



Ingeniería y competitividad
ISSN: 0123-3033
Facultad de Ingeniería, Universidad del Valle

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Ingeniería y competitividad, vol. 21, no. 1, 2019

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Available in: <http://www.redalyc.org/articulo.oa?id=291361226008>

DOI: 10.25100/iyv.v21i1.7669

Transfer mechanisms and strategic knowledge management in health and safety companies

Mecanismos de transferencia y gestión estratégica del conocimiento en empresas de seguridad y salud en el trabajo

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Ingeniería y competitividad, vol. 21, no. 1, 2019

Facultad de Ingeniería, Universidad del Valle

Received: 23 July 2018
Accepted: 24 October 2018

DOI: 10.25100/iyv.v21i1.7669

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Abstract: This paper aims to analyse the knowledge transfer mechanisms and strategic knowledge management in occupational safety and health (OSH) companies. The main authors consulted for the study were Davenport ⁽⁶⁾, Molina, and Marsal ⁽⁸⁾. The research is descriptive, non-experimental, cross-sectional and with field design. Results indicate that the spontaneous transference is present through personal meetings, and formal transference is mainly characterized by counselling. We found weaknesses in the strategic analysis and objectives definitions for the strategic knowledge management in the studied organizations.

Keywords: Formalized transfer, spontaneous transfer, strategic management of knowledge, transfer mechanisms.

Resumen: El presente artículo tiene como objetivo analizar los mecanismos de transferencia y gestión estratégica del conocimiento en empresas de seguridad y salud en el trabajo. Los autores bases considerados para el estudio son Davenport ⁽⁶⁾ y Molina y Marsal ⁽⁸⁾. La investigación es descriptiva, con diseño no experimental, transversal y de campo. Los resultados indican que la transferencia espontánea, está presente a través de las reuniones personales y la transferencia formalizada, se caracteriza por el desarrollo de asesorías. En cuanto a la gestión estratégica del conocimiento se presentan debilidades en el análisis estratégico y la definición de objetivos en las organizaciones analizadas.

Palabras clave: Gestión estratégica del conocimiento, mecanismos de transferencia, transferencia espontanea, transferencia formalizada.

1. Introduction

Knowledge management is a discipline that allows companies to increase the use of information and exploit it to generate competitive advantages. Its application focuses on sharing information in the organization, increasing levels of profitability and productivity, and creating value. In this way, knowledge management is a critical challenge for organizations,

and at the same time, it is a great potential to obtain a competitive advantage¹.

In reference to the processes of knowledge management, the authors Al-Emran *et al.*² conclude, despite the large number of studies carried out, this topic should be examined from other perspectives; for example, from its application in information systems. Similarly, the authors Yu and Yang³ emphasize that a stream of studies on knowledge management approaches on the methodology, focus and objective of management. On the other hand, the authors Manfredi *et al.*⁴ identify, through a literature review, the relevance of management and the knowledge transfer for the performance of organizations.

Specifically, Aparicio⁵ states that knowledge is a human capacity, which is only capable of generating value when it is transformed into goods, services or systems. In turn, Davenport and Prusak⁶, state that knowledge is the fluid mixture of experiences, values, contextual information and vision of experts that provide an appropriate scheme to evaluate and incorporate new experiences and information.

According to Peluffo and Catalan⁷ knowledge management emerge from the limitation of traditional management practices to efficiently manage tacit knowledge and its conversion to explicit knowledge, either by storing it, making it traffic, or by perfecting the skills of those who generate it. Regarding Davenport and Prusak⁶, knowledge management is a formal process based on a set of functions and capacities created by the company to fulfill the task of capturing, distributing and using knowledge for the creation of competitive advantages.

On the other hand, Molina and Marsal⁸ explain that organizations capable of creating the conditions to increase the rate of learning above the level demanded by the market can innovate, and, offer a superior quality. To such effects, the authors Nonaka and Takeuchi⁹ did not use the term "knowledge management", but "creation of organizational knowledge", because they did not operationalize it as an administrative, rigid and objective process. They attributed completely to the human being, for being the source of creativity and innovation. The knowledge management model proposed by Nonaka and Takeuchi⁹ is referenced in new approaches proposed by authors such as Andreasik¹⁰ and Gunasekera and Chong¹¹.

