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Artículos Científicos

Capital estructural y desempeño organizacional en el sector público de salud del estado de Tamaulipas, México

Structural capital and organizational performance in the public health sector of the state of Tamaulipas, Mexico

Capital estrutural e desempenho organizacional no setor de saúde pública do estado de Tamaulipas, México

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Resumen

En términos generales, la salud constituye uno de los derechos básicos intrínsecos para cualquier ser humano, de ahí que sea la piedra angular de la calidad de vida de toda sociedad. En este sentido, las perspectivas del sistema sanitario deben aprovechar las herramientas estratégicas que impulsan el desempeño organizacional a través del capital estructural. Por ello, la presente investigación tiene como primer objetivo determinar los factores que componen el capital estructural y el desempeño organizacional para luego analizar su relación en el sector público de salud del estado de Tamaulipas, México. Se usó un análisis factorial exploratorio (AFE) para validar el instrumento de medición y establecer la conformación subyacente de las dos variables de estudio. Además, con el coeficiente de correlación de Rho de Spearman se observó la reciprocidad existente entre los factores asociados a las citadas variables. Se aplicaron 125 encuestas de manera electrónica y presencial. Se determinaron dos factores para el capital estructural (1. innovación continua y 2. estructura organizativa formal) y cuatro para el desempeño organizacional (1. ciudadanía organizacional, 2. productividad, 3. dinamismo, y 4. fraternización organizacional). Los

resultados coadyuvan al robustecimiento de la literatura científica y promueven la gestión estratégica proactiva en beneficio del sector público de salud tamaulipeco.

Palabras claves: capital estructural, desempeño organizacional, sector público de salud, Tamaulipas.

Abstract

In general terms, health constitutes one of the basic intrinsic rights for any human being and is the cornerstone in the quality of life of every society. In this sense, the perspectives of the health system must take advantage of the strategic tools that promote organizational performance through structural capital. Therefore, the first objective of this research is to determine the factors that make up structural capital and organizational performance and, from there, to analyze their relationship in the public health sector of the state of Tamaulipas, Mexico. An exploratory factor analysis (EFA) was used to validate the measurement instrument and establish the underlying conformation of the two study variables. Furthermore, with Spearman's Rho correlation coefficient, the existing reciprocity between the factors associated with the aforementioned variables was observed. 125 surveys were applied electronically and in person. Two factors were determined for structural capital (1. continuous innovation and 2. formal organizational structure) and four factors for organizational performance (1. organizational citizenship, 2. productivity, 3. dynamism, and 4. organizational fraternization). The results contribute to the strengthening of the scientific literature and promote proactive strategic management for the benefit of the Tamaulipas public health sector.

Keywords: structural capital, organizational performance, public health sector, Tamaulipas

Resumo

Em termos gerais, a saúde constitui um dos direitos intrínsecos básicos de qualquer ser humano, sendo, portanto, a pedra angular da qualidade de vida de qualquer sociedade. Nesse sentido, as perspectivas do sistema de saúde devem aproveitar as ferramentas estratégicas que impulsionam o desempenho organizacional por meio do capital estrutural. Portanto, o primeiro objetivo desta pesquisa é determinar os fatores que compõem o capital estrutural e o desempenho organizacional e, em seguida, analisar sua relação no setor de saúde pública do estado de Tamaulipas, México. Uma análise fatorial exploratória (AFE) foi usada para

validar o instrumento de medida e estabelecer a conformação subjacente das duas variáveis do estudo. Além disso, com o coeficiente de correlação Rho de Spearman, observou-se a reciprocidade existente entre os fatores associados às variáveis citadas. 125 pesquisas foram aplicadas eletronicamente e pessoalmente. Dois fatores foram determinados para o capital estrutural (1. inovação contínua e 2. estrutura organizacional formal) e quatro para o desempenho organizacional (1. cidadania organizacional, 2. produtividade, 3. dinamismo e 4. fraternização organizacional). Os resultados contribuem para o fortalecimento da literatura científica e promovem uma gestão estratégica proativa em benefício do setor de saúde pública de Tamaulipas.

Palavras-chave: capital estrutural, desempenho organizacional, setor de saúde pública, Tamaulipas.

