

EUROPEAN EVIDENCE ON INTELLECTUAL CAPITAL: LINKING METHODOLOGIES WITH FIRM DISCLOSURES

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The aim of this research is to examine the degree to which different categories of intellectual capital are disclosed in the annual reports of a sample of large European companies.¹ The sample comprises 18 companies included in the STOXX® Europe TMI Software & Computer Services Index, from six countries. Keeping with the previous literature, the present study has analysed the disclosed items of intellectual capital outside the financial reports of these entities; this methodological choice assumes that disclosure outside the requirements of accounting standards shows the true commitment of managers in the creation and development of intellectual capital. Therefore, we have collected the cross-sectional raw data from the management review section of selected annual reports for one fiscal year. We have used relevant methodologies from the earlier literature for the content analysis of intellectual capital disclosures. The elements disclosed in narrative form were coded as binary variables on an index scale, and several frequencies and charts are included in the discussion section. Frequencies found are only poorly comparable with the results of previous studies.

Keywords: intellectual capital, software companies, European firms, research methods for intellectual capital assessment

JEL classification indices: O34, M41

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1. INTRODUCTION

The expansion of information technologies and cost-effective communication services has profoundly transformed industrial activities. Productive systems have gone through massive mutations, which are relying on the emergence of a new economic logic. Dematerialised production, the exponential growth of information services and the integration of data flows into readily accessible databases have led to the configuration of a post-industrial economy, whose qualitative attributes of flexibility and reactivity are an essential part of this highly adaptive system. In other words, tangible investments are progressively giving place to intangible elements, such as knowledge management systems. Global markets no longer exclusively deal with goods and services; knowledge has also become a highly valued commodity, which is transferred by itself or in association with traditional material goods. Therefore, companies and nations seek to gain a competitive advantage on any global market by supplying increasing amounts of knowledge or “intellectual capital”, which incorporate impressive material, monetary and human resources. Several studies have pointed out that between 75% and 90% of international market capitalisation is attributable to intangible assets (Hand – Lev 2003; Baklouti et al. 2007; Zyla 2010). In other words, intellectual capital has become the major component of growth and success for companies of any size. The advent of these changes has provided strong *incentives for managers to include intellectual capital disclosures in the annual reports*, in order to acknowledge and demonstrate the effectiveness of intangibles management (Brennan – Connell 2000). This type of information is required by investors with the clear aim of narrowing the information gap (Wong – Gardner 2005). Consequently, the management, measurement, and disclosure of intellectual capital have gained relevance as a major research topic (Petty – Guthrie 1999).

The present paper investigates the reporting practices of companies included in the STOXX Europe TMI Software & Computer Services index. We believe it to be the first study in this field targeting the intellectual capital disclosures of firms in the IT sector, therefore significantly contributing to the intellectual capital disclosure literature. The results are useful for all those interested in the extent of voluntary disclosures of intellectual capital, while professional bodies and regulators may also benefit from the application of relevant methodologies in the creation of guidelines and accounting policies for those components of intellectual capital which are not yet formally recognised as assets in the corporate financial statements.

The present study also tests and thoroughly discusses the methodology of Guthrie et al. (1999), whose intellectual capital framework involves 24 variables across three intellectual capital categories. This contribution to the literature is

timely and relevant, since we propose that the aforementioned methodology should be incorporated into the mainstream corporate disclosure framework by shaping it to meet the needs of all stakeholders.

The remainder of the paper is structured as follows. First, several definitions of intellectual capital and some of its components are provided. In the following, the paper describes the research method and presents the results. In the final section, the conclusions are accompanied by a description of tentative avenues of research.

2. THE DEFINITION AND MEASUREMENT OF INTELLECTUAL CAPITAL

The global expansion of intangible investments is a major incentive for academic research. Thinkers from a multitude of fields have attempted to discover the criteria for the recognition and measurement of this type of capital investments, which are by no means similar to acquiring property, plant and equipment. However, the main obstacle is establishing the perimeter of analysis, since there is no universally acceptable definition of “intangible investment”. The heterogeneity and the vastness of the conceptual implications arise also from the usual confusion between such terms as “intangible”, “dematerialised” and “intellectual” (Feleagă et al. 2010). Moreover, the term “investment” itself is subject to controversy. For these reasons, we prefer to use the notion of “intellectual capital”.

