while gaining less profile are no less important and including promoting the development of executive power within the company hierarchy (Uzzi and Dunlap 2005), easier access to financial capital, cooperation in promotion and innovation and the gaining or losing of reputation (Hall 2005).

The organisation's actual capacity to establish competent networks is limited by the attractiveness of the company to potential partners and by the level of uncertainty surrounding attaining the responses desired (Hall 2005). Therefore, companies should seek to establish and enhance the value of its network through strong relationships. The characteristics determining the expectations and behaviours of network members are the extent of the jointly shared objectives, the exchange and receipt of information of value to the company and the levels of trust among network participants.

Trust between partners shapes the relationship in two different ways (Kim et al. 2010): (1) a reduction in the perceived risk of opportunistic behaviour and (2) a reduction in the transaction costs inherent to relationships of exchange. However, just what is this trust? Morgan and Hunt (1994) define trust as the conviction and certainty as to the honesty of a commercial partner while Zaheer et al. (1998) define such as the collective confidence that all members of an organisation place in another commercial partner.

Trust is believing in the existence of a functional continuity to whatever one is familiarised with, thereby enabling the freedom to act as if uncertainty levels have been reduced even where not actually the case (Steensma 2000). Wicks et al. (1999) argue that trust is an expectation with entities assuming ethically justifiable behaviour on behalf of the other entity, that is, that partner decisions are morally correct and that actions are based on ethical principles, thereby in the belief, there will be a joint effort or mutual economic exchanges. Steensma (2000) states that trust is the adoption of a belief that one party will not deliberately act against the interests of the other party and this belief is maintained, without undue doubts, suspicions and without seeking out detailed information on the actions ongoing at the other party. On the contrary, Muthusamy and Margaret (2005) define trust as a deliberative activity that proves somewhat uncomfortable to the entity.

Wicks et al. (1999) propose that companies should try and identify the best level of trust they should hold in their commercial relationships and hence there should correspondingly be an optimal level of trust in a networking relationship. Nahapiet and Ghoshal (1998) also affirm that a specific combination of social trust, norms and targets shared between members of network facilitates coordination and cooperation to mutual benefit.

Trust is thus an important issue to strategic choices managers make when seeking to foster and enhance optimal trust levels in relationships with interested parties, thereby improving the company's own performance (Wicks et al. 1999).

According to Smith and Lohrke (2008), only at an initial phase do business managers depend on the levels of their affective trust in partners. Furthermore, to the extent that the company proceeds, its network should steadily be less based on levels of affective trust and become more based on cognitive trust. Hence, at the beginning of company activities, the entrepreneur develops emotional bonds that involve concern over the well-being of partners; nevertheless, over the passage of time, the entrepreneur begins to take more aware decisions based upon the knowledge accumulated in the meanwhile. Companies that remain mired in relationships based purely on affective trust may hold back and hinder the growth of their networks given the essential role played by growth in the company's social capital. Hence, entrepreneurs and managers who develop relationships of cognitive trust with their most critical suppliers may be able to attain higher success rates and prove able to more swiftly overcome problems associated with new events and technologies.

Smith and Lohrke (2008) go so far as to state that the larger the company and the greater its power, then so much the greater should be its responsibility. Hence, large companies and corporations should do whatever is morally acceptable so as not to lose reputation. However, the development of trustworthy networks may in turn lead to barriers being raised to accessing a diversified range of information as people inherently tend to set up networks with people and companies similar to their own and effectively with identical life experiences. In this way, networks with identical partners find it difficult to come up with new information and insights as regards more efficient financial strategies (Uzzi and Dunlap 2005).

These relationships with external entities represent an essential factor to the development of entrepreneurial companies. Various researchers (Lechner and Dowling 2003; Uzzi and Dunlap 2005; Wicks et al. 1999) even propose that investment should go into developing networks competent at developing more efficient financial strategies. Hence, setting up a company network should be a proactive task for managers and its construction should be approached from a long-term perspective (Lechner and Dowling 2003).