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Introduction

In general terms, health constitutes one of the intrinsic basic rights for any human being, hence it is the cornerstone in relation to the quality of life of every society. It is very difficult to imagine sustainable economic development without ensuring, in the first place, a health system that is tailored to the particular needs of each country. Therefore, hospital institutions have a great responsibility to make the maximum administrative effort to provide the best medical service to the population. The perspectives of the health system should take advantage of the strategic tools to facilitate continuous organizational improvement through intellectual capital (Acevedo, Farias, Sánchez, Astegiano and Fernández, 2012; Bernal, Pedraza and Sánchez, 2015; Working Group of the Mexican Foundation for Health, 2013; World Health Organization [WHO], 2018).

In this sense, intellectual capital encompasses the intangible heritage of knowledge that must be used by the organization's strategists in the fulfillment of organizational performance (Aramburu, Sáenz and Blanco, 2015). Likewise, the optimal administrative management of tangible and intangible resources will indicate the path to be taken for each potential decision scenario (Nuryakin, 2018). Therefore, the achievement of competitive advantages will be born from the perfect combination of both types of resources (tangible and intangible) (Khan, Kamaruddin and Buyung, 2017; Torres, Vásquez and Luna, 2011).

However, it is worth noting that intangible resources —because they are not only difficult to replace, but also complex to be imitated by competitors— are more relevant than their tangible counterpart (Chatterji and Kiran, 2017). Therefore, the management top must be able to link the supply of intangible assets with the implemented strategy, since this will cause good results in terms of organizational performance (Fernández, Molodchik and Paklina, 2018).

In this sense, various authors point out that intellectual capital can generate a positive and significant influence on organizational performance, for example, in relation to high productivity, achievement of objectives, reduction of waste and redundancies, etc. (Ibarra and Hernández-Perlines, 2018; Yudawisastra, Manurung and Husnatarina, 2018). In other words, competitive advantages arise to a greater extent from a correct management of intellectual capital, and not so much from the simple abundance of tangible resources (Hejazi, Ghanbari and Alipour, 2016). Thus, the structure of the organization must support intellectual capital at all times, since this asset does not function spontaneously. (Freeburg, 2018).

Most of the scientific literature on intellectual capital suggests that its explanatory power lies in three main dimensions: human capital, relational capital and structural capital (Bakhsha, Afrazeh and Esfahanipour, 2018; Bontis, 1998; Burgman and Roos, 2007; Cabrilo , Kianto and Milic, 2018; Cleary, 2015; Roos, 2017; Sumedrea, 2013). However, it should be noted that this scientific work focused exclusively on structural capital and organizational performance and then analyzed its relationship with the public health sector of the state of Tamaulipas, Mexico.

Literature review

In the knowledge-based economy, intellectual capital plays a leading role in creating and strengthening competitive advantages that provide added value to the products or services of organizations (Asiaei and Jusoh, 2015; Villegas, Hernández and Salazar, 2017) . This means that organizational performance is influenced by the intangible assets that are owned at a given time, so decision makers must be able to capitalize on these resources to achieve a more efficient and effective achievement of the objectives set during the stage. planning (Andreeva and Garanina, 2016; Bontis, 1998; Edvinsson and Sullivan, 1996; Lavín, 2010).

Now, as explained in the introduction, intellectual capital is made up of three basic dimensions: human capital, relational capital, and structural capital. Human capital refers to all the knowledge that is owned by the employees of an organization, such as abilities, skills, loyalty, maturity, kindness, gift of command, adaptability, attitudes, talents, etc. (Bontis, Chua and Richardson, 2000; Fuentes, Osorio and Mungaray, 2016; Hashim, Osman and Alhabshi, 2015). On the other hand, relational capital is the knowledge manifested in formal and informal relationships with any stakeholder in the organization, either internally or externally (Ahmed, Vveinhardt & Streimikiene, 2017; Cabrita, 2009; Delgado-Verde, Martín-de-Castro, Navas-López and Cruz-González, 2011). Typical examples of relational capital are internal information networks used by employees, alliances or collaboration agreements such as outsourcing, agreements signed with higher education institutions or suppliers, among others (Álvarez, Lavín, Pedraza and Ibarra, 2018) . Instead, structural capital —axis on which this research is focused— represents knowledge that belongs only to the organization (eg, patents, trademarks, databases, organizational manuals, information systems, etc.) (Allameh, 2018; Buenechea-Elberdin, Sáenz and Kianto, 2018; Ferreira and Franco, 2017; Phusavat, Comepa, Sitko-Lutek and Ooi, 2011).