The concept of “intellectual capital” was introduced in the context of academic research conducted at the beginning of the 1990s on North American and Scandinavian companies (Dow Chemical, Canadian Imperial Bank of Commerce, and Skandia, respectively). The results of these investigations were presented in two seminal contributions by Edvinsson – Malone (1997) and Stewart (1998). The former considered intellectual capital to be equivalent to having corporate control over knowledge, management techniques, market relationships and professional skills, the synergy of which would offer a competitive advantage to the respective firm. Stewart (1998) considered intellectual capital to consist of “intellectual material – knowledge, information, intellectual property, experience – that can be put to use to create wealth” (p. xi).

A more unconventional approach is that of Ulrich’s (1998), who proposed a simplified model: *Intellectual capital = competence × commitment*. This equation implies that a weak score on any of the two components will lead to a diminished value for intellectual capital. Therefore, this type of capital is dependent on the way each employee sees his/her work and performs his/her duties, and on the corporate policies relative to enabling the employee to accomplish his/her goals for the company. Moreover, Roslender – Fincham (2001) contend that intellectual

capital is the “new” goodwill, which is gradually built inside the company and which is a perpetual source of economic benefits.

Generally, the literature has identified three sub-phenomena that constitute the concept of intellectual capital: human capital, structural (internal) capital, and customer (external) capital.

Human capital is the set of collective knowledge, creativity, management skills and entrepreneurship abilities observable among the employees of an entity. These resources can be grouped in three categories (Edvinsson – Malone 1997): competencies (talents, experience, capacities), attitudes (motivation, managerial abilities), and intellectual agility (the ability to innovate and to establish new patterns of knowledge). The authors insist on the fact that as employees leave the company, their human capital may no longer be available to the entity. Thus, human capital is much more volatile than structural capital, but crucial to the development and survival of any organisation. Entities should not refrain from investing in human capital simply because of its high degree of volatility.

Other researchers have analysed human capital from a different perspective, describing the enterprise as a dynamic mixture of specific organisational capacities, not as an inventory of resources with a potential for interaction (Bounfour 2000). In this view, human capital could be seen as the entirety of implicit knowledge and routines stored in the brains of the employees. This knowledge can be broken down into immaterial assets such as: information, quality of working teams, collective capacities, organisational competences and culture. Human capital is an essential component of any entity because organisations can only exist when they benefit from the presence of humans and their creativity.

According to Stewart, human capital develops when an enterprise is intensively using the knowledge of its employees, or when a large number of individuals acquire useful knowledge for their work within the enterprise. In other words, in order to develop their competitive edge, companies are forced to accumulate, preserve and use their human capital in the most efficient way possible. Human capital also comes as a “surprise gift” to the company: the employer knows its worth (the opportunity cost of education) and its expected returns (higher earnings for the firm), but no one knows the actual content of this capital. That is, the manager does not know for sure which of the abilities developed through education are useful for the economic activity (Hartog 1999).

Structural (internal) capital is the “protective environment” for human capital, allowing the employment of the latter for value creating purposes (Stewart 1997). There is a fundamental difference between these two forms of capital (UNI P-MS 2000): “Structural capital can be owned by the organisation whereas human capital is volatile. People can walk away, they might fall ill or die, or they might be enticed away by a competitor. They cannot be owned” (p. 7). Structural capital re-

lates to a firm's databases, procedures, systems, distribution networks and anything that has a higher value to the company than their material values (costs).

Customer (external) capital relates to the knowledge that is embedded in the relationships external to the firm (Bontis 1998). This consists of marketing channels, relationships with customers and suppliers, brand names and reputation. Some of these can be considered to be proprietary, but only in a temporal sense and, even then, not with any degree of confidence. For instance, a company has some influence over the value of its customer relationships; however, reputation and relationships can change over time and a company cannot control the behaviour of customers or suppliers if they are not compliant (Guthrie – Petty 2000).

