Transfer of tacit knowledge - Proposal of model and test in preparatory course

Transferência do conhecimento tácito - Proposta de modelo e teste em curso preparatório

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ABSTRACT

This article seeks to analyze the factors perceived as relevant to the transfer of tacit knowledge in a preparatory institution of higher education according to the model previously used in technology-based industry by Lemos (2008) and Mendes (2014). To achieve this goal we carried out a descriptive and quantitative research using a questionnaire with data processing through exploratory factor analysis and structural equation modeling. The adopted model of tacit knowledge transfer included the dimensions: organizational model, organizational structure, management strategy and idiosyncratic factors. In structural equation modeling any of the analyzed dimensions were considered significant to the transfer of tacit knowledge in the organization in question. The dimensions idiosyncratic factors, organizational structure and management strategy exhibited strength in the opposite direction to the transfer of tacit knowledge and organizational model size did not influence positively or negatively the transfer of tacit knowledge in the research organization. This provided reflections in the organization where it occurred, and model analysis also indicates that studies in other segments are needed to advance the relationship between the transfer of tacit knowledge and the dimensions analyzed.

KEYWORDS: Knowledge transfer; Organizational model; Idiosyncratic factors; Organizational structure; Knowledge management.

RESUMO

Este artigo buscou analisar os fatores percebidos como relevantes para a Transferência de conhecimento tácito em uma instituição preparatória de ensino superior de acordo com modelo anteriormente utilizado em setor de base tecnológica por Lemos (2008) e Mendes (2014). Para alcançar esse objetivo realizou-se uma pesquisa descritiva e quantitativa utilizando um questionário com tratamento dos dados por meio de análise fatorial exploratória e modelagem de equações estruturais. O modelo adotado de Transferência do conhecimento tácito incluiu as dimensões: Modelo organizacional, Estrutura organizacional, Estratégia de Gestão e Fatores idiossincráticos. Na modelagem de equações estruturais nenhuma das dimensões analisadas foram consideradas significativas à Transferência do conhecimento tácito na organização em questão. As dimensões Fatores idiossincráticos, Estrutura organizacional e Estratégia de Gestão exibiram forças em sentido contrário à Transferência do conhecimento tácito e a dimensão Modelo organizacional não influenciou de forma positiva ou negativa a Transferência do conhecimento tácito na organização pesquisada. Isso proporcionou reflexões na organização onde ocorreu a análise do modelo e indica que estudos em outros segmentos são necessários para avançar na relação entre a Transferência do conhecimento tácito e as dimensões analisadas.

PALAVRAS-CHAVE: Transferência do conhecimento; Modelo organizacional; Fatores idiossincráticos; Estrutura organizacional; Gestão do Conhecimento.

1   INTRODUCTION

This research addresses the relationship between tacit knowledge and factors relevant to the transfer of knowledge in a pre-university educational institution. From Nonaka vision and Takeuchi (2008), it is understood that the organization creates and uses knowledge converting tacit knowledge into explicit knowledge, which is a continuous process and done in both directions.

Most organizations have difficulty in making the transfer of tacit to explicit, although some have different degrees of learning in this process (Senge, 2009; Davenport & Prusak, 1988) and, according to Lévy (1999) this learning generates the skills acquired and should be applied in organizations.

In the field of education this process is also present and must manage the transfer of knowledge and, according to Drucker (1993) observed that the value of the organization is also related to the contribution generated in society and this can be reflected in the performance of their employees.

In the case studied this pre-university educational institution, the perceived value refers to tacit knowledge transfer involving several agents such as teachers, students and secretaries.

As the transfer of tacit knowledge is part of the organizational culture, from the assumption that organizational culture generates change and that changes instigate or stimulate the transfer of tacit knowledge, the research seeks to relate the organizational model, Strategy and Knowledge Management, organizational structure and idiosyncratic factors in a business environment, with the factors relevant to the transfer of tacit knowledge in a private learning environment.

The research also seeks to analyze a model that brings together two previous studies on the transfer of tacit knowledge held initially in Brazilian oil by Lemos (2008) with another study in technology-based companies conducted by Mendes (2014) and apply it in context of an educational institution under the gaze of employees.

The problem of this research is: Which dimensions are related to the transfer of tacit knowledge in a preparatory educational institution of higher education?

The general objective was to analyze which dimensions and variables are perceived as relevant to tacit knowledge transfer in a preparatory educational institution for higher education.

Justified the study because, according to Lemos (2008) knowledge management has been concerned with the knowledge within business organizations size and must explore new contexts as proposed in educational institutions and particularly the preparatory courses. The function of the preparatory course for graduation is the transfer of knowledge, a fundamental process for the student to acquire the skills and expertise necessary for its approval for entering a higher education institution (Piunti, 2009).

Search, therefore, contribute to applied studies on the transfer of knowledge and, in particular, to continue previous studies that focus on the business environment, as Lemos (2008) and Mendes (2014).

The article is structured in five parts. The introduction discussed issue, problem, purpose and justification, then the theoretical framework. Following is the methodology, results and discussions and ends with the final considerations.

