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Artículos Científicos

Gestión y medición del capital intelectual (activos intangibles) en las organizaciones

Management and measurement of Intellectual Capital (intangible assets) in organizations

Gestão e mensuração do capital intelectual (ativos intangíveis) nas organizações

Enrique Aduna Lira
Universidad Antropológica de Guadalajara, México
e_aduna@yahoo.com
https://orcid.org/0000-0003-0791-9565

Resumen

El presente estudio se centra en la comprensión y medición del capital intelectual (CI), término que es alusivo a los activos intangibles en el campo de la gestión de las organizaciones. Involucra la descomposición de sus diferentes dimensiones que la integran, como son el capital humano, el capital estructural y el capital relacional. El tema se desarrolla con un abordaje de análisis cualitativo, basado en investigación documental de diversas fuentes consultadas, identificando las dimensiones, componentes y variables específicas que deben de ser contempladas en el contenido de un modelo de medición del CI (intangibles).

Los resultados que arroja este trabajo no solo son la comprensión de todo un marco teórico de referencia sobre el tema en cuestión y sus mecanismos de medición, que justifican la importancia y contribución que tienen esta clase de bienes intangibles en los impactos concretos que se pueden lograr, sino también se proponen en los resultados del estudio una serie de modelos o conceptualizaciones nuevas para la gestión y desarrollo del CI en las organizaciones. Estas propuestas buscan ser una aportación a la aplicación práctica del tema, pero que con sus respectivos alcances, como se mencionan en las conclusiones del trabajo,

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pueden llegar a convertirse en una aplicación automatizada (*software*) que facilite su medición cotidiana.

Palabras clave: capital intelectual, capital humano, capital estructural, capital relacional, medición del capital intelectual.

Abstract

This study refers to the understanding and measurement of Intellectual Capital (IC), a term that is allusive to intangible assets in the field of organization management nowadays. It involves the decomposition of its different dimensions that make it up: Human Capital, Structural Capital and Relational Capital. The subject that is approached from a qualitative methodology based on documentary research from various sources consulted, identifying the dimensions, components and specific variables that must be considered in the content of an IC measurement model (intangibles).

The results of this work are not only the understanding of an entire theoretical framework of reference on the subject in question and its measurement mechanisms, which justify the importance and contribution that this class of intangible assets have in the concrete results that can be achieve, but also propose a series of new models or conceptualizations for the management and development of IC in the organizations. Accordingly proposals that aim to contribute to the practical application of the subject matter, but despite their respective scopes as mentioned in the conclusions of the work, can become an automated application (software) that facilitates your daily operation.

Keywords: intellectual capital, human capital, structural capital, relational capital, measurement of intellectual capital.

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Resumo

Este estudo tem como foco a compreensão e mensuração do capital intelectual (CI), termo que se refere aos ativos intangíveis no campo da gestão organizacional. Envolve a decomposição de suas diferentes dimensões que o compõem, como capital humano, capital estrutural e capital relacional. O tema é desenvolvido com abordagem de análise qualitativa, com base em pesquisa documental de diversas fontes consultadas, identificando as dimensões, componentes e variáveis específicas que devem ser consideradas no conteúdo de um modelo de medição de QI (intangíveis).

Os resultados que este trabalho produz não são apenas a compreensão de todo um referencial teórico sobre o tema em questão e seus mecanismos de mensuração, que justificam a importância e contribuição que esta classe de ativos intangíveis tem nos impactos concretos que podem ser alcançados. , mas também uma série de modelos ou novas conceituações para a gestão e desenvolvimento de CI nas organizações são propostas nos resultados do estudo. Estas propostas procuram ser um contributo para a aplicação prática da disciplina, mas com os seus respetivos âmbitos, conforme referido nas conclusões do trabalho, podem tornar-se numa aplicação automatizada (software) que facilita a sua medição diária.

Palavras-chave: capital intelectual, capital humano, capital estrutural, capital relacional, mensuração do capital intelectual.

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Introduction

Background

The genesis of the term intellectual capital (IC) occurred during the eighties and nineties of the 20th century (Bueno, 2007, cited by Acosta, 2012). In this sense, Lev (2002, cited by Acosta, 2012) already pointed out in his writings that traditional accounting had not been considering and reflecting a set of intangible assets that contributed to the generation of value, innovation, practices and activities that became economic results in organizations. As a reference pattern, the IC model can direct the actions of the organization or the system so that from the resources and capabilities possessed of an intellectual and intangible nature, they can create knowledge that is transferred as innovation for the creation of value through the identification, measurement and disclosure, converted into IC statements or reports.

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The evolution of the knowledge society has led, for example, the European Union, as well as the main OECD countries to define a strategy and an economic model based on "knowledge for growth" and in which they emerge with a dynamic force. the new approaches of the "triangle of the knowledge society", integrating the roles of education, the greater effort in R&D and its transfer as innovation (Bueno, 2007, cited by Acosta, 2012). In this sense, IC is a topic that is increasingly of interest to companies that obtain their benefits thanks to innovation and knowledge (Montejano and López, 2013). Consequently, CI is understood as that set of intangible resources and capabilities referring to different manifestations of knowledge, whether individual, group or organizational, which can achieve a sustainable competitive advantage over time for the organization.

Methodology

According to the work of Vargas (2011), the epistemological position of approach in the present study is hermeneutics, with a methodology used of a qualitative nature, based on theoretical research and with documentary inquiry techniques applied in a period comprised of recent studies (2008 to 2020), mainly in the exploration of documents in electronic format related to the main topic, and in a complementary way in a systematic review of existing literature, such as texts, case studies, doctoral theses and specialized databases. The foregoing with the intention of extracting, compiling and analyzing information related to the identification of indicators and measurement models of IC. The study seeks to achieve an integrative conceptualization of the different components that make up IC in an organization and identify measurement methods to evaluate their results.

The main objective of this work is the analysis and decomposition of the IQ at various levels of understanding (dimensions, components, variables and measurement methods), providing elements and implications to understand and apply the subject in question. One of the relevant questions to discern in this study is the fact that the identified dimensions of IQ by themselves are not going to be developed or strengthened, since they require an additional element that is not contemplated in most models and theories. in this regard, which is the component of managerial management. For this reason, the research at the results level also offers the proposal of several exploratory theoretical models for the management and development of intellectual capital in organizations.

