

# Intellectual Capital and Performance in Higher Education Organizations

Soraia Barbosa, José Vale, Vera Teixeira Vale, Manuel Castelo Branco  
ISCAP, Porto, Portugal

**Abstract:** This paper intends to explore the relative importance of different Intellectual Capital (IC) dimensions regarding their contribution to the perceived performance of an Higher Education Organization (HEO). It also seeks to discuss the role of IC and performance measurement in these organizations. This is done through a case study conducted in a Portuguese HEO. The particularities of this type of organization turns it into a very interesting empirical ground for IC research. Evidence suggests that although human, structural and relational capital should contribute as a “whole” to the performance of an HEO, human resources have an added importance as source of knowledge. Results also suggest an ‘overlap’ between IC and performance indicators. Despite the validity of the interpretations provided in the context of the case study, generalization to other situations should only be conducted in a theoretically framed manner. This paper contributes to the development of IC research in a specific type of organization: an HEO. This empirical context is still underexplored, namely regarding the relationship between IC and performance. This study provides important managerial implications for HEOs and their members, who are concerned with its performance and competitiveness.

**Keywords:** Intellectual capital; Performance; Higher Education; Non-financial indicators; Human Resources

## 1. Introduction

To survive in a new competitive environment, organizations had to cease seeking competitive advantages in their tangible resources and rather focus on their intangible assets (Edvinsson & Malone, 1997; Sveiby, 1997). Several studies stress the need to give due importance to the concept of intellectual capital (IC) as a source of competitive advantages’ creation for organizations (Marti, 2004)

Although in the last decade there has been an effort to apply the IC concept to different settings, such as regions, nations or even networks of firms, most of the extant literature in IC focuses on individual firms (Vale et al., 2016). However, even at the micro level, there is a lack of research addressing IC in specific settings, such as the case of Higher Education Organizations (HEO). These organizations have to leverage their IC in order to achieve their goals of knowledge creation and dissemination (Barrera et al., 2007). Hence, they can be easily framed in the so called “knowledge economy”, which is characterized by the production, transfer and dissemination of knowledge (Sánchez & Elena, 2006).

In the last decade there has been an effort to develop IC frameworks for HEOs, most of them grounded on the traditional taxonomies applied to individual firms (e.g. Leitner, 2004; Lee, 2010; Sánchez & Elena, 2006). Still, no consensus has been achieved regarding its dimensions and measurement indicators. This field of research is still in its infancy, with several papers focusing on developing batteries of indicators to measure IC and on designing IC reports.

This study aims to improve understanding about the measurement and management of IC in a specific setting, that of HEOs. It intends to analyze the relative importance of different intellectual capital dimensions of an Educational Institution and the impact on its perceived performance (from a stakeholders' point of view). Also, it intends to discuss the role of IC/knowledge measurement in an organization which is characterized by 'using knowledge to produce knowledge'. There is an important challenge when developing an IC measurement tool: to acknowledge the differences between in-process and end-process metrics (Fazlagic, 2005).

Specifically, the main research questions addressed in this paper are the following:

RQ1 – What is the relative importance of each IC dimension in terms of their contribution to the performance of an HEO (as perceived by its stakeholders)?

RQ2 – What are the indicators that stakeholders perceive to be most important to measure the performance of an HEO?

The paper results from a single case study conducted in a Portuguese public HEO. This type of organization has specific characteristics that differentiate it from private for-profit firms, hence turning it into a valuable setting to study the phenomena of IC measurement and impact on organizational perceived performance. The primary roles of HEOs are to produce knowledge and to provide education (Evangelinos & Jones, 2009). The case study allows to better comprehend IC in this context, where performance is primarily assessed by the degree of IC creation. Furthermore, this paper argues that in such organizations IC measurement might 'overlap' with performance measurement. As Sánchez et al. (2009, p.310) put it: "IC information is not necessarily designed for evaluation purposes but can be used for it".

The next section offers the background to the paper. Section 3 is devoted to the review of relevant literature. In section 4, the methodology adopted in the study is described. In section 5, the findings of the case study are discussed and in section 6 some concluding remarks and some cues for future research are offered.

