TO COOPERATION PROCESS LEARNING AND JOINT VENTURE

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Abstract

Innovation currently determines a firm's competitiveness and survival. A joint venture is a fast and effective way to acquire the missing knowledge that partners require in order to innovate. In this case "knowing how to cooperate" can be a determining factor in achieving the successful transfer of knowledge. Through a sample of 74 firms from the service sector and by using a structural equation modeling methodology, our results have shown a positive and direct impact between the cooperative learning process and partners' commitment to innovation.

Keywords: innovation; cooperative learning; commitment; trust.

1. Introduction

Globalization and frequent advances in technology means that firms have to adapt quickly and ensure that they are constantly improving and innovating (Brown and Eisenhardt, 1995; Gilson and Shalley, 2004). Under such circumstances, firms that have a greater capacity to innovate are able to respond better to competitive pressures and develop new capabilities that put them at an advantage over their competitors.

Innovation is the result of an interactive process in which different specialized agents exchange, absorb and assimilate knowledge in a physical or socially shared context (Autio *et al.*, 2004). This process does not depend solely on the knowledge that a firm develops internally, but also depends on a firm's capacity to assimilate the knowledge of other firms (Cohen and Levinthal, 1989). In this case, strategic alliances can often be the most effective option for access to and/or assimilation of knowledge for a partner. Nevertheless, some forms of alliance are more appropriate than others for simply accessing knowledge and others, such as joint ventures (JV) are more suitable when learning about the knowledge provided by a partner is required (Grant and Baden-Fuller, 2004).

A joint venture provides an appropriate context so that other learning processes may take place simultaneously, for example, cooperative learning (Simonin, 1997; Tsang, 1999, 2002; Anand and Khanna, 2000; Kale and Singh, 2007). This learning process can provide new knowledge which provides firms with the capacity to cooperate and, furthermore, acquire the knowledge they need in order to innovate.

The knowledge generated by the cooperative learning process is considered a unique, scarce and valuable resource, one which is difficult to transfer or imitate and one that could therefore constitute a new competitive edge (Simonin, 1997) and determine the success of the cooperation.

We have proposed several objectives in the current study. Firstly, we will analyze the relationship between the cooperative learning process and innovation through a JV in firms from the service sector. Secondly, we will study the relationship between the trust and commitment of partners with regards to cooperative learning.

2. Background and hypothesis

2.1. Innovation in service-sector firms

The service sector includes a wide range of diverse activities which also share certain characteristics that set them aside from manufacturing firms. Some of these characteristics determine the definition and analysis of innovation in firms in this sector. Firstly, the interaction and inseparability between production and consumption in services means that a large part of the innovation is aimed at adapting the product to meet the client's needs. Secondly, the intensive amount of information for service-sector products demonstrates the fundamental role information technology plays in innovation. Thirdly, the crucial importance of the human factor in service firms, as a basic competitive element, means that training has to be considered as an important way of improving their capabilities. Finally, the amount of organizational factors affecting the results of service-sector firms means that organizational changes such as innovation have to be considered seriously (Evangelista and Sirrilli, 1995).

Taking into account these characteristics, it is possible to uncover four different types of innovation in service firms: *product innovation*, which consists of presenting the client with new services or improved existing ones; *process innovation*, which includes not only new or improved production processes but also better service provisions; *market innovation*, which means entering into a new market segment or a new business; and *organizational innovation*, which consists of a new way of organizing or managing a firm (Sundbo and Gallouj, 2000). This last factor can bring about a change in the structural organization (Marklund, 2000).

It is important to point out that, in general, service firms carry out organizational innovations simultaneously, both in products and processes (Pattison *et al*., 1995; Evangelista and Savona, 1998; Cainelli and Evangelista, 2004). Furthermore, these innovations are not usually preceded by any R + D investment (Sundbo, 1997; Djellal and Gallouj, 2000). This activity is not just confined to a specific area within the firm but is capable of being disseminated throughout all of the units that constitute the firm.

