

INTELLECTUAL CAPITAL: AN EPISTEMOLOGICAL APPROACH

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Abstract. *For more than 40 years, the concept of intellectual capital (IC) occupies the headlines of the researches developed in both technological and social areas. Little by little, it captures the attention of both practitioners and academics, and it evolves from the individual level to the organizational one; it switches from being a human behavior to describing an organizational capability. Just like knowledge, it crosses individual's boundaries and it floods in all the activities in which people are involved. According to the first theories, which followed an informative or inductive approach, IC is born at individual level where is labeled as "internal capital" and then through cooperation, collaboration and organizational processes its abstract content which is entitled as "external capital" is developed. Against this backdrop, IC becomes to be a valuable asset for the policymakers from both private and public sector. Therefore, its boundaries are extended to the regional and even national level. Despite these, the field is still in an embryonic phase of development; so far, there is no general accepted framework for its analysis; new dimensions are identified, new variables are brought forward, new indicators are used and new models are being developed on regular basis. Considering these, we aim to analyze the concept of "intellectual capital" from an epistemological approach. In order to achieve our goal, we develop an exploratory research and employ a qualitative analysis. Based on inductive reasoning and interpretative endeavor, we emphasize that the studies developed by now are either dominated by an inductive approach or by an integrative one. No matter the level of analysis, most of the researches focus on an empirical or integrative approaches, and neglect the value-added generated by the hermeneutical, rational or mystical approaches. These highlight a powerful need for capturing the unseen and labeling it in a number format. Besides, there is a lack of skeptical and interpretative perspectives. Finally yet importantly, the previous models concentrate on using a static approach although IC is based on knowledge, which is a dynamic and fluid resource.*

Keywords: *intellectual capital; empirical approach; rational perspective; positivism; constructivism.*

Introduction

For more than 40 years, the concept of "intellectual capital" (IC) occupies the headlines of the researches developed in both technological and social area. Although it seems to be used primarily in business and its development is assumed to be generated by the obsolete of the financial capital, its roots lie in social sciences. Galbraith (1969), who uses it in order to label a human behavior, coins the term. Based on an informative approach, he claims that IC describes the behavior of using brain and not just knowledge and mere intelligence. In other words, it is a human characteristic, it is rational and it involves processing and applying knowledge.

Galbraith's statement is reinforced by the transition to a post-fordist economy in which knowledge becomes a critical factor of production, and IC is the only one capable of providing competitive advantages. In fact, Edvinsson and Malone (1997, p.22) state: "Step lively now and you will be in the vanguard of this movement, better prepared and more experienced than your competitors. Or wait, until it washes over you and tosses you forward struggling to keep from being dashed and drowned. But make no mistake, whatever path you choose, Intellectual Capital is our future". Although it remains in the economics area, the perspective switches from the individual to the organizational

level; IC is no longer a human behavior but the key to company's salvation. This urges managers' need for IC measuring; a need that is supported by the incapacity of the traditional double-entry booking system to display the emergent realities. Therefore, IC captures the attention of both practitioners and academics, who following an inductive approach, present it as the difference between market value and book value; its most simplified version is measured using Tobin's Q formula.

During the time, it proves to be a valuable asset for the policymakers from both private and public sector and its boundaries extend to the regional and national level. It is conceptualized by scholars from various disciplines, like accounting (Ordoñez de Pablos, 2002; Pulic, 2000), psychology (Bickel, 2007), sociology (Taljunaitė, 2010), information technology (Hsu et al., 2014), engineering (Chen et al., 2014), and medicine (Covell & Sidani, 2013). Following either an inductive or integrative approach, IC influence on organizational performance (Jardon & Martos, 2009; Kim et al., 2012), financial returns (Chu et al., 2006; Reed et al., 2006), value creation (Bozburu, 2004; Zeghal & Maaloul, 2010), innovative behaviours (Chen et al., 2009; Subramaniam & Youndt, 2005), and wealth creation (Alfaro-Navarro et al., 2011; Lin & Edvinsson, 2008) is revealed.

Despite the fact that IC becomes practically a discipline, the field is still in an embryonic stage of development. There is no general accepted framework for its analysis; new dimensions are identified, new variables are brought forward, new indicators are used and new instruments are being developed on regular basis. Most models focus either on an *inductive approach*, trying to identify patterns and to develop new theories, or on an *integrative one*, combining the knowledge-based theory with psychology, sociology, informational technology or classical economy.