The existence of a common objective is the point of departure for setting up a network (Gopalakrishnan et al. 2008) while this factor, however, is not in itself sufficient to founding networks. From the perspective of these authors, what is also required is keeping the members of the network satisfied through actions of cooperation that encapsulate exchanges of information beneficial to both parties.

Network relationships allow for organisations to obtain access to resources that may prove difficult to develop and acquire through alternative means (Hall 2005). Therefore, we may state that these relationships are crucial sources of information for the company that may be developed with the purpose of fostering the interchange of relational inputs between network members. The networked relationships enable better, easier and cheaper access to the resources necessary to ongoing company activities (Nahapiet and Ghoshal 1998).

Kirwan et al. (2007) also find in favour of network ties proving an important factor for social capital based upon how these relationships define the degree of reciprocity and proximity between an organisation and its suppliers and proving useful within the framework of generating a richer and deeper view of the marketplace and the different technologies able to stimulate the development of both new products and creativity. Thus, these authors conclude that companies invest their resources and their time in building up strong bonds characterised by trust and the sharing of objectives and visions with the respective partners within the overall framework of acquiring new technologies and knowledge from the market able to subsequently leverage creativity and competitiveness.

2.2 Inter-firm Cooperation

The management literature has tended to significantly focus more on the motivations for cooperation than the effects of cooperation on company (innovative) performances.

According to Mention (2011), innovation is seen as the result of an interactive process between the company and its surrounding environment while also stemming from cooperation between a major variety of actors and located both within and beyond the company. Cooperation is considered a driver of innovation and is expected to bring benefits such as obtaining economies of scale and product range economies, reducing the level of uncertainty and accessing both new markets and complementary knowledge. Companies that cooperate, on average, return higher performance levels than companies that do not cooperate (Abramovsky et al. 2009; Mention 2011). Furthermore, success at innovation and the global performance are also influenced by the nature of cooperation partners (Mention 2011).

Explanations for the reasons companies adopt cooperative strategies have been subject to broad-ranging debate (Belderbos et al. 2004a, b; Benfratello and Sembenelli 2002; Das and Teng 2000; Hamel 1991; Kogut 1988a, b; Nakamura 2003; Pisano 1990; Roberts and Berry 1985; Tyler and Steensma 1995). While having found that as a rule a substantial percentage of alliances fail (Harrigan 1986; Kale et al. 2002; Kogut 1988a, b, 1989; Porter 1987; Barkema et al. 1997; Park and Ungson 1997; Mora-Valentin et al. 2004; Reuer and Zollo 2005; Okamuro 2007), they still prove a source of competitive advantage and generate long-lasting effects on company performance. For example, Teece (1980) argues that organisational practices do have an effect on company performance and may explain the sustained

performance differences within industries due to the slow diffusion of best practices and the difficulties inherent to imitating complex organisational abilities.

That the different types of cooperation may have different end purposes has also been proposed within the framework of innovation objectives being either reducing costs or expanding market share. Von Hippel (1988) recognises how cooperation with clients is important to reducing the risk associated with introducing innovation into the marketplace, in particular, when the products are either new or complex and require adaptation by clients, such cooperation may prove critical to guaranteeing market growth (Tether 2002). As regards cooperation with suppliers and competitors, Belderbos et al. (2004a, b) conclude that cooperating both with suppliers and with competitors may have a significant impact on raising workforce productivity. Lhuillery and Pfister (2009) also come out in favour of how cooperating with competitors may considerably boost the knowledge base in effect at the company as such competitors generally have similar needs in terms of product or process development and hence the knowledge base in the meanwhile built up may be particularly relevant to competitors in the same field. Various other empirical results (Belderbos et al. 2004a, b; Lööf and Heshmati 2002) confirm how cooperating with competitors boosts certain measurements of company innovation performance.

