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Determinants of Entrepreneurship in Small and Medium Companies/Enterprises of the Defense Sector*

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All over the world, the small and medium enterprises are more and more organized in consortia, cooperation networks, joint-ventures and strategical alliances allowing not only the reduction of uncertainty and turbulence of the markets but also the gathering of advantages which may make them more competitive. It is worth considering that the results of these relationships are affected by determinant factors which may inhibit or facilitate the entrepreneurship. Our aim is to evaluate the relationship among some of those determinants, associations, inter-company cooperation, innovation in the methods of work and creativity—about the entrepreneurship in 236 small and medium enterprises of the national defence. One of the questions initially posed is if there is a significant relation among corporation, innovative methods of work, creativity and entrepreneurship; The second question is being creativity as an attribute of the entrepreneur, if it can have a mediator effect on innovative methods of work and entrepreneurship. A factorial exploratory analysis is made in main components (varimax rotation) and multiple linear regression. The results show the direct relationship of the evaluated determinants and entrepreneurship, and the partial mediator effect of the creativity between the innovation in the methods of work and entrepreneurship. These enterprises may expect to develop new methods of work as a high differential component concerning the competition and the more efficient use of knowledge and the skills of the people who make part of the work team in order to increase their competitiveness.

Keywords: cooperation, creativity, entrepreneurship

Introduction

The growing technological complexity, the duration of the cycle of the product and faster service are among the factors which have led to a higher specialization of the chain of value. This attracts bigger collaboration inter-organizations, a critical component of the strategy of the company in many industries of technological basis (Cukier, 2005). Oliver and Ebers (1998) stood out the importance of understanding the

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motives of promotion and maintenance of these relationships, inter-enterprises, and in the context of networks. The networks are a source of unique skills for the small and medium enterprises. The small and medium enterprises benefit from the experience of other enterprises and experts and governmental institutions, among others, which provide not only a practical advice but also an incentive to the creation and maintenance of a social group (Friedman & Miles, 2002) and the saving of costs through the technological sharing. The small and medium enterprises are the main source of economic growth, due to their dimension and ability that they quickly develop new methods of work, they are more creative and motivated and develop more employment in the teams they belong to (Havard Business Review, May 2011), indicating a drastic change of the management for the entrepreneurial economy (Druker, 1985).

Most of the new enterprises which have greatly developed after the industrial revolution in the globalized economy, today, derive from corporate entrepreneurship (Dess, Ireland, Zahra, Floyd, Janney, & Lane, 2003; Stevenson & Jarillo, 1990), and the small and medium enterprises have had a growing importance, showing different scenarios, which have been presented in literature (Burgelman, 1984; Covin & Slevin, 1991; Pinchot, 1985). Although the scholars, who have approached corporate entrepreneurship, have contributed a lot to the theory of its development, there is still room for an exploration more centered on the small and medium enterprises, especially because there is a growing need of corporate entrepreneurship and innovation in the organizations (Hornsby, Kuratko, & Zahra, 2002; Ireland, Hitt, Camp, & Sexton, 2001; Kuratko, Hornsby, Naffziger, & Montagno, 1993; Sexton & Bowman-Upton, 1991; Zahra, 1995). In this article, entrepreneurship and concerning the networks of inter-companies cooperation, more precisely the small and medium enterprises, it is intended to go further towards a better understanding of the influence of the internal cooperation, the use of innovative methods of work and creativity, in entrepreneurship, as a result of processes of reorganization of the enterprises and the intensification of the inter-company links, focusing the different approaches in literature which explain the phenomenon of the networks of the enterprise.

First, in this article, we intend to clarify the concepts of collaborative entrepreneurship, networks, innovative methods and creativity. Then, we will present the method we have adopted where we present the participants, the methodological procedure, the way the variables operate and the data processing. Finally, we present the results, conclusions and practical implications for the small and medium enterprises.