2.2. Cooperative learning and innovation through a JV

In the same way that cooperation relaxes any boundaries between organizations, it also offers an appropriate context for inter-organizational learning to take place, in particular, the transfer of tacit knowledge (Kogut, 1988; Inkpen, 1997, 2000; Khanna *et al*., 1998; Simonin, 2004). This type of knowledge is dependant on the staff in the firm that possess it (Teece, 1981) and on their organizational routines (Winter, 1987). It is difficult to communicate or share this knowledge as it is supported by a broad range of contextual factors such as the organizational structure, culture and the shared values of the members in the organization (Nonaka, 1994; Nonaka and Takeuchi, 1995; Nonaka and Konno, 1998). The greater the tacit character of a particular type of knowledge, the more difficult it is to transfer between organizations (Kogut and Zander, 1992; Hedlund, 1994; Simonin, 2004; Anh *et al.,* 2006). This difficulty increases the need for the staff that possesses this knowledge to work closely under the same organization with those from the firm that wish to acquire it, as is the case with a JV (Hennart, 1988). A JV is an association between two or more independent organizations that decide to create a new firm with its own legal identity in which the control, decision-making, profits and risks are shared proportionally depending on the contribution of each partner (Harrigan, 1986)[1].

Learning from other partners through a JV is the result of various types of learning, one of which being the cooperation process (Simonin, 1997; Anand and Khanna, 2000; Kale *et al*., 2002; Kale and Singh, 2007). This process can be developed through the direct experience of the firms in

the JV and will be determined not only by the frequency with which the firm cooperates but also by its intensity and longevity (Simonin, 1997). Whether or not this experience is positive or negative, it can, and should, be internalized and transformed into knowledge (Tallman and Shenkar, 1994; Simonin, 1997; Tsang, 2002; Kale and Singh, 2007), which would enable tangible advantages to gained (greater market quota, increase in sales, new products, etc.) and also intangible benefits (acquisition and/or creation of new knowledge) for future alliances (Simonin, 1997). Evidence shows that firms that have more experience at cooperating reach greater performance levels in subsequent agreements (Barkema *et al*., 1997; Simonin, 1997; Anand and Khanna, 2000; Tolstoy, 2010) and the impact of such learning in creating added value is greater in JVs than in other alliances as a result of its heightened complexity (Anand and Khanna, 2000).

Therefore, a firm can innovate using the acquisition of knowledge contributed by its partner depending on its own ability and capacity to "know how to cooperate". Thus, our first hypotesis is as follows.

H1: Cooperative learning through a JV positively influences innovation

2.3. Cooperative learning and commitment

Commitment in an inter-organizational relationship can be better understood as the extent to which the firms involved in the relationship actually take part in it (Anderson and Weitz, 1992). In a JV, the partners have a lot to lose if their behavior is opportunistic and, therefore, the level of commitment in terms of resources is a lot greater than in other forms of cooperation (Kogut, 1988). A high level of commitment reduces the risk of opportunistic behavior and motivates the partners into making the greatest possible effort in order to solve any problems that arise during the cooperation process which, at the same time, increases the possibility that their objectives can be achieved (Mohr and Spekman 1994).

Commitment ensures that the partners maintain their high expectations (Doz, 1996), which, in turn, generates even greater commitment (Kumar and Nti, 1998) and guarantees the achievement of their objectives and the success of the cooperation (Borys and Jemison; 1989). However, a lack of commitment causes the relationship between the partners to deteriorate and puts the ongoing cooperation in doubt (Ariño and de la Torre, 1998). Therefore, commitment is necessary to overcome the natural resistance to the assumption of risk and ensure that the partners can provide the resources necessary to guarantee the success of the cooperation (Ariño and Doz, 2000; Barners *et al*., 2002).

The willingness of the partner to learn what it is that others can provide and what they expect to receive in return (Doz, 1996; Ariño and de la Torre, 1998) generates an ability to cooperate that enables cooperative learning to be developed through trial and error (Benavides-Espinosa, 2007).

Commitment among partners is vital from the outset of the relationship (Ring and Van de Ven, 1994; Ariño and de la Torre, 1998) due to the fact that it acts as a motivating tool for the partners (Gulati *et al.*, 1994). However, it is especially important during the implementation of the agreement as it ensures the longevity of the relationship, even when there is an imbalance in the level of input between the partners (Cullen *et al*., 2000).

H2: The commitment of partners in a JV positively influences cooperative learning.