2   DEVELOPMENT

2.1 Literature review

The model analyzed involves the relationship between the transfer of tacit knowledge and dimensions: organizational model, knowledge management strategy, organizational structure and idiosyncratic factors (Figure 1).
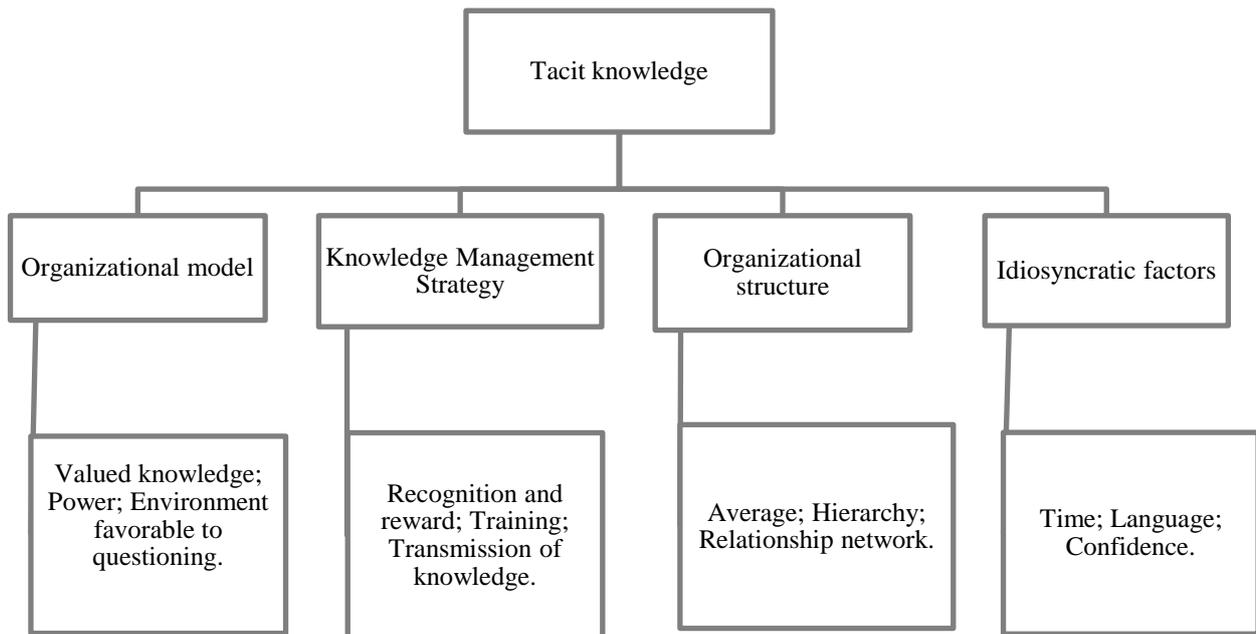
Figure 1 – Model of tacit knowledge transfer
Source: Adapted from Lemos (2008) and Mendes (2014).

For companies to achieve competitive advantage from the knowledge, they should transfer it effectively by the organization where, according to Lemos (2008) and Castro, Diniz, Duarte, Dressler and Carvalho (2013), the process involves difficulty in the acquisition of external knowledge in its transformation, application and incorporation in organizational routines. Tornet and Peace (2006) state that there is no consensus on how is the sharing of knowledge between people and it meets the reflection Simões and Duarte (2009) when they indicate that the transfer of knowledge is determined by organizational culture and can be understood as permanent and spontaneous.

Despite this transfer vision unplanned among people, there are different forms of organization and alternative practice knowledge management that can generate different results in the process of sharing and learning (De Muylder et al., 2014).

In an educational institution this scenario is the same as the need to manage knowledge and enable knowledge transfer. The model includes four categories of variables.

2.1.1 Organizational model

Ferreira (2015) states that the organization needs coherence and consistency in the modeling of different variables to achieve efficiency, efficacy and effectiveness of actions. The choices of variables must meet suitability the criteria to the task or function of the organization. In order to adapt the organizational model the structure and aspects that can be related to the transfer of tacit knowledge, has the following variables:

- Valued knowledge - Davenport and Prusak (1998) define that knowledge can be relevant in organizational knowledge process, as the authors indicate in their studies that companies hire employees with more experience than intelligence or education to understand that the value of applied knowledge developed over time can be seen. Thus, this variable was incorporated into the organizational dimension model and sought to determine the acceptance or the perception of the members of the organization as to suggestions and ideas (Lemos, 2008; Mendes, 2014);
- Power - There is a close relationship between power and knowledge, and according to Zanon (2012), the more you study, the more open opportunities, which follows the view of Drucker (1993), which indicates that the power allied to generate responsibility performance.

According Keys and Arnaud (2016), other researchers have also indicated that humanity confirms that those who have access to knowledge you can use it to your advantage and ensure power over others. Therefore, the proposed model, the power was established as an indicator related to the perceived or recognized knowledge;

- Favorable environment for questioning - Senge (2009) states that the organization is committed to the environment and encourages the personal vision and the truth can develop better, using as a basis for this statement the view that the individual with this power generates opportunity and domain from knowledge (Davenport & Prusak, 1998). In this sense, this variable was contemplated on the model if the organization has or not favorable environment for questioning and criticism of colleagues.