Furthermore, cooperation with universities and research institutes and, once again, with competitors has a positive effect on both product sales and new services for the market. Cooperation with universities and research institutes is generally more designed for innovations able to open up completely new markets or market segments (Tether 2002; Monjon and Waelbroeck 2003). For example, Lööf and Brostöm (2008) find evidence that cooperating with universities boosts the innovative performance of major Swedish industrial firms in terms of sales of new products per employee. Belderbos et al. (2004a, b) conclude that engaging in R&D in conjunction with universities (as well as with competitors) raises growth in sales attributable to new market developments.

As Mention (2011) refers and as earlier reported by EUROSTAT (2008), 26 % of innovative companies are involved in cooperation with other companies, universities, public research institutes, suppliers, clients and competitors in the European Union. In member states, the most common cooperation partners are suppliers followed by clients, while the least common prove to be universities and research institutions. According to Marchi (2011), cooperation with suppliers, knowledge intensive companies and universities is more relevant for other innovations, while cooperation with clients would not seem to attain differentiating significance.

A number empirical studies have reported cooperation generates a positive impact on innovation performance levels (Belderbos et al. 2004a, b; Faems et al. 2005; Klomp and van Leeuwen 2001; Lööf and Heshmati 2002), patents (Vanhaverbeke et al. 2002), and sales growth (Cincera et al. 2004). Some of this research has also examined the effect of different cooperation types while returning only ambiguous results. Faems et al. (2005) conclude that there is a positive association between cooperating with universities and the company's market

share of sales of innovative new products while an aggregated measurement of other cooperation types was positively associated with the sales level of innovative company products (but not with market share). Monjon and Waelbroeck (2003) describe a mixture of negative and positive impacts of cooperation and its spillover effects. Cincera et al. (2004) find spillovers generate a positive impact on productivity but a negative impact on cooperation. Lööf and Heshmati (2002) report how cooperation with competitors and with universities has a positive impact on innovation output levels but a negative impact on clients.

Although the overall level of cooperation on innovation related activities is similar between industrial and service sectors, Mention (2011) observes significant discrepancies in the choice of cooperation agreements and the level of information supplied between these different sectors. Cooperation with competitors takes place more frequently at service companies than in the transformative industrial sector, while the opposite holds for cooperation with universities. This observation leads to the supposition that the cooperation practices and supply of information may also differ somewhat between the different sectors of activity.

According to Faria et al. (2010), cooperation activities with other companies or institutions are opportunities to access complementary technological resources (through the sharing of skills and knowledge) that may nurture swifter innovation development, better access to markets, economies of scale and range, the sharing of costs and the diversification of risk.

Browning et al. (1995) make recourse to the theory of complexity to analyse the construction of cooperation in competitive industries and provide interesting insights into the formation of alliances and specifically identifying the factors preceding the establishment of cooperation as ambiguity and disorder. However, to the extent that a shared morale is built up between the actors and firms involved, without expecting any individual or immediate return, this contributes towards consolidating the alliance. The instability present in strategic alliances has already been highlighted by Parkhe (1993), who adopts economies of transaction costs and game theory as his framework of reference for analysing the structuring of strategic alliances.

According to Parkhe (1993), some alliance structures display a greater propensity to fraud, to highly unpredictable behaviours and lower levels of stability before warning that structure is directly bound to performance. Other authors (Gulati 1995; Holm et al. 1999) have placed the emphasis on the importance of the structure being built up through actions of cooperation. Gulati (1995) shares this feeling and explores how such factors explain the choice of governance structures in inter-organisational alliances while emphasising the costs of transaction dimension. The author concludes that the choice of contractual format for the alliance does not only depend on the scope of partnership activities and their associated costs of transaction. Instead, he emphasises that the choice of governance structures depends on the trust and the bonds built up between organisations over the course of time.

Holm et al. (1999) propose and test structural models of business relationships with the objective of studying the interconnection between interaction, interdependence and the creation of value by networked business relationships. These relationships

are conceived as a causal chain linking businesses up in networks involving a mutual commitment not only regarding mutual dependence but also a relationship actually able to create value. The results demonstrate that relationship development has a strong effect on the returns from this value creation. According to Afuah (2009), this value creation derives from the differentials arising out the benefits perceived by clients and the costs of these benefits as appropriated by their components as well as the sum of the different added values accruing to each organisation participating in the network.