The three components of intellectual capital should not be seen in isolation. They are complementary and in permanent interaction with each other and with other external factors (Edvinsson – Malone 1997).

The more recent contribution of Avril – Dumont (2006) has highlighted the idea that intellectual capital should be approached on a modular basis, taking into account the sector in which the entity conducts its operations, the products it offers on the market, and, especially, its managerial structure. This approach divides the model of Edvinsson – Malone (1997) into four to seven components. The simplest form employs the aforementioned four concepts (i.e. human, relational, procedural and innovation capital), while more detailed analyses take into consideration elements such as suppliers, trademarks, or even organisational information systems.

Irrespective of the selected approach, the essential traits of intellectual capital can be summarised as follows (Simion et al. 2009): (i) intellectual capital is the sum of everything known by the people in a company, allotting it competitive advantages on the market; (ii) intellectual capital is recognised as being a value in most organisations; and (iii) intellectual capital stands for the intellectual material that has been formalised, captured and put into value in order to produce more valuable assets. In other words, intellectual capital is tightly connected to the activities of the employees, so that it can be considered anthropogenic capital.

Placing the equal sign between a human person and the notion of capital (or asset) is controversial. Following the definition, an asset is likely to generate future economic benefits, can be controlled by the enterprise and its value can be expressed in monetary terms. When talking about humans, the first part of the definition is widely considered to be true because the relationship between economic performance and human involvement has already been empirically demonstrated (Hitt et al. 2001). The other two points of the definition cannot be met. On the one hand, people, unlike fixed assets, cannot be controlled by the enterprise, considering that employees are in control of their professional life. On the other hand, assigning monetary value to human resources has proven an unsuccessful task. In

the end, the optimum approach to this dilemma has been to consider a firm's employees as owners of and investors in intellectual capital (Davenport 2000). This approach has significant and beneficial consequences in terms of the control, evaluation and management of intellectual capital.

In accordance with the International Financial Reporting Standards (IFRS), an enterprise controls an asset if it has the power to extract future economic benefits from the respective resource and if it can restrict the access of third parties to that asset. Normally, a firm's capacity to control the flow of future economic benefits from an asset is a result of a set of rights which can be enforced in a court of law. In our case, the simple existence of an employment contract is insufficient to exert control over intellectual capital. However, the lawful enforcement of a contract is not necessary if the management can find other – more efficient – ways of extracting future benefits from intellectual capital. In the end, explaining the control over intellectual capital generated by the employees should be accompanied by a substance-over-form analysis of the labour relationships within a firm. This assertion is compatible with the opinions of Meer-Kooistra – Zijlstra (2001), for whom control over intellectual capital implies the existence of a managerial strategy in its development and use, while providing incentives to organisational participants to systematically direct all their activities towards implementing this strategy.

It is not surprising that the measurement and management issues associated with intellectual capital have generated a considerable amount of academic research. This is due to the fact that the sceptics of measuring intellectual capital outnumber the optimists. One answer to this difficulty can be found in the so-called "Macnamara Fallacy" (UNI P-MS 2000): "The first step is to measure whatever can be easily measured. This is OK as far as it goes. The second step is to disregard that which can't be easily measured or to give it an arbitrary quantitative value. This is artificial and misleading. The third step is to presume that what can't be measured easily really isn't important. This is blindness. The fourth step is to say that what can't be easily measured really doesn't exist. This is suicide" (p. 9).

From an accounting point of view, the only element that can be immediately measured is cash. However, liquid assets such as cash cannot be the measure of any organisational component, and cannot throw doubt on the existence of other assets which are not easily measurable. The management of intellectual capital requires the development of relevant methods derived from the particularities of each organisation, mainly in connection with the setting and achievement of organisational objectives.

There are two leading approaches to the measurement of intellectual capital: those which employ strictly quantitative measures and are justifiable from an accounting point of view, and those which derive from managerial instruments and are mainly qualitative. However, one should bear in mind that the choice of crite-

ria for measuring intellectual capital is a very difficult task. To overcome such obstacles, some organisations prefer to compare current to prior year activity, or to measure themselves against the competitors. This method of measurement is called benchmarking, and it has the advantage that intangible assets are thus rendered visible and measurable.

