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Towards 'An Intellectual Capital-Based View of the Firm': Origins and Nature

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ABSTRACT. Economic and social activities are undergoing radical changes, which can be labelled as 'knowledge economy and/or society'. In this sense, intellectual capital (IC), or knowledge assets, as the fourth factor of production, is replacing the other ones – job, land and capital. This article tries to offer the origins and nature of the firm's IC that can be labelled as 'An Intellectual Capital-Based View of the Firm Competition'. This framework tries to highlight the strategic role of different intangible assets like talented and committed workers, cultural values, or long-term relationships among the firm and its stakeholders – customers, allies, suppliers and society in general – in gaining and sustaining competitive advantages, being the management of IC a key issue in the management agenda.

KEY WORDS: intellectual capital, knowledge management, human capital, relational capital, state of the art

Firm's intellectual capital: origins and concept

The rise of the knowledge-based economy and society has been attributed to the predominance of intellectual capital (IC) as a key resource for obtaining firm's sustained competitive advantages (Dean and Kretschmer, 2007).

Although it has been recognized that economic wealth comes from knowledge assets – or IC – and its useful application (Kong, 2010; Teece, 1998), the emphasis on it is relatively new, and the management of firm's IC has become one of the key tasks in the executive agenda. Nevertheless, this work is especially difficult because of the problems involved in its identification, measurement and strategic assessment. In this situation, the models of IC become highly relevant, because they not only allow to understand the nature of these assets, but also to carry out their measurement.

However, if IC assets are both nonfinancial and intangible in their nature, how can it then be identified, measured and managed? The financial statements are inadequate and insufficient when a firm's value lies primarily in its intangible assets (Moon and Kym, 2006).

The term IC is used as a synonym for intangible or knowledge assets (Stewart, 1991). The fact of calling it 'capital' makes reference to its economic roots, because it was described in 1969 by the economist Galbraith as a process of value creation and as a bundle of assets at the same time, although the term 'capital' has proven to be somewhat controversial (Dean and Kretschmer, 2007).

In the recent historical evolution of IC, we can distinguish two main stages. The first one – basically during the last decade of twentieth century – was focus on the measurement models of IC. It is characterized by the predominance of practitioner and consultant proposition, as well as some academics. The second one – starting with the new century – is characterized by the academic proposals.

First stage: emergence

The emergence of IC in the context of business administration could be address in the early 1990s (twentieth century), being the initial propositions and questions derived from the business and consultancy activities. Empirical works like Lev (1997), based on a sample of 300 public companies from NYSE, with longitudinal data (1954–1993),

highlights a persistent gap between market value to book value of 2.8 times. Maybe, 'intangible assets' or IC could explain some of these gaps.

Early reports, made from business practice, as experiences in Saint-Onge or Skandia, represents the first efforts in identifying and measuring firm's IC. During the 1990s, numerous proposals focus on it will appear in the format of business books, as well as some academic journals with a practitioner focus, as California Management Review or Harvard Business Review.

Among these proposals, we can remark the following ones: Bontis (1996), Brooking (1996), Sveiby (1997), Edvinsson and Malone (1997) or Teece (1998). In parallel to IC proposal, it is remarkable the work of Kaplan and Norton (1992) about their 'Business Balance Score Card'.

Second stage: academic emphasis

Starting the new century we can appreciate a significant shift of IC towards the Academia. The emergence of specialized academic journals as 'journal of intellectual capital' in the year 2000, as well as 'special issues' appear in other scientific journals as 'R&D management' in 2005, or becoming a key focus of relevant academic and scientific associations of business administrations like Strategic Management Society, Academy of Management or International Association for the Management of Technology.

The interest of academic world on IC is highlighted in the bibliometric analysis developed by Dean and Kretschmer (2007), where they analyse articles focused on IC, as well as other topics related as 'human capital' or 'social capital', published in journals indexed in the JCR-SCCI from 1958 to 2004. Trying to follow this effort, in the next figure we show a bibliometric analysis developed for the first quarter of the JCR-SSCI, Business and Management categories, from 2000 to October 2009. As we can see, a total number of 37 published articles are focused on IC, with an increasing path during this decade (Figure 1).

Taking into account the nature of proposals made during this stage, the focus of IC studies shifts towards its strategic assessment and implications for firm effectiveness. In this sense, there are studies that try to link IC with technological innovation (e.g.

