INDIVIDUAL COMPETENCIES AND INNOVATION MANAGEMENT: A Comparative Study on Integration Practices

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ABSTRACT

The goal of this article is to identify the practices for the integration of individual competencies in innovation management through a comparative study between two companies with different characteristics. To achieve that, we carried out a literature review on the elements of individual competency and innovation management to guide the definition of research variables and the construction of the proposal for a comparative analysis. The research paper presents a quantitative and descriptive analysis to verify the information raised through internal surveys conducted in the two studied companies. Statistical correlation analysis was used for the investigation. The results indicate a positive interference of individual competency elements in the integration of innovation management elements practiced by the analyzed companies. The monitoring of individual competencies may be carried out by models of managerial competencies able to guide the implementation of human development activities.

Keywords: *individual competencies, innovation management, survey, integration*

INTRODUCTION

Technological changes emphasize the development of individual competency for the success and competitive advantage of companies (DREJER; RIIS, 1999). Strategic management of human resources has increasingly sought to combine its practices to business innovation strategies given the current turbulent and changing environment (DREJER, 2000; HAGAN, 1996; HUSELID; JACKSON; SCHULER, 1997; JAYARAM, DROGE; VICKERY, 1999; KATZ, 2006; MILLS *et al.* , 1998; RAY, BARNEY; MUHANNA, 2004; SCHULER; JACKSON, 2005).

Management of human resources through the competency development process may help companies to become competitive by enabling them to recognize and exploit technological opportunities (LE BOTERF, 2003; LAWLER III, 1994; SANDBERG, 2000; SCHROEDER; BATES; JUNTILLA, 2002).

In order to innovate, a company must find out what such opportunities are, establish an appropriate strategy, be able to transform inputs into real innovation and do so faster than its competitors (MANUAL DE OSLO, 2007). Thus, it is possible to highlight that the innovativeness of enterprises no longer relies only on the industrial potential or on the costs of research and development (R&D), but also depends on the use of differentiated resources and skills (LE BOTERF, 2003).

In light of this fact, models of individual competencies emerge as a distinct contribution to companies in search of innovation. The manifestation of these models is supported by the rapid development of information technology caused by generality, formalization and sharing of knowledge and experience.

The aim of this study is to identify the practices for the integration of individual competencies in innovation management through a comparative study between two companies with different characteristics; and so, some variables of analysis are highlighted, focusing on important individual competencies for certain innovation management activities.

The article is divided into 4 sections. Section 1 presents a theoretical framework on elements and research variables of individual competency and innovation management. Section 2 defines the main methodological aspects of the research study. Section 3 presents the analysis and the discussion on results of the internal surveys conducted. Section 4 highlights the concluding remarks of the present study based on an integrated analysis of individual competencies and innovation management.

2 THEORETICAL FRAMEWORK

2.1 Individual Competency

Some studies on individual competency (LE BOTERF, 2003; LE DEIST; WINTERTON, 2005; SANDBERG, 2000; ZARIFIAN, 2001) reinforce the notion that competency is developed through the individuals' interaction with their environment for three main reasons: to take responsibility; to be recognized and rewarded as skilled people, and due to the use of practical intelligence directed to work situations.

The concept of competency is associated with the idea of aggregation of value and delivery in the work context, regardless of the post studied. The focus of the concept shifts from being only the stock of knowledge and skills to being how the person mobilizes their stock of knowledge, experiences and initiatives in a dynamic and specific context.

Thus, the concept of individual competency discussed in this article involves the study of four main elements: knowledge, skills, attitudes and results (DUTRA, 2004). Knowledge represents the set of beliefs held by an individual about the causal relations between phenomena, and their likely consequences (FLEURY, 2001). The sum of the accumulated knowledge of the people in the organization is the result of the interaction that occurs in the workplace and reflects the effect of the associations of experiences, intuition and values of the people (FLEURY; OLIVEIRA JUNIOR, 2001).

Skills are characterized by a person's ability to exercise tasks, activities and functions. They involve knowing how to do something, which is necessary for the execution of a given set of roles and responsibilities within the organization. They are acquired by training, practice and communication and are measured by qualification methods applied by legitimate entities (DUTRA, 2004).

Attitudes are pondered taking into account the effort and behavior of the people at work. The effort involves the quality of the aggregation of results to the company; whereas behavior must be dealt with through evaluations and through the implementation of actions to assist in the review of individual competencies (DUTRA, 2001).