Taking these into consideration, we aim to analyze IC from an epistemological perspective. We focus on both epistemological schools of thought and approaches. On the one hand, we take into account the distinction between constructivism, positivism and interpretativism. On the other hand, we use as a reference framework the main epistemological approaches (Marbaniang, 2012), namely: informative (revelational), inductive (empirical), indefinite (skeptical), interpretative (hermeneutical), integrative (synthetical), inferential (rational) and intuitive (mystical) approach. The results are presented in the following sections. Next, we concentrate on IC definitions and components; then, we focus on the models that were developed in order to measure the organizational, regional and national IC. In the end, we close this article by drawing the main conclusions and indicating further research directions.

Intellectual capital: conceptualization and implications

The perspectives upon IC switch not only from individual level to the organizational one but also from being "pure intellect" to "capability for action" (Table 1). The initial theories follow an informative approach, have their roots in the work of Polanyi (1966) and perceive knowledge as a continuum; at one end, knowledge is semi- or unconscious and resides in individuals' head, and at the other end, it is completely explicit and accessible (Leonard & Sensiper, 1998). Therefore, Galbraith (1969) and Stewart (1997) define IC from the tacit knowledge perspective while Klein and Prusak (1994) focus exclusively on explicit knowledge. Edvinsson and Malone (1997) adopt an integrative perspective and describe it as the possession of both tacit and explicit knowledge.

Based on an inductive approach, the researches developed during the XXI century brought forward a series of changes: IC is approached from a prospective point of view; its value is no longer related to its possession but with its use; and it is not an asset but a capability. These are based on empirical analysis; focus on observations; and use detailed descriptions of several case studies in order to support their assumptions and to facilitate the development of the IC theory.

The previous definitions tend to complement each other even though some are based on revelations (Galbraith, 1969) and other on empirical processes (Edvinsson & Malone, 1997; Lev, 2001); there is a

general agreement that IC exists and is knowledge-related. These results are generated by the lack of sceptical perspectives; no one tries to deny IC existence or to explain the gap between market-value and book-value using other arguments. In fact, once knowledge is accepted as a critical resource for development, the unseen and unexplainable issues start to be related with IC. In a couple of years, IC became the engine of personal development, organizational performance and national wealth-creation. Since these were assumed to be the effects of creating, disseminating and using knowledge (Drucker, 1999; Nonaka & Takeuchi, 1995), are IC and knowledge interchangeable? If so, then why did the previous mentioned academics felt the need to use a static-dynamic dyad for explaining the differences between them? They presented knowledge as an asset, an object and IC as an action (of possessing or transforming).

Table 1. Main definitions given to the concept of IC

Author/-s	Definition
Galbraith (1969)	- It refers to individual's behavior of using brain instead of just using knowledge and mere intelligence.
Klein and Prusak (1994)	- It is the intellectual material that has been formalized, captured, and leveraged to produce higher valued assets.
Stewart (1997)	- It is what everyone knows and brings to an organization that enhances its value to others.
Edvinsson and Malone (1997)	- It is the possession of the knowledge, applied experience, customer relationships and professional skills that provide the firm with a competitive edge in the market
Bontis (1998)	- It represents the stock of knowledge within the firm.
Lev (2001)	- It is a promise to future benefits which have neither physical nor financial form.
Ordonez de Pablos (2002)	- It includes the sum of all of the unseen assets that increase an organization's current and future profitability
Carlucci and Schiuma (2007)	- It refers to the knowing capability of an organization as well as to denote the valuable cognitive resources and a capability for action based in knowledge and knowing
Bucheli et al. (2012)	- It describes the capacity to produce knowledge.

Starting from these, we argue that IC definitions are the result of *inferentialism*. According to Brandom (1994, p.496), this aims "to explain in deontic scorekeeping terms what is expressed by the use of representational vocabulary – what we are doing and saying when we talk about what we are talking about". So, IC is an umbrella concept that covers the efficiency of knowledge management processes.