In summary, the literature suggests that analysis of the different types of strategies and cooperation agreements should take into consideration the respective different objectives of collaborative efforts. We explore this issue through empirically examining the effects of cooperation on financial performance measured through business turnover. Furthermore, we follow the recommendations set out in the literature in advocating how cooperation impacts on company performance.

3 Research Design

3.1 Regions Under Analysis

The Portuguese *Centro* region and the Spanish *Castilla y León* region are geographically adjoining and benefit from a strategic location within their respective countries and the Iberian Peninsula (with its extent in excess of 600,000 km) as a whole. With the opening of markets, these border regions became progressively closer with the creation of strong connecting bonds within the framework of attempts to leverage strengths in order to deal better with the challenges posed by competitiveness and the internationalisation of the economy.

The geographic positioning of these two regions is considered strategically favourable to the extent that the regions form a link between Portugal and Spain and the rest of Europe and between the northwest of the peninsular and the two Iberian capitals. Both regions are criss-crossed with international standard transport infrastructures, both road and rail, which is duly recognised at the European level through integration into the Trans-European Transport Network.

The *Centro* region, with an area of 28,200 km^2, covers 31.7 % of mainland Portugal, is home to 2,385,911 inhabitants and distributed across 100 councils. In terms of the private sector, the *Centro* region has close to 239,840 companies, of which 5,236 are exporters, employing a total of 706,270 members of staff and responsible for generating annual turnover of around €55 million. These companies specialise in the chemicals sector, automobile components, moulds, cellulose and paper, textiles, ceramics, agro-food industry (dairy, olive oil and meat products), viniculture as well as the extractive (gold, lead, wolfram and tin) industries (INE 2009).

Castile and León is one of the four Spanish autonomous communities that border Portugal. Located in the northwest of Spain, the region covers 94,224 km^2, inhabited by around 2,560,000 citizens, around 5.5 % of the country's total population. Average GDP per capita in the region stands at €23,361 per annum, around 97 % of the Spanish average. The road network spans 32,448 km, of which 1,619 correspond to major thoroughfares. Relative to trade between Portugal and Spain, the Spanish region is the fifth largest recipient of Portuguese exports with a market share of 7.1 % and is the seventh largest supplier with a share of 5.9 %. Among the main products exported from Portugal to *Castilla y León* are automobile components and accessories, semi-manufactured aluminium products, home furniture and furnishings, steel products, raw materials and semi-manufactured plastics, preserved vegetables and meats, wood and food oils.

The main products Portugal imports from this region are automobile equipment, components and accessories, fresh meat, steel products, personal hygiene products, cereals, animal foodstuffs, pulp and paper, fresh vegetables and biscuits. The *Castilla y León* region enjoys a geographically favourable relationship as in addition to bordering nine other Spanish regions; it is considered a key border crossing to and from Portugal. Hence, it is deemed of strategic importance for trade between southern Europe and the rest of the continent and guaranteeing the proximity of its business community to other regions and markets.

There are already important protocols in effect for business-level cooperation between these two regions, of which the 1998 agreements signed by the Centro Business Council and the Confederation of *Castilla y León* Business Associations and the protocol between the Confederation of Business Owners of Salamanca and the Business Cluster of *Centro* Region of Portugal signed in the same year (Pérez 2006) are good examples.

3.2 Sample

The present research is supported by the ACTION project. The ACTION project is an international project designed to promote cooperation among cross-border regions, among firms in different industries and also among scientific and technological entities to enhance the productivity of regional innovation. This project is co-financed by the POCTEP—program of cooperation in border regions, axis I (joint cooperation and management for fostering competitiveness and the labour market). The geographical scope of the project is the NUT II, which includes the *Castilla y León* region (Spain) and Portugal's *Centro* region. A questionnaire was drafted with the objective of gathering data on the cooperation activities ongoing at project participant companies. Sixty-one firms from the logistics and agro-business sectors were surveyed with Table 5.1 below detailing the main sample characteristics.