Collaborative Entrepeneurship

The different fields of research which were developed have expanded the traditional entrepreneurship in areas like the intra-entrepreneurship or corporative entrepreneurship and more recently the collaborative entrepreneurship. In the collaborative entrepreneurship, the investigators (R. E. Miles, G. Miles, & Snow, 2006; Pinchot, 1985; Zahra, 1995, among others) refer that the organizations look for more collaborative relationships in a world network of companies, leading to a continuous innovative strategy. They defend that the small and medium enterprises mainly act in a collaborative way, as they do not have the resources to participate in a continuous innovation by themselves; they see the network as an essential means to do business. Gray and Wood (1991) defined collaboration and its occurrence the following way: “collaboration is a process through which different parts, when they see different aspects of a problem, may, in a constructive way, explores their differences and looks for limited visions”. The collaboration happens when a group of “autonomous

stakeholders," that dominate a problem, involve themselves in an interactive problem using role division, norms and structures to act or decide questions related to the problem. For these authors (Gray & Wood, 1991), all the organizational theories emphasize that the environmental complexity, uncertainty and turbulence are among the problems faced by an organization and one of their main tasks is to reduce such problems to controllable situations. The authors defend that to some theories the organizations collaborate to reduce, control the problems, but none of them offers a model of cooperation. A second explanation is that working from a vision based on resources of the enterprise suggests that the human capital is a unique, inimitable resource which may lead to competitive advantages in a long term (Hatch & Dyer, 2004; Hitt, Bierman, Shimizu, & Kochhar, 2001; Lepak & Snell, 1999; Wright, Mcmahan, & Mcwilliams, 1994). Ahuja (2000) indicate two big classes of explanations from the perspective based on resources, reflecting incentives from the enterprises or incentives to cooperate, he states that the enterprises form connections as a way of having access to the necessary goods (Hagedoorn & Schakenraad, 1990; Hennart, 1988; Nohria & Garcia-Pont, 1991), learn new abilities (Baum, Calabrese, & Silverman, 2000; Hennart, 1988; Kogut, 1988; Powell, Koput, & Smith-Doerr, 1996), manage their dependence in relation to other enterprises (Garcia-Pont & Nohria, 1999). A second set of explanations about the network resources are that an enterprise must collaborate, once it has a position in the network which was previously a structure, suggesting that the patterns of negotiation and collaboration observed in the enterprises reflect the previous patterns of inter-organization relationships (Gulati, 1995, 1999; Gulati & Gargiulo, 1999; Walker et al., 1997) to support the dependence of the trajectory of the vision of collaboration suggested by the vision based on resources, influencing the entrepreneurship in a positive way. However, it is not the human capital but the relationships that the human beings establish that are the most important and inimitable capital. Therefore, the enterprises which can go beyond the human capital and develop the high value relational capital will succeed, especially because the variation rate increases business. We think that the small and medium companies are today the best prepared group of enterprises to take advantage of the relational capital. It is known that all organizations need coordination (Van de Den Delberg, 1976). The internal coordination is inherent to the organization, once it identifies, establishes work priorities and integrates the different parts and tasks to reach collective aims. Besides the external barriers, these companies also aim at removing barriers among the internal sources of skilled knowledge. So, the inter-department integrations are attractive. At the structural inter-department level, they are also interesting. At the structural level they create a series of mechanisms of coordination and multi-functional teams which promote the collective knowledge and creative skills. The model of relational vision of Dyer and Singh (1998) suggests that the potential that an enterprise has to create a competitive advantage does not depend only on its resources, but also on its relational assets, that is, on its relationship with other key companies. On the sequence of the language based on resources, the inter-organization links can also be idiosyncratic and, therefore, they can be a competitive added value advantage. The relational capital is defined as the set of all the market relations, relations of power and cooperation established between companies, institutions and people, which results from a strong feeling of belonging and a highly developed capacity of cooperation typical from the culturally similar peoples and institutions (Capello & Faggian, 2005). The concept of cooperation can be translated as the concept of mutual help between two or more parts which follow a common objective. The generic concept also applies to economy and to the business world. Cooperation consists of an agreement which establishes strategical

alliances which allow the different actors not only to reduce uncertainty and turbulence, but also to conjugate advantages in a perspective in which the global benefit is superior to the individual action. The most recent western business organizations reinforce models of cooperation, alliances, strategies and internal and external networks in the companies as it already happened in the Japanese “Keiretsu”, in the South Korean “charbol” or in the “quauxi” (Chinese networks). The flexible company, where the borders of the organization are less clear, is more valued (Schwartz, 1997). For some authors like Piore and Sabel (1984) and DeSousa (1993), the new relations between the companies represent a paradigm of “flexible link”, sometimes through non-institutional mechanisms and with relations of competence in regional markets, but with the development of ways of cooperation in more vast, national or international markets. The literature about networks also deals with this subject from the studies that show the usefulness of a social network in order to support the new companies (Birley, 1986), to those that analyze the way an efficient network can be supported in a long term (Jarillo & Ricart, 1987, 1988; Birley & Lawrence, 1988). Certainly because the networks can be the way to facilitate opportunities, generating capacity to get access to the resources scattered in the organization, with no need of installing a previous thorough process of appropriations, this literature can now be considered as relevant to the entrepreneurship.