In this sense, knowledge management is gaining importance in the business world as one of the critical enablers for innovation. In effect, the correct implementation of knowledge management improves the innovation capacity of organizations.¹² Therefore, managers should develop and maintain an appropriate culture for the adoption of knowledge management, taking advantage of the cultural differences presents in the personality of the collaborators¹³.

On the other hand, Davenport and Prusak⁶ define transfer of knowledge as a process that involves two actions: transmission and assimilation (use). According to these authors, the knowledge transfer

in organizations can be spontaneous or formalized. In the spontaneous transfer, the nature of personal exchanges prevails, without pressure from the directors or authorities of the institutions. In this context, the openness to share knowledge according to a real need to solve a situation of common interest for the organization stands out. Within the spontaneous knowledge transfer mechanisms proposed by Davenport and Prusak⁶, include informal meetings, corresponding to a form of tacit routine of the staff. The physical and virtual spaces, generated by the companies are spontaneous and unstructured conversations take place. As well as the open forums, in which work or services are exposed in the company and the readings of documents for further discussion among collaborators.

In another sense, the formalized transfer is one that is carried out through strategies that the organization establishes intentionally and with the purpose of generating new knowledge through the transmission of tacit knowledge. This type of transfer is one that would be supported by formal education programs, some of which are developed when knowledge previously has been coded.

The mechanisms of this type of transfer proposed by Davenport and Prusak⁶ include counseling, which consists of adding to the functions of employees with greater seniority, the task of knowledge transfer to new staff. The movement of personnel to the place where the knowledge is originated and then return them to their place of work, or go through rotations inside the company. The record of experiences, through which the tacit knowledge of the people is consigned to consolidate the technical memory of the company.

In another order of ideas, the strategic management of knowledge, from the perspective of Riesco¹⁴, includes the use of the range of resources available within the company, both tangible and intangible, to achieve a defined strategic purpose, which constitutes a sustainable competitive advantage. On the other hand, Lara¹⁵ states that the strategic management of knowledge is a process that relates the company knowledge with the design of organizational structures that encourage their generation and conversion, as well as focusing the business strategy towards this goal, promoting the development of knowledge professionals.

According to Molina and Marsal⁸, the strategic knowledge management is a process that defines what is the vision that the management team of the organization has about its future, analyzing probable scenarios and establishing the necessary goals to approach the desired state. The literature agrees that knowledge management will be strategic as it is incorporated into the main elements of strategic planning, thus ensuring that it is carried out through actions aligned with specific objectives for its implementation in the company.

Next, the indicators of the strategic management of knowledge are described, according to the approaches of Molina and Marsal⁸: Mission, which consists in the declaration of "*raison d'être*" of the company. The

vision, which combines an anticipation of the future with the definition of the role that the company wishes to play in the future. The strategic analysis of the company to consolidate its competitive position. The operational goals raised at the level of the departments or functional units and reviewed semi-annually or annually. The strategic objectives, referred to the results that the company intends to achieve in the framework of a desired future situation and the action plans, which are derived from the strategic objectives, constituting a planning tool for the job of the organization.

This paper analyzes the transfer mechanisms and the strategic knowledge management in companies that provide occupational safety and health services in the city of Valledupar. Regarding to this, companies should articulate innovation activities with strategic planning, in order to generate an innovative process with a managerial and collective focus, aimed to consolidate a culture that favors the systematic development of new and improved services ⁽¹⁶⁾. Here, knowledge management is defined as the set of actions aimed to strengthening knowledge through learning and experience. As well as creating, an enabling environment supported by technology, for share it among the members of the organization and increase internal capacities to reach competitive advantages in the occupational health and safety service offered to users. It is important to point out that the companies under study carry out a fundamental task in the prevention programs of work-related accidents and illnesses, since they provide advice and technical assistance in this area, in compliance with the legal regulations in force in Colombia.

2. Methodology

The present research is descriptive ¹⁷, with a non-experimental, transectional and field research design ¹⁷. The population of the present work is of finite and objective type ¹⁷, constituted by a population of 17 managers of companies providing health and safety services in the workplace of Valledupar, Colombia, with registration in the Departmental Health Secretariat and the Chamber of Commerce of Valledupar. The distribution of the population is indicated below in Table 1.

