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Artículos Científicos

Gestión del capital estructural organizativo en instituciones educativas: caso del CUValles, Jalisco[1]

Management of Organizational Structural Capital in Educational Institutions: Case of CUValles, Jalisco

Gestão do capital estrutural organizacional em instituições de ensino: caso de CUValles, Jalisco

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Resumen

En la actualidad, las instituciones educativas afrontan desafíos que exigen de manera apremiante la identificación y medición de intangibles, con un enfoque especial en la gestión del capital intelectual, compuesto por el capital estructural, humano y relacional. El propósito de este estudio corresponde a la medición del capital estructural del Centro Universitario de los Valles (CUValles), institución de educación superior. Se utilizó como método básico el estudio de caso. Esto con la finalidad de medir intangibles que normalmente no son medidos, e identificar las fortalezas y debilidades del capital estructural del CUValles. Los resultados permitieron analizar en general el capital estructural, lo cual reflejó particularidades de dicha institución educativa y de su dinámica. Y también se pudo apreciar que el capital estructural representa una fortaleza del CUValles; muestra de ello se da en la sólida infraestructura

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tecnológica, los avances en innovación de productos y servicios, así como su constante fortalecimiento en el área de investigación y desarrollo.

Palabras clave: activos intangibles, capital estructural, universidad.

Abstract

Currently, educational institutions face challenges that urgently require the identification and measurement of intangibles, focusing their attention on the management of intellectual capital, composed of structural, human and relational capital. The purpose of this study corresponds to the measurement of structural capital, applied to the Centro Universitario de los Valles (CUValles), institution of higher education. The case study as a basic method was used. This to measure intangibles that are not normally measured and identify the strengths and weaknesses of the structural capital of the CUValles. The results allowed to analyze in general the structural capital, which reflected particularities of the mentioned institution and its dynamics. And also, it was possible to appreciate that the structural capital represents a strength of the CUValles; proof of this occurs in the solid technological infrastructure, the advances in innovation of products and services, as well as its constant strengthening in the area of research and development.

Keywords: intangible assets, structural capital, university.

Resumo

Atualmente, as instituições de ensino enfrentam desafios que exigem urgentemente a identificação e mensuração de intangíveis, com foco especial na gestão do capital intelectual, composto por capital estrutural, humano e relacional. O objetivo deste estudo corresponde à mensuração do capital estrutural do Centro Universitário dos Vales (CUValles), uma instituição de ensino superior. O estudo de caso foi utilizado como método básico. Isso para medir intangíveis que normalmente não são medidos e identificar os pontos fortes e fracos do capital estrutural dos CUValles. Os resultados permitiram analisar em geral o capital estrutural, que refletia as particularidades da instituição de ensino e sua dinâmica. E também pode ser visto que o capital estrutural representa uma força da CUValles; Isso é demonstrado

na sólida infraestrutura tecnológica, nos avanços na inovação de produtos e serviços, além de seu constante fortalecimento na área de pesquisa e desenvolvimento.

Palavras-chave: ativos intangíveis, capital estrutural, universidade.

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Introduction

Today is characterized by the need and demand for new ways of managing a very valuable resource in organizations and that has to do with intangible assets based on knowledge. In the words of Naranjo and Chu (2015):

> Human capital occupies an increasingly relevant place. Intangible aspects linked to organizations, in particular, are not a trivial matter. These are of increasing importance in the value structure of the vast majority of goods and services (p. 112).

Taking into account this need and the desire of organizations to compete in a global or regional environment, it becomes essential that companies turn their eyes inwardly and once again assess their leverage bases (processes, machinery, manuals, policies, etc.) before implementing or implementing any theory, technique or technology.

> They need to review their indicators, not just the financial ones. It is imperative that organizations get more out of their intangible advantages, that is, those elements that the company has and that are difficult to quantify, touch, express and evaluate (Borjas, 2002, p. 2).