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Theoretical framework

Knowledge management

As part of the initial approach to the concept, it can be mentioned that knowledge management is the antecedent of what has subsequently become the management of the intellectual capital of an organization. Table 1 offers a summary of the most representative definitions of various authors on the subject. There may be coincidences, differences and findings based on these definitions, but by way of summary it could be explained that the term consists of somehow converting data into information, and later into useful knowledge to generate competitive advantages in organizations, that is, , knowledge in itself is only resources (intangible), but these must be converted into useful capabilities that can be exploited and generate "value" for the organization (tangible results).

Tabla 1. Definiciones básicas de gestión del conocimiento

Autores	Definición
Becerra-Fernández, Sabherwal (2005)	Es hacer lo que se necesita para obtener lo máximo de los recursos de conocimiento.
Bradley (2003)	Es la gestión y movilización de los activos intangibles de la empresa sobre los que debe sustentarse la capacidad de aprendizaje y mejora continua de la organización.
Davenport y Prusak (2001)	Es el proceso sistemático de buscar, organizar, filtrar y presentar la información con el objetivo de mejorar la comprensión de las personas en un área específica de interés.
Saint-Onge (1998)	Es la habilidad de desarrollar, mantener, influenciar y renovar los activos intangibles llamados *capital de conocimiento* o *capital intelectual.*
Steward (1998)	Es el conjunto de procesos que hacen que el capital intelectual de la empresa crezca.

Fuente: Elaboración propia basado en Monagas-Docasal (2012)

Intellectual capital

The term was outlined for the first time in 1969, in a letter written by the Canadian economist John Kenneth Galbraith to Michael Kalecki, in that letter John stated that intellectual capital was an addition to the human brain (Bermúdez et al., 2015) . More contemporary definitions of the concept can be seen in table 2 as a summary. All of them coincide in conceiving the intangible elements of an organization, such as human resources, knowledge, learning, culture, processes, technology, innovation, internal and external relationships. It is a combination and direct interaction between human capital, structural capital and relational capital (De La Hoz et al., 2017). Usually, they are non-quantifiable elements in the financial reports of an organization, but their presence or absence really generates and contributes "value" to the results.

Tabla 2. Definiciones básicas de capital intelectual

Autores	Definición
Sveiby (2010)	La combinación de activos intangibles que generan crecimiento, renovación, eficiencia y estabilidad en la organización.
Delgado (2008)	Innovación es aquel proceso mediante el cual, basándose fundamentalmente en el capital intelectual, se consigue crear una nueva idea que posteriormente será comercializada.
Bueno (2007)	Representa la perspectiva estratégica de la "cuenta y razón" de los intangibles de la organización.
Ramírez (2007)	Las raíces teóricas del capital intelectual se pueden trazar en dos corrientes distintas de pensamiento. Por un lado, la corriente de medición, centrada en la necesidad de desarrollar un nuevo sistema de información, midiendo los datos no cuantitativos a lo largo de los tradicionales reportes financieros. Por el otro, la corriente estratégica, que ha estudiado la creación y el uso del conocimiento, así como las relaciones entre el conocimiento y el éxito o la creación de valor.
Ordóñez (2004); Bontis (2002); Roos (1997); Sveiby (1997)	Como ya se ha mencionado, el capital intelectual se compone de tres elementos: el capital humano (CH), capital estructural (CE) y el capital relacional (CR).
Díaz (2001)	Capital intelectual es la agrupación de activos en una organización, que a pesar de no estar

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	mencionados en un estado contable, son generadores de valor.
Viedma Martí (2001)	Capital intelectual (CI) es el conjunto de activos intangibles que generan valor para la empresa y no aparecen en los estados contables.
Pérez (1999)	El capital humano es muy importante para desarrollar el compromiso y la lealtad por parte de los trabajadores. El capital estructural es propiedad de la empresa, permanece en la organización cuando los individuos la abandonan. El capital relacional se refiere al valor que tiene para la empresa el conjunto de relaciones que mantiene con los agentes de su entorno (clientes, proveedores, competidores, etc.).
Edvinsson y Malone (1997)	La posesión de conocimientos, experiencia aplicada, tecnología organizativa, relaciones con los clientes y destrezas profesionales que proporcionan una ventaja competitiva en el mercado.
Brooking (1996)	La combinación de activos intangibles que permiten a la empresa funcionar.
Drucker (1993)	Ha destacado la manera en que el conocimiento ha reemplazado al capital financiero como principal condicionante de desarrollo en las sociedades contemporáneas, siendo el único recurso que garantiza en el presente y en el futuro la sustentabilidad económica, por lo que su gestión tiene que ver con la manera en que una empresa genera, comunica y aprovecha a su capital intelectual.

Fuente: Elaboración propia basado en Villegas *et al*. (2016)

Dimensions of intellectual capital

Once the fundamental concept of the term is understood, it is now important to proceed to break down the elements or dimensions that compose it. At the level of an exploration of the different existing models, which can be mentioned with different nomenclatures or terms, most agree that there are three most relevant: human capital, structural capital and relational capital.

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The integration exercise reflected in figure 1 has been very revealing, since the finding of these three dimensions was later found reflected in a variety of documents that support their origin. Undoubtedly, it is enough to put different theories and models in "dialogue" to reach this same conclusion, so we proceed to explain what each of them consists of.

Human capital are all those elements related to the contributions that people make to an organization through their skills, that is, not only the fact of having people within an organization generates a contribution to intellectual capital, since they have to become capabilities. useful that generate "value" in the results.

Structural capital is all that knowledge that has become organizational learning, that is, everything that remains in the company when people leave. We can mention, among other aspects, the know-how of the business, its processes, the technology used, the culture, as well as the innovation that is achieved through the research and development of knowledge that are promoted by the same company (intelligent organizations), warehouses non human knowledge (Gutiérrez, 2020).