Table 5.1 Survey data collection

Geographic area	*Castilla y León* region (Spain) and *Centro* region (Portugal)
Analysis unit	Logistics and agro-business sector firms
Data recollection	In-person questionnaire
Population	61 Firms (26 Portuguese firms and 35 Spanish firms), ACTION project members
Response rate	61 Valid questionnaires Response rate: 100 %
Questionnaire date	October–December 2010

3.3 Methods

The data obtained was subject to analysis by SPSS software version 18.0. The numerical variables are summarised in accordance with the average, the median, the minimum, the maximum and the standard deviation while qualitative variables are summarised by recourse to their absolute and relative frequencies. The comparative bivariate analysis of Portuguese and Spanish companies applied the Mann–Whitney test and the T test for continuous variables and the chi-squared test for the categorical variables. In multivariate terms, linear regression was the methodology adopted for analysis of the ways cooperation influences financial performance (sales turnover) and the respective differences between the two regions under analysis.

We deployed ordinal regression (with a probit link) models to ordinal (average, high average and high) business turnover with these associations proving statistically significant with p-values below 0.10. The calculated coefficient of determination (pseudo R^2) applied was Nagelkerke's. The bivariate analysis of p-values below 0.05 returned significant differences and in the multivariate analyses this value was 0.10. We adopted this latter value given the sample size was made up of only 61 companies.

4 Results

4.1 Descriptive Statistics

We returned statistically significant differences ($p < 0.05$) between the Portuguese and Spanish company respondents as regards their core business activities. In the Portuguese case, the most common company business is transport and logistics, amounting to 46.2 %, while a majority of Spanish companies (54.3 %) are engaged in production and distribution activities. There are equally statistically significant differences ($p < 0.05$) regarding the number of company employees with the majority of Spanish firms no larger than micro-companies with fewer than ten

employees (60 %) while small-sized companies prevail in Portugal as a clear majority employ between 10 and 49 members of staff (61.5 %).

Business relationships with partners in the North, *Centro* and Lisbon and Tagus Valley regions of Portugal have expanded significantly ($p < 0.05$) and more at Portuguese companies than at their Spanish peers. Nevertheless, and understandably, Spanish companies have seen significantly greater growth ($p < 0.05$) in their ongoing relations with companies located in the *Castilla y León*, *Centro*, South and other regions of Spain.

As regards informal relationships, the results reveal how Portuguese companies have registered a significantly higher increase in the Portuguese regions of *Centro*, North, Lisbon and Tagus Valley and the Algarve while Spanish companies record this significance only in the *Castilla y León* and North regions of Spain.

The level of cooperation engaged in by the respective business participants displayed no statistically significant differences ($p > 0.05$) between Portuguese and Spanish companies.

Regarding the level of agreement over the advantages resulting from cooperation, Portuguese companies report significantly higher levels ($p < 0.05$) in terms of technical knowledge, how company management improves with cooperation, boosting turnover, enabling greater marketplace agility with overall company competitiveness enhanced by partnerships able to raise client satisfaction levels and strengthen the company's market position.

As regards the level of agreement about the overall benefits of cooperation, Portuguese companies once again return significantly higher levels ($p < 0.05$) as regards issues such as cultural differences between partners, the non-revelation of all company information to partners, greater client satisfaction levels following cooperation, the non-interference of cooperation in the company's own independence and avoiding unnecessary expenditure.

A comparison between the two countries in terms of the cooperation types subject to analysis is set out in Fig. 5.1.

4.2 Variables Influencing Cooperation Type Differences Between the Two Countries

The variables incorporated into the linear regression model applied to analyse just which variables influence the various cooperation types in effect at Portuguese and Spanish companies are presented in Table 5.2.

The results obtained from the multiple linear regression model for means of cooperation (Table 5.3) set out the difference between the two countries.