Table 1
Research Population

<i>No</i>	<i>Business name</i>
1	Fundación Visión Caribe
2	Bvc & Asociados Limitada
3	Aprehsi M.P. Ltda
4	Fundación Emprendamos
5	Servicios Integrales de Salud Ocupacional Los Ángeles S.A.S.
6	Santa Helena Del Valle I.P.S. S.A.S.
7	Dipresalud I.P.S. S.A.S.
8	Siso Consultores
9	Grupo De Control y Servicios S.A.S Sede Valledupar
10	Previniendo Riesgos Laborales S.A.S.
11	IndustryHse Training S.A.S
12	Fundipal
13	Salud Ocupacional y Cuidado Industrial En Ambiente Laborales S.A.S.
14	I.P.S. Asesoramos y Protegemos Salud Ocupacional S.A.S
15	Carmen Rosalba Herazo Contreras E.U.
16	Q Services And Consulting S.A.S.
17	Minería, Equipos, Transporte Y Seguridad Industrial S A S

Source: Valledupar Chamber of Commerce

Following the explanation given by Bravo ¹⁸, the study population is finite, since it is located in less than 100 units, it will be accessible to the researchers. The primary data is obtained through the survey technique, using as a tool a Likert scale questionnaire with five response options: 1. Never (N). 2. Almost Never (CN). 3. Sometimes (AV). 4. Often (CS). 5 Always (S). The questionnaire was made up of 31 items, distributed as follows (Table 2).

Table 2
Distribution of the items of the data collection instrument

<i>Dimension</i>	<i>Subdimension</i>	<i>Indicators</i>	<i>Number of items</i>
Mechanisms of knowledge transfer	Spontaneous transfer	Meetings	3
		Physical and virtual spaces	3
		Open forums	2
	Formalized transfer	Document readings	2
		Advice	3
		Movement of personnel	3
		Record of Experiences	3
	Subtotal items mechanisms of knowledge transfer		
Strategic knowledge management	Vision	2	
	Mission	2	
	Strategic analysis	2	
	Operational objectives	2	
	Strategic objectives	2	
	Action plans	2	
Subtotal items strategic knowledge management			12
Total instrument items			31

A set of subject experts validated the instrument. The reliability was established using the Cronbach's Alpha coefficient, where a coefficient of 0.89 was obtained, which when compared to the scale proposed by Ruiz ¹⁹, indicates very high reliability. For analyzing the results, two scales were established: one for the mean (Table 3) and another for the standard deviation (Table 4).

Table 3
Scale for the interpretation of the arithmetic mean

<i>Alternative Answer</i>	<i>Score of the answer</i>	<i>Rank</i>	<i>Level</i>
Forever	5	$4.20 \leq a < 5.00$	Very high
Usually	4	$3.40 \leq a < 4.19$	High
Sometimes	3	$2.60 \leq a < 3.39$	Medium
Hardly ever	2	$1.80 \leq a < 2.59$	Low
Never	1	$1.00 \leq a < 1.79$	Very Low

Table 4
Scale for the Interpretation of Standard Deviation

<i>Categories</i>	<i>Score</i>	<i>Reliability level</i>
High dispersion	1.00 a 1.50	Low reliability
Low dispersion	0.50 a 0.99	Reliable
Very low dispersion	0.00 a 0.49	High reliability

Source: Ruiz 19

For the purpose of determining the statistical technique, the Shapiro-Wilk normality test was used, considering that less than 50 data are available. The results of the normality test indicate that the data of the factors have significance values greater than 0.05 (Table 5), so it is confirmed that the data correspond to a normal distribution²⁰.

Table 5
Normality tests

	<i>Shapiro-Wilk</i>		
	<i>Statistical</i>	<i>gl</i>	<i>Sig.</i>
Mechanisms of knowledge transfer	0.936	17	0.275

*. This is a lower limit of the true significance.

a. Significance correction of Lilliefors

Table 5 (Cont.)
Normality tests

Strategic Management of Knowledge	0.953	17	0.499
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Considering the data correspond to a normal distribution, the inferential statistics technique was applied, specifically ANOVA analysis to check if there are significant differences between the variables and the Pearson correlation coefficient, to determine the correlation between the transfer mechanisms and in the management strategic knowledge, using the SPSS program. For the analysis of the correlation indexes, the following is considered: 0.00 = There is no correlation between the variables, 0.10 = Very weak correlation, 0.25 = Weak correlation, 0.50 = Average correlation, 0.75 = Considerable correlation, 0.90 = Very strong correlation, 1.00 = Perfect correlation¹⁷.