Many of these tools provide immaterial benefits that are now taken for granted, but that did not exist before, to the point that the organization cannot function without them. Ownership of such tools provides competitive advantages and, therefore, constitutes an asset (Del Castillo, 2019). Reference is made to the combination of intangible assets that allow the organization to function, and that encompasses the set of elements, factors, assets, skills, attributes that the company owns or controls and that allow it to formulate and implement a strategy (Navas , 2015).

The perspective of measuring structural capital in educational institutions, specifically in the case of universities, aims to review the evolution of considerations for this process in the public sector. And to fulfill this purpose, this study makes a journey through

concepts, methods and models of structural capital measurement in organizations, with the purpose of approaching an ideal model for higher education institutions that allows to reveal intangibles that are not normally measured or measurable At the same time, through a case study, access the particularities of a specific institution. It should be noted that, based on the importance of intangibles for any organization, this research focuses on the distinction of intellectual capital as a factor in value creation, specifically in structural capital. Therefore, the objective of the present study is to identify, measure and analyze the structural capital and determine the strengths and weaknesses of this aspect specifically in the University Center of the Valleys (CUValles), by virtue of being the component that indicates the formalism and The systematization of knowledge.

Structural capital, unlike the other two components (human capital and relational capital), is composed of the knowledge that is generated in the organization and that is its property; Even when the people who generate it leave, this knowledge stays in the organization. Therefore, a conceptual and empirical review has been carried out and, as lines were advanced, the case study applied to a higher education institution has been methodologically used, to finally present the results obtained from the evaluation of structural capital.

Intellectual capital: conceptualization

Next, a theoretical approach is made on the subject of intellectual capital and its components; Emphasis is placed on their differences and similarities, as well as the characteristics of each component, in particular structural capital, which is the reason for the present study.

This literary journey will begin describing the concept of intellectual capital and its components. It would be necessary to start, then, by saying that this concept integrates all the intangible organizational resources that are not included in the financial statements, but which, nevertheless, contribute greatly to the generation of value or organizational plus. In broad terms:

> It is the set of systems and processes oriented to the production and participation of knowledge based on the strategic objectives of the organization with its components, human capital, structural and relational, give value to the company and determine the performance of organizations (Limache, 2017, p. 505).

In that sense, intellectual capital refers to the possession of knowledge, applied experience, organizational technology, relationships with customers, suppliers, etc., as well as professional skills that provide a competitive advantage in the market (Edvinsson and Malone, 1997). The above is in accordance with what Pastrana (2016) said, who also emphasizes that knowledge is the source of value and wealth creation.

For its part, Rivas (2013) comments that the concept of intellectual capital maintains a variety of complex connotations. Until ten years ago, for example, it was synonymous with intellectual property, intellectual assets and knowledge, which reflects that it could be considered as the final result of a process of transformation of knowledge or knowledge itself.

Bautzer (2010), on the other hand, states the following:

> With the advance of social development and intense reformulations in labor relations, the great currency of exchange of the so-called informational age or information society became the intellectual capital and its consequent application in talent management in organizations independently of its size and / or segment of action constituting knowledge in the main focus of building the competitive advantage of successful organizations (p. 16).

Given the above, the theoretical roots of intellectual capital can be traced in two different currents of thought. On the one hand, the measurement current, centered on the need to develop a new information system by measuring non-financial data along traditional financial systems. On the other, the strategic current, which has studied the creation and use of knowledge, as well as the relationships between knowledge and success or the creation of value (Ramírez, 2007).

For Simó (2008), intellectual capital has to do with the knowledge owned by the organization (explicit knowledge) or its members (tacit knowledge) that creates or produces present and future value for the company. Bermudez, Pertuz and Boscan (2015) agree with that. In his own words:

> It is an intangible asset, directly associated with the knowledge or intellectual material that is stored in people's brains, creating value for organizations and increasing competitive advantages. Mathematically it is the sum of the three capitals: human capital, structural capital and relational capital. From an accounting point of view, it is a non-financial capital, difficult to audit and represent your data in the financial statements (Bermúdez *et al.*, 2015, p. 137).