The level of importance attributed by Portuguese companies to cooperation with suppliers is significantly associated with the importance attributed to the supplier factor ($B = 0.64, p < 0.05$). The greater the importance attributed to suppliers, the higher the value attributed to this cooperation typology. In turn, the level of

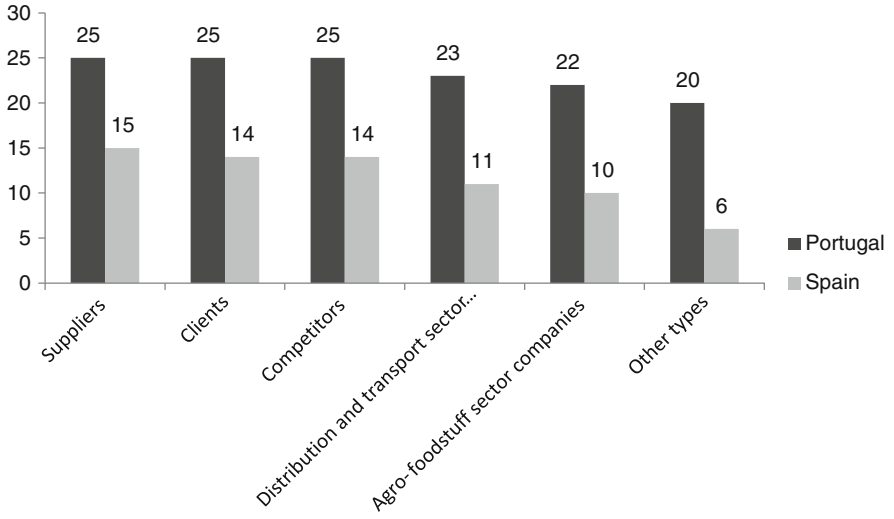

Fig. 5.1 Comparison between cooperation types in Portugal and Spain

importance of cooperating with suppliers by Spanish companies is significantly associated with the importance attributed to qualified human resources ($B = 0.77$, $p < 0.05$) and state support for economic and technological development ($B = -0.73$, $p < 0.05$). Furthermore, the greater the importance attributed to human resources, the greater the importance attributed to cooperation with suppliers with the contrary proving the case regarding state support with the latter potentially viewed as some kind of obstacle to this cooperation type.

As regards the level of importance attributed to cooperating with clients by Portuguese companies, this is statistically significantly associated with the importance attributed to suppliers ($B = 0.77$, $p < 0.01$) and consultants ($B = -0.48$, $p < 0.05$). The greater the importance attributed to suppliers, the greater the level of importance attributed to this cooperation type. In the case of consultants, the inverse holds and thus potentially viewed as an obstacle to this cooperation type. In the case of the Spanish companies, the level of importance paid to cooperating with clients did not attain statistical relevance across any variable.

As regards cooperation with the competition, no variable attained statistical significance in terms of the level of importance attributed by Portuguese companies while at Spanish companies the level of importance awarded to cooperating with competitors is statistically significantly associated with the importance endowed to the risk capital factor ($B = 0.49$, $p < 0.01$). The greater the level of importance attributed to this factor, the greater the importance awarded to cooperating with competitors.

The level of importance attributed to cooperation with distribution and transport sector companies in the case of Spanish companies is significantly associated with company age ($B = 1.39, p < 0.05$) and with the importance paid to the risk capital

Table 5.2 Model variables

Model	Means of measurement
Dependent variable:	Intensity of company participation in different cooperation agreements
Cooperation types	Likert's scale:
Suppliers	1 = "not at all important" to 5 = "very important"
Clients	
Competitors	
Distribution and transport sector companies	
Agro-foodstuff sector companies	
Factors of cooperation	Level of importance of different company cooperation factors
State support for development	Likert's scale:
Consultants	1 = "not at all important" to 5 = "very important"
R&D	
Suppliers	
Local qualified labour	
Clients	
The company engages in productive activities	
Qualified human resources	
Cooperation configuration	Cooperation configuration type
Improvement to business processes	Likert's scale:
Exports	1 = "not at all important" to 5 = "very important"
Distribution agreements	
Outsourcing	
R&D agreements	
Company characteristics	
Company age	1: <5 years; 2: [2–15]; 3: [16–35]; 4: [36–70]
Number of employees	1: <10 employees 2: [10–49] 3: [50–249]