3. Results and Discussion

With reference to knowledge transfer mechanisms, the following results are presented:

Table 6
Statistics of the dimension knowledge transfer mechanisms

<i>Dimension</i>	<i>Subdimension</i>	<i>Indicators</i>	<i>Average Indicator</i>	<i>Standard deviation</i>	<i>Half Subdimension</i>	<i>Standard deviation</i>
Mechanisms of knowledge transfer	Spontaneous transfer	Meetings	3.00	0.54	2.48	0.60
		Physical and virtual spaces	2.57	0.65		
		Open forums	2.32	0.64		
	Formalized transfer	Document readings	2.03	0.57	2.22	0.60
		Advice	2.82	0.77		
		Movement of personnel	2.20	0.27		
		Record of Experiences	1.65	0.75		
	Average Dimension				2,35	0,60

According to Table 6, averages of 2.48 and 2.22 are obtained, for the subdimensions of spontaneous transfer and formalized transfer, respectively. this determines a mean for the knowledge transfer mechanisms dimension of 2.35. This score is located at a low level, in a category that indicates that companies almost never apply knowledge transfer mechanisms, which is required to present knowledge to a receiver, exchange ideas spontaneously or formally, and promoting trust in the source of knowledge. The standard deviation of the subdimensions is 0,60, this value indicates a low dispersion of the scores with respect to the average of the dimension, according to the interpretive scale.

In general terms, the spontaneous transfer sub-dimension reached an average of 2.48, indicating a low presence of knowledge transfer

mechanisms in companies that provide health and safety services. In contrast to Davenport and Prusak⁶, who explain that in order to properly apply knowledge transfer mechanisms, personnel should be offered some spaces for the free exchange of knowledge and ideas.

To extend the results referenced above, the technique of inferential statistics ANOVA was applied to determine whether there are significant differences in the spontaneous transfer mechanisms, for which a significance of 0.020 (less than 0.05) is obtained, this indicates that there are significant differences between the different spontaneous transfer mechanisms in the companies under study (Table 7).

Table 7
ANOVA Spontaneous Transfer Mechanisms

	<i>Sum of squares</i>	<i>gl</i>	<i>Half quadratic</i>	<i>F</i>	<i>Sig.</i>
Between groups	4.588	3	1.529	3.511	0.020
Within groups	27.882	64	0.436		
Total	32.471	67			

To establish the factors that present the significant differences, a post hoc test was performed, in this case the Tukey HSD. From the multiple comparisons obtained, significant differences (Sig. <0.05) are presented (Table 5) between meetings and document readings (0.014).

As for the formalized transfer, a value of 2.22 is obtained for the formalized transfer sub-dimension, being located at a low level within the mechanisms of knowledge transfer applied in the companies of the sector studied, exposing differences with Davenport and Prusak⁶. They point out that these mechanisms allow extracting and structuring the knowledge of an individual or group so that, subsequently, other members of the organization or the same sector, as well as contributing to the codification and knowledge generation use it.

To deepen the results, the results of formalized transfer mechanisms are analyzed through ANOVA (Table 8).

Table 8
ANOVA Formalized Transfer Mechanisms

	<i>Sum of squares</i>	<i>gl</i>	<i>Half quadratic</i>	<i>F</i>	<i>Sig.</i>
Between groups	10.863	2	5.431	13.112	0.000
Within groups	19.882	48	0.414		
Total	30.745	50			

Because the level of significance is less than 0,05, which indicates that there are significant differences between the groups, in this case, between the formalized transfer mechanisms in companies. For this purpose, a post hoc test was carried out, in this case the Tukey HSD. From the multiple comparisons obtained, there are significant differences (Sig. <0.05) between counseling and movement of personnel (0.007), counseling and record of experiences (0.000).