## **2. Background**

Since the late 80s, reforms in public management brought many changes to Universities. Universities began to adopt market-oriented strategies, stressing the role of efficiency, economies of scale, rationalization, increase of private contributions or the development of better capabilities to respond to the market (Guthrie & Neuman, 2007). Their autonomy has increased, namely regarding the power of decision over its educational services (Arena et al., 2009) and the increase of competitiveness between

them demanded the search for new opportunities and the creation of new competitive advantages (Liu, 2007). Furthermore, pressure to use resources more effectively and efficiently in their activities (education, research and support services to society) has been increasing in the last decade (Arena et al., 2009).

In Europe, Universities have been subject to important changes in order to improve their quality levels and political efforts have been made in order to harmonize the High Education system. The “Bologna Process” and the creation of an “European Research Area” are examples of such endeavors (Ramirez et al., 2007; Sánchez & Elena, 2006). The “Bologna Process” marked a transition in the way knowledge was managed. The mission and role of Universities towards the society was reassessed. The pressure to incorporate new knowledge management models increased (Sánchez & Elena, 2006).

In the knowledge-based economy, IC is considered the most important driver of value creation and organizational success (Chang et al., 2008; Lu et al., 2014). Leveraging and managing Intellectual Capital (IC) is critical to improve organizational performance (Schiuma & Lerro, 2008). Although the IC concept was initially developed to assess the contribution given by the intellectual resources in private for-profit organizations (Edvinsson & Malone, 1997), it has been extended to other type of organizations.

In recent years there has been a growing interest towards the assessment of Intellectual Capital (IC) of Public Organizations such as Universities or Research Centers (Sánchez & Elena, 2006). Although universities are losing the monopoly of knowledge (Prejmerean et al., 2007), they are accredited institutions whose main goals are the production, transmission and the diffusion of knowledge (Sánchez et al., 2006; Ramírez et al., 2007) which is in line with the definition of knowledge economy. Their role is increasingly being recognized as crucial to produce new knowledge to the economy. Rather than ‘ivory towers’ producing knowledge in isolation, HEOs are now seen as economic agents involved with a variety of stakeholders, aiming to produce economic benefits (Rossi & Rosli, 2013). Additionally, knowledge transfer has become HEOs’ “third mission”, in complement to the traditional ones (teaching and research) (Rossi & Rosli, 2013). This third mission involves several activities, through which Universities address social needs and both private and public goals (Sánchez et al., 2009). Universities are now considered as a critical part of local and regional development, being considered crucial actors for the development of national innovation systems. Such is stressed by the Lisbon Agenda (2000), which emphasizes their role in the creation of a Europe of Knowledge (Sánchez & Elena, 2006).

In this particular type of organization, knowledge is both an input and output. On the one hand, its most valuable resources eventually encompass their teachers, researchers, administration and service personnel, principals and students, with all its relations and organizational routines, which can be interpreted as intangible assets (Ramírez et al., 2013; Leitner, 2004; Ramírez et al., 2007). On the other hand, knowledge is its most important output, being incorporated in research results, publications, educated students and productive relationships with their stakeholders (Leitner, 2004; Ramírez et al., 2007). Thus, an effective assessment and management of IC may prove crucial for organizations’ competitiveness.

### 3. Relevant literature

IC is a crucial driver of organizational performance and value creation (Cabrita & Bontis, 2008; Maditinos et al., 2010). In a context of intensive competition for funds, students, teachers and researchers, HEO's managers need detailed information about the organization's performance in order to make strategic decisions (Min Lu, 2012; Sánchez et al., 2009). However, defining performance is troublesome. In broad terms, performance is the result of an activity (Tayles et al., 2007).

Assessing the performance of an HEO is a crucial but also a complex task. Although rankings are used to benchmark HEOs (Maingot & Zeghal, 2008), Universities can differ not only in terms of size, quality, research specialization profiles, management structures and societal missions, but also along different countries (Tijssen et al., 2009). For example, it is difficult to value and compare the performance of a research-oriented with a more training-oriented institution (Leitner, 2004).

