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Predictors of administrative innovation: functions and organizational methods - Mexican and Colombian hospitals-

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ABSTRACT

Objective – To determine to what extent functions and organizational methods influence on administrative innovation.

Design/methodology/approach – This research is quantitative approach, with a not experimental and transversal design. The hypothesis was supported by using a transactional study with a sample of Mexican and Colombian hospitals through the perception of their high and medium level managers. The hospital sampling was by convenience.

Findings – Organizational functions and methods are associated and are predictors of administrative innovation.

Practical implications – As long as the hospital encourages the development of training and knowledge methods, autonomy methods for employees are developed, and when performance appraisal takes place in hospital, new methods will be able to develop and organize the routines and the management procedures, allocation of responsibilities and power among employees could be developed, as well as to develop new structure concepts for workplace, organizational practices and external relationships.

Keywords – Administrative innovation. Organizational methods. Organizational resources. Hospitals.

1 INTRODUCTION

Knowledge has turned into the most important factor in production (Drucker, 1993; Quinn, 1992) and, since Schumpeter in 1934 established that innovation plays an important and decisive role in economic development, it has caught great attention and has been studied for its aspects which impact organizations (Liao, Fei & Liu, 2008); it is generally accepted that innovation is essential for the increase of production and productiveness (OCDE & EUROSTAT, 2005).

Nonetheless, innovation here is related to Marshall's work in his fourth book, called "Principles of Economics"; he considers that sometimes is better to recognize organization as a distinct agent from production. That is, the internal structure variable acquires greater importance even for the costs as an explanation of the differences in the competitiveness of firm (Milgrom & Roberts, 1993).

Marshall established that economies of scale of production also depend on each company's own resources, of its organization and efficiency of management. In this way, Marshall introduced organizational activity as the fourth factor of production (Marshall, 1890:221, quoted by Sanidas, 2005).

An organizational activity can be the organizational innovation, and, inside this one, administrative innovation is found; it can be a previous and essential condition for technological innovations (Lam, 2005). It is not only a supporting factor for the innovation of a product and service, it also has a considerable influence on the results of the organizations (OCDE & EUROSTAT, 2005). Therefore it is unavoidable to carry out a research about predictors of administrative innovation.

From the logic of the principles which are the basis of the Resource-Based View, management and technical capabilities are based on internal resources (Eisenhardt & Martin, 2000). An organizational capacity refers to an ability of an organization to develop a structured set of tasks by means of organizational resources in order to achieve a final particular result (Helfat & Peteraf, 2003). Hence, it is considered that management skills resources generate capacities.

Capacities are the ones that cause creation, evolution and recombination of other resources into new ones, that is, they are the processes of organizations that use the resources to generate changes. Organizational and strategic routines are used to get new setting resources in organizations (Eisenhardt & Martin, 2000).

Specifically, the capacity to innovate involves the development of activities such as scientific, technological, financial, commercial, organizational and administrative operations, which are aimed to lead to introduce innovations (OCDE & EUROSTAT, 2005); that makes company efficiency and effectiveness based on internal resources (Bharathi, 2007; Utterback, 1994; Coutinho & Ferraz, 1995; Pinto *et al.*, 2006; Pasquini & Mendes, 2009; Griffy-Brown & Chun, 2007). Consequently, it is likely that some internal organizational resources are going to be managed and they will allow the creation of innovative administration capabilities.

The general topic about adopting innovation has resulted in plenty of research. However, this research is focused on analyzing the influence of methods development and organizational functions, in the introduction of new organizational methods in the workplace and in the organization of external relations (OCDE & EUROSTAT, 2005).

A review of literature suggests that knowledge is related to innovation (Constantinescu, 2009, Fong & Kwok, 2009; Nonaka, 1991; Milam, 2001; Wang & Ahmed, 2003; Broos & Cronjé, 2009; Liao & Wu, 2010). Moreover, innovation depends on different resources and organizational capacities (Griffy-Brown & Chun, 2007; Constantinescu, 2009; Conner, 1991; Fijalkowska, 2008), and it is likely that functions, methods and efficient organizational procedures imply growing organizational and innovation strategies (Wernelfelt, 1984; Damanpour 1991; Kimberly & Evanisko, 1981).