In other words, structural capital is essentially the opposite idea to the dimension of human capital, because it consists of "knowledge that has been made explicit and documented" (Silva, Barahona & Galleguillos, 2014, p. 567). Table 1 presents some definitions of structural capital, as well as its four core characteristics: 1) organizational processes, 2) infrastructure, 3) organizational strategy and 4) ownership of the organization (Flores, Álvarez-Herrera y Pedraza, 2020).

Tabla 1. Definiciones del capital estructural y características medulares

Fuente	Definición	Características medulares
Aramburu *et al.* (2015, p. 45).	"Se refiere al conjunto de intangibles de naturaleza tanto explícita como implícita, formal e informal, que permiten que la actividad de la empresa se estructure y desarrolle de manera efectiva y eficiente".	• Procesos organizacionales
Gogan, Artene, Sarca y Draghici (2016, p. 196).	"Es el componente de la organización que puede describirse como la infraestructura de la organización y los procesos organizativos utilizados para obtener productos y servicios".	• Infraestructura
Matos, Vairinhos, Dameri y Durst (2017, p. 695).	"El capital estructural consiste en las infraestructuras, procesos, rutinas, *software* y bases de datos que permiten el funcionamiento de las organizaciones".	• Estrategia organizacional
Sumedrea (2013, p. 140).	"El capital estructural (organizativo) incluye sistemas de información, conocimiento codificado en forma de bases de datos, procesos y procedimientos organizacionales (que no están en la mente de los empleados, sino en medios externos), marcas registradas, patentes e infraestructura requerida para respaldar la aplicación de las estrategias organizativas".	• Propiedad de la organización

Fuente: Elaboración propia a partir de Aramburu *et al.* (2015), Flores *et al*. (2020), Gogan *et al*. (2016), Matos *et al.*, (2017) y Sumedrea (2013)

The correct management of structural capital should focus on establishing the formal internal procedures that indicate the best way to execute the various organizational tasks in order to gain maximum knowledge; that is, seek the most effective way to expand the intellectual assets of the organization by establishing the optimal way to encode the highest

percentage of knowledge owned by human resources available in the workforce and, consequently, reduce the negative impact of leakage ideas caused by the possible termination of employment of such personnel (Adler and Kwon, 2002; Ibarra and Hernández-Perlines, 2018; Longo, Mariani and Mura, 2009; Losada and Rodríguez, 2007; Yang and Lin, 2009; Zablah, Bellenger and Johnston , 2004).

Strategically managing structural capital must be high on the agenda of those who must make decisions, regardless of the sector to which they belong. The constant modernization of the technological infrastructure facilitates the conservation, growth and effective application of the stock of knowledge, which invariably has repercussions in a continuous and sustainable improvement of organizational activities, both routine and complex. Some examples of the processes supported by structural capital are the customer service protocol, the development of products and the provision of services, the creation of a strong positive business culture and the retention policies of employees, managers, and directors. (Daud y Yusoff, 2011; Hussinki, Kianto, Vanhala y Ritala, 2018; Malagón, Galán y Pontón, 2008; Yudawisastra *et al.*, 2018).

Therefore, the scientific organization must substitute the conservative point of view of usable resources (resource-based view) to prioritize the strategic direction aligned to the intellectual vision that the entities intend to achieve, since in this way the intellectual capital will favor organizational performance (Khan, 2016; Yudawisastra et al., 2018). In other words, strategies based on knowledge will allow us to act in a timely manner in the face of dynamic changes in a globalized world; therefore, the relevance of this study and its interest in strengthening the academic literature and promoting proactive strategic management for the benefit of the Tamaulipas public health sector.

Investigation method

The objective of this research was to determine how structural capital and organizational performance are composed and then analyze their relationship in the context of the public health sector of the state of Tamaulipas, Mexico. For this, the data was examined with the Statistical Package for the Social Sciences (SPSS), version 21; Likewise, an exploratory factor analysis (EFA) was used to validate the measurement instrument and to establish the underlying structure of the two variables: structural capital and organizational performance (Bernal, Pedraza & Castillo, 2020). Furthermore, with Spearman's Rho

correlation coefficient, the existing reciprocity between the factors associated with the aforementioned study variables was observed (Álvarez, Flores & Pedraza, 2019). The research technical file is presented in Table 2.