Since the connection between IC and efficiency is perceived by all the scholars, further analysis is developed regarding the elements that compound it. In a first stage, following a rational approach, the distinction is made between the internal and external capital; the separation is undertaken based on the level of control (the internal elements are controllable while the external ones are uncontrollable) and it reflects the influence of the strategic management school. In fact, plenty of research was developed for emphasizing the relationship between IC and Balance Scorecard (Boj et al., 2014; Kaplan & Norton, 1996). The last one is a manifestation of IC due to the fact that it only captures a face of it in its attempt of measuring the progresses among four areas: financial, customer, internal/business process, and learning and growth.

According to the sceptical scholars (Bueno et al., 2011; Edvinson & Malone, 1997), control is relative; the division should be based on capital's location. Therefore, IC yields three classes: human, structural and relational capital. The locus of the first one is human brain; it is the most dynamic and uncontrollable part and it can further be divided into individual and shared capital. The second one resides in organizational structures and practices, and it is the hardest one to change. The relational capital incorporates organization's relationships with its stakeholders; it includes mostly tacit knowledge and is hard to capture it.

Through an inductive approach, the relationship between these three components is emphasized (Martinez-Torres, 2006). Nevertheless, they could have been highlighted following the hermeneutical paradigm. Individuals' psyche performs four fundamental functions: sensation, intuition, thinking and feeling (Jung, 1933), but they develop differently (Calori, 1998). The sensors pay attention to details,

support the conversion of tacit knowledge into explicit knowledge and facilitate organizational learning; the intuitives are addicted to metaphors and symbols, disregard practical details and create organizational myths; the thinkers focus on analyzing situations and discovering cause-effect relationships, and are efficient in the planning, organizing and coordinating activities; the feelers concentrate on inspiring others and disseminating organizational stories. Each and every one of them is involved in the organizational practices and also in the relationships the organization establishes.

Since the organizational routines are developed and followed by individuals and the relationships are also established among individuals, a question arises: *where do the boundaries of human capital stop?* Can we really draw a line between IC components based on their location? The answer is “no” and it is brought forward by Brătianu (2014) who claims that the distinction should be made based on IC’s dynamics. He adopts a skeptical perspective and argues that the classical paradigms limit the understanding of knowledge and IC which should be seen as energy. He follows a hermeneutical approach and proposes a new IC model, which connects the three dimensions through three elements: rational, emotional and spiritual IC. Technology & processes, management and leadership facilitate the development of the first one; management, organizational culture and leadership influence the second one; while the third one depends on organizational culture and leaderships. From this point of view, leadership seems to be the cornerstone of IC’s development. The assumption is justified if we take into account that leaders are usually feelers; they inspire others, collect and share cognitive, emotional and spiritual knowledge. Although this perspective is clarifying in terms of explaining what really happens with IC, it may be confusing when it comes to analyze and measure it.

Levels of analysis

The models developed for IC measurement and management focus either on organizational level or on regional/national one. Some of them are the result of an inductive approach while others are based on a skeptical perspective.

Organizational level

Sveiby (2001) concentrates on the IC models and designs a two-dimensional matrix (Figure 1) based on their level of analysis and the measurement method. He distinguishes between the models that use a monetary value for defining IC (Market Capitalization Methods and Return on Asset Methods) or its components (Direct Intellectual Capital Methods), and the non-financial ones (Scorecard Methods). His analysis also brings forward the lack of qualitative valuation of organization’s IC and the powerful influence of the positivism philosophy. The researchers focus on what it can be observed and measured (emotions, thoughts and most of the tacit knowledge are ignored); seek objectivity and use rational endeavors; concentrate on developing an instrument that can be generalized no matter the time and context. The gap is filled by the constructivists who develop narrative IC models (Dumay & Roslender, 2013; Mouritsen et al., 2002); they realize that “the narrative presents something close to the identity of the firm, and therefore presents some kind of *raison d’être* of its activities” (Mouritsen et al., 2002, p.14). Their models tend to be socially-constructed; emphasize the unpredictable nature of the analyzed reality; and focus on meanings and subjective experiences.