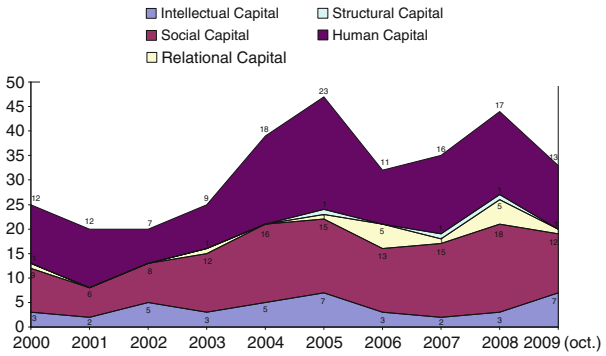

Figure 1. Intellectual capital evolution on JCR-SSCI, management and business categories, first quarter.

Subramaniam and Youndt, 2005) or with competitive advantage (e.g. Cabrita and Bontis, 2008) or trying to develop a new theory, of middle range and pragmatic, that tries to overcome the manifested difficulties owned by the resource-based view, which Reed et al. (2006) label ''An Intellectual Capital-Based View of the Firm''.

IC concept

Teece's 'intellectual capital' represents one of the earliest and most cited developments of the term. However, Teece's concept was not explicitly defined, and his use oscillates between a narrow financial use and a general equation of IC with intangible resources (Dean and Kretschmer, 2007).

Some of the definitions converge at the same point, that can be known as 'the combination of intangible assets that allows the company to operate' (Brooking, 1996, p. 25), the difference between the market value of the company and the replacement cost of its assets (Bontis, 1996), or as the sum of all knowledge possessed by the employees of an organization that confer it with a competitive advantage. In short, intellectual material – knowledge, information, intellectual property, expertise, etc. – which can be used for creating wealth (Stewart, 1998, pp. 9–10).

As can be seen in some of these definitions, IC includes the stocks or funds of knowledge, intangible assets, and ultimately intangible resources and capabilities, which allow for the development of basic business processes of organizations, enabling the achievement of competitive advantages. This potentially strategic nature of IC is embodied in the

following definition of Bueno (1998, p. 221): 'set of intangibles, invisible or intangible, off-balance, allowing the firm to operate, creating value to it'.

It is difficult to provide a unified definition of IC, and even more difficult it is to propose a commonly accepted typology for it, because this phenomenon still is at an emerging stage of development. Table I summarizes some of the definitions of IC. As can be concluded from it, the term has not yet solidified, and its identification with the concept of 'capital' – in accountability terms – presents controversy (Dean and Kretschmer, 2007).

TABLE I

Intellectual capital concepts

Concept	Authors
The difference of an organization's market value and book value	Galbraith (1969)
The difference between the market value of the company and the replacement cost of assets	Bontis (1996)
The combination of market assets, human-centred assets, intellectual property assets, and infrastructure assets	Brooking (1996)
The gap between market and book value of the firm	Sveiby (1997)
The gap between a firm's market value and its financial capital (book value of a firm's equity)	Edvinsson and Malone (1997)
Knowledge, information, intellectual property, expertise which can be used for create wealth	Stewart (1998)
Set of intangibles, invisible or intangible, off-balance, allowing the company to operate, creating value to it	Bueno (1998)
Knowledge and knowing capability of a social collectivity	Nahapiet and Ghoshal (1998)
Essentially comprises all immaterial resources that could be considered as assets, being possible to acquire, combine, transform and exploit, and to which it is possible to assign, in principle, a capitalized value	Granstrand (1999)
Intellectual assets, knowledge assets, total stock of knowledge-based equity possessed by a firm	Dzinkowski (2000)
Includes knowledge, competence and intellectual property. Also includes other intangibles such as brands, reputations, and customer relationships	Teece (2000)
Represents the stock of knowledge that exists in an organization at a particular point in time	Bontis et al. (2002)
Set of intangibles, invisible or intangible, off-balance, allowing the company to operate, creating value to it. Includes human, technological, organizational, relational and social capitals	CIC (2003)
The sum of all knowledge firms utilize for competitive advantage	Subramaniam and Youndt (2005)
Includes those intangible assets of an organization that are not recorded in financial statements but which may constitute 80% of the market value of the organization	Martínez-Torres (2006)
Basic competences of intangible character that allow creating and maintaining competitive advantage	Reed et al. (2006)
Set of intangible resources and capabilities possessed or controlled by a firm	Alama (2008)
The knowledge assets that can be converted into value. Is a matter of creating and supporting connectivity between of sets of expertise, experience and competences inside and outside organization	Cabrita and Bontis (2008)
Represents knowledge-related intangible assets embedded in an organization	Chang et al. (2008)
The total capabilities, knowledge, culture, strategy, process, intellectual property, and relational networks of a company that create value or competitive advantages and help a company achieve its goals	Hsu and Fang (2009)

Nevertheless, IC is demanding a more rigorous theoretical framework (Cabrita and Bontis, 2008). In this regard, since the beginning of the 1990s, many proposals have been raised around its theoretical identification and classification.