Based on the previous discussion, the research question is the following: To what extent organizational functions and methods influence administrative innovation? In order to answer the previous question and taking into consideration the perspective of the Resource-Based View (Wernerfelt, 1984; Barney, 1991), this research contributes to current knowledge about organizational innovation showing the influence of the development of methods of knowledge and training, the development of autonomy methods for employees, performance appraisal and decentralization of functions in innovative administration.

2 LITERATURE REVIEW AND HYPOTHESIS

The grow strategy implies a balance between the exploitation of existing resources and the development of new ones. Even organizations are positioned in a strategic way according to its resources and capacities, and they consider idiosyncratic resources (common and shared characteristics by members in a group of people) and capacities as main sources of growth and development when they cannot be duplicated by other organizations, once it allows to form strategies for value creation (Penrose, 1959; Wernerfelt, 1984; Griffy-Brown & Chun, 2007; Constantinescu, 2009; Barney, 1991, 2001; Conner, 1991; Eisenhardt & Martin, 2000; Grant, 1991, Barney, 1991; Hall, 1992; Peteraf, 1993; Ventura, 1996; Barney, Wright & Ketchen, 2001).

Wernerfelt (1984) established that resources of a company could be defined as assets – tangible and intangible –, which are semi-permanently linked to the organization. Examples of those resources are brand names, internal technology knowledge, employing qualified personnel, machinery, efficient procedures, and capital, among others[1]. Assets are implemented to create value for strategies.

Then, to the extent that organizations develop efficient procedures by considering transformations and changes within them, strategic initiatives that contribute knowledge to processes will be changed, selected and maintained, with results derived from strategic autonomous behavior of each organization (Caldart, Vassolo & Silvestri, 2010; Calderón, Cuartas & Álvarez, 2009).

These efficient processes can be, among others, organizational, that is, internal organizational resources are vulnerable to develop new capacities such as innovation.

Innovation can be the generation of a new product, of a new service, of new technology or of a new administrative practice (Nogueira & Marques, 2008); it is the adoption of ideas which are new to the organization that adopts them (Rogers, 1983).

In general, organizations can innovate through the development of new products and services, in order to differentiate them and get additional income, through the creation (generally known as process innovation), through optimization of manufacture or the innovation of processes which aim is to facilitate relationships with customers and the organization (ISI, 2006).

Among different types of innovation, there are three which have caught greater attention: administrative and technical innovation, product and process innovation, radical and incremental innovation (Damanpour, 1991).

However, scientists and strategic management professionals have begun to define innovation in a broader sense. They suggest that innovation activities take place in four different areas and they can be technical or non-technical. Product and process innovation represent technical innovation and product and service innovation as well as administrative innovation are within non-technical innovation (Kinkel, Lay & Wengel,

2004). In the same way, in the Oslo Manual, four types of innovation are distinguished: product innovation, process innovation, marketing innovation and organizational or administrative innovation (OCDE & EUROSTAT, 2005). Administrative innovation refers to recruitment policies, allocation of resources and authority, and task structure, as well as authority and reward tasks are related to management activities. It therefore implies that administrative components are connected to the structure or the social organization system. Technical innovations, in general, are related to technology and concerned by the products, services and the production/ technology process; they also refer to core activities (Daft 1978; Damanpour, 1991).

Administrative innovation refers to a change in the way decisions are taken: changes in the allocation of responsibilities, in the way the information is structured, and in communication structures within the organization (Greenan, 2003).

In other words, it is a way in the organization to face the structure and processes which are significantly different from the current practices in the organization and have an economic impact (Schienstock, Rantanen & Tyni, 2009). It is defined as "the implementation of changes in business practices that improve the capacity to innovate, as well as the company performance" (ISI, 2006, p.65).

Administrative innovation is "the introduction of a new organizational method in the practices, in the organization of a workplace, or in the external relations for the organization" (OECD, 2005:62). It involves organizational components and it is connected to the organization social system. Then, it is considered that predictors could be crucial organizational methods that had not been used before by the organization and they are the result of strategic decisions taken by leaders within the organization who impact the achievement of organizational innovations (Daft, 1978); they also improve the results in the organization (OCDE & EUROSTAT, 2005; Ravinchandran, 2000).