Although the fundamental importance of intellectual capital is unquestionable, accounting methods are still not sophisticated enough to accurately measure the stocks and flows of intellectual capital for an entity. However, there are some methods which are ingenious and which deserve to be mentioned. Among these, the Skandia Navigator is already a classic, alongside the Balanced Scorecard.

In order to visualise the interaction between the various elements of intellectual capital, the Swedish firm Skandia produced a special managerial instrument called the Navigator. This instrument is composed of five dimensions attributable to the value creation process, each dimension being a correspondent of the aforementioned components of intellectual capital. The Navigator is based on a metaphor (Edvinsson – Malone 1997): the intellectual potential of an entity is similar to a building; the roof is the financial capacity of the enterprise; the commercial relationships with the customers and the internal procedures are the supporting walls; at the foundation, one finds the innovation capacity and growth prospects of the enterprise, while at the core of this building, the analyst should discover the human capital.

From another perspective, Kaplan – Norton (1996) have proposed a new concept, the Balanced Scorecard. It represents a system of management which concentrates the energies, capacities and knowledge of individuals within an organisation, with a view of attaining the proposed strategic objectives. Unlike traditional management instruments, the Balanced Scorecard relies on four distinct perspectives: training and growth (relative to employees and infrastructure, respectively); the internal perspective (relative to the procedural performance of internal systems); the client (whose satisfaction is paramount for an entity which intends to maximise profits); and the financial perspective (which integrates all the monetary flows of the enterprise into a comprehensive picture to be delivered to the shareholders). The creators of this instrument claim that the simultaneous application of these four perspectives should offer a complete vision of the present and future performance of any entity.

Besides the aforementioned models, one of the more recent contributions was developed by Bounfour – Epinette (2006), and was called Intellectual Capital Dynamic Value (IC-dVAL®). It represents an integrated model for measuring the performance and value of intellectual capital, by favouring the interactions between different dimensions of intellectual management (inputs, outputs, external and internal relationships). In the same vein, the European Commission (2006)

enumerates some other instruments: the Austrian, the Danish, the Swedish, and the MERITUM models. As would be expected, there are numerous critiques regarding these models. The inherent debate is necessary and unavoidable since it puts intellectual capital into the focal point of any discussion on organisational performance and post-industrial management.

3. METHODOLOGICAL ASPECTS: SAMPLE SELECTION AND RESULTS

3.1. Sample selection

The purpose of our research is to examine the extent to which different categories of intellectual capital are disclosed in the annual reports of large European companies. Our sample included 21 companies listed in the STOXX® Europe TMI Software & Computer Services index. In accordance with the Classification Benchmark (ICB) provided by Stoxx Ltd., the Software & Computer Services Sector contains: (i) companies that provide consulting services to other businesses relating to information technology, (ii) companies providing Internet-related services, such as Internet access providers and search engines and providers of Web site design, Web hosting, domain-name registration and e-mail services; and (iii) publishers and distributors of computer software for home or corporate use. One company was eliminated because it did not include any information related to intellectual capital in its annual reports, and another two because they did not have their reports available on the website until September 30, 2010. The final sample comprised of 18 companies from 6 countries, and is presented in *Table 1*.

The majority of research contributions in the field of intellectual capital reporting have focused on the content analysis of annual reports (Subbarao – Zeghal 1997; Guthrie – Petty 2000; Brennan 2001; Olsson 2001; Williams 2001; Wong –

Table 1
Sample companies

Companies	Country	Companies	Country
Atos Origin	FR	Kudelski	CH
Autonomy Corporation	GB	Logica	GB
Aveva Group	GB	Micro Focus International	GB
Cap Gemini	FR	Misys	GB
Dassault Systems	FR	Sage Group	GB
Dimension Data	GB	SAP	DE
Fidessa Group	GB	Temenos Group	CH
Indra Sistemas	ES	Tieto	FI
Invensys	GB	United Internet	DE

Gardner 2005; Morariu 2010). Annual reports are a highly useful source of data because managers of companies commonly signal what is important through the reporting mechanism (Guthrie – Petty 2000; Goh – Lim 2004). They are also a good proxy for measuring the comparative position and trends of intellectual capital between firms, industries and countries (Abeysekera – Guthrie 2005).