2.1.2 Knowledge Management Strategy

Tacit knowledge, as opposed to explicit, can not be found in a structured way into documents, forms, among others, and to get them, you must use different strategies. Access to knowledge is a form of appreciation of the organization (Davenport & Prusak, 1998). In this sense, the variables of this dimension are:

- Recognition and reward - Public recognition of good performance in the work environment or even beyond its borders, is a good instrument to promote, but should be used with clear criteria that encourage knowledge sharing (Rocha, 2007; Earth, 2001). A reward system can also be used with clear criteria, to avoid discouraging those who receive no (Rock, 2007) and, earlier, Davenport and Prusak (1998) call attention to the importance of encouraging managers or were likely to generate knowledge. Thus, recognition and reward are considered variables related to the transfer of tacit knowledge in the model;
- Training - For Lemos (2008) regardless of the type of training adopted by the organization, the activity can be considered a strategy that demonstrates the company's propensity to prioritize the dissemination of tacit knowledge. Milk and Loft (2013) recommend that training needs to be planned to ensure specificity and effective dissemination of knowledge. And even when this occurs planning and recognition of the people involved, the results from this are better (Rocha, 2007). This variable is part of the reporting model and aims to identify whether the organization prioritizes customized training for their employees;
- Transfer of knowledge - Davenport and Prusak (1998) state that the main objective of knowledge transfer is to improve the organization's ability to adapt, create value and sustainability. Tornet and Peace (2006) also indicate that when employees seek to share the knowledge learned continuously with the group's experience and generate greater knowledge or qualification. Thus, one has to remember that the transmission of knowledge and subsequent absorption are the transfer process and not only making them available (Davenport & Prusak, 1998).

2.1.3 Organizational structure

Drucker (1993) indicates that employee productivity is related to the knowledge base of the tasks to be developed and that this willingness to seek knowledge and to learn allows to overcome new challenges. Thinking about the whole organization structure and chain of command and authority, one can relate the way knowledge is shared or led (Chiavenato, 2008). The variables, regarding the Organizational Structure, treated in the model are:

- Relationship network - The way communication takes place in the organization and generates tacit knowledge transfer indicates a relevant reason to form and maintain relationships as indicated by Castro, Bulgacov and Hoffman (2011). The network of relationships becomes an

indicator considered relevant to the transfer of tacit knowledge in the organization in the model;

- Hierarchy - According to Rocha (2007) organizational structure with many levels may have greater difficulty or distortion in the communication process and therefore less chance of sharing knowledge. These hierarchical levels cannot be considered necessary paperwork and display as Nonaka and Takeuchi (2008) reported this characteristic inertia or inhibiting the changes or absence of new ideas or concepts. Whereas Rocha (2007) also indicates the importance of access to information, this variable was considered in the model as a knowledge transfer generator;

- Average - Resources provided by the AVG to facilitate the transfer of knowledge within an organization, according to Davenport and Prusak (1998) and can overcome the barriers cited by Mendes (2014) suggests that one cannot say that the AVG addresses the barriers dissemination of knowledge, but might allow a means of communication. In this sense, the model seeks to describe AVG adopted by organizations and perception of knowledge transfer.

2.1.4 Idiosyncratic factors

Knowledge is individual, so associate peculiar behavioral characteristics of individuals within an organization is pressing, since they can help identify enablers and inhibitors to the transfer of tacit knowledge. Nonaka and Takeuchi (2004) report that tacit knowledge can be understood as an idiosyncratic knowledge, subjective, guarded highly individualized, and practical know-how gained from years of experience and direct interaction within the profession domain. Therefore, the variables will be discussed this dimension addressed in the model:

- Time - For Davenport and Prusak (1998) is the responsibility of managers to pay attention as to the time required to learn and enable knowledge management. According to Lemos (2008), the absence of management time to learn and transfer knowledge is a factor that prevents the transfer of tacit knowledge and therefore is part of the model variables;

- Language - The language and how it is transmitted are crucial, according to Davenport and Prusak (1998), in the knowledge transfer process and communication involving the transmitter and receiver depends on this combination (Tornet & Peace, 2006). Still can relate the language to the possibility of reflecting on the information transmitted and concepts in the learning process, according to Rocha (2007), so this variable belongs to the analysis model;

- Trust - A trust variable was also considered in the model analyzed. It is understood by the trust relationship between company and employees, and the possibility of knowledge which generates the market share or flow of knowledge in the organization (Davenport & Prusak, 1998; Terra, 2001). According to Castro et al. (2011) trust is built over time and the coexistence and involves other variables such as honesty, willingness and effectiveness.

3   METHODOLOGY

The research of this study is configured as descriptive and quantitative, it aimed to measure the intensities of the indicators enabling environment for transfer of tacit knowledge in a preparatory course for higher education institution. As for the method, it was classified as field research and classified as a study of contemporary cases, because it occurs simultaneously with the event of the facts, which does not differentiate in terms of working an old research (Gil, 2008).