Results represent a person's production and delivery and lead to experience acquired, mainly through reflecting on past successes and mistakes. Performance management aims at assessing the set of deliverables and results achieved by professionals to the organization, indicating a relationship between the human resource management system and the overall development of the firm (DUTRA, 2001).

2.2 *Innovation management*

Innovation management refers to the set of activities within a company that are capable of creating conditions to facilitate the effective management of multiple challenges under high levels of uncertainty (TIDD; BESSANT; Pavitt, 2008). Thus, it depends on specific contextual factors that guide the flexibility of strategic choices by the standards of the current demand (ORTT; DUIN, 2008).

In innovation management, the kind of innovation or who is involved in the decision-making process is not questioned (TIDD; BESSANT; PAVITT, 2008), but rather, what processes need to be made by the company in order to develop particular forms of behavior capable of guiding the work routine toward innovation.

In this specific research study, innovation management involves the study of the following elements: research and development, organizational culture and technology transfer.

Research and development activities include basic research, applied research, and experimental development. Basic research is intended to generate knowledge to better understand the nature around us, without necessarily seeking a solution to a specific problem in the short or medium term. It is generally carried out in universities and research institutions with or without business partnerships (MINISTRY OF SCIENCE AND TECHNOLOGY [MICT], 2001).

Applied research can be understood as original research, conducted out of interest in acquiring new knowledge with practical purposes. It is generally a project carried out to explore promising results of a basic research program. Experimental development involves the systematic use of technical and scientific knowledge to demonstrate the feasibility of adopting new materials, products, equipment, services and processes. In general, prototypes, plants, etc., are built (IMCT 2001).

Organizational culture, in turn, relates to a total system of beliefs and principles that lead the members of the organization to share common meanings and to coordinate actions to achieve goals (ROGERS, CARAYANNIS, KURIHARA & ALLBRITTON, 1998). The implementation of innovation depends on the organizational culture created by strengthening individual competencies, incentives and training programs in communication and teamwork (LAU; NGO, 2004).

Technology transfer refers to a special communication process that usually involves R&D activities to develop technology, and commercialization activities in the market for services and products (ROGERS et al., 1998). Technology is only fully transferred when it is commercialized as a product or service, as then innovation is absorbed in a market (CRIBB, 2009; HALL, 2004).

It is noted that activities of technology transfer are grouped in the management process oriented to the integration of research and development activities with the market, focusing on the incorporation of knowledge and technology in the production process; the monitoring of economic and social impacts; and the further development of the R&D process.

There are several mechanisms used for technology transfer (ROGERS, TAKEGAMI, & YIN, 2001). Among the main ones, we could mention: spin-off (partnerships for product development and technology transfer); licenses and patents; publications; meetings and conferences; and cooperative R&D agreements.

It is clear, then, that the innovation management elements reinforce the dynamic capacity of the company to change its configuration of product development resources and thus are used as mechanisms of survival and renewal by the companies.

3 METHODOLOGY

To achieve the goal of this study, two companies with different characteristics in the State of São Paulo - Brazil were chosen for their availability to participate in the research study. Next, both companies were analyzed and compared in order to verify the existence of differences between them, whether significant or not, related to issues of individual competencies and innovation management (Table 1).

The number of companies was chosen with the intention of comparing companies with different market contexts and characteristics. The companies were chosen for their recognition in the market in which they operate; for their strategic focus on innovation management; due to the fact that they were starting a competency management program for people development; and also for their availability to take part in the research. Other companies were also contacted but were not willing to cooperate.

Data on the companies were obtained through the following data collection instruments: bibliographic research; interviews and self-completion questionnaires carried out by email with employees with practical experience in the problem under study; and information raised from institutional materials.

As a descriptive study method, an encoded questionnaire with closed questions - *survey* - considered to be the most suitable questionnaire for quantitative studies was used. Its use is justified by two main reasons: (i) it allows the realization of a cross sectional study of statistically synthesized data collected at a single point in time and (ii) it is a procedure for collecting primary data - beliefs, opinions, attitudes, experiences and life styles - from individuals (HAIR JR et al., 2005).

Non-probability or intentional sampling was chosen for the study, since the researcher used subjective methods to select the elements of the sample, which represents the target population and has a specific purpose (HAIR JR. Et al., 2005).

The target population consists of people from the surveyed companies who were directly linked to the research problem. Two samples were constructed through spontaneous responses to an internal survey conducted separately with the companies employees A (N = 54) and B (N = 51).

Table 2, below, present some variables of analysis that highlight the relationships between individual competencies and innovation management for data analysis.