3.2. Content analysis of annual reports

In a manner similar to prior research, the collection procedure in our study has ignored the elements which are already included as part of the financial statements. Since all the companies in our sample comply with the International Financial Reporting Standards (IFRS), the mandatory disclosures on the face of the financial statements and in the notes to the accounts are not indicative of the managers' propensity to disclose intellectual capital elements in the "Management discussion" section of the annual report (Guthrie – Petty 2000; Brennan 2001; Ax – Marton 2008).

For the content analysis of annual reports, the methodology developed by Guthrie et al. (1999) was considered relevant because it proposes a framework which classifies intellectual capital into three components: internal capital, external capital and employee competence. The components of each dimension are listed in *Table 2*.

Table 2

Intellectual capital elements used in the coding instrument

Internal capital (organisation capital)	External capital (customer/relational capital)	Employee competence (human capital)
Patents	Brands	Know-how
Copyrights	Customers	Education
Trademarks	Customer loyalty	Vocational qualification
Management philosophy	Company names	Work-related knowledge
Corporate culture	Distribution channels	Work-related competencies
Management processes	Business collaborations	Entrepreneurial spirit
Information systems	Licensing agreements	
Networking systems	Favourable contracts	
Financial relations	Franchising agreements	

Prior research (Guthrie et al. 1999) has employed a coding scale to measure the quantity of disclosure concerning the component elements of intellectual capital. This four-point scale is presented as follows:

- 0 – the element is not present in the annual report;
- 1 – the element can be found in a narrative;
- 2 – the element takes a numerical form (counts, frequencies, trends);
- 3 – the element is presented in monetary terms.

However, the preliminary results of a pilot test and the consultation of the relevant literature have shown that the components of intellectual capital are mainly presented in a narrative form (Guthrie et al. 1999; Goh – Lim 2004; Bukh et al. 2005; Ax – Marton 2008). This implies that companies are more interested in simply pointing out where the added value lies rather than assigning a currency value to it (Petty – Guthrie 2000; Wong – Gardner 2005). For this reason, our investigation does not consider the four-point scale as relevant, and instead uses a binary coding system (present/not present).

We collected the cross-sectional raw data from the annual reports of the selected companies, for one fiscal year. Depending on the accounting period of each company, year-end dates varied between December 31, 2009 and September 30, 2010.

The first stage of the content analysis procedure was performed by a junior researcher, who extracted the data related to intellectual capital from the annual reports onto a coding sheet with several variables. Another researcher independently confirmed the coding for each element and filled out a spreadsheet on the basis of the information reported on the coding sheets. This gives a high degree of confidence in the overall result.

3.3. Results and discussion

Table 3 shows the frequencies found in the content analysis of the annual reports of the 18 listed companies in the sample. The results are presented in nominal terms and also proportional terms with regard to our particular sample size. In parallel, the results reported by Guthrie et al. (1999) are shown for comparative purposes.

Frequencies were found to compare poorly with those of Guthrie et al. (1999). This result was to be expected, given that the current sample is significantly different from that employed by the latter researchers. The firms included in the STOXX® Europe TMI Software & Computer Services index are significantly larger than those listed on the Australian Stock Exchange, as indicated by Guthrie et al. (1999). Larger firms are more likely to disclose more information (Guthrie – Mathews 1985) and to possess more intellectual capital because they are more visible and have more resources at their disposal to sponsor new initiatives

(Abeysekera – Guthrie 2005). Secondly, the sample of Guthrie et al. included companies from six industries, whereas the present study is focused on only one intangibles-oriented industry. The companies belonging to the Software & Computer Services Sector are more likely to design, develop, sell or exploit resources of an intellectual nature, thus being able to disclose more information related to their intangible capital (Wong – Gardner 2005). Thirdly, the timing of this research can also be a cause of the differences between the presented results. Our study was conducted more than a decade after that of Guthrie et al. (2009). The passage of time is expected to have led to a refinement of the companies' policies regarding the disclosure of intellectual capital.