Tabla 2. Ficha técnica de investigación

Concepto	Descripción
Diseño de investigación	No experimental, transversal
Ámbito geográfico	Estado de Tamaulipas
Objeto de estudio	Sector público de salud
Enfoque de estudio	Cuantitativo
Tipo de muestra	A conveniencia (125 encuestados)
Trabajo de campo	noviembre 2019-enero 2020
Instrumento	Cuestionario de escala Likert (5 puntos)
Aplicación del cuestionario	Presencial (110 encuestas) y virtual (15 encuestas)
Técnica de investigación	AFE y coeficiente de correlación de Rho de Spearman
Software estadístico	SPSS versión 21

Fuente: Elaboración propia

The application of the survey was carried out between November 2019 and January 2020 in two ways: face-to-face and virtual. In the face-to-face mode, an individualized institutional presentation document was drawn up for each interviewer. In said document, the purely academic purpose of the research (non-profit), as well as the rigorous confidentiality of the information obtained, was clearly specified. A working meeting was also held with the intention of reducing biases on the part of the interviewers during the application of the research instrument. In this meeting, each of the items was reviewed, any doubts that arose were cleared up and emphasis was placed on maintaining courtesy and kindness when interacting with the respondents.

As for the virtual part, the survey was digitized and stored in Google Drive. Then, it was sent to organizations belonging to the public health sector of Tamaulipas (Mexico) by means of an institutional mail that followed the same clarifying guidelines referred to in the physical office (1. explain the objective of the research, 2. specify the academic purpose, 3 remember the privacy of the information, and 4. encourage the dissemination of the digital survey among colleagues from other health institutions).

By sending the emails through an institutional account, it was possible to project greater trust among potential respondents because they usually assign more authority to said platform. Likewise, with a thank you note, the emails were personalized in order to encourage the correct completion of the research instrument. The contact information of the health institutions was compiled through the National Statistical Directory of Economic Units (DENUE).

The survey implemented consisted of 45 items distributed in three sections. For the first and second sections, the research instrument validated by the Academic Body of Public and Business Management of the Victoria School of Commerce and Administration (FCAV), which depends on the Autonomous University of Tamaulipas (UAT) (Cortina, Flores and Álvarez) was used , 2019; Ledezma, Bernal and Pedraza, 2019). The first section consisted of 8 questions designed to find out the sociodemographic data. The second section examined structural capital using a five-point Likert scale (1 = never, 5 = always) and allowed 10 items (Ahmad, Naji and Bontis, 2010; Bontis, 1998; Crema and Verbano, 2016; Huang and Jim , 2010; Khalique, Bontis, Nassir and Hassan, 2015; Vasconcelo, 2017). The final section consisted of an adaptation of the research by Díaz-Vilela, Díaz-Cabrera, Isla-Díaz, Hernández-Fernaud and Rosales-Fernández (2012), through which the organizational performance was explored through another Likert scale out of five points (1 = strongly disagree; 5 = strongly agree); this included 27 reagents.

Results

Table 3 shows the statistical results of the sociodemographic variables of the applied survey. 125 respondents (35.2% men and 64.8% women) participated. Regarding marital status, 28.8% were single, 53.6% married, 8.8% in common law, 2.4% widowed, and 6.4% divorced. Regarding the type of position held, 3.2% were managers, 7.2% area coordinators, 5.6% department heads, 34.4% administrative personnel, 45.6% operational personnel and the remaining 4.0% carried out another activity within the public organization.

Regarding education, 16.8% completed the postgraduate level, 56.8% undergraduate, 16.0% high school, 4.0% secondary, 0.8% primary, and 5.6% indicated that they had a different educational background.

Regarding the seniority in the position, 16.0% was in the range 0-5 years, 32.8% between 6-10 years, 12.0% between 11-15 years, 20.0% between 16-20 years, and 19.2% indicated that they had more 20 years in office or position. Of the type of contract, 52.8% are unionized, 14.4% trust, 13.6% by contract, and 19.2% have another type of contract.