From a strategic point of view, it is linked to the ability to create and apply the potential of an organization's knowledge base. In essence, three key characteristics of this construct can be described as follows:

1. Its intangibility;
2. Its potential to create value;
3. The growth effect of collective practice and synergies.

In this sense, and based on a wide literature review, Dean and Kretschmer (2007) identify other characteristics of IC:

- Weightless
- Tradable
- Cheap to reproduce
- Appreciates rather than depreciates with use
- Multiple, simultaneous applications
- Effective interface among information technology, business development, and human resources
- Inexhaustible: ability to leverage knowledge capital is unlimited
- Socially and contextually embedded knowledge
- Closely related to social capital
- Dominating as a means of production
- Ownership is central
- Fixed or flexible, both the input and output of the value creation process
- Transfer cost hard to calibrate
- Property rights are limited in many of these assets

Both Brennan and Connell (2000) and Guthrie et al. (2004) provide an understanding of the evolution of the IC field from its roots.

From the practitioner point of view, one of the first and well-known efforts in developing and implementing a measurement model of IC was made in the 1980s at Skandia, a Swedish financial services company. Then, Edvinsson and Malone (1997, p. 11) define IC as 'those dimensions beyond the human capital that were left behind when the staff went home'.

Nevertheless, the need for adapting theoretical and empirical models to different industry contexts as well as to the new social and economic trends justifies an effort in improving previous proposals. In this setting, empirical evidence for classification and measurement of IC still becomes necessary, but empirically supported models are scarce (Lim and Dallimore, 2004; Martínez-Torres, 2006).

A joint perspective for IC (that can be understood as intangible resources and capabilities) led to us to raise its assessment to state its own consistency. The different types of IC represent different kinds of intangible resources and capabilities. Nevertheless, in spite of their strategic nature, all of these assets would not have the same value for a firm (Aaker, 1989; Hall, 1992, 1993; Itami and Roehl, 1987; Prahalad and Hamel, 1990) emphasizing the importance of certain intangibles. Setting this kind of differences can be considered as a useful help for strategic management. They can help in making decisions about the actions that the firm must perform and about the implementation of programs that allow one to protect, maintain or develop its most valuable intangible assets. This way, before exploring the relation between any specific kind of intellectual asset and competitive advantage, a clear identification of the main components of IC is required.

As we have noted previously, making an effort in understanding this new competitive dynamic, since the mid-1990s, numerous theoretical proposals about the concept and measurement of firm's IC have emerged (Bontis, 1996; Brooking, 1996; CIC, 2003; Edvinsson and Malone, 1997; Kaplan and Norton, 1992; Sveiby, 1997, among others).

However, what are the different components of IC? Edvinsson and Malone (1997) proposed that IC is a two-level construct: human capital (the knowledge created by, and stored in a firm's employees) and structural capital (the embodiment, empowerment and supportive infrastructure of human capital). They then divide structural capital into organizational capital (knowledge, created by, and stored in a firm's information technology systems and processes, that speeds the flow of knowledge through the organization) and customer capital (the relationships that a firm has with its customers).

Based on the literature review, at international level there is a general agreement about the three

main components of IC (Bontis et al., 2002; Martínez-Torres, 2006). In a wide sense, these represent different expressions of firm's knowledge stocks. This triple nature of intellectual assets is being revisited by different lines of research which are trying to reconcile the concept of IC (Dean and Kretschmer, 2007).

In this way, several contributions have provided different frameworks for classifying the components of IC, as well as for establishing series of indicators for IC measurement. Thus, according to the literature review, in a first step, three main components can be found: (i) human capital; (ii) structural capital; and (iii) customer or relational capital (Hsu and Fang, 2009; Martínez-Torres, 2006; Subramaniam and Youndt, 2005).