In general terms, the dimension of knowledge transfer types are presented in the companies providing health and safety services, with an average of 2.35. Because, it is mainly carried out during gatherings and meetings occasional in the workplace, limiting the existence of a technological memory available to all employees. Hence, they know the procedures of the company, which would facilitate the solution of unforeseen situations. This differs from that presented by Davenport and Prusak ⁶, for whom the transfer knowledge is mainly based on the exchange of experiences. Although, The Knowledge transfer is supported by technology, allows us to safeguard knowledge to be used in times of contingency. They emphasize the importance of tacit knowledge and the difficulty of being transferred. For this reason, they emphasize the application of techniques such as databases, routines, processes, practices, rules and institutional regulations. Additionally, for an adequate transfer it is important to promote trust in the source of knowledge and overcome the fear of taking risks by introducing new ways of doing a job.

In another order of ideas, in reference to the dimension of strategic knowledge management, the following results are presented in Table 9

Table 9
Statistics of the dimension Strategic knowledge management

<i>Dimension</i>	<i>Indicators</i>	<i>Half</i>	<i>Standard deviation</i>
Strategic Management of Knowledge	Vision	4.41	0.83
	Mission	4.21	1.09
	Strategic analysis	2.32	0.43
	Operational objectives	2.00	0.47
	Strategic objectives	1.74	0.56
	Action plans	2.62	0.60
Average Dimension		2.88	0.66

According to Table 9, the strategic knowledge management dimension reached an average of 2,88, indicating a medium level, showing that even when a well-defined mission and vision is in place, there should be clear goals, as well as action plans, for the fulfillment of the organizational strategy. Regarding the standard deviation of the strategic knowledge management indicators, they stood at 0.83; 1.09; 0.43; 0.47; 0.56 and 0.60, respectively, generating an average standard deviation for the dimension of 0.66, according to the interpretive scale; this value indicates a low dispersion of the scores with respect to the mean of the dimension. These results are based on what was proposed by Molina and Marsal ⁸, for whom the strategic management of knowledge is a process that allows defining the vision that the management team of the organization has about its future, analyzing the probable scenarios and establishing the necessary goals to approach the desired state.

When analyzing the results for the indicators; a very low level was observed in the application of strategic objectives. Likewise, the very high level obtained in the mission and vision indicators stands out, which indicates that the companies have very well defined their *raison d'être*, the goals to be reached when fulfilling the development of their obligations. However, there is a moderate presence of action plans, since it obtained a value of 2.62, which can be improved by clearly establishing the strategic analysis and the operational objectives of the companies providing health and safety services at work.

The reviewed authors agree that knowledge management will be strategic, as it is incorporated into the main elements of planning, guaranteeing alignment with the specific objectives of the company. The foregoing, considering that knowledge management is the ability of an organization to acquire, create, transfer, integrate, share and apply resources and activities related to knowledge through functional limits to

generate new knowledge Attia and Essam.²¹ Similarly, Abdessadak *et al.*²² defines knowledge management as all the tools, methods and approaches implemented in society to identify, capitalize on the knowledge of the company, organize it and share it. On the other hand, the study by Ceptureanu *et al.*²³ analyzes the barriers that affect knowledge management processes, grouped into three categories: organization, knowledge and people.

Next, it is analyzed if there are significant differences between the elements of strategic knowledge management, through the ANOVA statistical technique (Table 10).

Table 10
ANOVA Strategic Management Knowledge

	<i>Sum of squares</i>	<i>gl</i>	<i>Half quadratic</i>	<i>F</i>	<i>Sig.</i>
Between groups	95.971	5	19.194	36.680	.000
Within groups	50.235	96	.523		
Total	146.206	101			

Because the level of significance is less than 0.05, it is evident that there are significant differences between the groups analyzed, in this case, the elements of strategic knowledge management in the companies analyzed. From a post hoc test, in this case the Tukey HSD, in Table 11 the significant differences are identified (Sig. <0.05).