Network of Enterprises

The small and medium companies have become more and more important in the pursuit of the world economic and social development (Nassif, Ghobril, & Silva, 2010). Besides being an important source of creation of employment, the small and medium companies are also a powerful source of innovation. The companies of small and medium dimension are more and more organizing themselves in trusts, networks of cooperation, joint-ventures and strategical alliances. These arguments represent a bigger occupation of the spaces and an increase of the degree of entrepreneurship. Traditionally, the sector of the small and medium companies is considered important due to its capacities to generate employment and to contribute to the industrial production. During the 1980s, the interest in studying the small and medium companies increased because of the difficulties of the big ones in supporting the level of employment in most Western Europe (Sebrae, 1996). The phenomenon of the network of companies is not exclusively from the developed nations, the same happens in countries where industrialization is recently like in Southern Asia and Latin America. A change in the industrial organization has been verified since the 1970s. For example, there was the creation of industrial districts of the so-called “third Italy”, the local productive systems in France, Germany, the United Kingdom, and Silicon Valley in the USA and the networks of enterprises in Japan, Korea, and Taiwan (Sebrae, 1996). The small and medium companies started to incorporate state of the art technologies in the productive processes, to modify internal organizational structures and to look for new links with the social and economic context, in order to find a way of industrial restructuration which might compete in some sectors like the big companies. This is strictly related to the character of the technological innovations of the last years, in particular with the electronic industry, robotics, and computers. The entrepreneurs tend to initiate their new companies in the area where they live. They develop networks strongly rooted in the regional context. The limited empiric literature clearly shows that the entrepreneurs present a geographical inertia (Sorenson & Audia, 2000) and defends the hypothesis of the “regions subject” to the investigation of entrepreneurship. According to

Leon (1998), the networks of enterprises are initially formed with the aim of reducing uncertainty and risks, organizing economic activities, from the coordination of networks between enterprises (small and medium enterprises) there is the possibility of these becoming flexible networks of small and medium enterprises as clusters of enterprises or as networks of cooperation, usually as virtual organizations or even as the so-called "supply chain management". According to Powell (1990), many authors have agreed that there is a new way of economic organization, others admit that a new social organization is emerging. For him, the economic exchanges are involved in a particular context of social structure, depending on connections, mutual interests and reputation and with little guidance of a formal structure of authority.

To Ribault and his collaborators (1995) the society of companies, sometimes called network of companies, is a way of gathering companies aiming at favouring the activity of each of them even if they do not have financial connections. The network companies complement each other in the technical plans (productive means) and commercial plans (networks of distribution) and decide to support one another without any priority, but the constitution of a network may also be translated by the creation of a central of purchase common to the enterprises of the network. It is, therefore, an affinity model of association of informal nature and which makes each company responsible for its own development. It is a choice of structure which adapts well to the small and medium companies to which this type of association is a way of fulfilling the motto "many hands make light work". Casarotto (2001) defends that the small companies may benefit from the scale of regional branding, scale of production, scale of technology, scale of logistics and from their inclination and region to become competitive. Casarotto (2001) states that it is usually romantically said that the companies of the same segment and of the same region are not competitors, but sisters, and as sisters they should collaborate with each other. According to his view, this cultural process is of long maturation. Even if the entrepreneurs take the initiative of creating their networks of cooperation, success will only be reached if there is a model of local development, as it is the case of the enterprises of this study, with the participation of the whole society. In the specific case of the enterprises which are targeted by this study, they belong to the same economic sector related to the industry of defence and have their origin and incitement in the policy of modernization of the armed forces and of the systems of defence. They develop a concerted collaborative work, where the performance of any partner helps the whole network and the global increase of entrepreneurship. In this context, the present work aims at analyzing the role of a network of small and medium companies of the sector of activity of national defence as agents of promotion of cooperation, creativity and motivation influencing entrepreneurship. Furthermore, the relational capital is the dependent path and the enterprises are limited by the limits of their network, in a way that they can be unable to take advantage of some opportunities because their relationships do not give them access to appropriate resources to do it. So, the limits of the social capital also create costs of opportunity (Hitt, Lee, & Yucel, 2002).

In summary, the organizations may establish inter-organizational relationships as a way of becoming more stable when facing the environmental uncertainties, that is, they use the relationships as an adaptive answer to the uncertain environment. The environmental uncertainty is created by the shortage of resources and this motivates the organizations to establish relationships in order to reach stability and predictability in the relationship with other organizations (Brass, Galaskiewics, Greve, & Tsai, 2004; Galaskiewics, 1985; Whetten & Leung, 1979).