Organizational level		Market Capitalization Method <ul style="list-style-type: none"> ▪ Market-to-Book Value ▪ Tobin's Q Return on Asset Method <ul style="list-style-type: none"> ▪ Economic Value Added ▪ Calculated Intangible Value ▪ Value-Added Intellectual Coefficient ▪ Intangible Driven Earnings ▪ Residual Income Model 	
	Components level	Scorecard Method <ul style="list-style-type: none"> ▪ Balance Scorecard ▪ Value Chain Scoreboard ▪ Skandia Navigator ▪ IC-Index ▪ Intellectual Capital ▪ Benchmarking System 	Direct Intellectual Capital Method <ul style="list-style-type: none"> ▪ Citation-Weighted Patent ▪ Real Option Model
	Non-monetary	Monetary	

Figure 1. Sveiby's classification of the IC models

The differentiation between positivists and constructivists researches is indirectly highlighted by Andriessen (2004) who adopts a synthetically approach, and argues that IC models can be split in five categories: (i) *IC community* which incorporates the models that adopt a global approach (Edvinsson & Malone, 1997); (ii) *human resources accounting community* which includes the models that focus on human resources (Flamholtz, 1999); (iii) *performance management community* which reunites those models that emphasize the relationship between IC and organizational strategy (Boj et al., 2014; Kaplan & Norton, 1996); (iv) *valuation community* which focuses on developing IC measurements based on a cost, market or income approach (Bueno et al., 2011; Pulic, 2000); (v) *accounting community* which incorporates those models that measure the intangible assets so that it can be used in financial statements (Lev, 2001; Stewart, 1997).

Table 2. Particularities of the organizational IC models

Author/-s	Method/-s	Sector	Characteristics
Edvinsson (1997)	Scorecard methodology	private	<ul style="list-style-type: none"> - It takes into account five perspectives, namely: financial, customer, process, human capital and innovation focus; each of these is measured with the help of four indicators. - It has a strategic orientation.
Steward (1997)	Financial analysis	private	<ul style="list-style-type: none"> - It reflects IC's value based on an average performance. - It facilitates comparison within and between industries and it allows trend analysis. - It is based on financial information.
Pulic (2000)	Financial analysis	private	<ul style="list-style-type: none"> - It defines IC performance as a sum of the value added by human capital and physical capital. - It facilitates comparison between companies. - It is based on financial information.
Leitner et al. (2005)	Data Envelopment Analysis	public	<ul style="list-style-type: none"> - It is based on BCC model. - It uses 48 indicators selected from ABIV. - Staff and size of the room are considered to be the only IC inputs.
Bueno et al. (2011)	Longitudinal data analysis	private	<ul style="list-style-type: none"> - It measures IC performance based on 342 indicators which follow a "relevance tree" approach. - It uses a multiplying factor in order to determine IC future value.
Sydler (2014)	Longitudinal data analysis	private	<ul style="list-style-type: none"> - It uses the adjusted residual income model for IC measurement. - It is based on financial data and it uses the non-linear regression.
Boj et al. (2014)	Multi-Criteria Decision Analysis	public	<ul style="list-style-type: none"> - IC structure is customized; the variables are defined by a heterogeneous group of experts who belong to different levels of the organization. - It links IC dimensions and variables with the strategic objectives developed within the organization.
Leon	Benchmarking	private	<ul style="list-style-type: none"> - It brings forward IC's relative character and its long term

(2014)			relationship with company's competitiveness. - It uses monetary and non-monetary data.
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Despite the shy attempt of adopting the constructivism philosophy in order to understand and manage IC, the models are predominantly based on a positivism approach (Table 2). They try to synthesize the complexity of the organizational IC in a value that can be used as a yardstick in the decision-making process. The phenomenon is the same in both public and private organizations.

Regional and national level

The regional and national IC have their roots in the work of Machlup (1962) and highlight the current and potential sources for wealth creation (Bontis, 2004). They represent the knowledge that provide the regional/national competitive advantage and determine its potential for future growth (Lin & Edvinsson, 2008). IC is a key driver of performance and makes the difference between the rich and the poor regions/societies. The first ones develop their intangible assets while the second ones focus on the classical factors of production: land, capital and labor (Malhotra, 2000). A large number of studies analyzing various aspects of regional/national IC were undertaken (Table 3) but the field is still embryonic; there is a lack of comprehensive reference framework and no methodology is widely accepted.