Finally, regarding the level of government of the organization, 0.8% indicated the municipal government, 15.2% the state government, and 84.0% the federal government. Finally, the organizations surveyed were located in five municipalities of Tamaulipas: 15.2 % Cd. Victoria, 9.6 % Soto la Marina, 6.4 % Matamoros, 36.8 % Mante, y 32.0 % Reynosa.

Tabla 3. Frecuencia y porcentaje de las variables sociodemográficas

Variable sociodemográfica	Frecuencia	Porcentaje (%)
Puesto/cargo		
Directivo	4	3.2
Coordinador de área	9	7.2
Jefe de departamento	7	5.6
Personal administrativo	43	34.4
Personal operativo	57	45.6
Otro	5	4.0
Antigüedad en la organización		
De 0 a 5 años	20	16.0
De 6 a 10 años	41	32.8
De 11 a 15 años	15	12.0
De 16 a 20 años	25	20.0
Más de 20 años	24	19.2
Escolaridad		
Primaria	1	.8
Secundaria	5	4.0
Preparatoria	20	16.0
Licenciatura	71	56.8
Posgrado	21	16.8
Otro	7	5.6
Sexo		
Hombre	44	35.2
Mujer	81	64.8
Estado civil		
Soltero	36	28.8
Casado	67	53.6
Unión libre	11	8.8
Viudo	3	2.4
Divorciado	8	6.4
Tipo de contrato		
Sindicalizado	66	52.8
Confianza	18	14.4
Contrato	17	13.6
Otro	24	19.2
Nivel de gobierno al que pertenece la organización		
Gobierno municipal	1	.8
Gobierno estatal	19	15.2
Gobierno federal	105	84.0

Ubicación de la organización		
Victoria	19	15.2
Soto la Marina	12	9.6
Matamoros	8	6.4
Mante	46	36.8
Reynosa	40	32.0

Fuente: Elaboración propia

Categorization of structural capital in the public health sector in Tamaulipas (Mexico)

A two-factor structure was determined for structural capital with a total explained variance of 71.893% when applying the data reduction technique (AFE). The assessment of implementing an EFA was based on the Kaiser-Meyer-Olkin (KMO) sample adequacy mean, which yielded a satisfactory result of .884. The 10 items that make up the structural capital exceeded the required minimum factorial load of .50 for a sample size of 125 respondents ($.533 \geq \lambda \leq .873$) (Chin, 1998; Field, 2013). Thus, Table 4 shows in detail the analysis carried out regarding the underlying structure of structural capital in the health sector; the two resulting factors were labeled as follows:

1. Continuous innovation: Composed of 5 items, with a Cronbach's alpha of .901. It was made up of the following variables: continuously developing innovation projects (products, technology, systems) (λ = .873), granting financial incentives for employees who generate new ideas (λ = .863), allocating resources to projects of innovation (product, processes and systems) (λ = .823), have structures, systems and procedures that support innovation (λ = .793), and successfully develop job succession programs (λ = .589).
2. Formal organizational structure: Composed of 5 items, with a Cronbach's alpha of .883. It was constituted by the following factors: having a defined organizational structure (λ = .855), having documented procedures that help to execute routine actions (λ = .848), having recruitment and selection processes to hire the best candidates (λ = .771), constantly update policies, procedures, databases and systems (λ = .758), and have training programs to constantly develop and update the skills of employees (λ = .533).

Tabla 4. Estructura subyacente del capital estructural en el sector público de salud en Tamaulipas (México)

Factor	Descripción del reactivo	Carga factorial (λ)	Estadísticos descriptivos			Alfa de Cronbach (α)	AFE
			Media	Mediana	Desv. típ.		
Innovación continua	CE5. ...desarrolla de forma continua proyectos de innovación (productos, tecnología, sistemas).	.873	2.75	3.00	1.354	.901	KMO = .884 Prueba de esfericidad de Bartlett (x^2 = 898.470032661737; gl = 45; Sig. = 0.000)
	CE4. ...otorga incentivos económicos para los empleados que generan nuevas ideas.	.863	2.53	2.00	1.412		
	CE6. ...destina recursos a proyectos de innovación (producto, procesos y sistemas).	.823	3.01	3.00	1.400		
	CE10. …cuenta con estructuras, sistemas y procedimiento que soportan la innovación.	.793	2.62	3.00	1.383		
	CE3. ...desarrolla de forma exitosa programas de sucesión de puestos.	.589	2.96	3.00	1.439		
Estructura organizativa formal	CE7. ... cuenta con su estructura organizaciona	.855	3.69	4.00	1.298	.883	