Furthermore, in order to assess performance in this type of organization, one has to assess the IC it creates. IC is crucial to produce new knowledge and capabilities (Shehzad et al., 2014) and it can significantly affect the performance of an HEO (Leitner, 2004; Min Lu, 2012). Several studies have assessed this relationship (see for instance Leitner, 2004, Sánchez & Elena, 2006, or Lee, 2010). Such studies propose models which allow the assessment and measurement of the effects of each IC dimension on the general performance of an HEO (Loureiro & Teixeira, 2011).

Since the late 90s, several IC models have been developed in order to identify, measure, manage and disseminate knowledge (Tan et al., 2008). These models have mostly addressed individual for-profit firms. Also, most of them have focused on the management and measurement of the traditional IC inputs – human, structural and relational – in order to improve the outputs (Ramírez et al., 2007). This paper adopts the traditional IC taxonomy proposed by Sveiby (1997), although adapted to HEOs. Human Capital is all explicit and tacit knowledge of the universities' personnel (such as teachers, researchers, PhD students or administrative staff) acquired through formal and informal educational as well as by the actualization processes that their activities demand, and that they would take with them if they left the institution (Sánchez et al., 2006; Ramírez et al., 2007; Lee, 2010; Leitner, 2004; Ramirez & Gordillo, 2014). Structural Capital is the explicit knowledge that stays within the institution and which is related to the routines and all internal processes of dissemination, communication and management of scientific and technical knowledge in the organization (Sánchez et al., 2006; Ramírez et al., 2007; Lee, 2010, Leitner, 2004). It may include a collective culture with common values and technological resources (e.g. documentary resources, databases or patents) (Ramirez & Gordillo, 2014). Relational Capital is the set of economical, political and institutional relationships developed and maintained by universities. It also includes the perception that others have about it, such its image/reputation (Ramírez et al., 2007, Ramirez & Gordillo, 2014). Regarding Human Capital, it is crucial to attract and retain highly qualified workers, something which may be difficult to achieve in countries where most part of the HEOs' funding comes from the government budget (Abramo et al., 2012).

Different dimensions may have different effects over an HEO performance. However, there is no consensus regarding which dimensions impact the most (Loureiro & Teixeira, 2011). Lee (2010) proposed a model which ranks IC measurement indicators within the various assessing criteria, according to their relative contribution to the general performance of a university. The results suggest that the relational dimension is the one that contributes the most to the overall performance. Loureiro & Teixeira (2011) have a similar opinion, also stressing that the interaction between those dimensions is crucial to improve general performance. On the other hand, Shehzad et al. (2014) claim that HC, which encompasses the organization's most valuable assets, is the most important dimension in terms of impact on the performance of an HEO. They consider SC as the second one and RC as the last.

Defining priorities and strategic goals are important issues for HEOs (Sánchez et al., 2006). To achieve their strategic goals, they should develop knowledge management and intellectual capital models and define the best mechanisms to measure and manage its intangible assets (Ramírez et al., 2007).

Measuring IC and organizational performance in HEOs can lead to better decision making and value creation. Although performance indicators have been increasingly used to assess and manage HEOs' performances (see Taylor, 2001; Markusova et al., 2014), developing an effective performance measurement system is no easy task. Indeed, defining performance indicators is a difficult task due to both technical and political concerns (Guthrie & Neuman, 2007). On the one hand, it is important to notice that university systems and traditions vary a lot throughout Europe, and also that there is no common model for valuing intangible assets and preparing IC reports for universities (Leitner, 2004). On the other hand, there is evidence that in order to better perform and achieve high scores, academics are pressed to focus in certain activities neglecting others such as education (Taylor, 2001). Therefore, several HEOs measure their performance by using production and research indicators. They try to achieve high scores in these indicators because these scores may influence their position in international rankings and increase or decrease their visibility. In a certain way these performance mechanisms are being 'imposed' by a new competitive environment (Maingot & Zeghal, 2008).