- Human capital makes reference to tacit or explicit knowledge which employees possess, as well as their ability to generate it, which is useful for the firm, and includes values and attitudes, aptitudes and know-how,
- Structural capital includes technological and organizational capital. The first one refers to the combination of knowledge directly linked to the development of the activities and functions of the technical system of the organization, responsible for obtaining products and services, while the second one can be seen as the combination of explicit and implicit, formal and informal knowledge which in an effective and efficient way structure and develop the organizational activity of the firm. This includes culture – implicit and informal knowledge, structure – explicit and formal knowledge – and organizational learning – implicit and explicit, formal and informal renewal knowledge processes),
- Relational capital makes reference to the value to the organization of the relationships which it maintains with the main agents connected with its basic business processes – customers, suppliers, allies, etc., as well as the value to the organization of the relationships which it maintains with other social agents and its surroundings.

Nevertheless, empirical evidence is needed to determine the level of aggregation that IC components must adopt in practice. This is the purpose of this study: to find out the main components or building blocks of an IC balance sheet for the case of manufacturing firms.

In this way, Brooking (1996) highlights the differences between intellectual property assets, focused on technological knowledge and infrastructure assets focused on organizational knowledge – and also gives a broader concept of market assets that include customer assets.

As can be seen in previous definitions of structural capital, due to its heterogeneous nature, it could be divided into two capitals: technological and organizational capital. In the same way, relational capital could be divided into business and social ones. This more detailed classification could allow a better understanding of these types of organizational factors. In this sense, the intellectus model (CIC, 2003) is a good example of the theoretical proposals about IC that are becoming more complex and detailed every day. This not only encourages analytical reflection among managers and Chief Knowledge Officers, but it can also be seen as a too extensive proliferation of criteria and categories of intangible assets.

Bearing this aim in mind, in this research, we take the three most common components of IC (namely human capital, structural capital and relational capital) and test empirically whether this grouping of intangible assets is supported by the evidence obtained from a sample of knowledge intensive firms.

As we can see in Table II, there are a lot of contributions on IC typologies, using different terminologies, and in the case of relational assets, focusing more or less in the customer relationships. Nevertheless, as we highlighted previously, certain agreement among researchers about the three main blocks of IC can be found.

In the following subsections, we will show a deeper analysis about the human, structural – that includes technological and structural ones – and relational assets, showing definitions, as well as dimensions and variables included.

Human capital

From a macroeconomic point of view, the OECD (1996) recognizes human capital as a primary driver

TABLE II
Intellectual capital typology

Authors	Intellectual capital blocks		
	Individual perspective	Collective or organizational perspective	
		Internal organizational perspective	External organizational perspective
Kaplan and Norton (1992)	Learning and growth	Internal processes	Customers
Saint-Onge (1996)	Human capital	Structural capital	Customer capital
Brooking (1996)	Assets based on the individuals	Assets based on intellectual property Assets based on infrastructure	Market assets
Sveiby (1997)	Competences	Internal structure	External structure
Edvinsson and Malone (1997)	Human framework	Processes framework	Customer framework
Edvinsson and Malone (1997)	Human capital	Structural capital	Customer capital
Bontis (2001)	Human capital	Structural capital	Customer capital
I.U. Euroforum Escorial (1998)	Human capital	Structural capital	Relational capital
Nahapiet and Ghoshal (1998)	Individual explicit knowledge Individual tacit knowledge	Social explicit knowledge Social implicit knowledge	
Dzinkowski (2000)	Human capital	Organizational capital	Customer capital
McElroy (2002)	Human capital	Structural capital Innovation capital Process capital	Social capital Intrasocial capital Intersocial capital
CIC (2003)	Human capital	Technological capital Organizational capital	Business capital Social capital
Guthrie et al. (2004)	Human capital Human capital	Internal capital Organizational capital Technological capital	External capital Business relational capital Social capital
Chen et al. (2004)	Human capital	Innovation capital Structural capital	Customer capital
Joia (2004)	Human capital	Internal capital Structural capital Innovation capital	External capital
Ordoñez de Pablos (2004)	Human capital	Structural capital Technological capital Organizational capital	Relational capital
Subramaniam and Youndt (2005)	Human capital Internal social capital	Organizational capital	External social capital

of competitiveness, prosperity and economic wealth. Thus, it can be considered the key element of IC and one of the most important sources of firm's sustainable competitive advantages (Cabrita and Bontis, 2008; Edvinsson and Malone, 1997; Nonaka and Takeuchi, 1995).