Technological Innovation and Creativity

The ability to innovate is today recognized as one of the main strands of competitive advantage in the enterprises. Becattini (1999) states that, in today's market, characterized by the fast growth of saturation of demand, the competitiveness of the enterprises has the tendency to be more determined by the innovative capacity than by the productivity. The only common feature to all the definitions concerning technological innovation is that to innovate implies novelty, and the world acts as a regulating agent and a booster of innovation, however, it demands knowledge and dexterity which can become a sustainable competitive advantage (Tidd, 2001).

Innovation is a breakthrough applied according to the technological development, which may involve a new product, a new service or new practices in processes and new technologies (Shumpeter, 1939) as well as the contribution or certain sources of knowledge. In innovative processes, technology is considered as one of the production inputs, which allows adaptation, better position in the market and the preservation of a sustainable competitive advantage, at least temporarily (Chiva & Camisón, 2001). The enterprises which need to reach a certain growth in their activities and dimension do not disappear in situations of recession as the present one, they must opt for innovations based on their own inventions, aiming at making difference from their competitors. (Carbonell, Rodríguez, & Munuera, 2004). There are case studies like the ones from Urbano and Toledano (2008, p. 219), which analyze the creation, development and implementation of innovation in the small and medium companies. Specifically, it is analyzed that the small and medium companies which are operated in the technological sectors have more chances of generating innovative projects, finding evidence that the entrepreneur and manager are the main catalysts and inhibitors of these innovative processes. It can be stated that the competition of the company sees itself reinforced because of its capacities of technological innovation in companies related to its industry. Despite the risk and uncertainty, innovation, when successful, may give origin to a relevant impact on the economic outcome of the companies. In the companies, innovation is more and more a key factor of business competitiveness. Companies which are aware of this should make an effort in order to innovate, and consequently they should try to create a sustainable competitive advantage, that's why it crucial to study it. Porter (1996) states that a company can only succeed in creating better results than its competitors if it manages to create a differentiating factor which is kept over time, being the main instrument of creation of that competitive advantage innovation or the acts of innovation. Mollón and Vaquero (2004) still refer that there are more and more companies which being aware of the fact that the accomplishment of the innovative activities contributes to a source of competitive advantages, make an effort to innovate. They defend that the systematic observation of the company which has a competitive success has shown that such companies base their competitiveness on an innovative capacity supported by an accumulation of resources and capacities which are difficult to be reproduced reproduced and imitated by their competitors. To Shumpeter (1939), innovation is something intrinsic and spontaneous to the entrepreneur. He defends that the entrepreneur has a well defined role, which is shown when he makes changes or revolutions in the patterns of production, when he creates new possibilities, transforming something which is already known, breaking in new sources of supply, and creating new products. This process, which can make new combinations, becomes faster and faster through the improvement of products and services, making the obsolescence more and more

accelerated. In Schumpeter's approach, only the one who can make new combinations can be considered as an entrepreneur, when he only runs the business he loses that position being only a manager. For the author, understanding and management are two different functions. The difference between entrepreneur and non-entrepreneur is the act of innovating. It is believed that this approach takes into consideration the fact that when the entrepreneur starts managing the company and dealing with bureaucratic processes associated to management, he stops performing new combinations, a function which characterized him, becoming only a manager. To Cário and Pereira (2001) "innovations disrupt this picture of a slowly changeable balance providing the opportunity for the economic expansion". That's why to Shumpeter, the entrepreneur is an agent of balance in the economy, the agent of "creative destruction", who innovates, imposes changes and breaks routines.

On the other hand, once creativity is a people's inherent characteristic, inevitably it converts into an element which horizontally affects the set of processes which are specific of the business activity. So, creativity must become one more asset, in a transversal way in the whole chain of value, within the culture of the company. The most creative and innovative companies, besides an efficient management, are characterized by the systematic use of the creative perspectives and techniques, which allow them to feed the continuous process of innovation and creation of ideas and to stand out in the competition. The creative process follows a scheme, and looks for alternatives to an existing situation or the finding of solutions which provide an answer to problems which may occur. The predisposition to find solutions and to change (seeing it as positive) also implies the existence of a creative attitude. Creativity is associated to the use of methods which do not respond to logical and traditional schemes. For the organizations to use creativity in a more efficient way, it is necessary that they know the process of innovation in the organizations and that they take measures to encourage this process. Given this, the investigation should develop around a set of questions of investigation, namely: is there a significant relationship among cooperation, innovative methods of work, creativity and entrepreneurship? Creativity being as a characteristic of the entrepreneur, will it have the capacity of performing a mediator effect on innovative methods of work and entrepreneurship? It is thus intended to evaluate the relationship among the variables cooperation intra-enterprises, innovation of the methods of work, and creativity in the entrepreneurship.