	l definida (manuales de organización, de puestos, organigramas) .						
	CE8. …tiene procedimientos documentados que ayudan a ejecutar acciones rutinarias.	.848	3.73	4.00	1.285		
	CE2. …tiene procesos de reclutamiento y selección para contratar a los mejores candidatos.	.771	3.38	4.00	1.269		
	CE9. …actualiza de manera constante las políticas, procedimiento , bases de datos y sistemas.	.758	3.56	4.00	1.214		
	CE1. ...cuenta con programas de entrenamiento para desarrollar y actualizar las competencias de los empleados constantemente.	.533	3.22	3.00	1.307		

Fuente: Elaboración propia

Categorization of organizational performance in the public health sector in Tamaulipas (Mexico)

For the 27 items that make up the organizational performance section, it was necessary to perform three runs of the matrix of rotated components when using the EFA. In the first run, two items were excluded because they did not obtain the minimum factor load required for a sample size of 125 respondents (λ> .500): to achieve the cooperation and participation of colleagues in the daily activity of the institution (λ = .495), and strive to favor the institution (λ = .435). In the second run, two other items were discarded for the same reason: maintaining a positive attitude towards the institution (λ = .491), and showing a willingness to carry out tasks that are not part of their job (λ = .404). In the third and last run, the 23 remaining questions managed to obtain a high factorial load, between .531 to .841 (Chin, 1998; Field, 2013).

A structure composed of four factors was determined for organizational performance with a total explained variance of 69.242% when applying the AFE data reduction technique. The KMO sample adequacy mean obtained a satisfactory result of .909. The 23 items that make up organizational performance exceeded the factor load required for a sample size of 125 respondents (.531 ≥ λ ≤ .810) (Chin, 1998; Field, 2013). Table 5 shows in detail the analysis made of the underlying structure of organizational performance in the health sector of the state of Tamaulipas, where the four resulting factors were labeled in this way:

1. Organizational citizenship: Composed of 7 questions, with a Cronbach's alpha of .900. It was made up of the following criteria: promote, promote and defend the institution (λ = .810), agree with the working conditions in the institution (λ = .669), support the objectives of the institution (λ =. 666), demonstrate respect for the rules and policies of the institution (λ = .636), demonstrate loyalty to the institution (λ = .634), commit to benefit the institution (λ = .587), and remain in the institution despite the difficulties or harsh conditions (λ = .579).
2. Productivity: Composed of 5 items, with a Cronbach's alpha of .864. It was made up of the following criteria: commit to their own development to improve their personal effectiveness (λ = .683), work hard with a higher effort than normal (λ = .636), show a higher effort than normal in their work (λ =. 623), show dedication at work (λ = .595), and show constant enthusiasm when doing their job (λ = .531).

3. Dynamism: Composed of 6 items, with a Cronbach's alpha of .885. It was made up of the following criteria: follow the institution's rules and procedures (λ = .767), provide service or help users or the general public beyond what is normal (λ = .748), share information with others about future events, activities or actions that the institution will carry out (λ = .652), participate responsibly in the institution (λ = .584), participate responsibly in group meetings and activities (λ = .574), and suggest improvements in procedures, administration or organization (λ = .561).
4. Organizational fraternization: Composed of 5 items, with a Cronbach's alpha of .886. It was made up of the following criteria: helping co-workers with their personal problems (λ = .841), cooperating with other colleagues from the institution to carry out their activities (λ = .725), behaving in a way that benefits colleagues from the institution (λ = .716), selflessly helping other colleagues (λ = .606), and helping other colleagues (λ = .566).