Accordingly, in the studied companies, we carried out internal surveys using seven-point Likert-type scale questionnaires to measure the opinions of employees from the surveyed companies. For each point on the scale, a label was created to express the intensity and/or importance of the respondents' views.

The response options corresponded to values on the scale where "1/Strongly Disagree" indicated that the variable did not have any relevance and "7/Strongly Agree" that the variable was very relevant to innovation management. As for issues regarding individual competency variables, the scale values were "1/Very Insignificant", indicating that the variable had no relevance and "7/Very Important", indicating that it was a very relevant variable.

The reliability of the questionnaire is guaranteed by analyzing the degree to which the measurements are free from random errors. The Cronbach's alpha (α) measures (i) the reliability of the internal consistency of questionnaires - consistency of the results of items of a given research study and (ii) the reliability among evaluators - consistency of the estimate about the same phenomenon by different evaluators (FREITAS; RODRIGUES, 2005).

The questionnaire was pre-tested to verify the clarity of the described information and the reliability of the answers obtained from the questionnaire. The analysis of the questionnaire based on the 21 research variables showed a Cronbach's alpha (α) of 0.817, which is very good in relation to intensity of association between the discussed concepts, as shown in Table 3. This level of reliability indicates the responders' understanding and consistency with respect to the questions (HAIR JR. et al., 2005).

Statistical analyses of the data collected - hypothesis test and correlation analysis - were conducted in the internal surveys. The tabulation and processing of inferential statistics data were performed with the SPSS software - *Social Package for Social Science*.

In order to verify the existence of systematic relationships between two or more variables and obtain an integrated view of each company studied, statistical correlation analysis was performed; since this analysis allows one to know the behavior of one or more variables and predict the behavior of another variable (HAIR JR. et al., 2005).

4 ANALYSIS AND DISCUSSION OF RESULTS

4.1 Characteristics of Company A

Company A is a decentralized regional research unit under the Ministry of Agriculture, Livestock and Supply. Created in 1975, it has several research programs, encompassing the areas of beef cattle, milk cattle, horses and forage crops. For each area, research projects are established seeking to meet the demands for competitive technological solutions for the benefit of society.

4.1.1 Individual competencies

Based on the information provided by the respondents, it was noted that Company A is increasingly concerned with the requirements and future needs for products and services by its users. Therefore, it focuses on specific technical expertise for the development of research projects and on breaking paradigms to develop competitive competencies.

There are no individual competency management models established in the company up to date. However, since 2006, the company has been working on a skills mapping pilot project to be implemented in the future in its other decentralized units.

The competency mapping project seeks to develop and validate a methodology for quantitative and qualitative staff dimensions in the decentralized Units and is aligned to technological innovation results. The balance of this project will guide the hiring policies, handling and training of people.

Among the practical initiatives of the pilot project for the development of individual competencies required for

the work, the people management policy, focused on new challenges of the unit, is highlighted: the renewal of the staff, the redefinition of roles and retraining. The pilot project of competency mapping aims to provide feedback information to employees on individual competencies in order to guide the training and professional development practices and the awards for work projects.

Specifically in relation to training practices, Company A offers many opportunities for the valorization of technical and scientific skills and adherence competencies to its organizational values, so that people are able to perform their occupational roles with initiative and creativity.

Aiming at boosting its innovative potential, the company believes that the managing of individual competencies is able to maintain and exceed the results of the products and services offered, as it allows (i) the current and necessary competencies to be defined; (ii) the possibility of interaction between projects and between Units to be established; and (iii) future scenarios for growth to be outlined.

4.1.2 Innovation management
All monitoring of innovation management is directed at the strategic level of the Unit, the III Unit Master Plan, which is based on the guidelines of Company A's Board of Executive Directors and prepared according to the analysis and consultations with researchers and specialists of the internal and external environments.

Issues related to organizational culture reflect the entrepreneurial environment of the organization. By consulting the corporate website, it is possible to notice the company really points out trends by providing scientific publications, services offered, event news and research developed in the Units.

Specifically in relation to activities of research and development, there are several research programs in the areas of beef cattle, milk cattle, horses and forage crops. The research projects are specific to each area in order to generate a set of technologies, products and services and corroborate the recognition of the company in the market.

Company A's initiatives in relation to activities of technology transfer began to have greater emphasis in 1999, aiming at a greater integration between research and development activities and market needs. Such technology transfer activities follow guidelines based on its organizational mission, regional development, integration of internal processes, social responsibility and brand strengthening.