factor ($B = -0.45$, $p < 0.05$). Companies with track records of less than 15 years attribute significantly greater importance to cooperation with these firms and the greater the importance attributed to risk capital, the lesser the risk attributed to cooperation with this factor deemed an obstacle to this cooperation type. In the case of Portuguese companies, the importance of cooperating with firms in this sector of activity gained no statistically significant relevance whatsoever.

Finally, the level of importance awarded by Spanish companies to cooperating with agro-foodstuff sector companies is significantly associated with company age ($B = -1.22$, $p < 0.1$) and with the importance attributed to qualified regional human resources ($B = 0.38$, $p < 0.1$). Companies with less than 15 years of business experience attribute significantly less importance to cooperating with agro-foodstuff sector companies and the greater the importance attributed to qualified human resources then the greater the importance attributed to cooperation. For Portuguese companies, the level of importance of cooperating with agro-foodstuff sector companies holds no statistical significance for any variable.

Table 5.3 Multiple linear regression model for means of cooperation

Dependent	Country		*B*	Std. error	Beta	*T*	*p*	R^2
Suppliers	PT	(Constant)	1.01	0.84		1.20	0.253	0.382
		Suppliers	0.64	0.24	0.62	2.73	0.018**	
	SP	(Constant)	4.06	1.27		3.20	0.008***	0.506
		Qualified H. resources	0.56	0.20	0.61	2.82	0.017**	
		State support for economic and technological development	−0.73	0.31	−0.51	−2.37	0.037**	
Clients	PT	(Constant)	2.56	0.72		3.57	0.004***	0.618
		Suppliers	0.77	0.18	0.96	4.22	0.001***	
		Consultants	−0.48	0.20	−0.55	−2.41	0.034**	
Competitors	SP	(Constant)	4.12	0.75		5.51	0.000***	0.328
		Risk capital	−0.49	0.20	−0.57	−2.42	0.032**	
Distribution and transport sector	SP	(Constant)	4.17	0.63		6.63	0.000***	0.541
		Company age ≤15 years	1.39	0.53	0.54	2.64	0.023**	
		Risk capital	−0.45	0.17	−0.54	−2.61	0.024**	
Agro-foodstuff sector	SP	(Constant)	2.61	0.63		4.13	0.002**	0.510
		Qualified human resources	0.38	0.18	0.48	2.20	0.050**	
		Company age ≤15 years	−1.22	0.62	−0.43	−1.97	0.074*	

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

4.3 Cooperation Type's Influence on Financial Performance

In order to analyse the influence of the various cooperation types on financial performance, ordinal regression models were generated for each country taking financial performance as the dependent variable and the cooperation agreement types as independent variables (Table 5.4).

In Portuguese firms, we find there is no statistically valid association ($p > 0.10$) between the intensity of the different cooperation levels and sales volumes while the level of intensity attributed by Spanish firms to cooperating with clients does statistically correlate with business turnover ($B = 0.97$, $p < 0.1$). Hence, the importance attributed by these Spanish companies to cooperating with clients is statistically associated with a greater probability of recording higher sales levels.

We should therefore highlight that despite cooperation with clients not relating to any specific factor, this type of cooperation does imply better financial performance.