Method

Participants and Procedure

A population of enterprises related to the Spanish industry of defence have participated in the present study, considering the criterion that they are important entities concerning their relations with the defence and which have kept routine commercial relations with the ministry of defence. The data base which were used concerning the year 2003 were offered by the Direccion General de Asuntos Económicos del Ministerio de Defensa with the general aim of knowing the strategical determinants focusing on the organization of defence, based on the training and modernization strategy of the Spanish Armed Forces and of the Systems of Defence and the analysis of the processes of cooperation of companies related to defence. The present study corresponds to a part of the central study trying to focus on modernization in companies associated to the national defence.

The participating companies have answered a questionnaire which was sent by mail between February and

August of 2004. Two hundred and thirty six people completed questionnaires and sent them back, which corresponds to an answer rate of 52.44% with a percentage of error of 4.4% to $p = q = 50\%$ and a level of trust of 95.5%. In what concerns legal training, 57.6% of the participating companies in the present study have formed cooperative societies and business societies (42.4%). Although they develop processes of cooperation related to the defence, they mostly belong to the tertiary sector (68.2%), followed by the secondary sector (28.8%) and, lastly, by the primary sector (1%) (missing system = 1.5%).

Operationalization of the Variables and Data Processing

The indicators were created for the present study by the collaboration between the department of Economics of the enterprise of the Polytechnic University of Cartagena and the Ministry of Defence concerning the needs presented by this ministry and based on the literature about this subject. All the indicators were answered in a scale of the type Likert of five points in which one corresponds to the value people disagree more with each item and five to the value people agree more with each item. Alfa of Cronbach was calculated as a measure of evaluation of the internal consistency of the scales. Factorial analysis was used as a technique of reduction of the dimensionality of the data. We have applied as method the extraction of factors in the Analysis of Main Components and the items with a charge equal or superior to 0.50 were elected, applying the test of Kaiser Meyer Olkin (KMO) and the proof of sphericity of Bartlett. To determine how the independent variables included in the hypothesized model influence the criterion variable Transfer of Training, the procedure of analysis of the Linear Multiple Regression of the programme Statistical Package for the Social Sciences (SPSS) version (17.0) was adopted. On the evaluation of the mediator effect of the creativity variable, the test of the effects of mediation was adopted, following the procedures recommended by Baron and Kenny (1986). Specifically, on the evaluation of the simple mediation effect (the effect of X on Y is measured by M) the following steps were observed: (1) showing that X (predictor) relates to M (mediator)—consists of estimating the coefficient of regression of M in X in a model of simple regression (Model 1); (2) showing that X (predictor) relates to Y (result variable)—consists of estimating the coefficient of regression of Y in X in a model of simple regression (Model 2); and (3) showing that M relates to Y when X is constant—consists of estimating the coefficients of regression of Y on M and of Y on X in a model of multiple regression (Model 3). If the data suggest that the coefficient of regression estimated on step (1) is not null, but that its similar model of multiple regression estimated in step (3) is not different from zero, then we should conclude that the effect of X on Y is totally mediated by M (complete mediation). If the coefficient of regression estimated on step (1) is not null and its similar in the model of multiple regression estimated in step (3) softens but continues being different from zero, then we should conclude that the effect of X on Y is partially mediated by M (partial mediation). The calculation tests of Sobel of Preacher and Leonardelli (Retrieved from http://www.people.ku.edu/~preacher/sobel/sobel.htm) are also made in order to verify whether the obtained paths in the structural equations are significant or not.

Data Presentation

In this section, the results obtained through the analysis of the given answers by the 206 companies inquired by the instrument used to operationalize the variables being studied are presented. We begin now the

presentation of the results with an exploratory factorial analysis of the different variables of the study made, and then a descriptive analysis of the different variables for the whole of the respondents.