Among these determining factors in the organization, it is found: the development of methods of knowledge and training, autonomy methods for employees, performance appraisal and decentralization of functions. Nonetheless, it must be specified that not only intangible organizational resources, such as knowledge and those related to human capital, have an impact on innovation; within organizations, there are other factors which allow it. Such is the case of the use of information and communication technologies which lead to major transformations in all organizational methods and that is why innovation activity gets the most benefit (Jiménez, Martínez & González, 2008). Even information and communication technologies represent a competitive advantage because they are capable of promoting innovation processes (patents and trademarks), so they are considered strategic organizational tools (Bond & Houston; 2003). Furthermore, it is essential to recognize that knowledge, on its own, gives opportunities to stimulate the creation of new knowledge and thus brings about innovation (Kogut & Zander 1992; Tsai & Ghoshal, 1998; Constantinescu, 2009; Fong & Kwok, 2009; Nonaka, 1991; Milam, 2001; Broos & Cronjé, 2009; Santos, Sanzo, García & Trespalacios, 2009; Liao & Wu, 2008; Liao & Wu, 2010).

Knowledge is the most important productive resource in terms of contribution to its value added and it also has great strategic importance (Grant, 1997). If organizations are based on knowledge, they can develop other capacities, and influence the efficiency and effectiveness of organizational performance (Daft, 1983, quoted by Barney, 1991).

No doubt, organizational elements in companies (people, processes and systems) are inherent to knowledge (Anand, Gardner

& Morris, 2007), and internal and external knowledge is important for organizations to innovate (Tsai, 2001; Santos, Sanzo, García & Trespalacios, 2009; Liao & Wu, 2010). When knowledge is produced, the innovation system as a whole influences the environment and its external conditions (Quintero-Campos, 2010). Consequently, knowledge generation and methods of knowledge and training can alter, change and improve organizational methods. If this is true, the development of methods of knowledge and training might have positive influence on administrative innovation.

According to the discussion above, the following hypothesis is suggested:

H1: The development of methods of knowledge and training has a positive effect on administrative innovation.

Alternatively, in addition to knowledge, other mechanisms are needed to make it possible to understand inherent challenges to the construction of new capacities in the organization, that is, to identify organizational systems and coordination mechanisms that should be established in order to develop new systematic capacities (Grant, 1996). Among these mechanisms, we consider the development of autonomy methods for employees, performance appraisal and decentralization of functions.

In general, autonomy for employees is referred to the freedom that is given to working groups and individuals to carry out their tasks in addition to the interdependence on them (Langfred, 2007). Autonomy encourages employees and working groups to take independent decisions that are used to improve organizational tasks, implicitly they give a higher degree of responsibility (Haas, 2010) and have influence on organizational performance. Due to the above, it is likely that the design of autonomy methods is a predictor of administrative innovation.

In accordance with the previous discussion, the following hypothesis is suggested:

H2: The development of autonomy methods has a positive effect on administrative innovation.

All around the world, performance appraisal is used in almost every single organization; basically, the process of performance appraisal allows an organization to measure, to evaluate the behavior and the achievements of individual members for a specified period of time (DeVries, Morrison, Shullman & Gerlach, 1981) and the importance attached to motivation, training and compensation has been vastly studied. However, it is important to consider its effectiveness to improve future organizational performance (Lee, 1985). One of these elements could be administrative innovation, as a key organizational element that improves results in an organization.

According to the discussion above, the following hypothesis is suggested:

H3: Performance appraisal has a positive effect on administrative innovation.

Decentralization of functions is defined as the degree in which decision taking is distributed to all parts of the organization and employees are able to take independent decisions about their job (Aiken & Hage, 1971). According to literature, it has been found that decentralization facilitates innovation in organizations (Ruekert, Walker & Roering, 1985; Damanpour, 1991). Therefore, it is likely that it may also have influence on administrative innovation.

In accordance with the previous discussion, the following hypothesis is suggested:

H4: Decentralization of functions has a positive effect on administrative innovation.

3 METHOD

3.1 Sample and data

This research has a quantitative approach with an exploratory effect, the situation was

examined as it was, and its design was not experimental or transversal (Creswell, 2009; Leedy & Ellis, 2002), with data gathering at a single moment. Data were used to explain organizational efficiency and effectiveness based on internal resources, and capacities should represent organizations which need a large extent building capability of administrative innovation due to high demands and social pressures. Hospitals are one of the most prone organizations to those pressures; hence, this research was carried out in hospitals, because in these organizations it is likely to observe the analyzed phenomenon. Hospital sampling was by convenience. However, hospitals were selected by looking for the most representative and convenient units for the research. The sample is formed by eight public hospitals in the State of Mexico: five general hospitals for all the people in the community; one high specialty hospital for all the people in the community; and two high specialty hospitals for beneficiaries. Likewise, in this sample six general and high specialty Colombian hospitals were included; those hospitals are from Tolima and Bogota.