The research was carried out in a pre-university educational institution founded in 1998, currently present in seven cities in the state of Minas Gerais, Brazil. Has a staff of 81 employees distributed as follows: a general director, a general coordinator, four area coordinators, a director of human resources, 57 teachers, 11 secretaries and six cleaning aids. This functional structure supports the total of approximately 1,200 students, distributed in various levels and preparatory courses. The population

of the research involved in this study, also called respondents/respondents consisted of teachers and secretaries of the institution, totaling 57 teachers and 11 secretaries.

In contrast, the sample size can be considerably less when working with structural equation modeling using the Partial Least Square PLS method (Structural Equations Modeling - SEM-PLS). A rule of thumb for robust estimates on SEM-PLS is to have a sample size greater than or equal to ten times the number of items that make up the formative indicator with the largest number of items (if any formative indicator) (Barclay, Higgins, & Thompson, 1995) or ten times the largest number of direct arrows to a particular construct the structural model.

But generally, accepting the rule of thumb ten times for PLS, can be reached unacceptable levels of statistical power (Henseler, Ringle, & Sinkovics, 2009). Only in cases of really large effect sizes of statistical power levels were within acceptable limits using the rule of thumb tenfold. According to Chin (1998, p. 306), one should use the power tables for regression (Cohen, 1992) to determine the minimum size required sample. Thus, the sample size for this study must be at least 38 to test the hypothesis with 5% level of significance with a large effect size. The research was conducted with 59 respondents, and there were 42 variables, a total of 2,478 responses. There were no blank cell in the database.

The questionnaire was divided into two parts: first, we sought to identify the characteristics of the participants, creating four questions about age, gender, time in business and education. The second part was made up of 38 closed questions based on the Likert scale of five points (totally agree to strongly disagree), on the dimensions of the model proposed in this article, namely: idiosyncratic factors (time, language and trust), Model organizational (valued knowledge, power, enabling environment), organizational structure (Average, hierarchy, relationship network), Management Strategy (recognition and reward, training and transmission and storage of knowledge) and transfer of tacit knowledge.

Importantly, pre-test was conducted to identify difficulties and problems in the questionnaire, and the questionnaire and the entire project were submitted to an ethics committee for approval.

After the data collection, all the data were submitted to a factorial analysis and structural modeling analysis. The function of this analysis is to grasp the first order variables: time, language, confidence, valued knowledge, power, favorable environment, network of relationships, hierarchy, average, recognition and reward, training and transmission and storage of knowledge and transforming them into an indicator for second order variables. The dimensions idiosyncratic factors, Organizational Model, Organizational Structure and Management Strategy are of second order, that is, they are not formed directly by the items (questions), but by other latent variables (indicators). To deal with this characteristic of the measurement structure, the two-step approach was adopted. In this way, the scores of the first-order latent variables were first computed using factorial analysis with the main components extraction method and varimax rotation (Mingoti, 2007).

The model of measurement and regression model were performed using the PLS method. Structural equation models are very popular in many disciplines, and the PLS approach an alternative to the traditional approach based on covariance. The PLS approach has been referred to as a soft modeling technique with minimal demand, when considering the scales of measurements, the sample size and residual distributions (Mingoti, 2007).

According to Hair, Black, Babin, Anderson and Tatham (2009), the SEM is a continuation of some multivariate analysis, especially of the multiple regression analysis and factor analysis. What differs from other multivariate techniques is that it allows you to examine different dependency relationships at the same time, while other techniques are able to check and examine a single relationship between the variables at a time. To verify the quality of fit, R^2 were used and GoF. R^2 represents, on a scale of zero to 100, as the independent variables explain dependent, whereas, the closer to 100% the better. But the GoF is a geometric mean of the average AVE of the variables with the average of the R^2 of the model. It ranges from 0 to 100%, with no further cutoff values to consider a fit as good or bad, but it is known that the closer to 100%, the better the fit (Hair, Black, Babin, Anderson, & Tatham, 2009).

The following analyzes and results will be described.

4   ANALYSIS OF DATA AND RESULTS

Regarding the demographic variables, the sample was composed mostly by men (59.32%). As for education the sample was considered heterogeneous, consisting of 33.90% of respondents graduated, Postgraduate 20.34% and 20.34% with master. The average age of respondents was 35.83 years, with standard deviation of 7.52 years. The last variable of demographic characteristic was the time of the company, and the sample mean equal to 5.16 years, minimum time equal to 0.33 years and maximum 13 years.

Regarding the descriptive analysis of quantitative variables, they were adopted tools specific statistics, such as standard deviation, absolute and relative frequencies, reliable and average range.

As you can see in relation to descriptive step analysis (Table 1) compared to the construct time, all respondents agreed that time is important. The strictly positive bootstrap intervals show that respondents tended to agree with those issues, Q1 (I have time and opportunity to share and receive knowledge of others) and Q3 (I am always available to share my knowledge with others on request). The question Q2 (The company encourages that I have time to share the knowledge I have with others) shows that people have time and are available to share knowledge, but the company is not encouraging employees satisfactorily to share knowledge between each other.

Regarding the language factor, it is observed that there was agreement on all issues, since the bootstrap intervals were strictly positive and the highest average compliance occurred in item Q4 (I find it easy to share the knowledge I have), noting that people in company is willing to share and feature easy to share this knowledge. As for Q5 items (I know and understand all the terminology used in the company) and Q6 (All company documents have clear language and easy to understand), it was found that besides the people have ease in sharing knowledge and be familiar with the company's terminology, they find the language clear and easy to understand.