Table 11
Multiple comparisons Strategic Management Knowledge Test HSD Tukey

<i>(I) Factor</i>	<i>(J) Factor</i>	<i>Mean Difference (I-J)</i>	<i>Standard error</i>	<i>Sig.</i>	<i>Confidence interval at 95%</i>	
					<i>Lower limit</i>	<i>Upper limit</i>
Vision	Strategic analysis	1.88235*	0.24812	0.000	1.1608	2.6039
	Operational objectives	2.23529*	0.24812	0.000	1.5137	2.9568
	Strategic objectives	2.52941*	0.24812	0.000	1.8079	3.2510
	Action plans	1.76471*	0.24812	0.000	1.0432	2.4863
Mission	Strategic analysis	1.64706*	0.24812	0.000	0.9255	2.3686
	Operational objectives	2.00000*	0.24812	0.000	1.2784	2.7216
	Strategic objectives	2.29412*	0.24812	0.000	1.5726	3.0157
	Action plans	1.52941*	0.24812	0.000	0.8079	2.2510
Strategic objectives	Action plans	-0.76471*	0.24812	0.031	-1.4863	-.0432

*. The difference in means is significant at the 0.05 level.

Additionally, Pearson indexes are calculated between spontaneous and formalized transfer mechanisms versus strategic knowledge management (Table 12).

Table 12
Pearson's correlation spontaneous and formalized transfer mechanisms against strategic knowledge management

		<i>Strategic Management of Knowledge</i>
<i>Spontaneous transfer</i>	Pearson correlation	0.504*
	Sig. (bilateral)	0.039
	N	17
<i>Formalized transfer</i>	Pearson correlation	0.356
	Sig. (bilateral)	0.161
	N	17

*. The correlation is significant at the 0.05 level (bilateral).

**. The correlation is significant at the 0.01 level (bilateral).

According to the results of Table 12, the correlation index between strategic knowledge management and spontaneous transfer mechanisms corresponds to 0.504, which indicates an average correlation between the variables. On the other hand, the correlation between the formalized transfer and the strategic management of knowledge corresponds to 0.356, which also indicates the existence of an average correlation among these variables.

Considering the above given situation, the authors Jurado et al.²⁴ They point out that knowledge management is a fundamental and complex process for current organizations. In this sense, the authors Jami et al.²⁵ propose, despite the importance of the knowledge exchange in organizations, the failure rates of this type of project are high, due to the lack of a roadmap and a methodology for the strategic planning. For this reason, the authors Jami et al.²⁵ propose a strategic planning methodology for knowledge management integrated by the following phases: strategic review, strategic orientation, implementation and evaluation. Additionally, the Elmorshidy study²⁶ highlights the importance of using systems for knowledge management.

In addition, the study by Jaleel et al.²⁷ identifies and validates best practices to capture, organize and share project knowledge management and suggest how to improve the capabilities of project management maturity models, to assess the extent to which an organization is following the practices for manage the knowledge of the projects.

3.1. Guidelines to improve the transfer and strategic management of knowledge

Based on the results presented above, the following guidelines will be propose:

- Organize the record of exchanges between staff members who communicate through different digital and virtual media.
- Encourage activities such as reading legal documents, regulations, prevention programs, as well as scientific articles related to occupational health and safety to achieve an effective flow of knowledge; that can be carried out in pleasant meeting places inside or outside the organization.
- Schedule some type of knowledge event, organized for purposes of exposing safety and health programs designed for clients, results obtained once applied, special cases advised by companies, among others where employees participate as exponents; offering them the opportunity to share their ideas and best practices; thus converting tacit to explicit knowledge.
- Carry out discussion forums on safety and occupational health updates where the most experienced personnel share this information, contributing their points of view to encourage brainstorming among the participants, this being a formal knowledge transfer opportunity.
- Design specific programs to establish the technique of internal and external advice, as a formal practice of knowledge transfer.
- Encourage the acquisition of new skills and knowledge through the rotation of personnel or the expansion of tasks in the position.
- Establish strategic alliances with companies from the same branch or related sectors to exchange personnel or to carry out internships and training in specific areas of knowledge that dominate one of the allied companies.

Based on the strategic knowledge management dimension, the following guidelines are generated:

- Recognize knowledge management as part of the organizational strategy making use of the physical, technological and human resources available in the company.
- Diagnose the availability of these resources to determine the feasibility of applying actions in favor of knowledge management.
- Promote the generation of knowledge as a systematic process to meet the demands and needs in the environment; for which the management can establish incentive programs that motivate to create and share knowledge.
- Include knowledge management in the mission and vision of the company, so that action plans, as well as strategies are directed towards their implementation, involving people in the conversion of tacit-explicit knowledge.