Finally, it can be induced that the baggage of essential knowledge of an organization is the main source of value. And certainly it is necessary to identify, measure, increase and definitely manage these intellectual assets to be considered as a success factor in their environment.

Components of intellectual capital

Within the conceptual framework of intellectual capital, the authors frame a division of this, and whose components are three: human capital, relational capital and structural capital.

Human capital is defined as the stock of individual knowledge of an organization, represented by its employees. Employees contribute to the generation of intellectual capital through their competence, attitude and mental agility. The competition includes skills and education, while the attitude represents the behavior of employees towards work. Finally, mental agility is the characteristic that allows employees to modify organizational practices and develop innovative solutions to problems (Ordonez, 2000, p. 134).

The second is relational capital, which includes relationships with the environment, and more specifically with the economic agents that participate in the different phases of the product value chain: suppliers, competitors and customers (Martos, Fernández and Froilan, 2008).

And finally, structural capital. Bontis (2004), who calls it as process capital, defines it as the non-human knowledge stores that are incorporated within the company or organization, in its technology and in information and communication systems, represented by hardware, software, databases, laboratories and organizational structures that support and represent the production of human capital. And it is in this component that the present study is based.

Conceptual framework of structural capital

The structural capital is made up of all the equipment, programs, databases, strategies, organizational structure, patents, trademarks, systems, routines, procedures. In general, what sustains the productivity of the employees, that is, everything that stays in the office when the employees go home (Edvinsson and Malone, 1997).

Vidal (2017) refers that "structural capital has an internal and an external component (organizational and relationship capital respectively), while human capital comes from knowledge, attitude and intellectual agility of employees" (p. 7).

Also, structural capital is usually composed of aspects related to the organization and technology. Among the former is the organizational culture, or the set of values that driven by the board serve as role models in the organization. Among the technological aspects we talk about the technology introduced in each of the products / services or processes carried out by the company (Martos et al., 2008).

In that sense, Heredia and González (2010) coincide in stating that the structural capital includes databases, organization tables, manuals.

> Structural capital is everything whose value for the company is greater than its material value and not only that, but ensures that its evolution, because it is not in anyone's head, evolves more slowly than human capital and those elements define the way of work of the organization (Heredia y González, 2010, p. 12).

It is important to specify that this type of capital integrates intangibles, not tangible infrastructure such as equipment. The infrastructure assets that it considers are methodologies and processes that make the operation of the organization possible (Demuner, Nava and Mercado, 2016).

On the other hand, Carrillo, Gutiérrez and Díaz (2012) conceive it in a broader way:

> Structural capital is a component of intellectual capital, and represents the intangible assets developed by the human resources of the organization, product of research activities, systematization of processes, brand generation, patents, among others. It is generally classified into two components: The first, organizational capital, which in turn is composed of the following categories: a) culture, b) organizational structure, c) training processes, d)

training, and e) organizational learning. The second, technological capital, which is formed by the categories: a) innovation, b) process improvement, and c) intellectual property (pp. 103-104).

Similarly, Ordonez (2004) states that structural capital is subdivided into organizational capital and technological capital. The first integrates all aspects related to the organization of the company and its decision-making process, such as organizational culture, structural design, coordination mechanisms, organizational routines, planning and control systems, among others; the second, which is technological, includes all those knowledge of a technical and industrial nature, such as the results of research and development and of process engineering.

In that sense, Stewart (1998) emphasizes that the elements that stand out mainly within the structural capital are the business culture, the organizational configuration of the company and the creation and development of knowledge.

Robles y Zárate (2013, p.75) defines structural capital as the set of knowledge that remains in the company at the end of the day. It includes patents, ideas, operating structures, as well as the administrative and computer organization of the company. It also includes aspects of installed capacity, productive efficiency and even internal business management or communication strategy in the company.

In short, in the conceptualization of structural capital, coincidences were found, for example, in that this is divided into organizational capital and technological capital. In addition, several authors highlight the importance of certain intangible resources of the organization that, despite contributing to the creation of organizational value, are not reflected in the financial statements.