Regarding the trust factor, respondents disagreed that there is no confidence in the company. It appears that only significant agreement with the Q7 item (I feel safe to share information and knowledge with my colleagues), but the majority of respondents disagreed more Q8 item (only share my knowledge with colleagues who also share their knowledge with me) and Q9 item (only share my knowledge with colleagues with whom I have more affinity), but with less intensity. It is noteworthy that, in the company, there is a climate of mutual trust.

Table 1 - Descriptive analysis of dimension variables

Variables		AVG	SD	IC - 95%[1]
Time	Q1	0,60	0,38	[0,50; 0,70]
	Q2	0,36	0,37	[0,26; 0,45]
	Q3	0,60	0,45	[0,48; 0,72]
Language	Q4	0,64	0,35	[0,54; 0,72]
	Q5	0,40	0,48	[0,28; 0,51]
	Q6	0,53	0,36	[0,45; 0,63]
Trust	Q7	0,75	0,30	[0,67; 0,81]
	Q8	-0,56	0,44	[-0,67; -0,45]
	Q9	-0,39	0,50	[-0,52; -0,26]
Valued knowledge	Q10	0,36	0,44	[0,25; 0,47]
	Q11	0,58	0,32	[0,49; 0,65]
	Q12	0,67	0,32	[0,59; 0,75]
Power	Q13	-0,04	0,65	[-0,20; 0,12]
	Q14	0,11	0,54	[-0,03; 0,25]
	Q15	0,64	0,31	[0,56; 0,70]
Favorable environment	Q16	0,15	0,45	[0,03; 0,25]
	Q17	0,42	0,40	[0,32; 0,53]
	Q18	0,49	0,40	[0,39; 0,59]
Relationship network	Q19	0,53	0,38	[0,43; 0,63]
	Q20	0,04	0,62	[-0,13; 0,20]

Hierarchy	Q21	-0,37	0,46	[-0,48; -0,25]
	Q22	0,64	0,31	[0,56; 0,71]
	Q23	0,65	0,30	[0,58; 0,73]
	Q24	0,63	0,34	[0,54; 0,71]
Mídia	Q25	0,15	0,50	[0,02; 0,27]
	Q26	0,31	0,46	[0,18; 0,42]
	Q27	-0,21	0,46	[-0,34; -0,09]
Recognition and reward	Q28	0,30	0,37	[0,20; 0,38]
	Q29	0,11	0,47	[-0,01; 0,24]
	Q30	0,58	0,36	[0,48; 0,66]
Training	Q31	0,16	0,48	[0,04; 0,29]
	Q32	0,34	0,49	[0,22; 0,45]
	Q33	0,42	0,44	[0,31; 0,53]
Transmission and storage of knowledge	Q34	0,56	0,35	[0,48; 0,65]
	Q35	0,04	0,47	[-0,07; 0,16]
	Q36	0,45	0,29	[0,37; 0,52]
Transfer of tacit knowledge	Q37	0,64	0,26	[0,58; 0,71]
	Q38	0,64	0,28	[0,58; 0,71]

Source: Research data.

As for the valued knowledge, it was found that the respondents agreed that the company values, accepts suggestions and feel free to opine. It was observed that all bootstrap intervals were strictly positive, indicating that there was agreement with the items. Also, note that the level of agreement was higher in items Q11 (The company knows and appreciates my personal skills in my work) and Q12 (I feel the urge to suggest, opine with my superiors in meetings). However, the Q10 item (My colleagues and superiors appreciate suggestions and ideas that I have based on my knowledge, even when they do not have enough information to support them), despite being accepted by the respondents, did not achieve the same result of the previous items.

Regarding the power factor, the people agreed that knowledge is power source in the company and feel comfortable in sharing that knowledge. There was agreement with the Q15 item (I feel the urge to suggest, opinions and contribute ideas in the company) and disagreement with the Q13 item (Knowledge is not power source in the company). Q14 in item (I am valued for my knowledge rather than the knowledge that I share), the bootstrap interval contained zero, stressing that the respondents did not tend to agree or disagree with these issues.

In favorable environment factor, respondents tended to agree with all the items, as the bootstrap intervals were strictly positive. This shows that there are in the company culture, respect and open dialogue. In addition, the agreement level was higher in the Q18 item (There are open dialogue, honest, reflective and critical in the company), followed by Q17 item (I feel the urge to have a different opinion on a subject in the company) and less intensity the Q16 item (the company culture encourages questioning of co-workers), noting that the company's culture needs to improve to achieve the same levels of respect and open dialogue.

Regarding the social networking factor, people agree that know who owns the knowledge in the company, but in time to seek knowledge not follow a particular order (direction) in the company. This can be checked for compliance with the Q19 item (I know exactly who the company has the expertise that can help my work) and disagreement with the Q21 item (I know of who has the deepest knowledge of a particular subject in the company). There was no agreement or disagreement with the Q20 item (When you need help look who is closest or who have more in common in my work and not who has more knowledge on the subject), as the bootstrap interval contains zero.