2.4. Cooperative learning and trust

In the context of inter-company cooperation, trust can be better understood as an expectation on the part of the partner to possess not only a particular level of competence but also certain intentions which have specific risks attached to them (Das and Teng, 1996). Having trust in a partner's ability is linked to the perception of risk performance. In other words, there is a risk that the alliance's objectives will not be met due to the fact that the resources and skills provided by the other partner do not hold the same value that was expected at the time of the agreement being finalized (Das and Teng, 1996), regardless of whether or not the cooperation has been satisfactory (Das and Teng, 2001). Trust in the intentions of a partner is linked to the perception of relational

risk, which is to say, the risk that a partner might behave in an opportunistic manner (Das and Teng, 1996), due to inaction (lack of dedication) or action (actively looking after own interests) (Parkhe, 1993).

Nevertheless, trust is built and reinforced in different ways and the common ground of a shared knowledge is the starting point for the JV to develop from (Doz, 1996; Inkpen and Currall, 2004). Trust requires a series of satisfactory interactions, repeated over time (Gulati, 1995; Ariño *et al.,* 2001, 2005) so that the partners can see that the levels of equality and reciprocity are being maintained (Ring and Van de Ven, 1992). Trust influences the performance of the JV in different ways. During the cooperation process, it reduces the need to constantly supervise and introduce costly control measures (Gulati, 1995; Uzzi, 1997; Gulati and Singh, 1998; Dyer and Chu, 2003); it lessens the amount of conflicts (Ring and Van de Ven, 1994) and makes resolving them easier should they arise (Ariño *et al*., 2001); it reduces the costs of coordinating activities given that the partners have learnt how to work collectively (Doz, 1996); it lessens the worry of appropriation in technology-based JVs (Gulati and Singh, 1998); and it makes communication, the exchange of information and more specifically, the ability to take on board knowledge provided by the partner, much easier (Inkpen and Curral, 2004).

In figure 1 we set out the relationships that appear in the previous hypotheses.

H3: Trust between partners in a JV positively influences cooperative learning

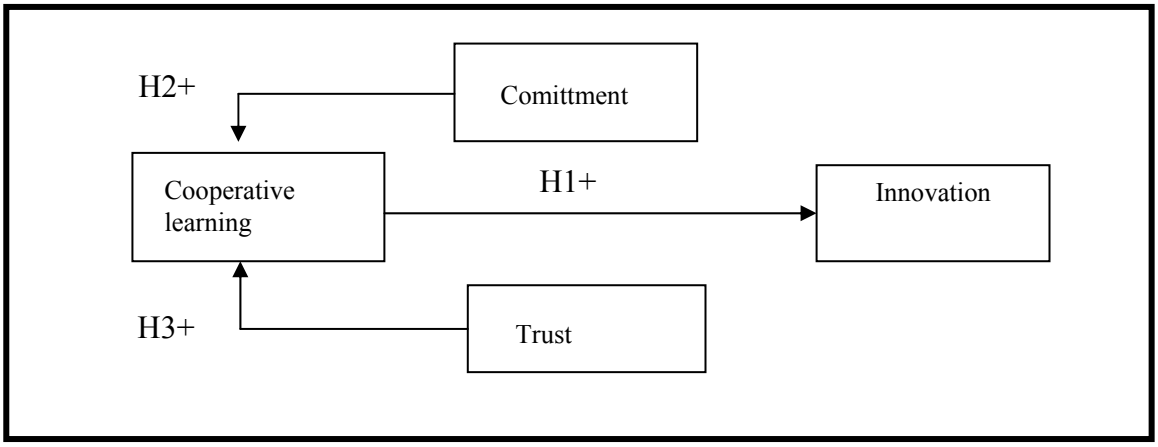

Figure 1. Model

3. Methodology

We extracted information from the ZEPHYR database, where we found a population of 825 firms from the service sector that had taken part in a JV. This database has been filtered along with the Amadeus and Thomson One Banker databases.

We sent a questionnaire via post and e-mail in different languages. Of the 825 questionnaires sent, 113 were returned as the address recorded on the database was incorrect. Furthermore, 63 questionnaires, despite being part of the specific database consulted, stated that they had never participated in a JV. The final sample we obtained consisted of 74firms[2].