4.2 Characteristics of Company B
Company B is a Unit of a multinational company that operates on five continents with factories in 30 countries. In Brazil, the company started its activities in 1969. Currently, the products it develops, which follow the certified quality standards under ISO 9002 and ISO 14001, are technological solutions derived from fiberglass and characterized as composites.

4.2.1 Individual competencies
With regard to individual competencies, Company B strives to retain its best employees and, in order to do so, it offers everyone an environment conducive to creativity; values teamwork; creates opportunities for professional growth, and empowers employees through internal and external training.

The individual competency management model set up in the company is still linked to job descriptions and is still not individual. A competency matrix is under implementation and will allow the determination of each employee's current competencies and competencies that should be developed. Establishing the competency matrix is a priority for Company B in order to design its next training plan.

Company B clearly understands the relationship between individual competencies and innovation management, because it presents practical initiatives for the development of competencies necessary for the work. The first initiative relates to training to develop the competencies of each employee; the second, to incentive programs to reward the generation of ideas through a promotion program and through a program that gives employees the opportunity to make suggestions for improvement, which are then evaluated by a committee, and according to the return (acceptance) of the idea, it is awarded.

There are individual performance assessments in the Company B and its result is used to: assess the need for training, develop skills necessary to improve the next evaluation, and for promotions, in the case of hourly employees. Therefore, seeking to improve its employees' performance, Company B gives information feedback to employees about their individual competencies.

4.2.2 Innovation management
Values and organizational practices drive the innovative behavior of employees. Consequently, market development and the creation of new technology aimed at competitive advantage, direct the activities of research and development (R&D) in the company.

Research and development (R&D) activities are related to the routines of the engineering and product development departments, and have as their main focus the manufacturing of products and provision of services in accordance with the feasibility to meet its consumer needs.

The company's main initiatives for technology transfer and for the access of its products and services in the consumer market are directly related to the provision of technical information and technical support, costs for investment, manufacturing support and market support. Besides, other customer services are provided.

4.3. Statistical analysis of the data collected
The tabulation of the correlation data is done using the Spearman coefficient, recommended for the measurement of the intensity of the relationship between ordinal variables. When the analyzed variables are associated, they present covariance because a coherent variable changes in relation to the other variable. (HAIR JR. et al., 2005).

The correlation analysis depends on statistically significant covariates. The correlation coefficient measures the strength of association and, for such, the coefficient size used must be at least the moderate index with an interval of ± 0.41 to ± 0.70 in order to quantitatively describe the strength of association between two or more variables. If the correlation coefficient is strong and statistically significant, one may conclude that there is a relationship between the variables.

Tables 1 and 2 show the correlations between the variables of individual competency and innovation management of companies A and B, respectively. The correlations with practical significance for the study of the variables are highlighted with shadow, even if the coefficient does not reach the moderate level <0.40. Significance levels below 0.05 (<0.05) are marked with *; whereas levels of significance lower than 0.01 (<0.01) are indicated with **. Table 3 summarizes the main correlations for the level of p <0.01 between the individual competency variables and innovation management variables in Company A.

By analyzing such correlations, it is possible to note that the attitudes do not relate to any element of innovation management. The strongest highlighted association is that between organizational culture and research and development activities and human competencies aimed at generating results. This corroborates Company A's main focus - developing research projects directed to market needs - and the main employee evaluation method, guided by the results of these projects.

Company A is concerned with strengthening its organizational culture toward research and development activities and does so by enhancing individual competencies focused on technical knowledge, without highlighting the importance of attitudes in the innovation process.

The synthesis of significant associations between variables to the level of p <0.01 in Company B is shown in Table 4. Upon assessing the correlations, one notes that there is great interaction between individual competencies and innovation management, with clear emphasis on indexes of technology transfer and results.

By comparing Tables 3 and 4, one notes that Company B has more associations than Company A. This confirms Company B's scenario, based on innovation activities and clearly focused on the access of its products and services to the end users and on important individual competencies for generating knowledge and for promoting interaction attitudes among work teams. Internal communication and the interoperability among teams influence innovation management in companies A and B.

6 CONCLUDING REMARKS
Seeking to contribute to studies on organizations, this article compares two companies with different characteristics in order to identify their practices for the integration of individual competencies in innovation management. It presents a quantitative study, which researches the relationship among defined elements, more specifically between four elements of individual competencies - knowledge, skills, attitudes and results - with three innovation management elements - organizational culture, research and development, and technology transfer.