The study of administrative innovation considers as unit of analysis middle-ranking and senior management within organizations, by virtue of managers, leaders and directors are the ones in charge of influence on employees and make them responsive, supportive and committed to the principles of the organization, from the knowledge (Kangas, 2009), therefore, over administrative innovation. In view of the foregoing, this is a managerial challenge and directors are the ones responsible for raising awareness about administrative innovation for personnel involved in processes (García, 2009). The participation in the sample in hospitals was voluntary and there was no control about its composition.

The research tool was administered to directors and middle-ranking (203) from different areas: medical, paramedical and administrative from Mexican hospitals.

The original number of answered questionnaires in Mexico was 203. However, 14 questionnaires were incorrectly answered and they were eliminated.

The final number of questionnaires analyzed was 183, this represents a participation fee of 93 percent.

The original number of answered questionnaires in Colombia was 55, this represents a participation fee of 90 percent.

Data were gathered through a research tool (questionnaire) carried out in Mexico from April to August in 2011; in Colombia, it was applied from November 2012 to June 2013.

The questionnaire was divided in two sections: the first one about demographic data (sex and age) and organizational (job position, area, seniority in the hospital and in the job position); the second part has a series of questions intended to measure the five variables of the study (administrative innovation, development of methods of knowledge and training, development of autonomy methods for employees, performance appraisal and decentralization of functions).

The items are based on literature and on the Oslo Manual (OCDE & EUROSTAT, 2005; ISI, 2006). For the questionnaire design, beyond the techniques of translation, adaptation and construction, (Muñiz & Hambleton, 1996), context (health sector) was considered, as well as new characteristics of the population (hospitals), unit of analysis – middle-ranking and directors - and a rhetorical review about the topic.

Reply options were defined in an ordinal scale with six options, which oscillated between 1 (extremely high) and 6 (very low).

To improve the questionnaire, content validation was carried out with a panel of experts (selected from a list of well-known experts in the field), whose suggestions were added to a second version of the questionnaire.

Before applying the questionnaire, a pilot-test was taken by 33 individuals (physicians, paramedics and managers) in a hospital of high specialty in Mexico.

3.2 Operational definition of the measures

Administrative innovation (Y) refers to the activities involved in administrative elements that affect the social system in the organization (Daft, 1978; Damanpour, 1991). Five questions related to new methods to organize routines, management procedures and power among employees were operationalized, as well as concepts of structure (OCDE & EUROSTAT, 2005; ISI, 2006).

The development of autonomy methods for employees (X_1) refers to the development of methods that influence the freedom that is given to working teams and individuals to carry out tasks, in addition to the interdependence in their tasks (Langfred, 2007). Three more questions referring to the development of new methods of responsibility attribution, autonomy of decisions and greater flexibility were also operationalized.

Appraisal performance (X_2) allows an organization to measure and evaluate behavior and achievements of an employee in a specific period of time (DeVries, Morrison, Shullman & Gerlach, 1981). Two questions related to individual assessments and the importance of wage systems based on performance were also operationalized.

Decentralization of functions (X_3) is defined as the degree in which decision taking is distributed to all parts in the organization and employees are able to take independent decisions about their jobs (Aiken & Hage, 1971). There were two questions about decentralization of functions for hospital service areas as well as administrative sections.

The development of knowledge methods and training (X_4) refers to the development of training methods and education as well as the development of tools, procedures, methods of knowledge exchange, information, knowledge use and skills inside and outside hospitals. Six questions were operationalized.

4 RESULTS

4.1 Sample characterization

From 244 middle-ranking and directors, 43% are men and 57% are women. Regarding age, there is similar ratio between ages from 25 and 35 years old and from 36 to 45 (34% respectively), 13.5% between 46 and 55 years old, only 3.7% is older than 56 years old and 3.3% did not answer.

In relation to job position, 16% works for medical and administrative area, 25.8% belongs to the medical area, 25% works for the administrative department and 17.6% belongs to the paramedical area.