Human capital makes reference to the knowledge – explicit and tacit – that people possess, as well as their ability to generate it, which is useful for the mission of the organization (CIC, 2003). In Table III, we can see a literature review of human capital definitions made by academics and practitioners.

Edvinsson and Malone (1997) remark that human capital includes knowledge, skills, innovativeness and the ability to meet the task at hand, and showed

TABLE III
Human capital definitions

Concept	Authors
Human-centered assets are the collective expertise, creative and problem-solving capability, leadership, entrepreneurial and managerial skills embodied by employees of the organization	Brooking (1996)
Is defined as the combined knowledge, skill, innovativeness and ability of company's individual employees to meet the task at hand	Edvinsson and Malone (1997)
The capacity to act in a wide variety of situations to create both tangible and intangible assets	Sveiby (1997)
Skills and knowledge of our people	Stewart (1998)
Represents the value of knowledge and talent embedded in the employees, and it includes values and attitudes, personal knowledge and skills, and behaviors	CIC (2003)
The knowledge, skills, and abilities residing with and utilized by individuals	Subramaniam and Youndt (2005)
The knowledge, skills, etc. of individuals	Martínez-Torres (2006)
Comprises the individual's education, skills, values and experiences	Cabrita and Bontis (2008)
Embraces all of the skills and capabilities of the people working in an organization	Wu et al. (2008)
Denotes the tacit knowledge embedded in the minds of the employees. Employees generate IC through their competence, attitude, motivation and intellectual agility	Chang et al. (2008)
The intangible elements that the human capital includes refer, basically, to the knowledge acquired by a person, besides other individual qualities as the loyalty, the polyvalence or the flexibility, which there determine the productivity and the value of the contribution of the individual to the company	Alama (2008)
Comprises all business capital embedded in employees and not owned by the organization. This capital may be taken away by employees, and includes employees and managers' competence, experience, knowledge, skills, attitude, commitment and wisdom	Hsu and Fang (2009)

a key characteristic: human capital cannot be owned by the company. Its strategic and managerial implications for managers are remarkable.

In order to advance in the understanding of the nature of human capital, it is necessary to analyse its internal structure, providing coherence for it. In this way, and based on the literature review, we could consider three main dimensions:

- *Knowledge*. Makes reference to the knowledge which employees have about things, to successfully carry out their tasks. Includes the following variables: (i) formal education, (ii) specific training, (iii) experience, and (iv) personal development.
- *Abilities*. Refers to the type of knowledge related to 'the way of doing things' (know-how). Specifically, it gathers all the utilities, dexterity and talent which a person develops basically as a result of his/her experience and practice. Includes the following variables: (i) individual learning, (ii) collaboration-team work, (iii) communication (exchange of individual knowledge and know-how), and (iv) leadership.
- *Behaviors*. Represent knowledge about the incipient sources which lead individuals to do their tasks. Includes mental models, paradigms, beliefs, etc. and refers to (i) feeling of belonging and commitment, (ii) self-motivation; (iii) job satisfaction, (iv) friendship, (v) flexibility, and (vi) creativity.

In her doctoral dissertation, Alama (2008) founded three main components of human capital in the case of professional service firms: (i) experience and abilities, that are characterized by the personal experience required for a successful performance, as well as by the personal abilities in the firm; (ii)

professional development, which includes the 'access to internal promotion' and incentive plans, but it also includes other aspects like job satisfaction, educational degrees or university reputation of precedence; and (iii) worker permanence. Permanence could be seen as a must-have for retaining the outstanding experience and abilities of the most brilliant associates, and also as a way for nurturing the employees with promising professional development to reinforce their talent and experience within the firm.

At this time, and based on the literature review, we can remark three basic components of human capital: (i) knowledge, embedded in the organizational employees, that may include education and training; (ii) experience and abilities, or the employee's know-how; and (iii) personal behaviors, willingness or attitudes, towards its task, jobs and organizations.

Structural capital

In a pragmatic and basic way, Edvinsson and Malone (1997) define structural capital as everything that gets left behind at the office when employees go home. Nevertheless, the above conceptualization has important differences and strategic implications of this collective or organizational knowledge. Whereas human capital is possessed by the employees, making so difficult its management, structural capital is controlled, possessed and managed by the firm.