It was noted that the two studied companies have a clear focus on innovation in their management activities: Company A, which is public, is mainly guided by research and development initiatives, whereas Company B is guided by technology transfer initiatives.

When the research data were being raised, the two companies signaled the implementation of a competency mapping system to manage the individual competency attributes of their employees, since individual competency management models seek to integrate accumulated human capacity with work processes practices over time. Thus, such a model presents itself as an important dynamic model to be integrated to innovation management.

Structures of individual competencies are typically seen as a link between the development of people and business strategy, aligning the strategic objectives of a company with its key human resource management processes. Depending on the strategic focus of the studied company, it is possible to notice which individual competencies are necessary for the activities of innovation management. The identification and monitoring of individual competencies can be made through competency-management models, which are able to guide the planning and implementation of human development activities.

In order to better explain the above phenomenon through the results obtained from the statistical correlation analysis, this study shows that the positive interference of the elements of individual competencies varies depending on the integration of innovation management elements practiced by the company in question.

The use of a small number of companies was due to the intention to carry out detailed analysis and find consistent evidences for the study on the subject. From a statistical point of view, the results are only valid for the comparison between the two studied companies; however, they allow those interested in the importance of developing individual competencies for innovation management to make suggestions and inquiries, as well as point the direction to future studies.

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TABLE ANNEX

Table 1 - General characteristics of the studied companies

EMPRESA	LOCAL	FIELD OF WORK	EQUITY CONTROL	STRATEGIC FOCUS
Company A	São Carlos Unit SP/Brazil	Agribusiness	National / public	Research and development
Company B	Rio Claro Unit SP/Brazil	Industrial	Multinational	Excellency in products and services

Table 2 - Elements and analysis variables

	Elements	Research Variables	Sources
INDIVIDUAL COMPETENCIES	**Knowledge**	Prospective knowledge	Walsworth & Verma (2007), Marsh & Stock (2006) Dutra (2004)
		Technical knowledge	Damapour (1991) Dutra (2004) Marsh & Stock (2006)
		Knowledge for diagnostic	Damapour (1991) Dutra (2004) Marsh & Stock (2006)
	Attitudes	Leadership	Walsworth & Verma (2007) Katou & Budhwar (2006) Damapour (1991) Brown & Eisenhard (1995) Dutra (2004)
		Teamwork	Walsworth & Verma (2007) Laursen; Foss (2003) Dutra (2004) Brown & Eisenhard (1995)
		Participation	Laursen & Foss (2003) Damapour (1991)
	Skills	Integrated view of processes	Koc, 2007 Damapour (1991)
		Use of technical information	Katou & Budhwar (2006) Damapour (1991) Dutra (2004)
		Effective communication	Walsworth & Verma (2007), Damapour (1991)

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	Results	Generation of ideas	Koc, 2007
		Experiences and prospects	Koc, 2007
		Performance management	Walsworth & Verma (2007) Moore, Cheng & Dainty (2002)
INNOVATIO MA NAGEMENT	**Research and Development**	Alignment between internal processes and organizational strategy	Laursen & Foss (2003) Cooke (2007)
		Multifunctionality	Laursen & Foss (2003) Walsworth & Verma (2007) Brown & Eisenhard (1995)
		Information sharing	Laursen & Foss (2003) Walsworth & Verma (2007) Cooke (2007)
	Organizational Culture	Organizational environment	Hailey (2001) Lau & Ngo (2004)
		Organizational values	Hailey (2001) Lau & Ngo (2004)
		Internal and external articulation	Hailey (2001) Lau & Ngo (2004) Danneels (2002)
	Technology Transfer	Product and service access in the market	Walsworth & Verma (2007) Mcfadzean, O´Loughlin & Shaw (2005)
		Patents	Damapour (1991) Hall (2004)
		Publications	Cooke (2007) Hall (2004)

Table 3 - Cronbach's alpha coefficient (α) of the questionnaire used in the study

Cases	**N (respondents)**	**%**
Valid	**10**	**100,0**
Excluded	**0**	**0,0**
Total	**10**	**100,0**

Cronbach's Alpha	**Variables**
0,817	**21**

Variation in the Alpha Coefficient	**Association intensity**
<0,6	**Low**
0,6 a < 0,7	**Moderate**
0,7 a < 0,8	**Good**
0,8 a < 0,9	**Very good**
0,9	**Excellent**

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Table 1 - Spearman correlation - Company A