With regard to job seniority, more than half of the sample has been there between 1 and 5 years (51.6%), 2% between 21 and 25 years and 4.5% for more than 26 years.

4.2 Comparison of variables averages in the research according to the group of hospitals in Mexico and Colombia

In accordance with the group of Mexican and Colombian hospitals, a student test was taken in order to compare averages among the variables studied. As it can be seen in table 1.

Values derived from Levene test showed significance ≤ 0.05 in all variables, the assumption of equal variances was not assumed.

All variables which depend on hospitals in Mexico and Colombia are perceived differently with the exception of performance appraisal. That is, regarding the variable related to performance appraisal, middle-ranking and directors agree that, in hospitals, regular individual evaluation is carried out and wage systems are based on performance appraisal.

For the other variables (development of autonomy methods for employees, decentralization of functions, development of knowledge and training methods, as well as administrative innovation), middle-ranking and directors in Mexico, in comparison to Colombia, are the ones who agree more with the variable.

TABLE 1 – Average comparison of variables studied according to the group of hospitals in Mexico and Colombia

	Group of hospitals	S	Mean	Std. D.	Average Standard error	t	Sig (bilateral)
Development of autonomy methods for employees	Colombia	51	3.22	1.01	.14	3.41	.001
	Mexico	189	2.64	1.23	.08		
Performance Appraisal	Colombia	51	3.23	1.07	.15	1.40	.164
	Mexico	189	2.97	1.51	.11		
Decentralization of functions	Colombia	51	3.04	.85	.11	2.14	.034
	Mexico	189	2.73	1.20	.08		
Development of knowledge and training methods	Colombia	51	3.02	.98	.13	2.36	.020
	Mexico	189	2.62	1.34	.09		
Administrative innovation	Colombia	55	3.15	.88	.11	3.08	.003
	Mexico	189	2.69	1.21	.08		

4.3 Sampling adequacy and Cronbach's Alpha

In order to validate the content of every single construct, the adequacy of measure called Kaiser-Meyer-Olkin (KMO) test was used. To define if the analysis is appropriate, Bartlett's test of sphericity was used. As it can be seen in table 2, constructs analyzed with KMO test range from 0.50 to 0.89; this range indicates regular adequate sampling (Kaiser, 1974) and Bartlett's test of sphericity is meaningful. With the aim to determine reliability of the instrument (questionnaire), as seen in table 2, Cronbach's Alpha was used. Acceptable values are observed (.784 to .940).

TABLE 2 – KMO Bartlett's test of sphericity and reliability

	Development of autonomy methods for employees (X_1)	Performance Appraisal (X_2)	Decentralization of functions (X_3)	Development of knowledge and training methods (X_4)	Administrative innovation (Y)
KMO test	0.689	0.500	0.500	0.891	0.500
Sig.	0.000	0.000	0.000	0.000	0.000
Cronbach's Alpha	0.843	0.801	0.784	0.941	0.871

4.4 Normality analysis

As it can be seen in table 3, the assumption of normality is verified through values of skewness and kurtosis; allowed values are among ± 2 (Pérez, 2008). With the statistical of asymmetry and skewness, it is proved that independent variables (development of knowledge and training methods, development of autonomy methods for employees, performance appraisal and decentralization of functions) proposed in the study are normal.

TABLE 3 – Normality

Variables	Skewness	Kurtosis
Administrative innovation (Y)	0.465	-0.504
Development of autonomy methods for employees (X_1)	0.375	-0.705
Performance appraisal (X_2)	0.381	-0.876
Decentralization of functions (X_3)	0.547	0.230
Development of knowledge and training methods (X_4)	0.552	-0.537

4.5 Linearity analysis and correlations

For this research, the assumption of linearity was evaluated through a partial correlation matrix and by comparing the significance of partial correlation with the confidence interval of 95% that corresponds to a significance of 0.05. The option of Zero order correlation was included. This option allows obtaining Pearson's coefficient of correlation among every pair of variables without the interference of a third variable. Furthermore, residues against the independent variable were plotted, no apparent pattern was seen.

In table 4, the value of significance from the relationship between independent variables (development of knowledge and training methods, development of autonomy methods for employees, performance appraisal, and decentralization of functions) can be observed with the dependent variable (administrative innovation) and it is under 0.05, corresponding to the level of reliability of 95%. Therefore, it is accepted that the relationship between the dependent variable and independent variables is linear.