Models of measurement and management of structural capital in organizations

In the search for the different models of measurement and management of structural capital that have been designed over time, he found the research carried out by Demuner et al. (2016), which shows in detail what happened in said term. Here this information is partially presented in table 1.

Tabla 1. Indicadores de capital estructural

Dimensiones	Indicadores	Fuente*
Procesos	Rutinas internas	Kaplan y Norton (1992); Brooking (1996); Kaplan y Norton (1997); Edvinsson y Malone (1997); Euroforum Escorial (1998); Bontis (1998); Leitner (2002); CIC (2003); Bueno-CIC (2003); Chen *et al*. (2004); Joia (2004); Guthrie *et al*. (2004); Ordóñez de Pablos (2004); Topete y Bustos (2007); Aguilera, Díaz y Hernández (2011); Ramírez y Peñalver (2013).
	Sistematización de información	Chen *et al*. (2004); Joia (2004); Guthrie *et al*. (2004); Brooking (1996); Saint-Onge (1996); Ross *et al*. (1997); Sveby (1997); Edvinsson y Malone, 1997; Bontis (1998); Aguilera *et al.* (2011).
	Innovación y nuevas tecnologías	Bueno-CIC (2003); CIC (2003); Chen *et al*. (2004); Joia (2004); Ordóñez de Pablos (2004); Ramírez y Peñalver (2013).
	Dotación de equipo tecnológico	Brooking (1996); Edvinsson y Malone (1997); CIC (2003); Bueno-CIC (2003).
Cultura	Vínculos organizativos internos	Saint-Onge (1996); Brooking (1996); Sveby (1997); Bontis (1998); Euroforum Escorial (1998); Dow (1998); Bueno-CIC (2003); CIC (2003); Chen *et al*. (2004); Joia (2004); Guthrie *et al*. (2004); Ordóñez de Pablos (2004).
	Aprendizaje organizativo	Leitner (2002); Bueno-CIC (2003); CIC (2003); Chen *et al*. (2004).
	Filosofía de la dirección	Brooking (1996); Euroforum Escorial (1998); Joia (2004); Guthrie *et al*. (2004).
	Apoyo a la investigación	Bueno-CIC (2003); Bueno-CIC (2003),
	Integración de mecanismos	Saint-Onge (1996); Sveby (1997); Ross *et al*. (1997); Edvinsson y Malone (1997); Euroforum Escorial (1998);

	de coordinación	Bontis (1998); Bueno-CIC (2003); CIC (2003); Chen *et al*. (2004); Joia (2004); Ordóñez de Pablos (2004); Sánchez *et al*. (2009).
Estructura	Integración de grupos de investigación internos	Carrillo *et al*. (2012).
	Creación de bases de datos	Brooking (1996); Edvinsson y Malone (1997); Joia (2004).
	Acervo electrónico, publicación de revistas científicas	Bontis (1998); Nava y Mercado (2010); Fazlagic (2011).
	Patentes, prototipos	Brooking (1996); Edvinsson y Malone (1997); Ross *et al*. (1997); Sveby (1997); Topete y Bustos (2007); Euroforum Escorial (1998); Modelo Navegador de Skandia, Bueno-CIC (2003); CIC (2003); Guthrie *et al*. (2004); Sánchez *et al*. (2009); Ramírez y Peñalver (2013).
Propiedad intelectual	Publicaciones	Topete y Bustos (2007); Sánchez *et al*. (2009); Nava y Mercado (2010); Aguilera *et al.* (2011).
	Conferencias impartidas	Topete y Bustos (2007).
	Proyectos de investigación concluidos	Aguilera *et al*. (2011); Naranjo *et al.* (2013); Ramírez y Peñalver (2013).

*La mayoría de las fuentes aparecen citadas en Demuner *et al.* (2016)

Fuente: Demuner *et al.* (2016)

As noted, the literature provides a series of indicators. The authors suggest using these considering, first, the adaptation to the objective for which the evaluation of the structural capital is carried out and, second, the particular characteristics of the institution.