In this sense, structural capital can be seen as the skeleton and the glue of an organization because it provides the tools and architecture for retaining, packaging, reinforcing, and transferring knowledge along the business activities (Cabrita and Bontis, 2008). Table IV shows the main definitions founded in the literature for the concept of structural capital.

In a similar way to human capital, and to advance in understanding the nature of structural capital, it is necessary to analyse its internal structure in search for coherence. Nevertheless, at this point, we must remark that its heterogeneous nature lets us to split this construct into two main 'capitals' or building blocks: (i) technological capital; and (ii) organizational capital.

Since the beginning of the IC studies, authors such as Brooking (1996) raised the need of differentiating those intellectual assets linked to innovation, intellectual property or technological nature, as know-how, trade secrets, copyrights, patents, design rights, etc. from those related to the infrastructure assets, as corporate culture, information and telecommunication technologies, databases, etc.

In this sense, several authors as CIC (2003), Joia (2004), Chen et al. (2004), Alama (2008), or Hsu and Fang (2009) have made the previous distinction.

Technological capital

As CIC (2003) points out, technological or innovation capital refers to the combination of organizational knowledge directly linked to the development of the activities and functions of the operations technical system, responsible of obtaining new products and services, the development of efficient production processes, as well as the advancement of the organizational knowledge base necessary to develop future technological innovations.

Technological capital includes the following elements:

- *Efforts in research and development*. Typically includes R&D expenditures, personnel linked to these efforts, and the number and relative importance of R&D projects.
- Technological infrastructure, including the purchase of technology as well as the information and telecommunications infrastructure necessary to develop technological innovations.
- Intellectual and industrial property, as the volume of legally protected and unprotected technical and scientific knowledge of the firm. Includes patents, prototypes, trade secrets, design rights, registered trademarks, licenses, etc.

Organizational capital

The second group of structural assets is linked to the organizational infrastructure (Brooking, 1996). Organizational capital results from the combination of intangible assets that are, by nature both explicit and implicit, formal as well as informal, which in an effective and efficient way, give structure and organizational cohesion to the different activities and

TABLE IV

Structural capital definitions

Concept	Authors
Includes intellectual property assets that contain the legal mechanism for protecting many corporate assets, infrastructure assets, including know-how, trade secrets, copyrights, patents, design rights, trade and service marks, as well as, Infrastructure assets, including those technologies, methodologies and processes which enable the organization to function, including corporate culture, databases and information, etc.	Brooking (1996)
Is the hardware, software, databases, organizational structure, patens, trademarks and everything else of organizational capability that supports those employee's productivity	Edvinsson and Malone (1997)
Patents, concepts, models and computer and administrative systems	Sveiby (1997)
Stored knowledge in patents, processes, databases, networks, etc.	Stewart (1998)
Technological capital. Includes know-how from R&D activities, technological knowledge, trade secrets, intellectual property, and patents	Hsieh and Tsai (2007)
Organizational capital: the institutionalized knowledge and codified experience residing within and utilized through databases, patents, manuals, systems, and processes	Subramaniam and Youndt (2005)
The property of the organization, such as processes, information in a database, etc.	Martínez-Torres (2006)
The structural capital includes the intangible assets that form a part of the structural design of the company, facilitating the flow of knowledge and bringing as consequence an improvement in the efficiency of the organization on having integrated (repaid), in a suitable way, the different functions of the company	Alama (2008)
It is comprised of non-human assets, such as information systems, routines, procedures and databases	Cabrita and Bontis (2008)
It includes all non-human storehouse of knowledge in organizations, including databases, organizational charts, process manuals, strategies, routines and anything whose value to the firm is higher than its material value	Wu et al. (2008)
Refers to the non-human storehouses of knowledge in a firm that involve organizational structures, such as the organizational routines, the structure of the business, and various types of intellectual property	Chang et al. (2008)
Structural capital as including process capital and innovation capital. Process capital is defined as workflow, operation processes, specific methods, business development plans, information technology systems, and cooperative culture, etc. Innovation capital is defined as intellectual property within an organization, including patents, copyrights, trademarks, and knowhow, etc.	Hsu and Fang (2009)

business processes developed into the firm (Alama 2008; CIC, 2003).