Finally, relational capital is not only the people and their processes (technology used, the elements that move an organization towards its objectives and intended results), but it is also the contribution made by internal and external "relationships" to achieve those objectives. results. The relationship or "relationship goods" would be like Wi-Fi that allows connectivity between all the elements that participate (shareholders, employees, customers, suppliers, government institutions, etc.). Good relations in the economic results of an organization, without a doubt, are intangible contributions that have a great influence on the tangible results. The set of dimensions, factors or variables of intellectual capital, based on Naranjo and Chu (2015), is shown below:

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Figura 1. Modelos y variables contempladas de medición del capital intelectual

Modelo Navegador Skandia	Modelo de Intellectual Assets Monitor	Modelo Technology Broker	Modelo de Canadian Imperial Bank	Modelo Universidad de West Notario	Modelo Nova	Modelo de Dow Chemical	Modelo de dirección estratégica por competencias	Modelo de las cinco fases de Nonaka y Takeuchi	Modelo de Estructura de Capital Intelectual "Intelect"
Enfoque financiero	Balance visible e invisible	Activos de infraestructura	Capital financiero						
Enfoque cliente	Activos tangibles e intangibles	Activos de mercado	Capital de clientes			Capital de clientes			
Enfoque procesos	Capital visible e invisible		Capital estructural	Capital estructural	Capital de organización	Capital organizacional	Capital organizativo	Conocimiento explícito	Capital estructural
Enfoque desarrollo		Activos de propiedad industrial			Capital de innovación aprendizaje		Capital tecnológico		
Enfoque humano		Activos humanos	Capital humano	Capital humano	Capital humano	Capital humano	Capital humano	Conocimiento tácito	Capital humano
Enfoque relacional				Capital relacional	Capital social		Capital social		Capital relacional

Fuente: Elaboración propia

Developing

Currently, there are various conceptual models that seek to identify and in some cases measure intellectual capital (IC) or intangible assets in an organization (Sveiby, 2010). Even so, it can be mentioned that, in general, there are two lines of interpretation: one is the financial approach, how to convert the IC valuation through quantitative standards and methods, and how to reflect it in the financial reports of an organization. The second is from IC management, which consists of focusing and clarifying the significant dimensions and variables that make up the IC, trying to find the relationship between intangible assets and tangible results through the "added value" they provide. . Table 3 mentions a compendium of reference or best-known models on the subject.

Tabla 3. Modelos de medición de capital intelectual

Autores	Modelo de referencia
Martínez (2005)	Modelo Poder-SEEO.
Edvinsson y Malone (2000)	Modelo Navegador Skandia: Sistema de Capital Intelectual.
Nova Care (1999)	Modelo Nova.
Bueno (1998)	Modelo de dirección estratégica por competencia: el capital intangible.
Dow (1998)	Modelo de Dow Chemical.
Karl-Erick y Sveiby (1997)	Modelo de Intellectual Assets Monitor.
Euroforum (1997)	Modelo de Estructura de Capital Intelectual "Intelect"
Bontis (1996)	Modelo Universidad de West Notario.
Hubert Saint-Honge (1996)	Modelo de Canadian Imperial Bank.
Brooking (1996)	Modelo Technology Broker.
Nonaka y Takeuchi (1995)	Modelo de las cinco fases.
Kaplan y Norton (1992)	Modelo del Balanced Business Scorecard (C.M.I.).

Fuente: Elaboración propia basado en Guzmán *et al*. (2018)

Conceptual model of intellectual capital

It is interesting to try to disaggregate the various elements that make up the models of intellectual capital. Firstly, we are going to understand the term model as a schematic representation that contains a series of components that are intended to be a guide or reference for interpretation; Thus, a variety of diverse graphic representations can be identified according to what is expressed in each model, but which have elements that coincide in their content. Next, its different levels of understanding will be broken down, from the general conceptual to the details of the variables and results that comprise it.

Starting from the general to the particular (figure 2, "conceptual approach" level). This scheme describes the fundamental components that give value to an organization, whether of a tangible or intangible nature. Financial capital is made up of the material and monetary resources that the organization has. These are usually reflected in the financial statements in a quantitative manner, under the standards and methods of valuation of the accounting records; It is practically the field of financial accounting, but today it is clear that it is not only this class of tangible resources that generate results or benefits, since there are others that are not directly quantifiable (intellectual capital) that cause "added value" and

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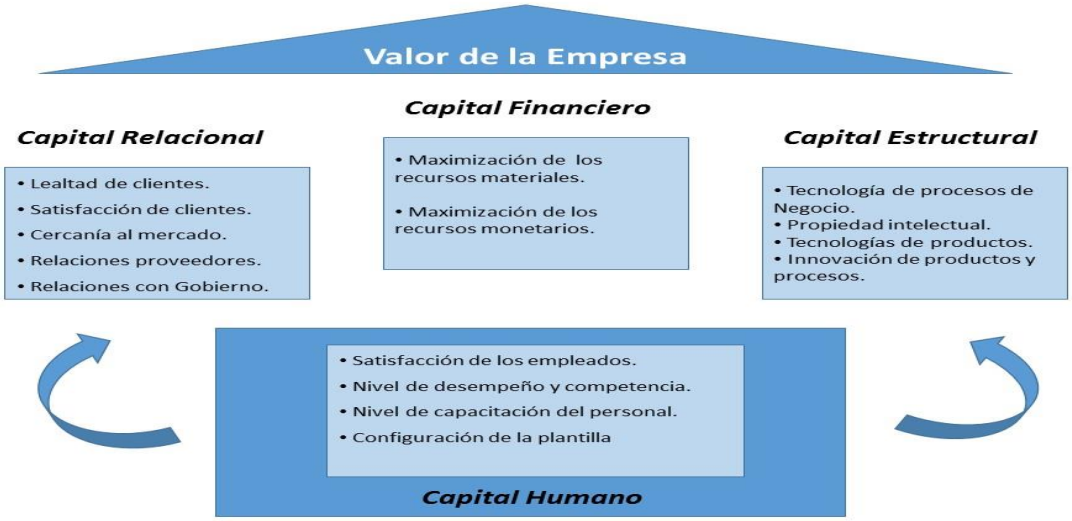
impact on the concrete economic results that are obtained through the daily operations that are carried out.

The intangible components (structural capital, relational capital and human capital) that are part of intellectual capital were explained in the introduction to this article. Today it is estimated that these components impact approximately between 60% and 75 % on the concrete and economic results obtained in an organization (Lev, 1999, cited by Villegas et al., 2016). Simply imagine how you could improve the operation of a business by properly managing these components that are subjective in nature.

Figura 2. Nivel enfoque conceptual



Fuente: Fundipe (2016)

Content model (dimensions-results)

The second level of understanding would be figure 3 (level "content approach"). This scheme mentions the three dimensions that make up intellectual capital (human, structural and relational) and how these become the business results of an organization, be they financial, market and innovation. In fact, there is a large number of efforts and methods that try to find the mathematical relationship between the components of intellectual capital and the business results that are obtained; Perhaps the quantification and/or relationship techniques are still unclear, since there are still many efforts to find their exact link, but there is no doubt that the relationship exists and it is estimated, for many reasons, that it is really very important.