As for the hierarchy factor, there was agreement on all items, demonstrating that the company, people are encouraged, they feel at ease and have access to all who have the knowledge, since the bootstrap intervals were strictly positive.

About the average (AVG) factor, there was agreement with the Q25 items (The AVG that more use to interact with people in the company, whose knowledge is important for my work is the personal conversation) and Q26 (AVG that more use to interact with people in company whose knowledge is

important for my work is the social or telephone networks), revealing that the average most used in the company are dialogue, social networking and telephone. On the other hand, the bootstrap interval was strictly negative, emphasizing that there was disagreement with the Q27 item (acquire all the knowledge I need the company reading memos, reports and the like). Even using a personal conversation and electronic systems to interact, it is found that the use of reading memos, reports and the like, is not a common activity in the company. This procedure can be self-will of the people or by no such documents in the company.

Considering the recognition factor and reward, the respondents agreed with the Q28 items (The company encourages and rewards the result of work done in teams) and Q30 (I like to share all my knowledge with others, for the simple fact help everyone need within the company), emphasizing that they like to share knowledge and that the company encourages and rewards teamwork. On the other hand, there was no disagreement or agreement with the Q29 item (I feel motivated to share the knowledge I have with others, as the company values and rewards that attitude), as the bootstrap interval contains zero.

Regarding the training factor, there was agreement with all the items, since the breaks were strictly positive, and the Q33 item (Experienced employees are encouraged by the company to transmit their knowledge to the younger) had the highest average level of agreement. The Q32 item (Everyone in the company are trained in their specific activities) showed an average level of agreement and the Q31 item (When you need to acquire specific knowledge, the company indicates an expert to help me) was the one with the lowest level of agreement.

In factor transmission and storage of knowledge, respondents agreed with the Q34 items (When I need some knowledge, the company encourages the search with other employees) and Q36 (People hold most of the knowledge that the company has). This proves that there is, in the company, a culture of knowledge transfer between internal staff and other professionals from outside the company. However, not agreed nor disagreed with the Q35 item (There is a knowledge database in which the company against any information that I need), as the bootstrap interval contains zero.

Respondents agreed with the construct items Transfer of tacit knowledge Q37 (I share tacit knowledge that I have with my colleagues) and Q38 (My colleagues share with me the tacit knowledge they possess), confirming that people in the company share knowledge, since the bootstrap intervals were strictly positive.

4.1 Exploratory factor analysis and structural equation modeling

Exploratory factor analysis included analysis of dimensionality, convergent validity and reliability of the first-order variables. When verifying the reliability was used Cronbach's alpha (AC) and Reliability Compound (CC) (Chin, 1998). When verifying the convergent validity was used the criteria proposed by Fornell and Larcker (1981).

To measure the dimensionality of the variables were analyzed using the Kaiser test (1958), which returns the number of factors to be retained in the exploratory factor analysis, i.e. the number of dimensions of the construct.

Table 2 shows the results for the validity and quality of the variables, and it is important to highlight that, in the AVE column, all variables were above 0.4, thus achieving convergent validation. With regard to validation, it is necessary that each construct must have a value above 0.60 in at least one of the AC and DC columns. It is noted that, for CA, some factors were lower than 0.60 (time, power, average, recognition and reward and transmission and storage of knowledge), however, all factors had CC values above 0.60. In this way, the variables can be considered to have reached the required levels of reliability. It is also noticed that the values of the KMO column are above 0.5, minimum value for validation. Therefore, according to the KMO values, it was concluded that the adjustment of the factor analysis was adequate in all factors. In the dimensionality column, it is observed, according to the criterion of Kaiser (1958), that all variables were unidimensional, that is, each question presented measures only a single concept.

Table 2 - Reliability, convergent validity and dimensionality of the variables

Variable	Items	AVE[1]	AC[2]	CC[3]	KMO[4]	Dim.[5]
Time	3	0,45	0,38	0,63	0,57	1
Language	2	0,81	0,75	0,83	0,50	1
Trust	2	0,85	0,82	0,86	0,50	1
Valued knowledge	3	0,58	0,61	0,73	0,61	1
Power	2	0,65	0,45	0,69	0,50	1
Favorable environment	3	0,56	0,60	0,71	0,62	1
Relationship network	2	0,78	0,71	0,80	0,50	1
Hierarchy	3	0,75	0,83	0,84	0,68	1
Mídia	2	0,67	0,50	0,71	0,50	1
Recognition and reward	2	0,67	0,51	0,71	0,50	1
Training	3	0,64	0,72	0,77	0,60	1
Transmission and storage of knowledge	3	0,46	0,35	0,63	0,54	1
Transfer of tacit knowledge	2	0,75	0,66	0,77	0,50	1

Source: Research data.

As in exploratory factor analysis to verify the convergent validity of the factors, we used the criteria proposed by Fornell and Larcker (1981) for the stroke and, in checking the discriminant validity was again used the criterion of the same authors, which guarantees discriminant validity as to the extracted variance (AVE) of a construct. To validate the reliability we used the Cronbach's alpha (AC) and Composite Reliability (CC).