		Important individual compentency variables for innovation management											
		Knowledge			Skills			Attitudes			Results		
Innovation management variables		Innovation capacity	Technical knowledge	Knowledge for diagnostic	Integrated view of processes	Use of technical information	Effective communication	Leadership	Teamwork	Participation	Generation of ideas	Experiences and Prospects	Performance Management
Organizational Culture	Organizational environment	0,214	0,065	0,425**	-0,013	-0,068	-0,157	-0,017	-0,005	-0,104	0,082	0,135	0,158
	Organizational values	0,199	0,255	0,290*	0,383**	0,299*	0,065	0,157	0,201	0,276*	0,412**	0,453**	0,275*
	Internal and external articulation	0,424**	0,233	0,078	0,143	0,284*	0,077	0,209	0,121	0,221	0,027	0,147	0,290*
Research e Development	Alignment between processes and strategies	0,137	0,343*	0,444**	0,395**	0,340*	0,024	0,033	0,052	0,208	0,240	0,446**	0,167
	Multifunctionality	0,227	0,225	0,335*	0,273*	0,300*	0,120	0,244	0,189	0,249	0,295*	0,333*	0,386**
	Information sharing	0,254	0,143	0,259	0,119	0,195	0,082	0,264	0,254	0,192	0,330*	0,244	0,361**
Technology Transfer	Access to products and services	0,281*	0,195	0,210	0,303*	0,193	-0,074	-0,022	0,032	0,123	0,050	0,001	0,142
	Patents	-0,105	0,336*	-0,031	0,139	0,282*	0,155	0,262	0,031	0,333*	0,018	0,113	0,346*
	Publications	-0,014	0,245	0,024	-0,051	0,355**	0,496**	0,301*	0,127	0,257	-0,078	0,099	0,289*

(** Correlation is significant at the level of p <0.01; * Correlation is significant at the level of p <0.05)

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Table 2 - Spearman Correlation - Company B

Innovation management variables		Important individual compentency variables for innovation management											
		Knowledge			Skills			Attitudes			Results		
		Innovation capacity	Technical knowledge	Knowledge for diagnostic	Integrated view of processes	Use of technical information	Effective communication	Leadership	Teamwork	Participation	Generation of ideas	Experiences and Prospects	Performance Management
Organizational Culture	Organizational environment	0,200	-0,036	0,039	0,175	0,228	0,087	0,120	0,214	0,276*	0,283*	0,262	0,140
	Organizational values	0,118	-0,053	0,351*	0,177	0,277*	0,017	0,258	0,380**	0,266	0,314*	0,423**	0,194
	Internal and external articulation	0,364**	0,179	0,331*	0,225	0,183	0,061	0,215	0,404**	0,149	0,383**	0,149	0,413**
Research e Development t	Alignment between processes and strategies	0,077	0,397**	-0,097	-0,041	-0,056	-0,060	0,108	-0,044	0,286*	0,080	0,033	0,365**
	Multifunctionality	0,057	0,131	0,179	0,189	0,114	-0,060	0,099	0,319*	-0,066	0,173	0,440**	0,168
	Information sharing	0,327**	0,109	0,233	0,245	0,348*	0,027	0,340*	0,481**	0,209	0,540**	0,346*	0,287*
Technology Transfer	Access to products and services	0,067	-0,095	0,379**	0,300*	0,569**	-0,067	0,358**	0,286*	0,334*	0,396**	0,111	0,291*
	Patents	0,181	0,379**	0,147	0,417**	0,201	0,272	0,402**	0,220	0,265	0,087	0,428**	0,530**
	Publications	0,167	0,388**	0,041	0,223	0,049	-0,028	0,124	0,142	0,184	-0,043	-0,019	0,120

(** Correlation is significant at the level of p <0.01; * Correlation is significant at the level of p <0.05)

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Table 3 - Number of significant correlations of Company A at the level of p <0.01 between individual competencies and innovation management

COMPANY A	**Individual Competencies**				
Innovation management	Knowledge	Skills	Attitudes	Results	**Total**
Organizational Culture	2	1	-	2	**5**
Research and Development	1	1	-	3	**5**
Technology transfer	-	2	-	-	**2**
Total	**3**	**4**	**-**	**5**	**12**

Table 4 - Number of significant correlations of company B at the level of p <0.01 between individual competencies and innovation management

COMPANY B	**Individual Competencies**				
Innovation management	Knowledge	Skills	Attitudes	Results	**Total**
Organizational Culture	1	-	2	3	**6**
Research and Development	2	-	1	3	**6**
Technology transfer	3	2	2	3	**10**
Total	**6**	**2**	**5**	**9**	**22**