TABLE 4 – Statistical descriptions, correlations and reliability coefficient

Variables	Mean	Std. D.	X_1	X_2	X_3	X_4	Y
Development of autonomy methods for employees (X_1)	2.78	1.21	1				
Performance appraisal (X_2)	3.04	1.44	.751**	1			
Decentralization of functions (X_3)	2.79	1.14	.679**	.568**	1		
Development of knowledge and training methods (X_4)	2.75	1.26	.809**	.830**	.605**	1	
Administrative innovation (Y)	2.80	1.16	.844**	.823**	.640**	.926**	1

Note. **Correlation is significant at the 0.01 level (2-tailed)

In table 4, correlations are also reported for the used variables in this study.

Meaningful correlation patterns were present in all intersections (100% with p≤0.01) and they were moderate to high. (0.568 to 0.926).

4.6 Multiple linear regression analysis

In order to test research hypotheses - that is, the positive influence on the development of knowledge methods and training about administrative innovation, the positive influence on performance appraisal about administrative innovation and the positive influence on decentralization of functions about administrative innovation -, verifying the combined effect of the variables, a multiple regression analysis was carried out (see table 5).

Durbin-Watson statistical has a result of 2.234, this means that residues (observations belonging to the sample) are not auto-correlated. The result of the standard error of the estimation was 0.3951. When this result is found close to the regression line or close to 0, it has a better model prediction.

In spite of that, it should be noted that data gathering is carried out at a single moment; the independence assumption is not infringed (Levine *et al.*, 2006).

TABLE 5 – Model (Multiple Regression Analysis)

Independent Variables	Administrative Innovation (Dependent Variable)				Collinearity Statistics	
	Unstandardized coefficients	Standardized coefficients Beta	t	Sig.	Tolerance	VIF
Development of knowledge and training methods (X_4)	0.579	0.630	13.96	0.000	0.232	4.312
Development of autonomy methods for employees (X_1)	0.238	0.248	6.51	0.000	0.325	3.077
Performance appraisal (X_2)	0.093	0.115	2.85	0.005	0.293	3.408
R^2		0.887				
R^2 adjusted		0.885				
Sig.		0.000				

As seen in table 5, functions and organizational methods (development of knowledge and training methods, development of autonomy methods and performance appraisal) contribute to explain 88.7% of administrative innovation, and a highly meaningful statistical model is assumed.

According to observed values of typified beta coefficients (table 4) it is seen that, in first place, variable X_4: development of knowledge and training methods (0.630) is the variable with most representation on administrative innovation; on second place, variable X_1: development of autonomy methods for employees (0.248); and at last, variable X_2: performance appraisal (0.115). For the decentralization of functions, variable (X_3), it is not representative because of the significance of "t" value (0.112), superior to value 0.05, which corresponds to reliability level of 95%; this means that meaningful relation between this variable and the dependent variable administrative innovation (Y) does not exist.

The variance inflation factor (VIF) shows values below 5 (see table 5), and the tolerance shown for each one of the independent variables is in an acceptable level (Martín, Cabero & De Paz, 2008). Therefore, there is no presence of correlation between independent representative variables in the regression model.

As a result, and according to the regression model analysis (table 4) specifically with non-standard coefficients, the following hypotheses are accepted:

H1: The development of knowledge and training methods (X_4) has a positive effect on administrative innovation (Y).

H2: The development of autonomy methods (X_1) has a positive effect on administrative innovation (Y).

H3: Performance appraisal (X_2) has a positive effect on administrative innovation (Y).

Furthermore, hypothesis four, decentralization of functions has a positive effect on administrative innovation (Y), is rejected.

5 DISCUSSION

Literature about the incidence of organizational predictors over administrative innovation is vast but it is different when it refers to the development of functions and organizational methods for administrative innovation, such as the development of knowledge and training methods, the development of autonomy methods for employees, performance appraisal and decentralization of functions.

With this study, a positive association was detected among the variables observed, even in a high meaningful way. According to middle-ranking, medical directors and paramedics who took part in the study from Mexico and Colombia, functions and organizational methods - specifically the development of knowledge and training methods, the development of autonomy methods as well as performance appraisal - are associated with administrative innovation. Although the development of knowledge and training methods, the development of autonomy methods and performance appraisal contribute to explain 88% of the variability of administrative innovation capacity, the decentralization of functions does not apply.