Organizational capital includes the following main elements:

- *Organizational culture, values and attitudes*. Includes the level of cultural homogeneity, or level of coherence, acceptance and general commitment to cultural values, business philosophy and ethics, social climate, or managerial commitment towards some concrete cultural values and attitudes.
- *Information and telecommunications capability*. Refers to the firm's ability, commitment and effective use of information and telecommunications technologies to ensure storage, disseminate, absorb, transfer, and refine useful information and knowledge across the firm.

– *Organizational structure*. Refers to the formal organizational design, and it includes formal mechanisms for structuring the firm.

Relational capital

Until now, relational capital remains underexplored, at least, relative to the way and depth of the other two previous types of IC. This may be due to the fact that relational capital has probably the most complex and heterogeneous nature due to all the kinds of intangible assets. Nevertheless, an additional effort must be done, because, as Acedo et al. (2006) remark, one of the most fruitful developments of the resource-based view (RBV) will be the 'relational one'.

From the knowledge-based view of the firm (Kogut and Zander, 1993), it has been highlighted that organizations are social entities that store internal and external knowledge which lies at the core of firm survival and success. Now, when describing relational capital, we have to focus on how firms can absorb, exploit and explore new knowledge from its environment to obtain and sustain competitive advantage positions.

In this sense, before starting with the comments about the concept of relational capital, its structure and components, we must review some of the key proposals that can be found in the literature – inserted in the IC framework – in recent years.

One of the earliest and most important efforts in the identification and measurement of relational capital is due to Kaplan and Norton (1992). They focused exclusively on customer relationships. However, we think that their vision of relational capital is too narrow. Whilst for most firms this agent has the most strategic value, we cannot ignore the rest of external relationships to explain competitive advantage.

This myopia found is also known in the Skandia Navigator (Edvinsson and Malone, 1997) which focuses on customer relationships. Nevertheless, this study offers a wider set of variables included in its relational component as: (i) customer typology; (ii) customer loyalty and longevity of relationships; (iii) customer support; or (iv) customer relationships efficiency.

In parallel, Brooking (1996) develops an interesting study about external firm relationships beyond its customers. She identifies other relational assets like product/service brands, corporate reputation and image, or business partnerships and alliances. Of course, she also includes a detailed study of the customer relationships.

Following these efforts, we would like to remark the Spanish proposal coming from the Intellect Model (I.U. Euroforum Escorial, 1998), which identifies, in the case of relational capital, different elements or variables relating to the following environmental agents: (i) customers, (ii) suppliers, (iii) allies; (iv) other social agents; and (iv) corporate reputation.

Finally, and following the previous effort, intellectus model (CIC, 2003), splits relational capital into two capitals: relational business capital (which includes the analysis of organizational relationships with customers, suppliers, partners and competitors, as well as other business-related activities in the same), and relational social capital (referring mainly to the value of the firm's relations with society in general terms).

In the same way, Bontis (1996) also expands the concept of 'client or customer capital' to include all the external relationships of the firm (e.g. suppliers, allies, trade unions, etc.).

In Table V, we show a literature review about the different labels of relational capital, as well as, the main assets/variables included in the proposals (Table VI).

Furthermore, in order to point out the strategic value of relational capital, we can highlight that it may be useful for the firm because (i) it provides an external or market valuation of its existing knowledge base; and (ii) it provides information about market needs and opportunities, competitive dynamics, etc., providing a useful external map or guide about how the firm can improve and develop new knowledge.

In this vein, relational capital could be critical for making decisions about how to exploit the current organizational knowledge base and also about detecting market trends and 'technological opportunity' (Kogut and Zander, 1992). Thus, relational capital could be considered as a close relative to the well-known notion of 'dynamic capabilities' proposed by Teece et al. (1997).

TABLE V

Relational capital definitions

Concepts	Authors
Included in the structural capital, customer capital provides the relationships developed with key customers	Edvinsson and Malone (1997)
Focused on customer capital: relationships with customers and suppliers	Stewart (1998)
Can be defined as the combination of knowledge which is incorporated in the organization and employees, as a consequence of the value derived from the relationships which they maintain with market agents and with society in general	CIC (2003)
The relationships that an organization has with its clients/customers and environment	Martínez-Torres (2006)
There are included those intangible assets that the company obtains when it supports relations with agents of its environment like clients, suppliers or allies	Alama (2008)
Is the knowledge embedded in relationships with customers, suppliers, industry associations or any other stakeholder that influence the organization's life	Cabrita and Bontis (2008)
Represents the knowledge embedded in the relationships with the outsider environment	Chang et al. (2008)
Refers to customer capital, that represents the potential an organization has due to ex firm intangibles	Wu et al. (2008)
Includes all value of stakeholders, customers, and supplier relations	Hsu and Fang (2009)