Once created and validated the indicators, a new model is presented in Table 3. Thus, it was concluded that the construct idiosyncratic factors are being formed only by the trust factor. The organizational model construct is being formed by the knowledge factors valued and supportive environment. Already construct organizational structure is being formed only by the hierarchy factor. Finally, the Management Strategy construct is being formed by the factors training and transmission and storage of knowledge.

Table 3 - Validation of the final measurement model

Dimensions	Items	AC[1]	C.C.[2]	Dim.[3]	AVE[4]	VCM[5]
Idiosyncratic factors	1	1,00	1,00	1	1,00	0,09
Organizational model	2	0,54	0,81	1	0,68	0,34
Organizational structure	1	1,00	1,00	1	1,00	0,34
Management Strategy	2	0,32	0,75	1	0,56	0,04
Transfer of tacit knowledge	2	0,66	0,86	1	0,74	0,06

Source: Research data.

Table 3 also shows that the dimensions of organizational Model and Management Strategy presented Cronbach's alpha values of less than 0.60, but all dimensions had reliability values made up of 0.60 and thus can be considered to the dimensions presented the required levels of reliability. All results were one-dimensional according to the criterion of Kaiser (1958) and had a stroke higher than 0.40, indicating that there was convergent validation in all of them. According to the criteria proposed by Fornell and Larcker (1981) was discriminant validity for the dimensions, since the stroke were larger than the respective maximum variance shared.

After validating the model, we attempted to adjust the quality, we used the R^2 and GoF. R^2 represents how much the independent dimensions explain the transfer of tacit knowledge. Since the geometric mean is a GoF the average AVE of the average dimensions with the model R^2, shown in Table 4.

Table 4 – Structural Model

Endogenous	Exogenous	β	EP (β)[1]	IC - 95%[2]	Valor-p	R²
Transfer of tacit knowledge	Idiosyncratic factors	-0,14	0,15	[-0,45; 0,21]	0,338	8,95%
	Organizational model	0,00	0,18	[-0,42; 0,38]	0,998	
	Organizational structure	-0,24	0,17	[-0,54; 0,17]	0,168	
	Management Strategy	-0,05	0,13	[-0,36; 0,35]	0,692	

Source: Research data.

Based on the results shown in Table 4, it can be inferred that none of the indicators obtained p-value <0.05, so it has to be, no indicator exercised significant influence over the transfer of tacit knowledge. What it was against the assumption by the model proposed by Lemos (2008) and Mendes (2014) indicating that occurred relationship between the dimensions addressed.

The exogenous variables: idiosyncratic factors, organizational model, organizational structure and management strategy were only able to account for 8.95% of the tacit knowledge transfer within the institution in question, therefore, with low values of R 2 = 8.95% and GoF = 24.32% confirms the fact that the dimensions: idiosyncratic factors, organizational model, organizational structure and management strategy are not significant to explain the transfer of knowledge in the institution in question, confirming what was previously described, not occurred relationship between the construct transfer of knowledge and the four dimensions, although they have been described by several authors as Nonaka and Takeuchi (2004), Castro et al. (2007) and Davenport and Prusak (1998), as well as Lemos (2008) and Mendes (2014).

The β coefficient measures the strength and direction of the relationships between the dimensions. Table 4 shows that rate is in line with the respective confidence interval for the dimensions: idiosyncratic factors, organizational structure and management strategy these forces act in the opposite direction. Already in the organizational model it is null. This result does not agree with Ferreira (2015) and indicates that the organization has no coherence and consistency of the actions related to the tasks related to the transfer of tacit knowledge.

From these considerations and analysis, we arrived to a structural equation model heuristic tacit knowledge in the research organization (Figure 2).

$$E(TCT) = -0,14.FI + 0,00. MO - 0,24. EO - 0,05. EG$$

Figure 2 - Equation of the proposed structural model
Source: Research data.

The final model of tacit knowledge in a preparatory institution of higher education with their respective validation indices is shown in Figure 3.

Observing the Figure 3 diagram with their respective indices, we came to the conclusion that none of the analyzed dimensions (second order): organizational model, organizational structure, management strategy and idiosyncratic factors were significant to justify the formative construct first order (Transfer of tacit knowledge) in the research institution. This disagrees with the indicated not only by Lemos (2008) and Mendes (2014), as the authors justifying the variables involved in each of the four dimensions involved in the initial model tested as Nonaka and Takeuchi (2004), Davenport and Prusak (1998), Rocha (2007) and Castro et al. (2011).