Regarding the hospital: 1) it must encourage the development of training and education methods, as well as the development of tools, procedures and methods, knowledge exchange, information, knowledge use and skills inside and outside hospitals; 2) when autonomy methods for employees are developed, they influence freedom given to working groups and individuals to carry out their tasks in addition to the task interdependence; 3) when performance appraisal takes place in hospital and administrative areas, new methods to organize routines, procedures and management procedures, allocation of responsibilities and power among employees could be developed, as well as new structuration concepts for workplace, organizational practices and external relationships.

The above, in general, is coincidental with Torrent-Sellens and Ficapal-Cusi (2010) study. They found out that in organizations (related to technology use) knowledge, labor relations based on safety at work as well as flextime have a positive influence on the growth potential in the organization in the long term.

According to knowledge and training, it is observed that the development of knowledge and training methods is the variable of greater representation about administrative innovation. This study is coincidental with the results obtained by Cheng and Mohd (2010), who carried out studies in 171 manufacturing enterprises in Malaysia, since they got similar results.

This research agrees with Tannien, Jantunen and Saksa's (2008) findings, once administrative innovation needs organizational changes at the same time in which innovation is taking place. Consequently, the development of functions and organizational methods are also predictors of achieving administrative innovation.

6 CONCLUSIONS

From Resource-Based View perspective, what generates value to organizations, apart from internal resources, are capacities that introduce new knowledge or strengthen the ones that already exist. That is why the mechanisms that make possible to understand inherent challenges to build new capacities in the organization - such as the development of knowledge and training methods, the development of autonomy methods for employees and performance appraisal - turn

into internal capacities in the organization that may influence the capacity of innovation and thereby administrative innovation.

The development of knowledge and training methods, the development of autonomy methods for employees and performance appraisal are efficient strategies that contribute to place organizations strategically according to their own resources and capacities. This involves generation of innovation, growth and development when it cannot be duplicated by other organizations, as well as it allows forming strategies for the creation of value.

With the results of this research, it is possible to consider that decentralization of functions for hospital services and administrative areas are also determined by other restrictive factors which affect the achievement of innovation.

From the Resource-Based View emerges an aspect that emphasizes that knowledge should be considered as the most valuable resource that an organization may have (Zack, 1999). It is called resource-based knowledge, and its basis is that an organization is a deposit of knowledge: it is able to generate it and apply it (Grant, 1996; Conner & Prahalad, 1996). This perspective agrees with the results of this research; the development of knowledge and training methods is basic for the development of other capacities that lead to creation, evolution and recombination of other resources into new ones or in processes that the organization uses to create total changes, such as administrative innovation.

Value creation and the improvement of the organization can be generated, among others, with the development of functions and organizational method, through the identification and creation of predictors generators of administrative innovation, that is, the one that is referred to management components. It is even connected to the structure or social system in the organization (Daft 1978; Damanpour, 1991), or the one that refers to a change in the way decisions are taken, a change in the allocation of responsibilities or a change in the structure and processes that are significantly different from current practices in the organization and have an economic impact (Schienstock, Rantanen & Tyni, 2009) - or the one that implements changes in business practices that improve the innovation capacity and the performance of an organization (Schienstock, Rantanen & Tyni, 2009).

Thought the results of this research, it could be shown that in a sample of middle-ranking and hospital directors, paramedics and managers who work in Mexican and Colombian hospitals, there is positive influence of functions and organizational methods in administrative innovation, and this study contributes to current knowledge about organizational innovation to prove relationship with administrative innovation.

Future issues of study might carry out empirical evidence in another kind of organizations, in order to verify the association of variables and determine the effect of these predictors in administrative innovation based on non-hospital characteristics, as well as the identification of other predictors.

When measurement of variables is considered in this study, longitudinal research studies are recommended.

Finally, one of the biggest limitations in this study was the range of the sample, and it is recommended to consider conclusions with caution. A second limitation was the use of only one measurement tool for data gathering.

NOTA

1. "By a resource is meant anything which could be thought of as a strength or weakness of a given firm. More formally, a firm´s resources at a given time could be defined as those (tangible and intangible) assets which are tied semipermanently to the firm. Examples of resources are: brand names, in house knowledge of technology, employment of skilled personnel, trade contacts, machinery, efficient procedures, capital, etc…" (Wernerfelt, 1984: 172).

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