- Propose mechanisms for the allocation of resources for the systematization of networks through new technologies.
- Identify internal factors, both organizational and administrative; that limit the freedom to exchange knowledge.
- Build, with the support of an expert system, the technical memory of the company, integrated by manuals, methods, programs, historical data, instructive on the management of technologies, executed projects, personnel profile, publications, among others; that can be consulted as a source of explicit knowledge by any member of the organization to increase their level of professionalization and experience.
- Maintain a climate of trust that influences the capture of knowledge and its use, as well as sharing it through collaboration.
- Establish strategic objectives and maintain an organizational culture to promote that knowledge about all of the tacit or individual type is shared among the members of the work team.
- To make the organization aware of the importance and value of organizational knowledge as an intangible asset.

4. Conclusions

Knowledge transfer mechanisms are used in a limited way in the companies studied. Where staff tend to transfer knowledge through spontaneous modalities such as meetings in the company spaces, where they have the opportunity to share and exchange points of view about a specific topic, observing that they make a limited use of the document readings to later discuss their content, deriving reflections that allow continuous updating in the area of professional performance.

Inside the mechanisms evaluated, the formalized transfer is applied by means of strategies such as, the advising of expert personnel, both external and internal, and the rotation of the personnel by different jobs to be trained in the procedures of a specific position to improve their skills and incorporate new learnings.

In conclusion, it is important to highlight the limited record of experiences in physical or digital documents that can serve as a source of knowledge for new staff or for less experience in a particular position that can consult these databases to clarify doubts or search historical data that allow you to solve current problems. These records are considered as knowledge repositories and constitute part of the company's intellectual capital as well as its technical memory where key knowledge for the creation of value is stored.

On the other hand, the strategic knowledge management was described. It is developed at a medium level, evidencing that even when companies have a well-defined mission and vision, they showed weaknesses in fundamental aspects for this management approach, such as action plans, strategic analysis and the definition of goals for the integration of knowledge management in its philosophical and strategic framework.

Apart from this, it is concluded there is a correlation between the knowledge transfer mechanisms and the strategic management of it. Additionally, the ANOVA technique highlights that in reference to spontaneous transfer mechanisms there are significant differences between: meetings and document readings. On the other hand, in formalized transfer mechanisms there are differences between counseling and the movement of personnel; also between the advice and the register of experiences in the companies analyzed. Finally, the elements of strategic knowledge management related to strategic objectives and action plans, and the mission and vision with the objectives of the organization, present significant differences in the companies targeted by the study.

5. References

1. Yildirmaz H, Atilla Öner M, Herrmann N. Impact of Knowledge Management Capabilities on New Product Development and Company Performance. *International Journal of Innovation and Technology Management*. 2018;15(4): 1850030. Doi: 10.1142/S021987701850030X.
2. Al-Emran M, Mezhuyev V, Kamaludin A, Shaalan K. The impact of knowledge management processes on information systems: A systematic review. *International Journal of Information Management*. 2018;43:173-187. Doi: 10.1016/j.ijinfomgt.2018.08.001
3. Yu D, Yang J. Knowledge Management Research in the Construction Industry: a Review. *Journal of the Knowledge Economy*. 2018;9(3):782-803. Doi: 10.1007/s13132-016-0375-7
4. Manfredi LV, Frattini F, Messeni PA, Berner M. Knowledge management, knowledge transfer and organizational performance in the arts and crafts industry: a literature review. *Journal of Knowledge Management*. 2018;22(6):1310-1331. Doi: 10.1108/JKM-08-2017-0367
5. Aparicio X. La Gestión del Conocimiento y las Tics en el Siglo XXI. *Conhisremi. Revista Universitaria de Investigación y Diálogo Académico*. 2009;5(1)1-21.
6. Davenport T, Prusak L. *Conocimiento en acción: Cómo las organizaciones manejan lo que saben*. Buenos Aires, Argentina: Pearson Education; 2001.
7. Peluffo AMB, Catalán CE. *Introducción a la gestión del conocimiento y su aplicación al sector público*. Santiago de Chile: Instituto Latinoamericano y del Caribe de Planificación Económica y Social; 2002. Available in: <http://unpan1.un.org/intradoc/groups/public/documents/uneclac/unpan014565.pdf>.
8. Molina J, Marsal M. *La gestión del conocimiento en las organizaciones. Negocios, empresas y economía: Libros en Red.com*; 2002.
9. Nonaka I, Takeuchi H. *La organización creadora del conocimiento*. Editorial de la Universidad de Oxford. New York. Estados Unidos de América; 1999.
10. Andreasik J. Knowledge management model based on the enterprise ontology for the KB DSS system of enterprise situation assessment in the SME sector. *Advances in Intelligent Systems and Computing*; 2019.