Regarding IC measurement and management in HEOs, one of the most important initiatives was developed by Leitner (2004), who suggested a model aimed at depicting a University's process of knowledge production. This model is composed of four elements: goals, intellectual capital (interpreted as the input for the knowledge-production process), performance processes and impacts. According to specific and general goals, IC is developed and transformed, resulting in the production of different outputs when different activities (such as research or education) are performed. It proposes the following performance processes: scientific research and education (the core ones); training, commercializing of research, knowledge transfer to the public; services and infrastructure (the 'third mission' related ones). A list of indicators was proposed to measure the different elements. Following this rationale, since 30 April 2007, Austrian public universities are obliged to publish an IC report. IC reporting for universities "is a tool that encloses the entire knowledge-production process within

universities, with the aim of generating information for management decisions” (Leitner, 2004, p.137).

Fazlagic (2005) also proposed an IC report for the Poznan University of Economics, presenting it in the form of resources, activities and results. This taxonomy was grounded on a IC framework developed by the Danish Agency for Trade and Industry. This author claims that “The high potential (resources) residing in the universities in many cases does not go hand in hand with their low performance (results)” (p.4).

Another ambitious initiative was carried out, in 2006, by the Observatory of European Universities (OEU), whose general objective was to provide universities and research centers with the necessary tools and instruments for governing the research activities (Sánchez & Elena, 2006). To improve transparency and reduce isolation from the external world, 15 universities and research institutes from 8 European countries collaborated with the following objective: to develop a common framework of analysis to improve management and to build a battery of indicators to measure and compare the intangible elements related to the research activities (Sánchez & Elena, 2006). Its main outcome has been a *methodological guide*, suggesting what to measure and how to do it, and also proposing an Intellectual Capital Report (ICU Report) (Sánchez et al., 2009). This report is composed of three main sections: the organization’s vision, its intangible resources and activities, and it aims to improve the transparency and the dissemination of homogeneous indicators for the three IC dimensions (HC, SC and RC) (Sánchez & Elena, 2006). This report was tested in several OEU universities, namely at the Autonomous University of Madrid – UAM.

Grounded in the above researches, Ramirez & Gordilho (2014) identified which intangible elements were considered as crucial to Spanish Universities’s stakeholders and, accordingly, should be measured. Then, a set of both financial and non-financial indicators was developed. These authors suggested the following key IC elements to be measured: Human capital: the academic and professional qualifications of ‘academic’ personnel (teachers and researchers), their mobility, scientific productivity and teaching capabilities; structural capital: intellectual property, management quality and innovativeness; relational capital: graduate employability, efficiency of graduate teaching, student satisfaction, relations with industry, the HEO’s image and collaboration with other HEOs. Finally, they proposed a set of 30 indicators to measure these elements.

Although HEOs’ performance can be measured through both financial and non-financial indicators, this type of organizations aim at producing and disseminating knowledge. Hence, performance measurement is often focused in non-financial and knowledge driven indicators, such as publications, graduations, average duration of studies, the drop out ratio, PHDs and master theses finalized or even non-scientific lectures (see Leitner, 2004). Similar indicators can be found in Guthrie & Neumann (2007), where performance indicators used for annual reporting in Australian Universities are described. Some of the non-financial indicators are, for instance, related with achievements in research. Tijseen et al.’s (2009) study assesses HEOs’ performance only in terms of research publications They used a sample of the world’s

largest 350 universities to analyze the publications output in Web of Science-indexed journals and regarding the period 2002-2006.

#### **4. Methodology**

This paper reports on a single case study conducted in a Portuguese HEO. The case study is an adequate method when we are analyzing a contemporary phenomenon within its real life context (Yin, 2009). Specifically, it turns possible the examination and understanding of “unique, rare, and atypical companies and organizations as well as complex and dynamic events and processes” (Mills et al., 2010, p. 95). An HEO can be regarded as complex setting to study the effects of IC on the organization’s performance, since it uses knowledge to produce and transfer knowledge (both internally and externally). Given this aim, and grounded on the research strategies cited by Yin (2009), we adopted an in-depth single case study as our research method.