3.1. Analyzing the reliability of the measuring instrument

We used *Cronbach's alpha* as the calculation for each one of the scales that figure in our model. In order to simplify this process, we have provided a summary in Table 2, where we show the results achieved after having removed the items that did not exceed 0.7. As can be seen in the table, all of the scales are above 0.7.

In order to analyze the composite reliability (CRI), we carried out a Confirmatory Factor Analysis (CFA) with EQS 6.1. The CFA was calculated using a Maximum Likelihood Estimation (MLE). This analysis showed us the need to remove certain items in order to achieve a good fit. Using the remaining items, we calculated the composite reliability. Furthermore, we calculated the Average Variance Extracted (AVE) which were satisfactory due to them being above 0.5 (See Table 1).

Tabla 1. Scale reliability

Factors or scales	Nº of items	Cronbach alpha	Nº of items	CRI	AVE
Innovation	5	0.767	3	0.793	0.723
Cooperative learning	16	0.903	7	0.966	0.682
Partner commitment	3	0.861	3	0.879	0.679
Partner trust	4	0.823	2	0.857	0.725

3.2. Analyzing the validity of the measuring instrument

The validity has several dimensions which should be analyzed separately, such as content, the validity of the concept or construct (convergent and discriminant), and the validity of the criteria. In terms of the criteria used to determine when a measurement had reached content validity, we analyzed several theoretical and empirical studies, especially the following ones, in order to understand what the dimensions for each scale should be.

With regards to the validity of the construct, we had to check not only the convergent validity but also the discriminant validity. In terms of the convergent validity, we analyzed whether the factorial loads were statistically significant (Anderson and Gerbing, 1988). The results of the CFA model show some very good estimations with a high level of significance (all of the *t* statistics were greater than 3.291 and, subsequently, significant for $p<0.001$) and high standardized λ values, which were all higher than 0.4 (See Table 2).

Furthermore, the goodness of fit statistics, on the whole, had values that were very close to 0.9 with the SMRS being above 0.05. In summary, we can say that the measurement model has an acceptable fit and, therefore, there is convergent validity.

In terms of the discriminant validity, we have set out the following comparison matrix between the correlations and the Cronbach alpha coefficient and the VEI values. The highest correlation in this matrix is that which corresponds to F3 and F2, which has a value of 0.624. If we square this value, we obtain a figure of 0.389, which is less than the F2 VEI (0.679) and the F3 VEI (0.725). These results confirm the discriminant validity of the measuring instrument we are using.

Finally, in the structural model, we set out an analysis of the causal relationships which was determined by the formulation of the hypotheses. To carry out this analysis, we used the *Structural Equations Model* (SEM).

Table 2. Confirmatory factor analysis of the model

Variable	ʎ	t	Standardised ʎ	Goodness of fit level
Cooperative learning (F1), commitment (F2), trust (F3) and innovation (F4)				
V1 F1	2.841***	11.232	0.902	χ2 (10 degrees of freedom) = 10.167 BBNFI= 0.901 BBNNFI=0.882 CRI = 0.912 GFI= 0.962 AGFI = 0.887 SRMR = 0.051
V2 F1	3.154***	10.868	0.889	
V3 F1	3.053***	10.201	0.831	
V4 F1	2.112***	7.687	0.621	
V5 F1	2.587***	7.378	0.685	
V6 F1	3.023***	9.954	0.792	
V7 F1	2.874***	9.326	0.775	
V8 F2	3.365***	6.901	0.828	
V9 F2	3.923***	7.566	0.987	
V10 F2	3.045***	5.566	0.701	
V11 F3	3.508***	10.245	0.978	
V12 F3	3.147***	10.198	0.837	
V13 F4	1.987***	4.708	0.687	
V14 F4	1.581***	3.579	0.604	
V15 F4	1.664***	4.421	0.656	

Levels of significance: * p<0.5; **p<0.01; ***p<0.001; (based on $t_{(499)}$ two lines)
$t_{(0.05, 499)} = 1.964$; $t_{(0.01, 499)} = 2.585$; $t_{(0.001, 499)} = 3.291$

3.3 Details of the structural model

The goodness of fit indicators in our "theoretical model" did not reach the desired levels, which is why we continued with the model analysis (See Chart 1).