Method

The type of research carried out corresponds to an empirical analytical study. The case study was applied as a basic method. As is known, through this the behavior of the people involved in the studied phenomenon is measured and recorded (Yin, 1989). In addition, in the case study method the data can be obtained from a variety of sources, both qualitative and quantitative, that is, documents, file records, direct interviews, direct observation, observation of participants and facilities or physical objects (Chetty, 1996).

The research area selected for this study was the University Center of the Valleys (CUValles), regional center of the University of Guadalajara located in the municipality of Ameca, Jalisco, Mexico. This institution was chosen for the area it covers: it covers 19 municipalities in the Valles region; and above all for the prestige he has achieved in his environment, which has been a consequence, it could be deduced, from the work of strengthening his tangible and intangible assets. The organization, as an institution of higher education, offers academic programs (bachelor's degrees, diplomas, masters and doctorates). Therefore, it turned out to be a very attractive field to carry out the study, and especially, combined with everything already mentioned, for not having evidence of previous studies or measurements of the strengths and weaknesses of its intangible assets or of the organizational structural capital.

To collect the empirical data, the questionnaire “Identification and measurement of structural capital” (Naranjo and Chu, 2015) was used, whose instrument was already validated and applied in a similar study. This instrument establishes two dimensions of structural capital, as shown in Table 2:

Tabla 2. Identificación y medición del capital estructural

Dimensiones	Indicadores	Núm. de reactivos
Capital organizacional	Rutinas organizativas	4
	Actividades organizacionales	3
Capital tecnológico	Dotación de equipo tecnológico	7
	Innovación y desarrollo	4
		Total: 18

Fuente: Elaboración propia

This instrument is made up of 18 reagents in total that will allow the measurement of the intangible assets of the institution in question.

And on the other hand, another questionnaire was used to identify the strengths and weaknesses of the structural capital of CUValles, consisting of 16 reagents. The instrument was obtained from the study conducted by Bermúdez et al. (2015). The response options were categorized in a Likert-type attitude measurement scale, termed totally agree (ADD), agree (AD), indifferent (I), disagree (ED) and totally disagree (EDT).

The questionnaire and the survey were socialized to all people in the relevant and necessary areas where their participation in the process was required. Information was also obtained from the annual report that is presented by the rector of the center each year. All this series of activities for the application and obtaining of specific information and data allowed the interaction, socialization and observation of all those involved in the study. A database was generated with the information obtained in Excel to proceed to encode and tabulate the data obtained, in order to calculate the absolute and relative frequencies (Bermúdez *et al*., 2015).

Results

This section shows the results obtained with respect to the dimensions and indicators of structural capital.

First, the results obtained from the application of the questionnaire "Identification and measurement of structural capital" (Naranjo and Chu, 2015) are presented. It began with the dimension of organizational capital, which belongs, according to Ordonez (2004), to the company as a whole. This can be played or shared. Some elements that are integrated within

this dimension are all aspects related to the organization of the company and its decision-making process, such as organizational culture, structural design, coordination mechanisms, organizational routines, planning systems and control, among others. Table 3 shows the results obtained with respect to organizational capital.

Tabla 3. Dimensión capital organizacional

Indicador	Reactivos	2019
Rutinas organizativas	Conocimiento de la plataforma estratégica (%)	76.72
	Misión y visión compartida (%)	82.10
	Nivel de satisfacción laboral (%)	80.09
	Nivel de compromiso institucional (%)	78.43
Actividades organizacionales	Empleados que participan en grupos sociales (%)	41.07
	Número de acciones de bienestar laboral	131
	Número de canales de comunicación interna	8

Fuente: Elaboración propia con base en Naranjo y Chu (2015)

Among the activities that CUValles is carrying out with a view to achieving its goals and objectives are those focused on terminal efficiency, career certification, membership, presence and impact in the region it covers, as well as a conception of carrying out its activities in a sustainable and sustainable way.

It is important to note that everything regarding the philosophy of CUValles is found on its institutional website, where all those involved and interested can consult and inform themselves accurately. On the other hand, the CUValles, in its purpose of serving the work environment part, performs events for its staff and children: cultural, sports and artistic activities, which generate socialization and good living. In addition to that, the center has yoga courses, an expanded gym with new equipment, folk dance workshops and basketball, volleyball and soccer fields that are for the entire university community.