The most commonly used data sources in case studies are documents, archival records, interviews, direct observation and physical artefacts (Yin, 2009). In order to comprehend the stakeholder’s perceptions about the phenomenon that was being studied and to respond to the research questions, 40 semi-structured interviews were conducted. Additionally, several documents and other records (which were publically available) were analyzed in order to characterize the HEO. The interviewees were selected based on their roles and their potential contribution for this research. In a first stage, emails were sent to the main HEO’s stakeholder, asking their availability for an interview. Fifty-four responses were received and 40 interviews were carried out to professors, staff and students (between the 24<sup>th</sup> of April and the 17<sup>th</sup> of July of 2015). Interview guides were designed prior its conduction. All the interviews were recorded and notes were taken. The interviews had an average length of 25 minutes. Finally, they were all transcribed to better assess its contents.

#### **5. Findings and Discussion**

The case study allowed to assess the perceived (by the stakeholders) degree of importance of each IC dimension and its effects on the perceived performance – HC, SC and RC.

Regarding the relative importance of each dimension (HC, SC and RC) for the whole IC, different opinions were collected. For instance, according to INT07 “All [dimensions]

are equally important. [However], from a students' motivational point of view, RC is the most important one". INT02 stresses the importance of HC and RC. As he puts it: "An organization is namely made by people (...) [thus] the most relevant [IC] components are HC and RC". Inversely, INT39 considers that SC is the most important IC dimension, by stating that "(...) a good organizational culture can be a[n important] basis to retain good professionals and to [foster] good interpersonal relationships"

To better summarize and understand the IC dimensions that were considered to be the most important, this paper adapted the coding-system used in Brennan's (2001) study. Accordingly, a binary method was adopted, i.e. a "1" was assigned to the IC dimension every time it was mentioned as the most important one, and a "0" was assigned to the other(s). Then, a final score was obtained by summing these values. Base on this methodology we found that, according to the interviewees, the most important IC dimension is HC, followed by the relational dimension (RC) and, finally, the structural one (SC). These results are summarized in table 1:

*Table 1 – Importance of IC Dimensions on IC total / by stakeholder*

HEO Stakeholders								
Professors			Satff			Students		
IC Dimensions	Points	Percent	IC Dimensions	Points	Percent	IC Dimensions	Points	Percent
HC	21	48 %	HC	10	59 %	HC	1	50 %
RC	15	34 %	RC	4	24 %	RC	-	-
SC	8	18 %	SC	3	17 %	SC	1	50 %
<b>Total</b>	<b>44</b>	<b>100 %</b>	<b>Total</b>	<b>17</b>	<b>100 %</b>	<b>Total</b>	<b>2</b>	<b>100 %</b>

From an "input" approach, most interviewees stressed the importance of human resources to create knowledge. This is in accordance with the idea that "universities' main objectives are the production and diffusion of knowledge and their most important investments are in research and human resources" (Ramirez & Gordillo, 2014, p.183). INT28 states that "when I think in 'intellectual' I think in knowledge".

Findings also suggest that there is a lack of consensus when assessing which IC dimension contributes most to the perceived performance. For instance, while INT04 claimed that "RC is prior to everything (...) the relationship with the students is the main concern", INT18 considers that "the best structures should be linked to the best human resources in order to achieve a better performance. This is consistent with extant literature, which is somewhat ambiguous when addressing the linkage between IC and performance in HEOs (Loureiro & Teixeira, 2011). For example, Lee (2010) considers that RC is the dimension that most affects organizational performance, followed by HC. Others, such as Shehzad et al. (2014) emphasize the role of HC. The interaction between IC dimensions and its effects on performance were also addressed by the interviewees, which is in line with Loureiro & Teixeira's (2011) findings. As INT31

put it: “the three components (...) complement themselves, they are interconnected (...) if some deficiency emerges in one dimension, such will affect performance”.

Despite the lack of consensus regarding *which* dimension is more important in terms of its impact on the performance of an HEO, HC was the most *mentioned* dimension (see table 2). These findings result of a systematization of responses, which was based on the aforementioned coding-system.