Chart 1. Goodness of fit indices for the "theoretical model"

	χ^2	gl	p	GFI	AGFI	SRMR
Theoretical model	20.975	3	0.003	0.911	0.685	0.067

GFI: close to 0.9
AGFI: close to 0.9
SRMR: less than 0.05

By analyzing the "theoretical model", we can see that an additional relationship arose according to the Lagrange test, which indicates that commitment also has a direct influence on innovation. Given that this relationship is theoretically justified, we decided to include it in the model and readjust it, obtaining a re-specification which we will call "revised model".

Chart 2. Comparison of the goodness of fit indices for both models

	χ^2	gl	p	GFI	AGFI	SRMR
Theoretical model	20.975	3	0.003	0.911	0.685	0.067

Revised model	1.564	2	0.121	0.992	0.921	0.022
GFI: close to 0.9 **AGFI**: close to 0.9 **SRMR**: less than 0.05;						

As shown in Chart 2, the goodness of fit indicators have improved and can now be considered as acceptable. We have set out the "revised model" graphically in Figure 2 below.

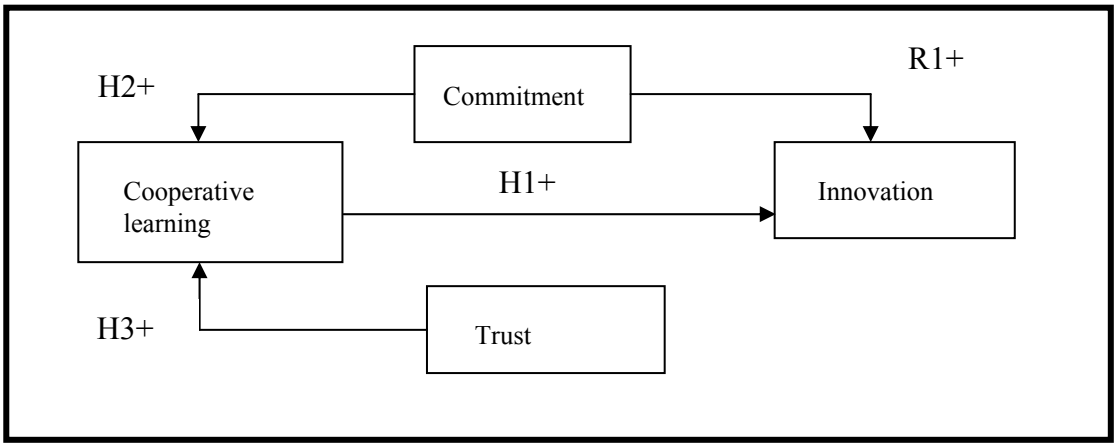

Figure 2. Revised model

We now proceed to compare the hypotheses presented in the model

4. Results and discussion

In Chart 3, we show the results obtained from the relationships set out in our hypotheses, as well as the unforeseen relationship between commitment and innovation.

Chart 3. Estimated parameters in the revised model

HYPOTHESIS	Standardized loads	t
H1. Cooperative learning through a JV positively influences innovation	0.431***	5.208
H2. The commitment of partners in a JV positively influences cooperative learning	0.383***	3.384
H3. Trust between partners in a JV positively influences cooperative learning	0.173	1.531
RELATIONSHIPS		
R.1. The commitment of partners in a JV positively influences innovation.	0.384***	4.436
p*<0.05; t > 1.964; p**<0.01; t > 2.585; p***<0.001; t > 3.291;		

With regards to H1, we can confirm the direct, positive and significant influence cooperative learning has on innovation, given that *t* has a value of 5.208, and for which reason this hypothesis is accepted.

Also, H2, which measures the relationship between commitment and cooperative learning, is significant, given that *t* has a value of 3.384, which confirms the positive influence of commitment on cooperative learning.

Furthermore, we obtained a new direct relationship (R1) between commitment and innovation. Previous studies analyzed have shown an indirect relationship between both variables. We found only one study, by De Brentani and Kleinschmidt (2004), which measured the direct relationship between commitment and innovation. According to this study, in order for the partners to begin to innovate, it is not sufficient that they simply have the intention to do so, but that innovation was only possible when they had fulfilled their commitments and provided the necessary resources.