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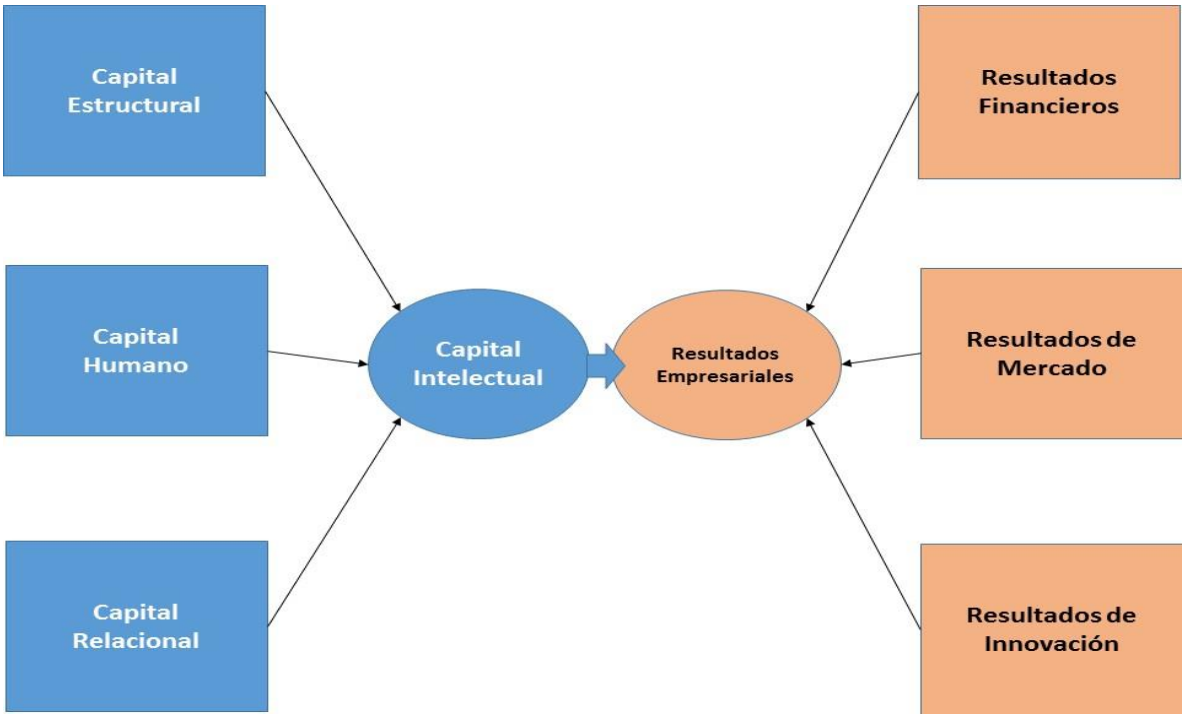
Figura 3. Nivel enfoque contenido



Fuente: Alama (2008)

Dimensions model (components)

In figure 4 (level "dimensions approach") the three dimensions of intellectual capital that have been regularly mentioned in this document are broken down to identify the specific components that make up each dimension. It could be said that they are the significant items or categories that will later be detailed and translated into specific variables to be observed or measured.

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Figura 4. Nivel enfoque dimensiones

DIMENSIONES	CAPITAL ESTRUCTURAL	CAPITAL HUMANO	CAPITAL RELACIONAL
COMPONENTES	• Competencias en T.I. • Modos de conservar conocimiento • Cultura/Valores • Estructuras /Sistemas /Procesos • Innovación/I+D	• Conocimientos • Educación • Desarrollo Profesional • Habilidades • Permanencia • Formación • Experiencia • Creatividad • Motivación	• Colaboradores • Clientes • Proveedores • Alianzas • Reputación

Fuente: Elaboración propia

Detailed model (variables)

The basic unit of measurement or observation are the variables of any reference model; Precisely the term variable implies some kind of dynamism or movement that is important to identify, measure and interpret. Figure 5 (level "measurement variables approach") lists a large number of variables that need to be identified as information from the organization itself so that its interpretation and relationship with other variables yields relevant data on the various components and dimensions of the organization. intellectual capital, as well as the application of some quantification methodologies that correlate the added value they provide in the results.

Another fundamental aspect is to clarify the specific elements that make up each dimension of intellectual capital, which allows a timely and detailed understanding of all those variables that are part of the "intangible assets" of the organization, which through various techniques and methods subsequently they will become mechanisms that measure their contribution and impact on results.

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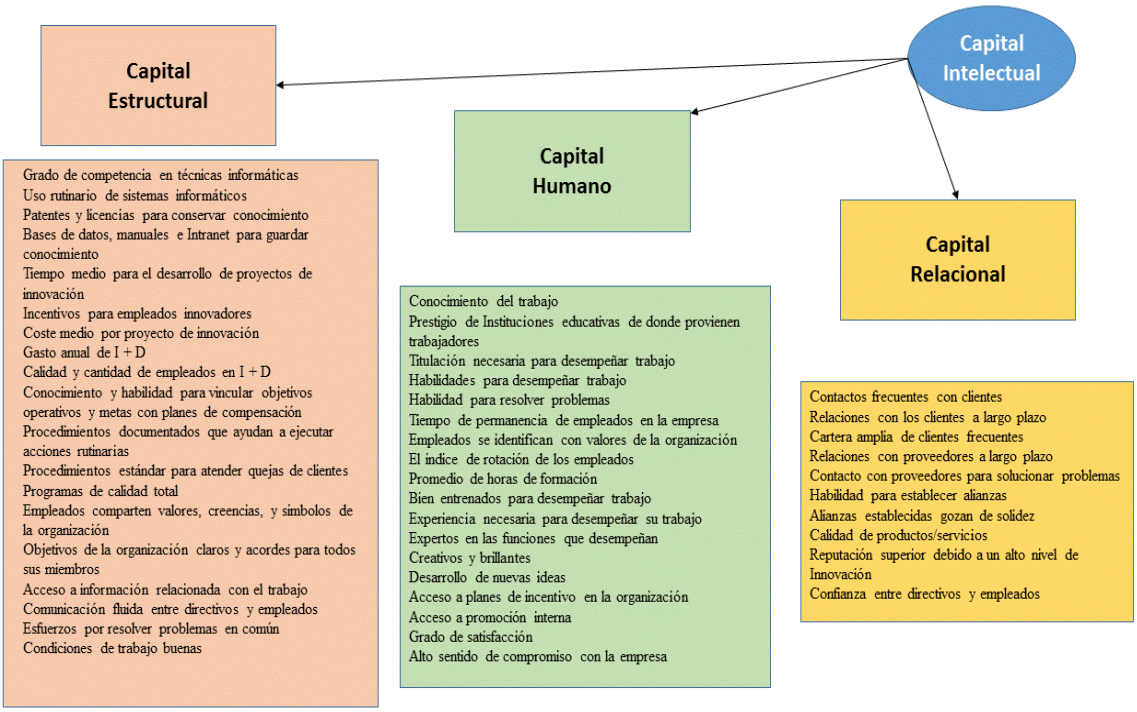
Figura 5. Nivel enfoque variables de medición