Conclusions and future trends

As it is well known, nowadays an important set of strategy researchers use the resource-based view (RBV) of the firm in their investigations (Powell, 2001). Nevertheless, before a theory can be accepted as 'true', this theory must survive repeated attempts for its empirical falsification. The actual level of empirical support for the RBV remains uncertain. Among the possible concerns, Reed et al. (2006) remark the following ones: RBV is not prescriptive; it suffers a lack of clear definition of competitive advantage; it has a tautology problem; it is ambiguous as to its relevant domain; and it is too general.

According to the RBV, a firm's resources and capabilities – particularly intangible ones – are more likely to contribute to attaining and sustaining firm's superior performance (Barney, 1991). Maybe, one of the RBV's concerns is how to conceptualize, identify, and measure these intangible resources and capabilities, intangible in its nature.

Following Reed et al. (2006), a pragmatic, though partial, resolution to these concerns emerges as a mid-range theory: the IC-based view (ICV) of the firm. As a mid-range theory, ICV should provide a higher potential for empirical testing than the RBV, representing specific aspects more narrowly linked to a firm's competitive advantage. In this way, ICV can be viewed as complementary to a more widely understood knowledge-based view (Grant, 1996), trying to assess knowledge assets responsible for superior performance.

This theoretical–pragmatic approach is narrowly focused or is a specialization of the RBV. This approach arose from practitioners in the 1990s (Brooking, 1996; CIC, 2003; Edvinsson and Malone, 1997), and ICV distinguishes different blocks of IC.

In this sense, the main objective of this study has been to show the origins and nature of firm's IC, signalling two main steps, from a practitioner interest to an academic one, and showing the concept and typology of it. An accepted classification of IC distinguishes among the following ones (Martínez-Torres, 2006): human capital; structural capital; and relational capital.

From a strategic point of view, IC is becoming a crucial factor for a firm's long-term profit and performance in the knowledge-based economy (Hsu and Fang, 2009; Kong, 2010). Knowledge storage and its application remain the basis of economic growth and welfare, and it is widely accepted that an

TABLE VI
Relational capital aspects

Authors	Label	Main aspects included
Kaplan and Norton (1992)	Customer perspective	Corporate reputation and image Quality of customer relationships Product/services attributes Market share Customer loyalty Customer satisfaction
Brooking (1996)	Market assets	Product brand Customers Corporate Image Social name Marketplace Business partnerships
Edvinsson and Malone (1997)	Customer capital	Customer typologies Longevity of customer relationships Customers role Customer support Customer efficiency
Sveiby (1997)	External structure	Customer segmentation Market growth Efficiency Stability
I.U. Euroforum Escorial (1998)	Relational capital	Customers Brand Corporate reputation Alliances Relationships with other agents
CIC (2003)	Business relational capital	Relationships with: Suppliers Shareholders, institutions and investors Allies Business competitors Quality institutions
	Relational social capital	Relationships with: Public administrations Mass media and corporate image Green agents Social agents Corporate reputation
Alama (2008)	Relational capital	Customer relationships Supplier relationships Allies Corporate reputation

organization's capability to innovate, as well as its performance, is closely related to its IC endowments or its ability to utilize its knowledge resources in an effective way (Subramaniam and Youndt, 2005).

Among the possible future research directions, we could highlight the following: (i) increase the limited actual level of empirical findings, supporting the fact that IC can be one of the main sources for a firm's

financial and market outcomes; (ii) a deeper understanding about the management of IC to improve innovation – internal and external – process and output; (iii) in relation with previous arguments, and following one of the main trends presented in the study of Acedo et al. (2006) about a 'relational view of RBV', as well as the 'absorptive capability', analysing the role of relational capital in the configuration of IC and its strategic role; and (iv) finally, it is necessary to make additional efforts in measuring IC assets. In this sense, the efforts made in relation with corporate brands – that can be measured in economic terms, with economic and financial methodology – represent an important advance in this direction.

Finally, we would like to remark in this proposal about an 'intellectual capital-based view of the firm' shows a new 'knowledge-based or intellectual-based' framework for firm's competition, where 'knowledge worker' as well as 'knowledge-creating company' and 'sustained and trusted relationships' have a key role in today's business competition.

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