Table 3

The frequencies of disclosures concerning intellectual capital elements, side by side with the results of Guthrie et al. (1999)

Company	Current study		Guthrie et al. (1999)	
	Sample: 18	%	Sample: 20	%
<i>Internal capital (organisation capital)</i>				
Patents	8	44	3	15
Copyrights	5	28	1	5
Trademarks	6	33	2	10
Management philosophy	14	78	12	60
Corporate culture	8	44	6	30
Management processes	14	78	15	75
Information systems	13	72	10	50
Networking systems	9	50	3	15
Financial relations	8	44	1	5
<i>External capital (customer/relational capital)</i>				
Brands	6	33	9	45
Customers	18	100	16	80
Customer loyalty	12	77	7	35
Company names	3	17	5	20
Distribution channels	4	22	10	50
Business collaborations	15	83	13	65
Licensing agreements	6	33	8	40
Favourable contracts	5	28	1	5
Franchising agreements	0	0	1	5
<i>Employee competence (human capital)</i>				
Know-how	6	33	6	30
Education	6	33	6	30
Vocational qualification	3	17	1	5
Work-related knowledge	14	78	12	60
Work-related competencies	15	83	9	45
Entrepreneurial spirit	4	22	19	95

When assessing the Intellectual Capital disclosures under the three components of IC, namely internal capital, external capital and human capital (*Figure 1*), Internal Capital has the largest reporting rate of 42% of the IC attributes disclosed (85 elements out of 202). Items of External Capital are the second most reported elements, in the proportion of 34% (69 elements out of 202), while the Employee Competence category comprises the most neglected elements, with 24% of the total disclosures (48 items out of 202).

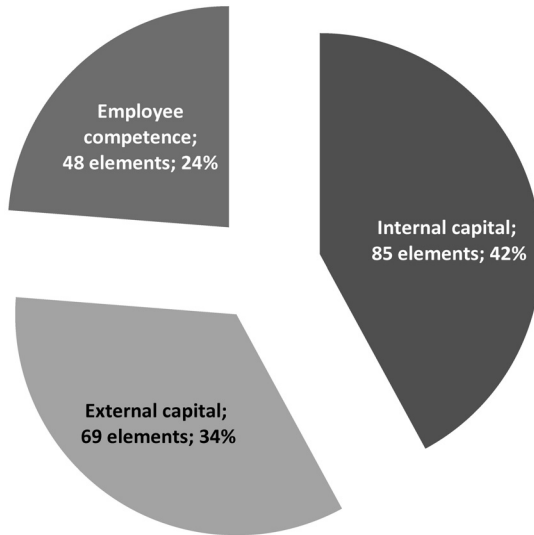


Figure 1. Intellectual capital disclosures with a breakdown of the three main components

A closer look at the data reveals that the general weights of intellectual capital disclosure are valid only for the French, German and UK companies. Conversely, for Swiss and Spanish companies, the reporting rates of External Capital are the highest (44% and 38%, respectively), while for the Finnish company, the Employee Competence component is predominant (40%).

As shown in *Table 3*, only one of the 24 elements of IC scored a 100% disclosure rate across sample companies: information related to customers was disclosed by all 18 companies. At the opposite pole, no information whatsoever is disclosed on franchising agreements.

Internal capital is the structural capital that is contained inside the firm, and includes intellectual property (patent, copyright, and trademarks) and intangible infrastructure assets (management philosophy, corporate culture, management processes, information systems, networking systems and financial relations). The company that showed the highest number of internal IC attributes was SAP,

which disclosed quantitative and qualitative information on all nine components of internal capital. The next ranked company displaying high internal IC attributes was Atos Origin, which presented information on all aspects of internal capital, except copyrights. The company that showed the lowest number of internal IC attributes was Temenos Groups, which included data only about information systems. On average, French, German and UK companies have the largest disclosure base for Internal Capital, while the smallest belongs to the Finnish company.