Fuente: Elaboración propia basado en Alama (2008)

The identified variables come from a measurement instrument, which was duly supported and designed by Alama (2008), based on a study carried out in 120 companies, tested and validated with different statistical techniques such as Cronbach's alpha, chi-square, Bartlett's sphericity, Kaiser-Meyer-Olkin (KMO) measure, Durbin-Watson, multiple linear regression, confirmatory and exploratory factor analysis, Pearson's R correlation, covariances, mean-mode-mean measures of central tendency, among others. It consists of 58 items, with a Likert-type scale of six options.

To collect empirical data, there are also other questionnaires that identify and measure intellectual capital in other studies with their own consistency and verification measures, but the one mentioned above is quite complete and well supported. It is also common to additionally generate databases with the information obtained in applications such as Excel to tabulate and process all kinds of data in order to calculate absolute and relative frequencies, among other relevant representation functions. That is, although the present study is eminently theoretical, as an effort to integrate significant issues related to intellectual capital, it is also based on information from empirical references related to applied research, such as the one referred to in the previous paragraph to validate the variables indicated in the scheme of Figure 5.

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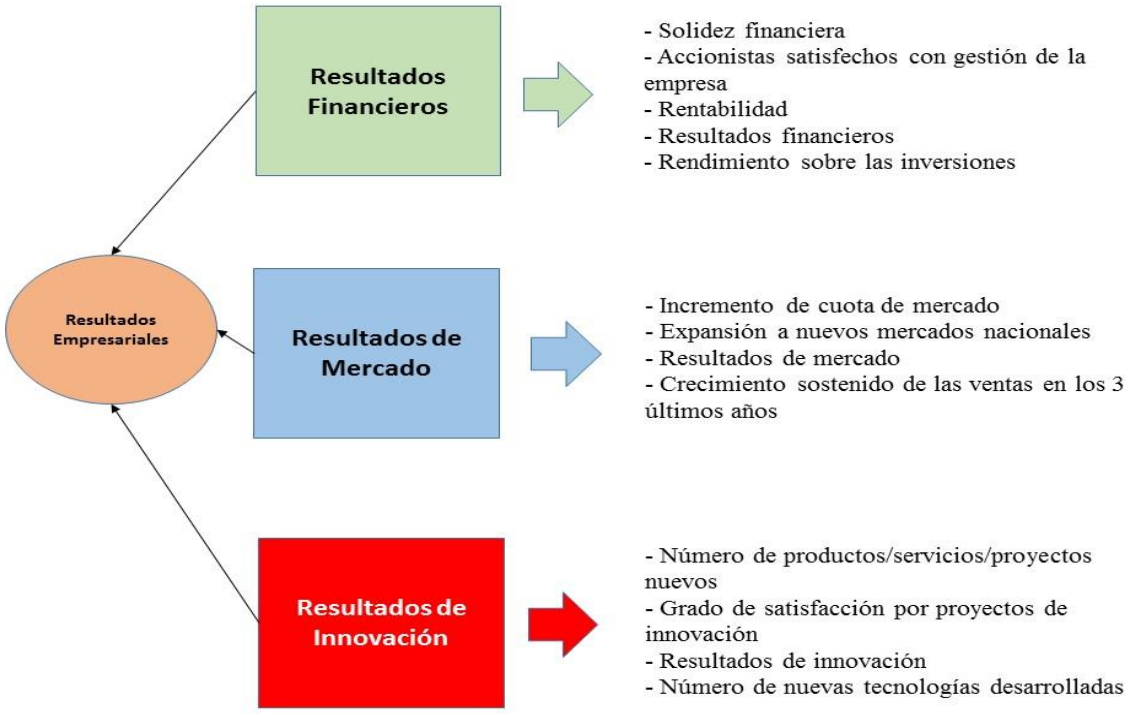
Results model

Finally, Figure 6 (level "results approach") identifies the specific variables that can be observed or measured based on the intended business results (financial, market, innovation). This closes the circle of interpretation based on the great conceptualizations of intellectual capital, the elements that make it up, its dimensions, its components, its variables, its results and the evidence that is generated through the intended performance indicators, applying during throughout this process of discernment a series of mechanisms for its quantification.

Later, such mechanisms will be addressed, which can be grouped into four broad measurement categories: financial measurement methods, market measurement methods, indicator dashboard methods, and direct intellectual capital (IQ) measurement methods, which basically they can be grouped in a quadrant scheme with the following aspects: financial/non-financial and organizational level/IC component level.

Figura 6. Nivel enfoque de resultados



Fuente: Alama (2008)

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The four approaches to measuring intangibles

Suggested measurement approaches for intangibles fall into at least four categories of measurement approaches. The categories and their respective quantification-explanation methods are shown in Figure 7 according to the research contained in the publication by Tóth and Kövesi (2008).

Market capitalization methods (MCM). They are used to calculate the difference between the value of a company capitalized on the stock market and the capital of its shareholders reflected in its financial information. The differential is considered as the value of its intellectual capital or intangible assets.

Return on assets (ROA) methods. They are financial figures that although they are not perfect, they are auditable. They can also provide elements of economic comparison on the valuation of the intangibles of a company and that can be compared with other companies in the same industry. They are methods that are very sensitive to the generation of rates of return and efficiency on the resources of the intellectual capital invested.

Methods of direct measurement of intellectual capital (DIC). These methods are a holistic attempt to offer the potential to create a greater understanding of the organization's picture in relation to its health and IQ measurement metrics. The monetary value of intangible assets is estimated by identifying their various components. Once they are identified, they can be evaluated directly, either individually or as an aggregate coefficient.