Table 1

Results of the Factorial Analysis in Main Components (Varimax Rotation) (N = 236)

		Factorial weight			
Indicator	Commonality	1	2	3	4
Intra- company cooperation					
Opportunist behaviours	0.79	0.87	0.12	0.09	0.07
Lack of confidence and commitment	0.74	0.82	0.06	0.12	0.22
Motivation, conciliation and commitment	0.75	0.78	0.31	0.11	0.01
Negotiation and coordination of efforts	0.67	0.77	0.35	0.18	-0.04
Information, dedication and working time	0.57	0.73	0.37	0.07	0.03
Lack of appropriateness to the interests	0.71	0.71	0.04	0.24	0.03
Innovation in working methods					
Access to segments of the market	0.71	0.19	0.81	0.14	0.06
Skilled workers	0.77	0.14	0.80	0.19	0.18
New products and services	0.71	0.30	0.79	0.24	0.10
Investigation and development of technologies	0.68	0.08	0.77	0.30	0.00
Ability to adapt	0.45	0.29	0.56	-0.02	0.16
Entrepreneurship and creation of companies					
Spin-off	0.70	0.00	0.30	0.77	0.04
Cooperation with companies	0.68	0.13	0.35	0.71	0.25
Business previous failure	0.57	0.30	0.07	0.69	0.08
Lack of information		0.31	0.11	0.62	0.28
Creativity					
Fulfilment	0.79	0.12	0.27	-0.05	0.84
Creative personality	0.76	0.05	0.17	0.20	0.83
Restless spirit	0.79	0.02	-0.09	0.37	0.81

Note. The higher factorial weights in each factor are KMO = 0.82.

Table 2 presents the average, standard deviations, correlations and the internal consistency of the variables which constitute the analyzed model.

We also make co-relational and regression analysis to evaluate the two raised questions about whether there is a significant relation among cooperation, innovative methods of work, creativity and entrepreneurship. And, being creativity an attribute of the entrepreneur, will it have the capacity of having a mediator effect between innovative methods of work and entrepreneurship, trying to proceed to its validation?

First, an Exploratory Factorial analysis was made in principal components (varimax rotation) of the indicators which constitute the variables of the model of analysis. This analysis allowed extracting four independent factors which correspond to the variables we intend to study and which explain 68.9% of the variance. Retaining the indicators with a higher weight in each factor, according to the described operationalization, indexes for each variable were created (see Table 1).

Table 2

Average, Standard Deviations, Correlations and the Internal Consistencies (N = 66)

Variable	N	M	DP	1	2	3	4
Intra-company cooperation	236	300.2[a]	100.0	(0.90)[b]			
Innovation in working methods	236	200.9[a]	100.1	0.50**	(0.87)		
Entrepreneurship and creation of companies	236	100.9[a]	100.0	0.44**	0.52**	(0.78)	
Creativity	236	300.1[a]	100.3	0.21*	30*	0.42**	(0.82)

Notes. [a] Scale 1 to 5; [b] the diagonal presents the values of alpha of cronbach; * $p < 0.05$, ** $p < 0.01$.

In what concerns the correlations we can see that all the variables are positively and significantly associated. The variable which is the most strongly correlated to entrepreneurship is innovation in the methods of work (r = (52) **), followed by intra-company cooperation (r = (44) **). The variable which is the least correlated to the result variable is creativity (r = (42) **). All the analyzed variables show good psychometric qualities expressed by the values of internal consistency of alpha of cronbach (values equal or superior to 0.78).

With the aim of testing the mediator effect of creativity we analyzed the models of regression in which we included, besides the antecedents, the intermediate variable. Furthermore, the demographic variables were also included in the analysis, but they were later removed once they did not show any predictive power in entrepreneurship. With the aim of understanding if each antecedent has a significant contribution in the intermediate variable, we analyzed Model 1 (see Table 3). The results show that the intermediate variable creativity relates with the antecedent variables intra-company cooperation (β = 0.28, p < 0.01) and with Innovation in the methods of work (β = 0.35, p < 0.02) in a positive and very significant way, accomplishing the first step of the mediation of Baron and Kenny (1986).

Table 3

S*tandardized Coefficients of Regression Referring to the Antecedent Variables Over the Variables of Result When the Effect of Intermediate Variable is Included (N = 66)*

	Model 1	Model 2	Model 3
	Creativity and motivation	Antecedent	Antecedents + Creativity
	Entrepreneurship		
Intra-company cooperation	β = 0.28	β = 0.43	β = 0.36
	p = 0.01	p = 0.000	p = 0.000
Innovation methods of work	β = 0.35	β = 0.47	β = 0.43
	p = 0.02	p = 0.000	p = 0.000
Creativity		β = 0.31	
		p = 0.000	
Intra-company cooperation and innovation in the methods of work		β = 0.34	β = 0.26
		p = 0.002	p = 0.05

Notes. * $p < 0.05$, ** $p < 0.01$.