Regarding internal capital, the disclosures related to management philosophy and management processes are the most common, each with 14 elements out of 85. Considering the total sample of 18 companies, the proportion of companies which disclosed such information is 77%. Disclosures regarding corporate information systems are the second most common, with 13 items out of 85, being relevant for 72% of the sample companies. Out of the 9 attributes of the internal capital, the ones with the lowest disclosure frequency were copyrights (disclosed by five companies) and trademarks (disclosed by six companies). These results are consistent with those reported by Bozzolan et al. (2003) who found large amounts of disclosure in management processes and information technology, while intellectual property was the most rarely disclosed. For the current study, the other internal IC attributes proportions are shown in the figure below (*Figure 2*).

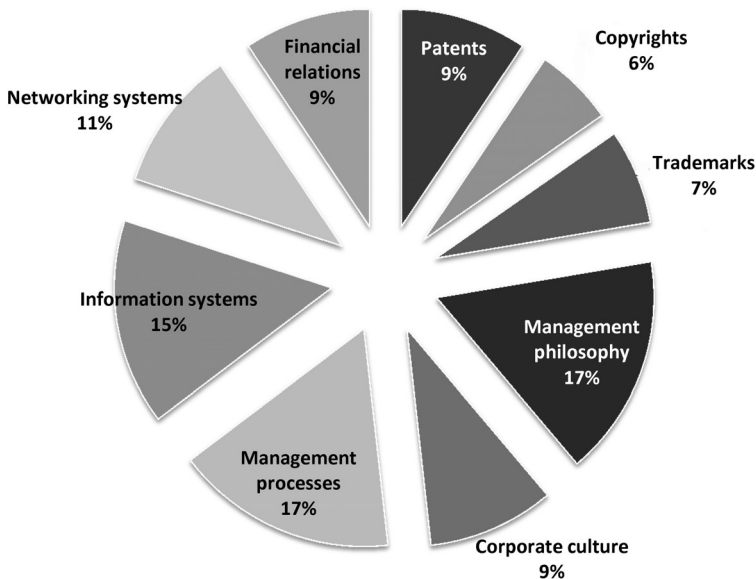


Figure 2. Internal IC disclosures, with a breakdown of the nine components

The external perspective of IC is relevant for the relationships and sources of value from outside the firm. Guthrie – Petty (2000) explained the large proportion of external capital disclosures through the increased emphasis in recent years on rationalising distribution channels, reconfiguring a firm’s value chain and reassessing customer value. In the present study, none of the companies exhibited full disclosure on the nine components of external capital. The companies that showed the highest number of external IC attributes (5 out of 9) were Cap Gemini, Indra Sistemas, Logica, SAP and Temenos Group. On the other side, the poorest disclosures are to be found at Tieto and United Internet, which provided information on only two relevant components of external capital. On average, French, Swiss and UK companies are reporting the most elements on External Capital, while the Finnish company is disclosing the fewest elements of this type.

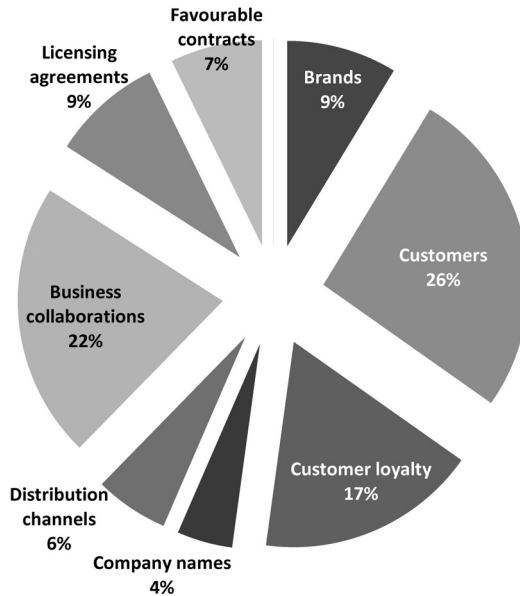


Figure 3. External IC disclosures, with a breakdown of the nine components

As shown in Figure 3, within external capital reporting, the two most popular elements were related to customers (100% disclosure rate) and business collaborations (with data to be found in 15 out of 18 reports). The emergence of customer disclosure is not surprising as the emphasis on customers within the management accounting literature is very relevant for companies, irrespective of industry (Foster – Gupta – Sjoblom 1996), while the high rate of disclosure relative to collabo-

rations with other businesses can be explained by the international exposure of companies from our sample.