Scorecard (SC) methods. The various components of intangible assets or intellectual capital are identified, and the indicators and indices that are generated are reported in dashboards or as graphs. SC methods are similar to DIC methods, except that no monetary estimate or value of intangible assets is expected to be made. A composite index may or may not be produced.

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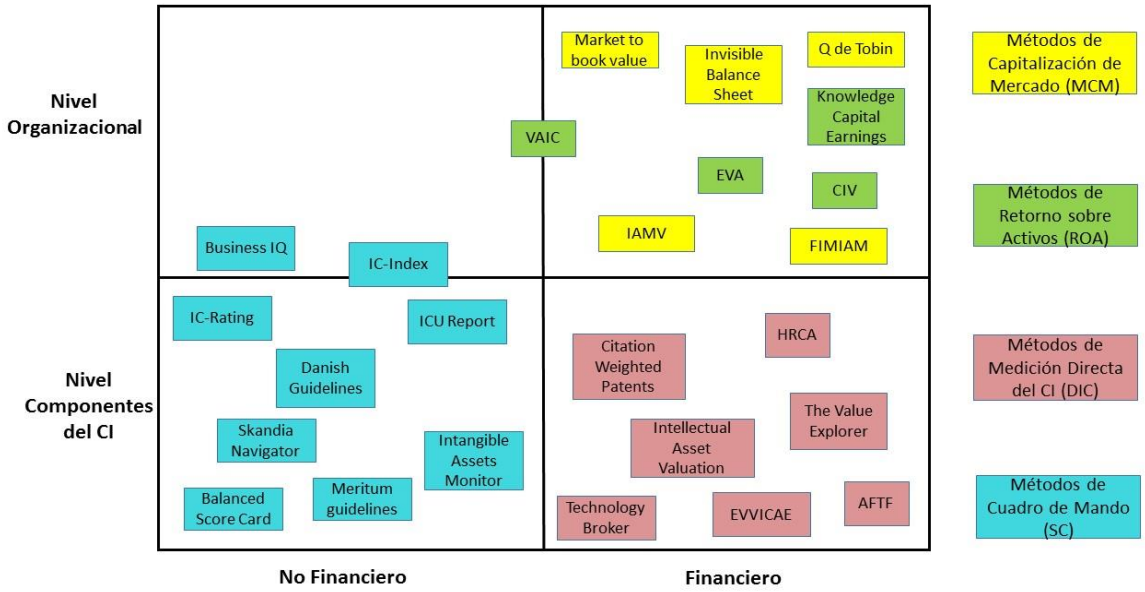
Figura 7. Cuatro aproximaciones para la medición del capital intelectual



Fuente: Tóth y Kövesi (2008)

Methods for measuring intangibles

Table 4 shows a concentrate with the description of the most relevant methods in the different categories, ordered chronologically from the most current to the oldest, as mentioned in the document published by Sveiby (2010). Also in Dumay et al. (2021), a large number of contemporary investigations (state of the art) are mentioned, related to the subject in question that are worth exploring in greater depth, more than being a book, it is a compendium of essays written by a good number of researchers.

Tabla 4. Métodos para la medición de intangibles

Año	Método	Autores	Grupo	Descripción del método
2009	ICU Report	Sánchez	SC	Es un modelo para universidades y contiene tres partes: visión de la institución, resumen de recursos intangibles y actividades y sistema de indicadores.
2008	EVVICAE	McMcCut & Cheon	DIC	Desarrollado por el Centro de Activos Intelectuales de Escocia; son herramientas basadas en investigaciones previas de otros autores.
2008	Intellectual Capital Index (IC-Index)	Schiuma, Lerro, Carlucci	SC	Usa el concepto de *knoware tree* con cuatro perspectivas de medición; hardware, netware, wetware y software para la creación de indicadores.
2004	Business IQ	Sandvik	SC	Una combinación de cuatro índices: identidad, capital humano, capital del conocimiento y reputación, desarrollado en Noruega.
2003	Danish guidelines	Mouritz	SC	Financiado por el gobierno, los reportes de intangibles contienen conocimiento narrativo, cambios directivos, número de iniciativas e indicadores relevantes.
2002	FIMIAM	Rodov & Leiaert	MCM	Valor monetario de los activos de los componentes del CI, una combinación de mediciones tangibles e intangibles, el método busca el vínculo entre el valor de mercado y el valor contable. La diferencia es el valor del CI.
2002	IC - Rating	Edvinsson	SC	Es una extensión del modelo de Skandia, incorporando otras ideas como la clasificación de eficiencia, utilidades y riesgo.
2002	Meritum guidelines	Meritum	SC	Se mencionas tres pasos: se definen los objetivos estratégicos, se identifican los recursos intangibles, acciones para el desarrollo de recursos intangibles.
2001	Intellectual Asset Valuation	Sullivan	DIC	Metodología para evaluar el valor de la propiedad intelectual.
2000	The Value Explorer	Andriessen & Tiessen	DIC	Metodología contable propuesta por KMPG para calcular y alojar cinco tipos de intangibles: activos asignados, habilidades y conocimientos, tecnología y procesos gerenciales.
1998	Accounting for the Future (AFTF)	Nash H.	DIC	Un sistema proyectado para descontar *cash-flows*. La diferencia entre el valor AFTF al inicio y final del periodo es el valor añadido.
1998	Investor assigned	Standfield	MCM	Toma el valor real de las acciones de la empresa en el mercado y lo divide entre el capital tangible