*Table 2 – Importance of IC Dimensions on perceived performance / by stakeholder*

HEO Stakeholders								
Academic Staff			Non Academic Staff			Students		
IC Dimensions	Points	Percent	IC Dimensions	Points	Percent	IC Dimensions	Points	Percent
HC	19	44 %	HC	10	59 %	HC	1	50 %
RC	16	37 %	RC	4	24 %	RC	-	-
SC	8	19 %	SC	3	17 %	SC	1	50 %
<b>Total</b>	43	100 %	<b>Total</b>	17	100 %	<b>Total</b>	2	100 %

The results are partially in line with those obtained by Shehzad et al. (2014). They claim that HC includes all the staff, which are the most valuable resources of an HEO, and that an effective management of these resources can lead the organization to success. Indeed, INT01 claims that “for very practical reasons, HC is the most important [dimension that affects performance]. (...) Universities are assessed by the teaching staff [it possesses] and scientific publications”. He adds that the “universities’ rankings result from HC assessment and not the other dimensions”. Indeed, HC was stressed by many interviewees. According to INT19 “the attitude [or] the reputation of the professor is the most important [factor] (...) people are in the core of the organization”.

Regarding the second research question “What are the main indicators that stakeholders perceive to be most important to measure the performance of a HEO?”, findings suggest that performance indicators are perceived (by the stakeholders) as IC indicators. Examples of such suggested performance indicators are faculty reputation, faculty mobility, professional experience, number of published articles, number of books and books’ chapters publication, number of conferences or number of Phds. According to Ramírez & Gordillo (2014) and Sánchez et al. (2009), these type of indicators can be considered as HC. Indicators such as industry’s contracts, community services, employment rate, partnership, internships, drop out ratio, number of students that choose this HEO as the first choice, impact on society (value creation) or client satisfaction index (students, academics and partners) were also suggested. These might be included in the RC dimension (e.g. Ramírez & Gordillo, 2014; Sánchez et al., 2009). Finally, interviewees suggested some indicators that may well fit in the SC dimension. Such is the case of management quality systems, number of credits,

infrastructures, equipment, total of subscript students, or fit between course name and course program. These indicators are also in line with what is proposed in extant literature (Ramírez & Gordillo, 2014; Sánchez et al., 2009).

In this paper, we argue that an ‘overlap’ may occur regarding IC and performance indicators. For example, although the “number of teaching staff with doctoral degrees” can be seen as Human Capital, in Modell’s (2003) study it is seen as a performance indicator. Another example is that of scientific productivity. While some authors (e.g. Leitner, 2004) consider indicators such as publications to measure an HEO performance, others, such as Ramirez & Gordillo (2014) consider it a HC indicator. A curious finding was that financial performance indicators were never suggested by the interviewees, which reinforces our claim that performance in HEOs is perceived as IC creation.

## 6. Conclusions

The results suggest that the IC of an HEO should be seen as a ‘whole’, and that its dimensions should contribute similarly to that ‘whole’ in an interconnected way. However, the role of human resources as source of internal and external knowledge creation, as well as its impact on the overall performance of the organization, is perceived (by the stakeholders) as crucial in this type of setting. Furthermore, the paper suggests that, in this type of organization, IC indicators are perceived (by its stakeholders) as performance indicators. In this setting, knowledge is both an input and an output. Results suggest that HEO’s stakeholders do not make this distinction. This leads to an ‘overlap’ between IC indicators and performance indicators.

This paper contributes to raise awareness about the role of intellectual capital in the management and performance of HEOs. Higher education has suffered a process of commercialization, with universities competing for “customers”. IC management and measurement can thus be crucial to gain competitive advantage. From a practical point of view, this study can provide HEOs’ managers with important insights to improve the organizations’ performance and to maximize its efficiency.

This paper is not without limitations. An important limitation concerns the generalization of the results. A case study was conducted in a specific context and generalization should only be done on a theoretical level. On another hand, the setting under analysis was a public HEO. Future research should address the above themes on private HEOs. Another avenue for further research concerns to the importance of “educational” performance indicators versus “research” performance indicators.

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