With regard to internal communication channels, CUValles has a web page, email, internal network telephony, personalized trades, online platform (Moodle), etc. Finally, it is worth mentioning that this dimension was in which there was some difficulty in obtaining the information, as it was not fully available.

On the other hand, with respect to the technological capital dimension, which consists of innovation, process improvement and intellectual property (Carrillo et al., 2012), the results shown in table 4 were obtained.

Tabla 4. Dimensión capital tecnológico

Indicador	Reactivos	2019
Dotación de equipo tecnológico	Nivel de utilización de herramientas tecnológicas (%)	92.13
	Número de conocimientos almacenados en la intranet	796
	Nivel de automatización de procesos (%)	83.52
	Nivel de obsolescencia de las bases de datos (%)	2
	Nivel de obsolescencia de las aplicaciones informáticas (%)	0
	Nivel de obsolescencia de la maquinaria y equipo (%)	4
	Número de foros virtuales	98
Investigación, innovación y desarrollo	Incentivos por innovar (%)	3
	Personal en investigación y desarrollo (I+D) (%)	38
	Proyectos de I+D (%)	21
	Número de patentes	6

Fuente: Elaboración propia con base en Naranjo y Chu (2015)

Regarding this dimension, it is important to comment that the CUValles was born with the characteristics of a non-traditional, semi-essential educational model, where technological tools play a very important role, so in this area there was evidence of broad technological support that accompanies all the organizational activities of the center. Hence the level of obsolescence of databases is very low and that of computer applications is null by keeping licenses and maintenance of their databases, software and applications, as well as the Moodle platform, updated at all times. in which students, teachers and administrators interact.

On the other hand, being a higher education institution, it is essential to have a space for research, innovation and development, and in CUValles there is an area responsible for monitoring and supporting innovation and development, where patents have been generated , scientific research laboratories, for example, the Specialized Software, Electronics and Control, Mechanics, Electronics and Telecommunications, and Basic Sciences laboratories,

as well as two research centers, one in digital signal processing and the other in nanosciences and nanotechnologies, all of which account for the path already traveled in these areas.

Next, table 5 shows the results obtained by applying the second questionnaire (Bermúdez et al., 2015), with respect to the basic indicators of each dimension to measure the strengths and weaknesses of the structural capital of the CUValles and perform the calculation of absolute and relative frequencies.

Tabla 5. Estadísticos de las dimensiones del capital estructural

Indicadores	**Alternativas**										**Total**	
	TED		ED		I		DA		TDA			
	Fa	%	Fa	%	Fa	%	Fa	%	Fa	%	Fa	%
Esfuerzos de I+D	3	16.67	4	18.33	2	10	7	36.67	4	18.33	20	100
Resultados de innovación	2	10	2	8.33	4	18.33	7	36.67	5	26.67	20	100
Dotación tecnológica	0	0	0	0	0	0	8	38.33	12	61.67	20	100
Actividades organizacionales	4	18.33	4	18.33	3	16.67	4	20	5	26.67	20	100
Propiedad intelectual	2	8.33	6	30	5	26.67	3	16.67	4	18.33	20	100

Fuente: Elaboración propia

For the interpretation of the data obtained in Table 5 and to establish the strengths and weaknesses the following criteria were considered.

1) Strengths: when a percentage greater than 50% of the respondents' answers is in the categories ADD and AD (positive position).

2) Weaknesses: when the percentage above 50% of the answers are in category I, ED and TED (negative position) (Bermúdez *et al*., 2015).

Strengths of structural capital in CUValles

From the results obtained, it can be seen that, among the indicators used, the most strengthened and remarkable was the Technological Endowment, when it was evidenced that 100% of the interviewees agreed and totally agreed that the processes in this area are effective and efficient; By keeping the licenses and maintenance of its databases, software and applications, as well as the Moodle platform, updated at all times, adequate backup and storage of the information generated in electronic media, and prompt and timely attention to these services .