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	market value (IAMV)			+ CI realizado + CI erosionado + ventaja competitiva sostenible.
1998	Economic Value Added (EVA)	Stern & Stewart	ROA	Calculado por el descuento que la empresa hace a sus ganancias con los cargos relacionados a los intangibles. EVA es uno de los métodos comúnmente utilizados.
1998	Value Added Intellectual Coeficient (VAIC)	Pulic	ROA	Es una ecuación que mide cuanto y como la eficiencia del CI y el capital empleado, crea valor basado en la relación de tres mayores componentes: capital empleado, capital humano y capital estructural. VAIC= CEE+ HCE+SCE
1997	IC - Index	Roos, Dragonetti , Edvinsson	SC	Consolida todos los indicadores individuales que representan propiedades y componentes intelectuales. Cambia el índice relacionado con los cambios en la valoración de mercado de la empresa.
1996	Technology Broker	Brookin	DIC	Es una valoración del capital intelectual, basado en el análisis y diagnóstico de la empresa, relacionados con veinte preguntas que cubren los diferentes componentes del CI.
1994	Skandia Navigator	Edvinsson and Malone	SC	El capital intelectual es medido a través del análisis de 164 métricas (91 de base intelectual y 73 métricas tradicionales). Es famoso el uso de este modelo por la empresa de seguros Skandia, aunque ellos no la crearon.
1994	Intangible Asset Monitor	Sveiby	SC	Indicadores selectos gerenciales, tres clases de activos intangibles son clasificados: competencias de la gente, estructura interna y estructura externa. La creación de valor son crecimiento, renovación, eficiencia y reducción de riesgo.
1992	Balanced Score Card	Kaplan and Norton	SC	El desempeño de la empresa es medido por indicadores en cuatro perspectivas: financiera, clientes, procesos internos y aprendizaje. El BSC es una de las herramientas más usadas como aplicación de control de indicadores.
1989	Invisible Balance Sheet	Sveiby y Konrad group	MCM	La diferencia del valor de las acciones en el mercado y el valor contable son explicados a través de tres “familias” del capital; humano, organizacional y clientes. Estas categorías se convirtieron en un estándar en Suecia.
1988	Human Resource Costing & Accounting (HRCA)	Flamholts, Johansson (1970 – 1988)	DIC	El pionero en mediciones de HR, Eric Flamholtz, ha desarrollado una gran cantidad de métodos para el cálculo del valor de los recursos humanos.

1950	Tobin´s Q	Tobin James	MC M	La “Q” es una razón del valor de la acción en el mercado dividido por el costo de reemplazo de sus activos. Los cambios en la “Q” es una aproximación de la medición efectiva del capital intelectual de la empresa, desarrollado por el premio Nobel en Economía James Tobin.

Fuente: Elaboración propia basado en Sveiby (2010)

Results and proposals

In the content of this article, the fundamental elements of the methodology applied in the study were first identified, as well as the relevant concepts related to knowledge management, intellectual capital and main models of intellectual capital (IC). This basic conceptualization has provided the references and importance that today not only have the understanding of these issues, but also really understand the impact they have on the results of an organization.

In a second section of the document, a series of schemes have been explained that have started from the general to the particular, breaking down the approaches, dimensions, components, variables and results obtained through good management and assessment of IC. . Also in this section, a series of valuation and quantification methods (measurements) were mentioned, both for the scope of an external nature (market valuation) and in the internal environment (direct valuation of the IC and dashboards of indicators related to the variables of the IC).

In a third section, at the level of results and proposals, a series of models for the development of intellectual capital in organizations are provided, which are the combination of an intervention model for planned change and specifically in the flourishing of the various dimensions that make up the IC. The importance and relationship between these sections lies in the fact that a gradual but intentional process is needed for the theoretical and practical understanding of the importance of these issues related to intellectual capital.

Finally, in a fourth section —referring to the discussion, conclusions and future lines of research of the study— the elements addressed, the findings identified, as well as the scope and next steps to continue with the contributions offered in this work are highlighted. The proposed models are listed below.

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Integral Model of Intellectual Capital (MICI)

In the development of this work, the different dimensions of intellectual capital (IC) have been mentioned and broken down, namely, Human Capital (HC), structural capital (CE) and relational capital (RC), conceptually we can express it in as follows: CI = CH + CE + CR.

However, the active element (catalyst) that should accelerate and grow the contribution of intellectual capital to the results of the organization is missing: this would be the managerial management of intellectual capital (GDCI), that is, by themselves the different dimensions mentioned in the CI will not develop and flourish if the following actions that are part of the GDCI and that justify the initial proposals of this study are not promoted. The aspects considered are the following:

. Planning, identify the components/variables to develop (intention).

. Control, measure and ensure the results to be achieved (attention).

. Decision making (knowing when and how to take appropriate action).

Figure 8 shows the MICI model (own source) with the most relevant components in each of the IC dimensions.

Integral Model of Organizational Development (MIDO)

This is a model for transformation and change in organizations. Essentially it is for action in consultancy interventions (own model). Its relevant elements are:

- The determination of a current state, identifying what favors and what limits the intended change (preliminary evaluation).
- Identify a desired state of change (purposes/results to be achieved).
- How to achieve change; in this case, through the development of the components and variables contained in the MICI model described in the previous section.

Integrated model for IC development (MIDO-MICI)

It is the integration of the MIDO-MICI models that are shown in the scheme of figure 9 (own source). It is reflected that from a model for organizational transformation, short, medium and long-term actions can be identified and developed, which have to do with the different dimensions of intellectual capital through adequate managerial management of intellectual capital (GDCI).).

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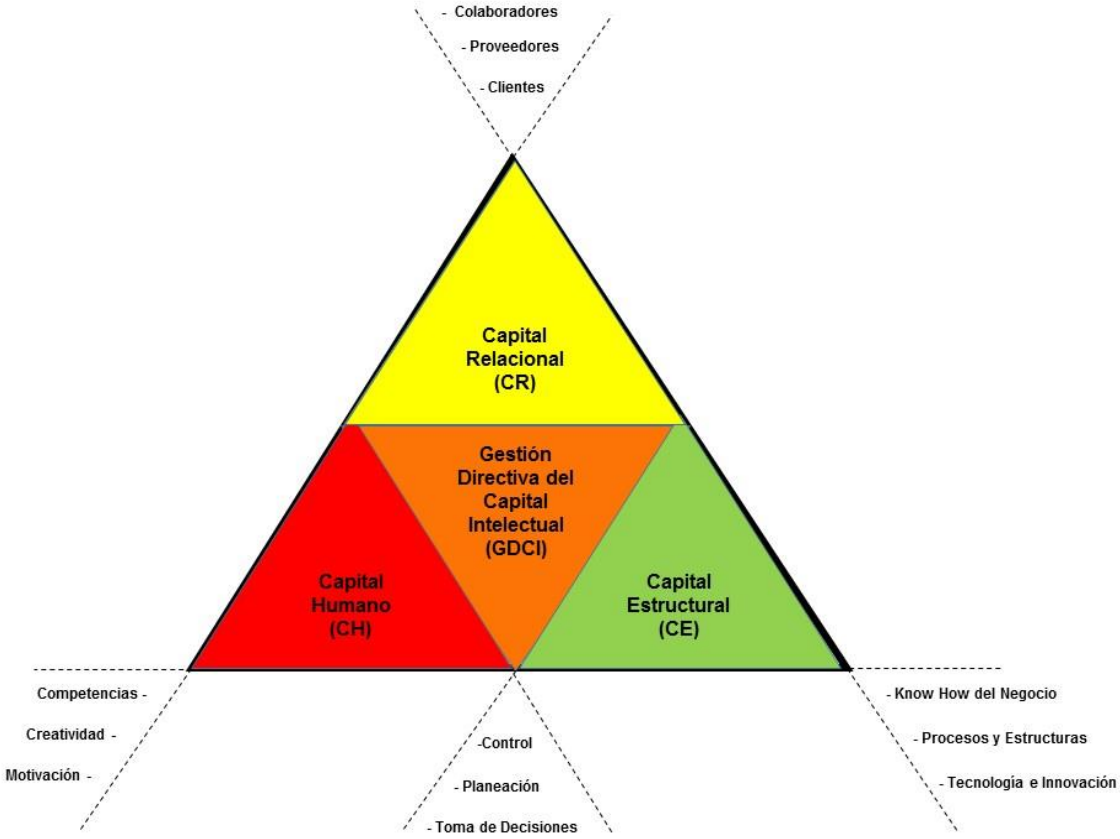
The relationship between the proposed models and the reference literature developed in previous sections of this document consists of basing the design of these models for action; They really intend to be a contribution to transform the productivity of an organization, turning the current state into a desired one through the directive management of intellectual capital, through its different dimensions, components and variables that comprise it.