The final aspect under consideration is the human perspective, which takes into account the contributions of the employees and includes areas such as training, education and entrepreneurial spirit. The company that demonstrated the highest human intellectual capital disclosure was SAP, which presented qualitative and quantitative information on all six components of human capital. In contrast to SAP, three other companies reported on only one component of human capital: Aveva Group (on work-related competencies), Kudelski (on know-how) and United Internet (on education). On average, German and UK companies disclose the largest number of elements on human capital, while Swiss companies have the poorest reporting base on this aspect.

The most popular type of human IC disclosure is about work-related competencies (present in 15 annual reports). Work-related knowledge is the second most popular choice in the human capital disclosures, while vocational qualification was an item that received very little attention (6.25%). These results are comparable to those reported by Bozzolan et al. (2003) and by Wong – Gardner (2005). Overall, the disclosure proportions for the current study are shown in the *Figure 4*.

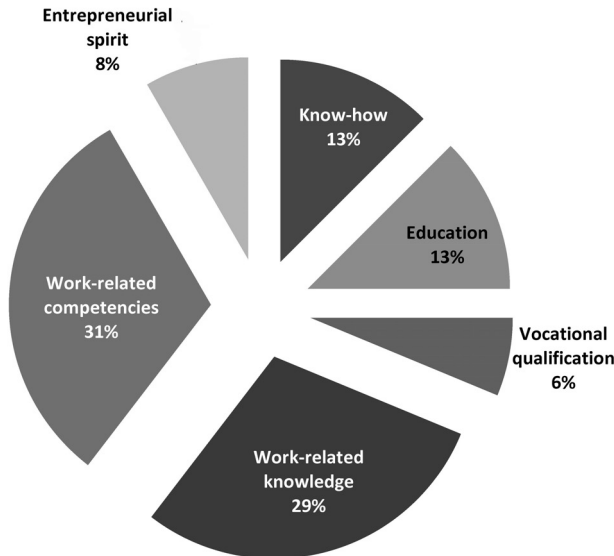


Figure 4. Employee competence (Human Capital) disclosures, with a breakdown of the six components

4. CONCLUSION

Thomas Stewart (1991) formulated the following hypothesis: “Intellectual capital is becoming corporate America’s most valuable asset and can be its sharpest competitive weapon. The challenge is to find what you have, and use it” (p. 44). However, a major obstacle to achieving competitiveness is tracing the epistemological perimeter of the concept of intellectual capital.

The present study set out to apply content analysis rigorously and to examine the nature and extent of intellectual capital disclosure for the companies included in the STOXX® Europe TMI Software & Computer Services index. The results indicate that the reports issued by these companies emphasised the importance of intellectual capital and covered a wide range of intellectual capital items. In a similar vein with other related studies, empirical evidence shows that although firms talk of human capital as the most important asset, in practice the most reported category is internal capital with 42% (which was divided into intellectual property: 9.4%, and infrastructure assets: 32.6%), followed by external capital with 34% and employee competence with 24%.

The evidence shows that very limited disclosure was made on patents, copyright, trademarks, company names, distribution channels, brands, franchising agreements, know-how, entrepreneurial spirit and vocational qualifications. This implies that standard-setters are welcome to develop an accounting framework that would allow the recognition and measurement of such IC elements for which there are no applicable accounting standards.

The results of this study are based on a small number of companies from a single activity sector in a cross-sectional research design (i.e., only one annual report per company was content-analysed from the perspective of IC disclosure). There is much scope for further research in this area. More data on companies in the Software & Computer Services sector could be gathered in a longitudinal design, which would provide more insight and would provide empirical evidence not only on the extent of disclosure, but also on the time variations in IC reporting. Moreover, the sample could be extended to include companies from other sectors, which would serve to estimate a statistical model with a sector control variable. Finally, a more developed research design could explore the complex motivations behind the disclosure of IC at a managerial level and from a market perspective.

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