The second indicator that shows positive results is that of Innovation Results, since 63% of the informants agreed and totally agreed with respect to the support in the process of the research projects, by giving them a timely follow-up seeking to solve any eventuality . There was also a lot of positive perception that new ways of generating clean and sustainable energy for the center, nanotechnology products and digital signal processing, among others, have been developed and implemented.

The third strength is the indicator of the R&D efforts indicator. Here 55% of respondents said they agree and totally agree when considering that research and development groups are made up of committed and qualified academics, in addition to having budgetary support for the proper development of their activities, which allows them to generate new knowledge with entrepreneurial, creative and innovative spirit; while the remaining percentage (45%) remained neutral or expressed disagreement and strongly disagree.

Weaknesses of structural capital in CUValles

The indicator that reflected the greatest weakness was that of Intellectual Property: 65% of the opinions were divided: one party disagreeing and totally disagreeing (38%), and another part indifferent (27%) regarding the management and monitoring of the intellectual property process. These opinions reveal that there are no clear policies aimed at the management of this indicator, despite being a very important aspect since it is considered that the generation of knowledge is probably the most important asset of a higher education institution, and that it should be at all times protected through a strategic and established institutional policy.

And finally, the second dimension that they declared as weak was that of Organizational Activities: 53% of those approached disagreed, totally disagreed or indifferent as to the part of the selection of personnel for entry and to occupy middle management positions , and exposed their disapproval of the mechanisms used for this. In addition to that, they externalized that the planning and control systems sometimes limit creativity and initiative and that under other conditions it could be a potential strength.

Discussions

From the results obtained in the study it is clear that intangible assets in the CUValles represent a great value: they have positive effects on the center and its surroundings (tables 3 and 4). In addition, the data show that organizational capital and technological capital have been developing significantly and have obtained benefits, taking better advantage of their intangible advantages. And it was also observed that technological capital represents for CUValles the greatest strength in the development of innovations and projects, in technological endowment, by keeping up-to-date in technologies, databases and software. At this point it is important to note that there is congruence between the goals and objectives set forth in the rectors' reports and the results of this study regarding technological capital. On the other hand, it is striking that the aspect of intellectual property is manifested as the main weakness of the center, which contrasts with what some authors express that the intangible resources that are generated in the organization are the latter's possession and that they must be taken care of and protected (Edvinsson and Malone, 1997; Robles and Zárate, 2013; Simó, 2007), and even more when considering that these intangible assets generate competitive value and advantages (Bautzer, 2010; Bermúdez et al., 2015; Edvinsson and Malone, 1997; Limache, 2017; Pastrana, 2016; Ramírez, 2007).

And in that same trend, another factor that showed weakness was related to organizational activities, where some aspects that showed evidence on the disagreements and disagreements of the institutional policies established for the hiring of personnel and on the systems of personnel were obtained and observed. planning and control, among others, which allowed generating a sense of interest for future research, with a more qualitative approach that allows us to understand and expand the issue related to organizational activities, considering that this study represented a limitation.

Conclusions

The evaluation of structural capital in a higher education institution has allowed the analysis of the intangible asset that is knowledge, integrating all internal processes, generation, transmission, communication and administration of this.

Hence, after the analysis process that integrates the aspects of structural capital in the CUValles, it can be asserted that the greatest strengths of this center are established in everything related to technological infrastructure and innovation, research and development processes, areas that were evidenced are very strengthened. On the contrary, the study also allowed identifying those aspects that showed weakness: organizational activities and intellectual property.

Through this investigation, internal situations could be identified, which could allow the center to implement strategies in the search for possible solutions or improvements in certain aspects in order to generalize all its intangible assets or its structural capital.

In sum, the CUValles shows in general a structural capital strengthened and prepared to respond to the demands and needs that the Valles region requires, an area that covers the university center, because the analysis undertaken here evidences that it has quality standards, with qualified human resources, technology and infrastructure to meet the demands of the environment.

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