However, we have rejected H3. This result is in agreement by the findings obtained by Lane *et al.,* (2001) who could not find a significant relationship between trust and learning through a JV. On this matter, we agree with Robson *et al.,* (2006) who state that, in studies carried out on strategic alliances, the importance of commitment has been underestimated, whilst trust has been overestimated as a determining factor in development and cooperation results.

In the validated items, the question was asked as to whether managers were certain that their partners were going to demonstrate a satisfactory level of cooperative behaviour "before" and "during" the joint venture. The rejection of this hypothesis and the analysis of the items used lead us to believe that, in order to participate in a joint venture, the existence of "previous" trust is not as important as in other types of cooperation.

According to the literature studied, trust between partners is vital in reducing the risk of opportunist behaviour in cooperation (Gulati, 1995). This risk diminishes if there is previous experience of developing cooperative agreements, especially between the same partners, as this past experience generates mutual understanding and trust which fosters the creation of more flexible control structures in future cooperation (Ring and Van de Ven, 1992, 1994; Gulati, 1995). Van Aken and Weggeman (2000) state that informal cooperative agreements are based more on trust and a moral obligation than on legal obligations. Therefore, we believe that a certain amount of existing previous trust among partners is necessary in creating ways of cooperating that are more flexible than those found in JVs. We believe that the existence of trust can depend on the type of agreement chosen within which to cooperate (Langfield-Smith 2008).

5. Conclusions

The current competitive climate, characterized by increased instability, makes innovation a key factor in achieving not only success, but survival for a firm. The continuing need to innovate may also be greater in the case off service firms, given that their innovations, in being difficult to patent, are more likely to be copied quickly by competing firms.

At times, a firm needs to acquire new knowledge in order to innovate. In this case, a JV can be a more suitable instrument with which to achieve the knowledge that a firm lacks. However, the acquisition of any knowledge supplied by another partner can be achieved with greater success when the firm learns how to acquire it through a JV, which is why it is necessary to learn how to cooperate.

The cooperative learning process has rarely been the focus of many researchers, who have limited their studies to manufacturing firms. Furthermore, the relationship between this type of learning and innovation has, up until now, not been explored.

By trying to bridge this gap in literature, in this current study we have tackled the influence of cooperative learning on innovation in a firm from the perspective of a JV, as well as analyzing the influence commitment and trust has on this learning.

The results of our study lead us to conclude that cooperation through a JV is an alternative that enables a partner's stock of knowledge to increase sharply and creates the opportunity to access

the type of knowledge required in order to innovate. In achieving this goal, it is important to learn how to work with a partner through a JV so that the necessary knowledge can be acquired and innovation can be developed and exploited outside of the alliance. In this sense, cooperative learning is a key element in establishing innovation as it allows the full potential of acquiring knowledge to be taken advantage of in the shape of a JV.

On the other hand, we have demonstrated that, in order for partners to learn how to cooperate through their participation in a JV, it is necessary that their relationship is founded on strong commitment. However, commitment alone does not directly influence the innovation of a partner. Provided that the partners involved fulfill their commitments and dedicate the efforts and resources agreed, the transfer of knowledge and its inter-organizational exploitation will make it possible for them to innovate. Therefore, commitment is deemed to be a necessary element, although not sufficient on its own, in ensuring that innovation can develop through a firm's participation in a JV. However, trust among partners is not especially relevant for this type of agreement, unlike in other forms of cooperation.

One limitation worth pointing out is that the data collected on JVs was supplied by just one of the partners that took part in this type of cooperation, a limitation that is common in Joint Venture studies and one that is difficult to overcome.

In the future, we will try to analyze the differences in innovation that could exist in the service sector by cooperating with other sectors and, also, to be able to analyze whether different types of cooperation agreements have an influence on innovation.

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Notes

1. When at least one of the partners is based outside of the country where the JV operates, or when a significant amount of its operations is carried out in another country, it is considered to be an international joint venture (IJV) (Geringer and Hebert, 1989).
2. We found empirical studies on cooperation and learning where the sample size was similar to this study. These were published works in journals such as the Strategic Management Journal and included studies by Kale, Dyer and Singh (2002) using 78 firms, Colombo (2003) 67 firms, Lane, Salk and Lyles (2001) 78 joint ventures and Lane and Lubatkin (1998) 69 firms.

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