As we can see in Model 2 of Table 3, the analysis of the estimates of the coefficients of regression, when only the antecedents are considered, allows us to state that both intra-company cooperation (β = 0.43, p = 0.000) and innovation in the methods of work (β = 0.47, p = 0.000), influence in a positive way the variable of result (Entrepreneurship). The same happens with creativity whose effect on entrepreneurship is also significant (β = 0.31, p = 0.000). These results are consistent with step (2) of the model of mediation suggested by Baron and Kenny (1986).

With the aim of understanding if the intermediate variable specifically mediates the effect of the antecedents on the variable of result, we analyzed the models of regression in which we included first each of the antecedent variables in an isolated way and then together, followed by the intermediate variable. In Model 3 we can see that, in the presence of the variable creativity, the direct effect initially performed by the intra-company cooperation on entrepreneurship ($\beta = 0.43$, $p = 0.000$) and by the Innovation of the methods of work ($\beta = 0.47$, $p = 0.000$), is significantly maintained ($p < 0.01$) although it gets slightly lower in magnitude (from $\beta = 0.43$ to $\beta = 0.36$) to intra-company cooperation; and from $\beta = 0.47$ to $\beta = 0.43$ to innovation of the methods of work, suggesting the existence of a partial mediation between these two antecedents and the criterion variable. Nevertheless, the test of Sobel only showed significance of the effect of innovation in the methods of work on entrepreneurship ($Z = 2.05$; $p < 0.01$). Thus, we may conclude that creativity has a partial mediator effect only on one antecedent (innovation in the methods of work) managing to diminish the magnitude of the direct relation between innovation in the methods of work and entrepreneurship.

Model 3 (see Table 3) still shows that, in the simultaneous presence of both antecedents—intra-company cooperation and innovation—the intermediate variable *C*—can diminish the magnitude of this relationship (from $\beta = 0.34$, $p = 0.002$ to $\beta = 0.26$, $p = 0.05$). According to the test of Sobel, this result shows the presence of a significant partial mediation ($Z = 1.4$, $p < 0.01$). Summarizing, the joint presence of both antecedents is important so that creativity can have a partial effect on these and the criterion variable (entrepreneurship).

Conclusions

It is absolutely important to stand out that with the growing productive restructuration and the movements of “cooperation”, the pressures for cost reduction and the increase of productivity are giving origin to the formation of new arrangements among companies, especially in the small and medium companies. These groups are focused on further cooperation among them, offering new elements to a possible formulation of industrial policies. The results of the study allow us to confirm the direct relation of intra-company cooperation with entrepreneurship, suggesting that a higher degree of cooperation understood intra-companies increases entrepreneurship. It also found support for the influence of innovation in the methods of work on entrepreneurship, signaling that when the participating companies understand the existence of innovative methods they are more willing to venture. Therefore, the answer to one of the questions initially posed, if there is a significant relation among cooperation, innovative methods of work, creativity and entrepreneurship, is affirmative. Concerning the mediator effect which was tested, the results show that creativity can have a partial mediator influence on the innovation of the methods of work. This result allows us to conclude that the innovation of the methods of work act at the level of the creativity which determines the level of entrepreneurship of the company, meaning that when these companies understand that there are innovative methods of work, they stimulate creativity and innovation in order to increase their entrepreneurship. The results also allow us to infer that these companies develop creativity when they understand that there is intra-company cooperation and innovative methods of work at the same time. Thus, we may conclude that the existence of cooperation and innovative methods of work is fundamental to stimulate creativity which, in turn, triggers entrepreneurship. It means that the answer to the second answer, being creativity an attribute of the entrepreneur can it have a mediator effect among innovative methods of work and entrepreneurship, is

affirmative, once creativity can have a partial mediator effect. The results show an empirical evidence of what was referred by Nunamaker, Romano, and Briggs (2002) in the revision of the literature, which stands out that the concerted collaborative work, where the performance of any partner helps the entire network and produces a global increase of the performance. It suggests that the patterns of the observed collaboration between the companies reflect the previous patterns of relations between inter-companies (Gulatti, 1995; 1999; Guleti & Garginha, 1999; Walker et al., 1997) supporting the dependence of the trajectory of vision of collaboration suggested by the vision based on resources positively implying the entrepreneurship. The results which were obtained are according to Hornsby, Kuratko, and Zahra (2002), Hornby and his collaborators (1993), Ireland (2002), Kuratko et al. (1993), Sexton and Upton Bowman (1991), and Zahia (1995) who stand out the growing need of exploring the corporate entrepreneurship and innovation in the organizations. The results are according to what was referred in the literature, that the human capital is a unique, inimitable resource, which may lead to the competitive advantage in a long term (Hatch & Dyer, 2004; Hitt, Bierman, Shimizu, & Kochhar, 2001; Lepak & Snill, 1999; Wright et al., 1994).