Tabla 5. Estructura subyacente del desempeño organizacional en el sector público de salud en Tamaulipas (México)

Factor	Descripción del reactivo	Carga factorial (λ)	Estadísticos descriptivos			Alfa de Cronbach (α)	AFE
			Media	Mediana	Desv. típ.		
Ciudadanía organizacional	15. Promueve, promociona y defiende a la institución.	.810	4.15	4.00	.942	.900	KMO = .909 Prueba de esfericidad de Bartlett (x^2 = 2308.36223996088; gl = 253; Sig. = .000)
	11. Está de acuerdo con las condiciones de trabajo en la institución.	.669	3.55	4.00	1.194		
	07. Asume, apoya o defiende los objetivos de la institución.	.666	3.83	4.00	1.037		
	16. Demuestra respeto por las normas y políticas de la institución.	.636	4.18	4.00	.916		
	14. Demuestra lealtad a la institución.	.634	4.14	4.00	.886		
	21. Se compromete de forma que beneficie a la institución.	.587	3.87	4.00	1.039		
	26. Permanece en la institución a pesar de las dificultades o dureza de las condiciones.	.579	4.00	4.00	1.063		
Productividad	20. Se compromete con su propio desarrollo para mejorar su eficacia personal.	.683	4.13	4.00	.861	.864	

	18. Trabaja duro con un esfuerzo superior al normal.	.636	4.16	4.00	.797		
	02. Muestra un esfuerzo superior al normal en su trabajo.	.623	3.86	4.00	.962		
	27. Muestra dedicación en el trabajo.	.595	4.17	4.00	1.068		
	01. Manifiesta un entusiasmo constante al realizar su trabajo.	.531	4.11	4.00	.882		
Dinamismo	06. Sigue las normas y procedimientos de la institución.	.767	3.62	4.00	1.120	.885	
	24. Presta servicio o ayuda a los usuarios o público en general, más allá de lo normal.	.748	3.96	4.00	.919		
	12. Comparte información con los demás sobre futuros eventos, actividades, acciones, etc., que realizará la institución	.652	4.06	4.00	.883		
	13. Participa responsablemente en la institución.	.584	3.81	4.00	1.014		
	19. Participa responsablemente en reuniones y actividades grupales.	.574	4.00	4.00	.950		
	25. Sugiere mejoras en procedimientos,	.561	3.79	4.00	1.087		

	administración u organización.						
Fraternización organizacional	23. Ayuda a los compañeros de trabajo con sus problemas personales.	.841	4.22	4.00	.897	.886	
	05. Coopera con otros compañeros de la institución para la realización de sus actividades.	.725	4.18	4.00	.874		
	22. Se comporta de forma que beneficie a los compañeros de la institución.	.716	4.17	4.00	.913		
	08. Ayuda desinteresadamente a otros compañeros.	.606	4.21	4.00	.864		
	04. Ayuda a otros compañeros.	.566	4.20	4.00	.793		

Fuente: Elaboración propia

Association of structural capital factors with organizational performance in the public health sector in Tamaulipas (Mexico)

From Spearman's Rho correlation coefficient (table 6), the following was observed regarding the correlation between the two factors associated with structural capital and the four factors associated with organizational performance:

I. *Continuous innovation* has a positive and significant association on organizational citizenship (Sperman's Rho .228 and significance .011), and dynamism (Sperman's Rho .351 and significance .000). However, the results obtained do not allow empirically to conclude the same for the productivity factor (Sperman's Rho .084 and significance .353) and organizational fraternization (Sperman's Rho .003 and significance .977).

II. *Formal organizational* structure has a positive and significant association on organizational citizenship (Sperman's Rho .252 and significance .005), and organizational fraternization (Sperman's Rho .253 and significance .004). However, the results obtained do not allow empirically to conclude the same for the productivity factor (Sperman's Rho .032 and significance .727) and dynamism (Rho de Sperman -.003 y significancia .974).

Tabla 6. Asociación de factores del capital estructural con el desempeño organizacional en el sector salud

Tipo de coeficiente	Factores del capital estructural	Estadísticos	Factores del desempeño organizacional			
			Ciudadanía organizacional	Productividad	Dinamismo	Fraternización organizacional
Rho de Spearman	Innovación continua	Coeficiente de correlación	.228*	.084	.351**	.003
		Significancia (bilateral)	.011	.353	.000	.977
		N	125	125	125	125
	Estructura organizativa formal	Coeficiente de correlación	.252**	.032	-.003	.253**
		Significancia (bilateral)	.005	.727	.974	.004
		N	125	125	125	125

*. La correlación es significativa al nivel 0.5 (bilateral).

**. La correlación es significativa al nivel 0.01 (bilateral).

Fuente: Elaboración propia

Discussion

As mentioned in the introduction and in the literature review, one of the main challenges for decision makers is knowing how to deal with the inherent intangibility characteristic of intellectual capital and, therefore, appropriately determine its direct correlation with organizational performance. reached.