Table 3. Particularities of the regional/national IC models

Author/-s	Method	Level	Characteristics
Bontis (2004)	PLS modelling	national	- It is based on a weighted mean of four dimensions, namely: human, process, renewal, market capital; the weights are subject of an academic debate. - It proves that national IC explains 20% of the financial wealth.
Andriessen and Stam (2004)	Benchmarking	national	- It has three dimensions, such as: human, structural and relational capital; variables are grouped in assets, investments and effects. - It analyzes the dynamics of IC in EU and it proves that the Nordic countries are the leaders.
Lin and Edvinsson (2008)	Longitudinal data analysis	national	- It has four dimensions, namely: human, market, process and renewal capital; each dimension includes 7 variables. - It emphasizes the importance of individuals, institutions and communities as sources for national wealth creation.
Schiuma et al. (2008)	Delphi analysis and benchmarking	regional	- It is called Regional Intellectual Capital Index and it includes four dimensions, namely: Wetware, Netware, Hardware and Software. - It emphasizes the positive relationship between IC ownership and value creation.
Alfaro-Navarro et al. (2011)	Principal Component Analysis	national	- It is based on a weighted mean of six dimensions, namely: human, process, relational, marketing, RDI, social and environmental capital. - It emphasizes the environmental responsibility of a nation.
Nitkiewicz et al. (2014)	Data Envelopment Analysis	regional	- It is based on linear programming procedures and it uses Farrell's efficiency measures. - Variables are selected based on a literature review and they do not describe entirely the IC of a region.

The previous models focus on the inter-regional and international comparison without taken into account that different regions/countries develop in different economic, social and cultural realities; concentrate on determining the amount of IC rather than its quality and dynamics; overlooked the importance of social and environmental issues on the sustainable development.

Compared with the research developed at the organizational level, the presence of the positivism approach is stronger at the regional/national level. The researchers try to understand the current knowledge-based economy so that they can control and predict it. What they overlook is the fact that knowledge is dynamic and cannot be understood and evaluated from a deterministic approach. Therefore, if the existence of a regional/national IC is hard to deny not the same can be assumed about the models that have been developed. They tend to analyze specific dimensions of what could

contribute to IC development but not necessarily its components. Once the cultural specificity, that defines how the population acts, thinks and feels, is neglected, the model is incomplete.

Conclusions and current challenges

IC proves to be a discipline and creates academics, journals, conferences, business consultants and industry analysts whose only objective is to shed light on what IC is and how it can be measured. Therefore, they develop concepts, theories and measuring techniques and instruments. Their research reflects (i) a normative perspective, trying to explain what IC is; (ii) a strategic perspective, focusing on main IC drivers; and (iii) an operational approach, concentrating on how IC can be used.

Although the insights of the previous researches are valuable, the field is still in an embryonic stage of development and has still a lot to offer. First of all, its origins are almost exclusively in the positivism philosophy: the need for measuring comes from observation; IC is analysed from a deterministic point of view and is described in terms of cause-effect relationships; the purpose of the scientific endeavour is to capture the visible part of IC in order to measure it and predict its future value; deductive reasoning is frequently used; statistical and mathematical techniques are applied on a regular base. Still, the world goes beyond our level of understanding and analysing IC framework from a constructivism perspective is needed. Given the high level of subjectivism and the low level of predictability that this philosophy implies, this approach is mostly neglected by both practitioners and academics. Yet, there are a few attempts that present IC from a contextualized and interpretative perspective (Brătianu, 2014; Mouritsen et al., 2002). They bring forward the essence of IC: its irrational character; the tacit, emotional and spiritual knowledge are the only one capable of making the difference, the hardest ones to imitate, capture and measure. Further research is needed in this area in order to better understand what IC is and how it can be used efficiently.

Secondly, the IC framework is in the stage, defined by Hegel, as understanding reasoning; the efforts concentrate on determining and defining the concepts. There is a lack of understanding of what IC is due to the fact that approach is either informative or inductive; it is based either on a revelational or empirical endeavour. As a consequence, most researches focus on the visible part of IC and neglect the unseen elements (emotions, values, cultural specificity etc.). Therefore, there is a need for dialectic and speculative approach.

Starting from these assumptions, in a further research, we aim to develop an IC model, based on a qualitative-quantitative approach, capable of answering to the following questions:

- How can IC be defined at the organizational level?
- What is the IC structure and what elements does each dimension include?
- Which are the visible and invisible IC elements and how can they be captured?

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