Figura 8. Modelo integral del capital intelectual (MICI)



Fuente: Elaboración propia

Discussion

Various reference models —as shown in Figure 1 in the introduction to this document— mention and coincide with the identification of the different dimensions, components and variables of intellectual capital (IC). The comprehensive understanding of all these elements is in itself a great contribution of the documentary research carried out, although they are concepts also referred to in various studies, among others, such as that of

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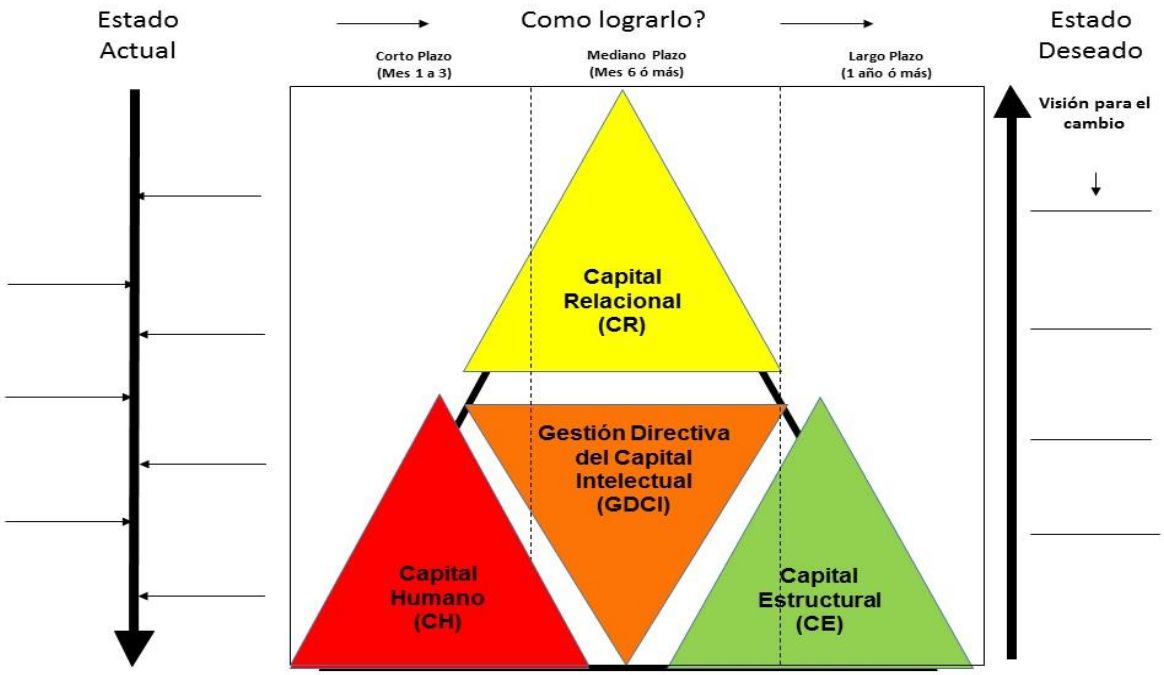
Mena et al. (2017), which are also a documentary exploration, and differ in the level of detail in which these issues are addressed. However, in some of them knowledge management is mentioned as the main source for the development of intellectual capital (certainly there are dimensions and components of IC that do benefit), but the difference is that action is needed, that is, a proactive intention is required for its development and this has to do with the managerial management of the IC (GDCI). It seems that it is taken for granted that the mere existence of these intangible assets in an organization will generate concrete contributions and results.

Figura 9. Modelos integrados MIDO-MICI



Fuente: Elaboración propia

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Conclusions

The different sections were analyzed according to the general objective set out in the methodology, which was fundamentally the documentary inquiry (limitations-scope of the study). In this sense, a finding and progress presented in this work is precisely that the GDCI (directive management of intellectual capital) is the catalyst element to enhance the intended results, for which conceptual and exploratory models are provided in this regard.

The practical application of the subject may be to reflect the value of intangibles in the financial reports of an organization. It is a slow trend, but it is necessary to recognize that the elements of intellectual capital explained and developed in this study also provide an "added value" to the quantification or monetary value of an organization, as previously mentioned. On the other hand, it is possible to apply various methods, which can assess the impact on the specific results of an organization, be they monetary, greater market share or the competitive advantages that can be obtained through innovation and technology. With this, the links that exist between the dimensions, components and variables of intellectual capital with the contribution they generate in the concrete results obtained can be developed and understood.

Future lines of research

Although the scope of this work is eminently a theoretical compilation of significant aspects related to intellectual capital, the following steps should focus on continuing to develop the necessary conceptual elements from the proposed theoretical and exploratory models, which allow the development of a application (software) to facilitate the management of intellectual capital (assessment of the business and measurement of its results) and become something concrete. The topic that has been widely developed in academic environments, but with very little practical and daily application. With this, the use in various organizations and businesses that can find in these issues an excellent focus of attention to generate greater value and business results, that is, convert the theoretical and complex conceptual into technological-based organizational routines that generate sustainable competitive advantages. in the time. It is more about aligning and harmonizing the intangible assets that most of them already have instead of seeking to make important tangible investments to be successful in their business model.

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