Following the conclusions will be exposed, research limitations and suggestion of new studies.
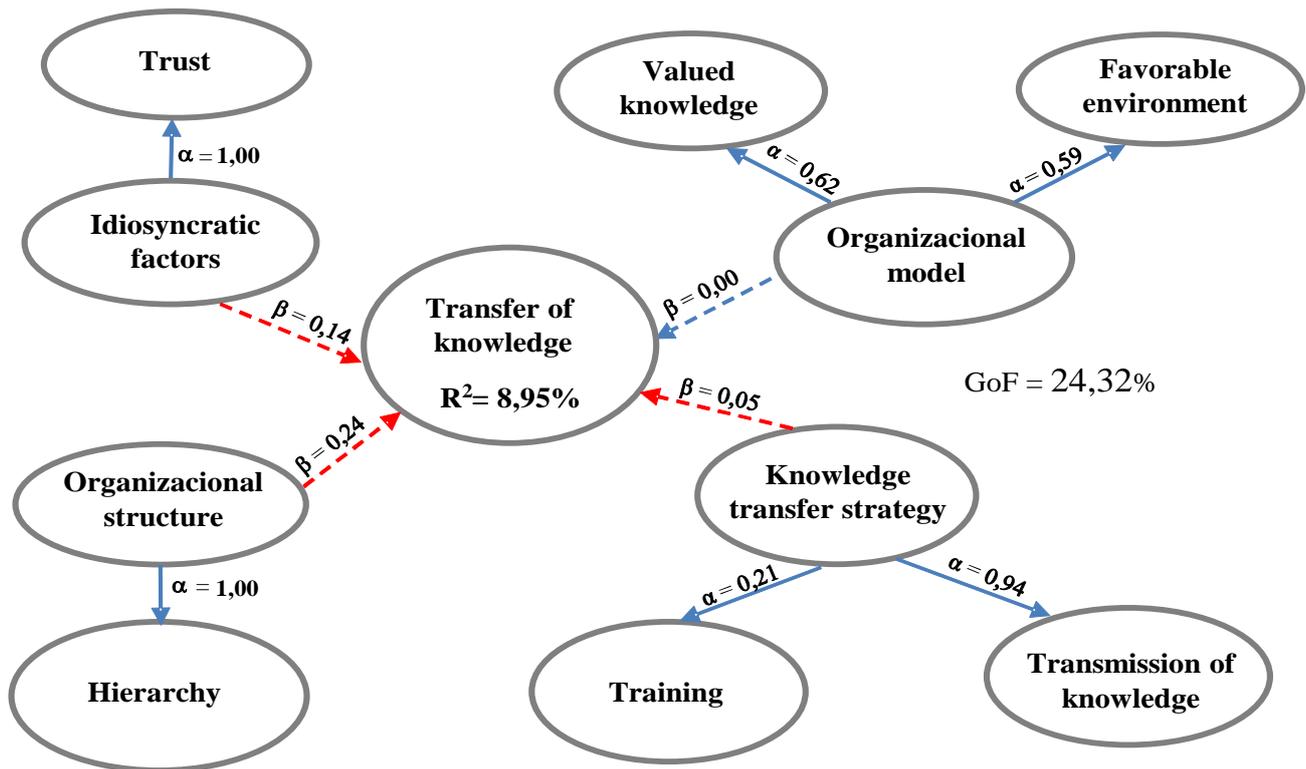
Figura 3 – Research Model
Source: Research data.

5   CONCLUSIONS

The aim of this study was to analyze the factors perceived as relevant to the tacit knowledge transfer in a preparatory institution of higher education. To accomplish this we used the descriptive and quantitative research based on the application of a questionnaire developed and proposed by the authors of this study. For the analyzes were carried out: exploratory factor analysis and structural equation modeling (SEM). The heuristic model proposed left four reflective dimensions of second order and twelve reflective factors to justify the transfer of tacit knowledge.

Can be seen in the obtained sample, the size called idiosyncratic factors was formed only by the trust factor. The factors time and language did not contribute significantly to the idiosyncratic factors were facilitating the transfer of tacit knowledge. According to respondents, the organizational model dimension is being formed by the variables valued and favorable environment knowledge. The variable power was removed, even with high contribution, as presented in the opposite direction to the other variables. Already the Organizational Structure is being formed only by the variable hierarchy.

The Management Strategy dimension is being formed by the training variables and transmission and storage of knowledge. The structural model (Inner Model) evaluated as the dimensions or second order reflective: Organizational Model, Organizational Structure and Management Strategy and idiosyncratic factors, impact on the formative construct first order in transfer of tacit knowledge. The results also allowed us to verify that the dimensions idiosyncratic factors, Organizational Structure and Management Strategy exhibited strength in the opposite direction (negative influence) the transfer of tacit knowledge, while the size of the organizational model does not influence, either positively or negatively, the transfer of tacit knowledge in the research organization.

6   LIMITATIONS AND RECOMMENDATION OF RESEARCH

Due to it is a case study, our findings require an expansion of the scope to elucidate the transfer of tacit knowledge, research that has guided the research agendas of the knowledge management theme (Tornet & Peace, 2006; Simões & Duarte, 2009; De Muylder et al, 2014). Another limiting factor of this study was the population size and hence the sample. In this sense, the research replication in other public and private organizations with larger populations can be critical to elucidate the question proposed here.

In the end, it was concluded that the results obtained by factor analysis does not confirm the relationship between the construct transfer of tacit knowledge and the four dimensions that were analyzed as initially expected and theoretically confirmed by several authors as indicated in the argument of discussions of the model. Although this aspect is that the research provided relevant data to the facilitators of the transfer of tacit knowledge of the researched organization and instills new studies in different sectors not to focus technology as the early models of Lemos (2008) and Mendes (2014) and may also suggest the inclusion of new dimensions such as Culture or Innovation.

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