Table 5.4 Ordinal regression—turnover and level of cooperation-type intensity

		B	Std. error	Wald	*p*	R^2
Portugal	Suppliers	0.20	0.33	0.36	0.551	0.095
	Clients	−0.24	0.36	0.44	0.508	
	Competitors	0.07	0.27	0.07	0.798	
	Distribution and transport sector companies	−0.21	0.34	0.40	0.527	
	Agro-foodstuff sector companies	0.15	0.32	0.23	0.633	
Spain	Suppliers	0.35	0.30	1.40	0.237	0.427
	Clients	0.97	0.58	2.75	0.097	
	Competitors	0.17	0.33	0.27	0.602	
	Distribution and transport sector companies	−0.46	0.46	1.00	0.318	
	Agro-foodstuff sector companies	−0.13	0.10	1.52	0.218	

5 Conclusion

The rising competitive pressures on companies encourage their managers to seek out opportunities and encounter means of improving their own competitiveness and future viability. In particular, companies located in border regions, by definition generally peripheral to their respective national contexts, are very often at a disadvantage when compared with their competitors in metropolitan locations. In these circumstances, cooperation between companies from different countries may represent an important strategic option in order to counterbalance the effects of distant location and thereby strengthen the local economy, stimulate innovation and positively contribute to enhancing the performances turned in by participant companies.

The research undertaken within the scope of this chapter involved border region-located companies in Portugal's *Centro* region and Spain's *Castilla y León* region and belonged to the distribution and transport and agro-foodstuffs industrial sectors. The research objective involved analysis of the involvement level of different companies in different types of cooperation agreement and ascertains the influence of such partnership-style agreements on company's financial performance. In particular, clear differences were identified between the behaviours of Portuguese and Spanish companies.

The empirical results also reveal that companies participate through various different configurations of cooperative activities. In descriptive terms, we demonstrate that companies not only cooperate within their respective region but also with companies from other regions and in both countries. Considering the cooperation types in themselves, there are no statistically significant differences between Portuguese companies and Spanish companies, although the latter do return higher average participation results.

As regards the advantages to cooperation, Portuguese firms return statistically higher confirmation of a relationship between boosting turnover and improving competitiveness.

Taking into account the cooperation types and volume of sales registered by companies, the data does not return any statistically significant association at Portuguese companies while in the case of Spanish firms, these do statistically affirm that cooperative relationships with clients are susceptible to generating higher financial performance.

The results of this research project therefore seem to indicate that companies in the regions under study perceive cooperation as a valid instrument for boosting their level of competitiveness.

However, the variations verified between companies from each country may also be interpreted as a sign of how cooperation is stimulated or restricted by the different prevailing levels of development. Thus, cooperation depends on the level of specialisation, the scale of markets and the level of openness of the respective different participant actors.

The results of this study bear implications for managers, consultants and political decision makers at any entity engaged in organising, supporting or fostering the terms and conditions appropriate to cooperation among border region companies. While the influence of cooperation practices on company's financial performance is not a generalised current practice among such companies in border regions, our results clearly point to cooperation agreements positively impacting on company's financial performance and as such should be intensified.

Furthermore, managers and entrepreneurs need to be aware that cooperation types should be defined in accordance with the desired objective and whether designed to generate new products for the marketplace or the development of new products and processes for the company. Political decision makers might therefore opt to strengthen such policies and establish incentives for companies to engage in cooperative partnerships with clients, suppliers, competitors, universities and research institutions and thereby foster higher overall levels of innovation and competitiveness.

This empirical study, nevertheless, does display a series of limitations. Firstly, the analysis focuses on a single point in time and the sample does not contain a large number of companies. Consequently, the possible effects of any time lag between establishing cooperation agreements and raising financial performance are not incorporated into the scope of this research. Establishing a database covering a wider timescale or, for example, undertaking a longitudinally based study represents potential areas for future development and analysis. The second limitation of this study derives from the questionnaire being structured around the declarations of individual managers on their ongoing cooperation activities. Thus, some questions may have proven slightly subjective and depend on the knowledge of the respondent as well as his/her direct or indirect involvement in cooperation activities.

Competition represents another highly interesting area for new research as that carried out thus far has provided contrasting results on its effects. Understanding the influence of competition on a company's actual capacity to cooperate would be of relevance to political decision makers given this would endow them with a substantiated vision on not only the feasibility of expanding this policy and the best means of implementation as well as what results might reasonably be expected. Finally, the study is strictly restricted to three sectors of activity and does not consider the influence of cooperation on the full extent of industry across the two countries subject to analysis.

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