11. Gunasekera VS, Chong S. Knowledge management for construction organisations: a research agenda. *Kybernetes*.2018;47(9):1778-1800. Doi: 10.1108/K-10-2017-0378
12. Yousaf MJ, Ali Q. Impact of knowledge management on innovation: Evidence from a South Asian country. *Journal of Information Knowledge Management*.2018;17(3):1850035. Doi: 10.1142/S0219649218500351
13. Usoro A, Abiagam B. Culture effect on knowledge management adoption in Nigerian hospitality industry. *VINE Journal of Information and Knowledge Management Systems Information*. 2018;48(3):314-332. Doi: 10.1108/VJIKMS-11-2017-0080
14. Riesco M. El negocio es el conocimiento. Madrid España: Editorial Díaz de Santos; 2006
15. Lara F. ¿Cómo mejorar los resultados de una empresa?. Barcelona, España: Erasmus Ediciones. 2012
16. Pertuz PVP, Boscan RNC, Straccia MDC, Pérez OAB. Actividades de innovación en servicios en las pequeñas y medianas empresas comerciales del sector textil de Valledupar, Colombia. *Revista Espacios*. 2016; 37(06); 25.
17. Hernández R, Fernández C, Baptista L. Metodología de la Investigación. Quinta edición. México: McGraw Hill; 2010.
18. Bravo R. Tesis Doctorales y Trabajos de Investigación Científica. Madrid, España: Editorial Paraninfo; 2009.
19. Ruiz C. Instrumentos de investigación educativa: procedimientos para su diseño y validación. 1ª ed. Venezuela: CIDEG; 2002. 266 p.
20. Corzo J. Estadística no paramétrica. Métodos basados en rangos. Bogotá: Universidad Nacional de Colombia Facultad de Ciencias Departamento de estadísticas; 2005. Disponible en: <http://bdigital.unal.edu.co/47938/2/9587015460.PDF>.
21. Attia A, Essam Eldin I. Organizational learning, knowledge management capability and supply chain management practices in the Saudi food industry. *Journal of Knowledge Management*. 2018;22(6):1217-1242.
22. Abdessadak J, Achelhi H, Reklouai K. Innovation: The Linking the impact of the variables “Knowledge management” and “Organizational culture” on the company’s performance. Tangier, Morocco: Institute of Electrical and Electronics Engineers; 2018. Doi: 10.1109/LOGISTIQUA.2018.8428290 Available in: <https://ieeexplore.ieee.org/document/8428290>.
23. Ceptureanu SI, Ceptureanu EG, Olaru M, Popescu DI. An exploratory study on knowledge management process barriers in the oil industry. *Energies*. 2018;11(8): 1977. DOI: 10.3390/en11081977
24. Jurado JL, Garces DF, Paredes LM, Segovia ER, Alavarez FJ. Model for the improvement of knowledge management processes based on the use of gamification principles in companies in the software sector. In: Mejia J, Muñoz M, Rocha A, Peña A, Pérez-Cisneros M, editors. *Trends and Applications in Software Engineering*. Verlag: Springer International Publishing; 2019. p. 142-151.
25. Jami PM, Kouchak ZZ, Ahmad ZN. Designing an integrated methodology for knowledge management strategic planning: The roadmap toward strategic alignment. *VINE Journal of Information and*

- Knowledge Management Systems. 2018; 48(3):373-387. Doi: 10.1108/VJIKMS-10-2017-0071
26. Elmorshidy A. The impact of knowledge management systems on innovation: An empirical investigation in Kuwait. VINE Journal of Information and Knowledge Management Systems. 2018;48(3):388-403. Doi: 10.1108/VJIKMS-12-2017-0089
 27. Jaleel F, Daim T, Giadedi A. Exploring the impact of knowledge management (KM) best practices for project management maturity models on the project management capability of organizations. International Journal of Management Science and Engineering Management. 2019; 14(1): 47-52. Doi: 10.1080/17509653.2018.1483780