Summarizing, the analyses which were made show that the intra-company cooperation, innovation in the methods of work and creativity influence the entrepreneurship both positively and significantly.

In what concerns the effect of mediation of the intermediate variable creativity and innovation, we may state as follows:

In what concerns the intra-company cooperation, its isolated presence (without the effect of innovation in the methods of work) is insufficient to produce a mediator effect. In what concerns the innovation in the methods of work, its isolated presence (without the effect of the inter-company cooperation) is enough to produce a partial mediator effect, once it can reduce its effect on the variable of result, although it still keeps being very significant. In the joint presence of the intra-company cooperation and innovation in the methods of work, the reduction of its effect on the criterion variable, in the presence of the intermediate variable, shows the existence of the partial mediator effect. This means that the presence of both antecedents is decisively important to show the partial mediator effect of creativity.

Practical Implications

The present study establishes the importance of entrepreneurship as a factor of development in the management of the networks of the companies and stands out the findings that investing in the development of the entrepreneurial spirit and in the characteristics necessary for a good management is fundamental. It shows that some entrepreneurial characteristics should be present such as cooperation, innovative methods of work, creativity and motivation. A more demanding environment in the global markets is forcing companies, and particularly the small and medium companies, to be almost compelled to cooperate in network. This cooperation develops into a long term relation, of more trust between the partners of the network, allowing a sharing of knowledge to improve and innovate. The demand of network by the small and medium companies is due, in part, to the need to reduce uncertainty and increase stability, to obtain opportunity when being associated to the network, to get benefits from the network and because they need help to grow. The network provides new knowledge at a lower cost. The mechanisms of control of the network prevent opportunist actions of some members. That’s why the formation of the networks is important, because it provides a means of

exchange of information and the articulation of business among the enterprises, making the promotion of consortia easier, with the aim of stimulating strategies and preventing the disappearance of ventures which cannot survive alone. At the same time that entrepreneurs defend that the enterprises should outline their strategies only to get profit, others put into practice the fact that the local development is their responsibility. Besides, the development of the entrepreneurship gains great proportions in an environment of network articulation. The small and medium enterprises have conditions to participate in the innovative process and, as a consequence, in the local economic development. The small and medium enterprises may develop processes of creation, apprehension transformation, accumulation and dissemination and sharing of knowledge, fundamental elements for the technological development and stimulation of the development. Through the social knowledge produced in the network, the emphasis goes to the ability to learn and innovate, considered also important to ensure the competitiveness of the companies. The more advanced the practices of the companies in their activities of innovation, the more ability they will have to apply innovations. Success does not depend only on having or not the most recent technologies, but on having the most productive technologies, which can be used in a large number of applications. No less essential is to take advantage of the opportunities created by the technologies which were developed in other places by the regulatory framework. Nevertheless, the results of investigation and technology do not automatically translate into new commercial activities or into an increase in productivity.

The use of technology often demands that the company has highly skilled workers. The intellectual capital and the investments to promote it should be more effectively used. The companies have not yet understood how much they can earn with the innovation which results from the improvement of the professional skills of the workforce. Unfortunately, according to an inquiry of Eurofound (European Foundating for the Improvement of Living and Working Conditions) about the conditions of work and a study of CEDEFOP (The Learning continuity: European inventory on validating non-formal and informal learning), the European companies continue on investing too little on the intellectual capital. Only 26% of the companies which train their workforce can foresee the professional skills which will be necessary in the future. The interest in work, the creative skills and the initiative of the workers are fundamental (80%) for the success and position of the companies and organizations. Only now are we beginning to understand these factors and to take advantage of them, while competitive tasks due to the fact that the directors are not often well informed about their importance. Nevertheless, this study, because of the interest the study of the capacities of the processes of innovation has raised, tried to provide an answer to why the innovative methods, cooperation and creativity can be a tool to success, and their use gives the opportunity of venturing, succeeding in making the company different from its competence, because it is more efficient in the productive process via technological methods. It would be desirable, in future studies, to develop comparative studies with small and medium companies from other sectors of activity.

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