Financial statements do very little to correctly weight intellectual capital, despite the fact that it is relatively easy to perform an accurate diagnosis of the financial situation (graphs, short and long-term trends, financial ratios, simulators, breakeven point, etc.) (Gogan et al., 2016; Tseng, Lan, Lu and Chen, 2013). For this reason, institutional guidelines must be established to codify, protect, manage and increase intellectual heritage, since in this way tacit knowledge (human capital) can be transformed into explicit knowledge (structural capital) (Flores et al., 2020 ; Silva et al., 2014). In the words of Flores et al. (2020), "the practical approach of structural capital must seek organizational efficiency and effectiveness by focusing the interest on establishing the relevant internal mechanisms in the documentation of human resource knowledge" (p. 56).

Structural capital - as indicated - is related to infrastructure, patents, databases, software, information systems and trademarks that facilitate the development of activities effectively and efficiently to obtain products and services supported by the implementation. of organizational strategies (Aramburu et al., 2015; Gogan et al., 2016; Matos et al., 2017; Sumedrea, 2013). Therefore, the implementation of the stock of knowledge for the benefit of organizational performance is associated with creativity and innovation, a harmonious relationship with suppliers and customers, a healthy organizational culture, the ability to attract skilled personnel, among other circumstances supported by structural capital (Daud y Yusoff, 2011; Flores *et al*., 2020; Hussinki *et al*., 2018).

In this order of ideas, empirical evidence is provided that supports the existence of a positive and significant association between structural capital and organizational performance in the public health sector of Tamaulipas, Mexico. In the results section, two factors were determined for structural capital (1. continuous innovation and 2. formal organizational structure) and four factors for organizational performance (1. organizational citizenship, 2. productivity, 3. dynamism, and 4. fraternization organizational). The continuous innovation factor had a positive and significant association with the dynamism organizational citizenship factors, which could be a trigger to boost the loyalty and proactivity of the workforce through the search for continuous improvement. On the other hand, the formal organizational structure factor had a positive and significant association with organizational citizenship and organizational fraternization; This could suggest the importance of formal organizational elements in fueling feelings of permanence and companionship among employees.

Conclusions

The objective of this work was to determine the factors that make up structural capital and organizational performance to subsequently analyze the relationship of both variables in the public health sector of the state of Tamaulipas, Mexico. In this sense, two explanatory factors for structural capital were determined. The first (continuous innovation) refers to the organizational commitment to modify existing components in order to improve them, as well as the uninterrupted search to create them from scratch. The second factor (formal organizational structure) has to do with the set of elements that facilitate the organization's actions to resolve routine and non-routine situations that arise on a day-to-day basis.

In the case of the organizational performance variable, four explanatory factors were obtained. The first factor (organizational citizenship) is associated with the feelings of loyalty that employees of all organizational levels manifest towards their organization. The second factor (productivity) emphasizes smart work, that is, the relationship between the resources used by the staff and the results obtained from the use of these resources. The third factor (dynamism) refers to the constant proactive participation shown by the workforce and management focused on the continuous improvement of the organization. The fourth and last factor (organizational fraternization) consists of solidarity collaboration between co-workers that strengthens the bonds of camaraderie and mutual support in the fulfillment of the established objectives.

The structural capital factors that have a positive and significant association on the organizational performance factors could promote proactive strategic management for the benefit of the Tamaulipas public health sector, since through professional analysis it will be easier to combat the failures of the health system; for example, poor care for patients, poor communication between medical areas, shortage of healing materials, insufficient beds, dissatisfaction of health personnel, to mention some examples observed during the application of the research instrument.

In this order of ideas, subsequent scientific papers can use a mixed research approach to link both quantitative and qualitative data in the same study to offer a holistic view of the object of study. Likewise, it could be chosen to analyze some other specific sector, both industrial and services. It could also focus on the evolution of the correlation between structural capital and organizational performance between different periods.

In addition to the above, and as a relevant limitation to consider, this scientific work focused exclusively on structural capital, for which the other two basic explanatory dimensions of intellectual capital (human capital and relational capital) were omitted. The omission of the aforementioned dimensions can be capitalized as an area of opportunity for further research.

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