

## **Strategic Relevance of Intellectual Capital in European SMEs and Sectoral Differences. InCaS: Intellectual Capital Statement – Made in Europe**

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### **Abstract**

As the Lisbon Agenda declares the aim for the European Union to become the most dynamic and competitive knowledge-based market in the world until 2010, management instruments are needed to support companies achieving this ambitious goal. Small and medium-sized companies (SMEs) are especially affected by this plan as they are the driving force of Europe's economy. To obtain their competitive advantage, it is crucial for SMEs to utilise knowledge efficiently and to enhance their innovation potential. Thus, managing their specific Intellectual Capital (IC) becomes more and more important for future-oriented organisations.

As the value of knowledge highly depends on its particular strategic context it is neither possible nor meaningful to measure the value of knowledge in absolute terms. Knowledge should rather be evaluated regarding its potential to support the company's individual strategic objectives.

A practical way to tackle this challenge is the methodology developed by the German pilot project "Wissensbilanz – Made in Germany" and the European pilot project "InCaS: Intellectual Capital Statement – Made in Europe". By applying this method in more than 50 German and 25 European small and medium-sized enterprises it was possible to support the participating companies in identifying, evaluating and developing their strategically relevant knowledge. Furthermore it helped to gain comparable data about crucial knowledge in SMEs and to develop first strategic recommendations in an empirical study. This paper summarises how the InCaS method supports companies developing a knowledge-based strategy. Moreover it describes research results gained from the German and European project about the strategic relevance of particular IC factors in general and their relevance depending on the business sector. Whereas for the German project the differences between the sectors "Industry" and "Services" have been analysed, the results of the European InCaS project allowed for a more detailed analysis between the branches "Business Services & IT", "Machinery & Equipment", "Construction", "Electronics" and "Retail Trade & Other Services". Besides the overall dominance of Human Capital factors the results indicate that companies in the Industry sector focus on knowledge management activities based on IT and explicit knowledge (codification strategy). The strategically most relevant knowledge in this sector is professional competences, i.e. specialised know-how needed to run the company's main business processes. Service companies, on the other hand, seem to focus on their individual employees' expertise and informal knowledge transfer if they want to ensure long-term and strategic business success (personalisation strategy). In this sector, motivation and leadership abilities are strategically equally important or even more important than specialised know-how.

### **Key Words**

Intellectual Capital, Intellectual Capital Statement, Knowledge Management, Innovation, SME, European Commission/Research

### **1 Introduction**

Beside the approaches developed by the practitioners Edvinsson and Sveiby in the mid of the nineties ("Skandia Navigator", (Edvinsson, Malone 1997) and the "Intangible Asset Monitor" (Sveiby 2002)) especially Anglo-American researcher predominately developed overall monetary evaluations of IC, for instance "Tobin's Q" (Tobin 1969) or the "market to book ratio" as well as "Calculated Intangible Value" (Steward 1997) or the "Intangibles Scoreboard" (Gu, Lev 2001). All the approaches aim to quantify organisations' total intangible assets in financial terms by using the cost, market or income approach. The monetary approach is appropriate in case of merger & acquisitions or to calculate the value of the company as a whole, but it makes it difficult to identify the strengths and weaknesses of the intellectual resources as well as pathways to future value (Bontis 2002; Andriessen, Tissen 2000). This is crucial to improve and manage the IC of a company effectively. Norton and Kaplan focused on this strategic aspect and developed the "Balanced Scorecard" (Kaplan, Norton 1996) as a

management tool that aims to enable managers implementing the strategy of a company by using financial and non-financial indicators. More recent approaches for the evaluation and management of IC, mainly developed by Austrian researchers and practitioners, try to include these aspects, as well as an operative link to the business processes. For instance the model of the Austrian Research Centres Seibersdorf (Austrian Research Centres Seibersdorf 2004) relates the IC to the operative business processes and combines it with the EFQM model (EFQM 2003). Furthermore, approaches were developed to combine the advantages of both concepts, the evaluation of IC in financial terms on the one hand and on the other hand the analysis of the strengths and weaknesses by using non-monetary indicators (Mertins, Alwert 2003).

In recent years different national approaches on the management of IC have been developed and tested but there is no European wide standard regarding the measurement and management of IC so far. The emerging need for a consistent – non-monetary - method was the starting-point for the German project “Wissensbilanz – Made in Germany” and the European project “Intellectual Capital Statement – Made in Europe (InCaS)”. Keeping the context-sensitive nature of knowledge in mind these projects aimed to develop a method to support companies in managing their IC. Whereas former papers presented the projects’ practical benefits for SMEs (Will, Wuscher, Bodderas 2006) and described the method in detail (Mertins, Alwert, Will 2006; Mertins, Will 2007) this study intends to analyse the results in terms of how far companies differ regarding the perceived importance of IC factors. In order to accomplish this goal the participating companies have been categorised by sectors and the existing company specific results regarding the evaluation of their IC have been analysed on an aggregated level.

## **2. Approach**

### **2.1 Research focus**

The methodology “Wissensbilanz – Made in Germany” was developed by the project consortium “Arbeitskreis Wissensbilanz” lead by Berlin-based Fraunhofer IPK. The consortium conducted a pilot project to adjust the preparation of Intellectual Capital Statements (ICS) to the German SME situation and to test it practically. The results and the experiences of the project led to the first German Guideline for implementing ICS in SMEs (Alwert, Bornemann, Kivikas 2004). By the end of 2007, more than 50 ICS have been implemented in the course of the pilot project. The German ICS guideline and the supporting software have been retrieved 60.000 times. The intention of InCaS, a project currently running under the European Union's Sixth Framework, is to harmonise the different national ICS approaches and to develop and test this European ICS methodology in 25 SMEs in 5 core countries. National SME associations in those countries act as dissemination partners and aim at the target of 1,000 EU SME's to be using InCaS model and tools by the end of the project (Dec 2008). Despite supporting SMEs in managing their Intellectual Capital (IC) effectively both projects allowed collecting valuable data about the perceived strategic importance of different IC factors in European SMEs. This article aims to present the results from analysing this data. The main research question was how far companies differ regarding the perceived importance of particular IC factors and if these differences could be explained by the characteristics of the sector they are belonging to. Following the most frequently used structure to describe intangible assets (Alwert 2006), the InCaS framework divides Intellectual Capital into three dimensions: Human, Structural and Relational capital. Human Capital (HC) includes the staff's competencies, skills, attitudes and the employee's motivation. Human Capital is owned by the employee and can be taken home or onto the next employer. Structural Capital (SC) comprises all structures and processes needed by the employee in order to be productive and innovative. According to a sloppy but useful definition, it “consists of those intangible structures which remain with the organisation when the employee leaves” (Edvinsson, Malone 1997). Relational Capital (RC) sums up the organisation's relations to customers, suppliers, partners and the public. Based on the results of phase I of the German pilot project fifteen IC factors have been delineated. This set of harmonised IC factors has been used and continuously reviewed during later stages of the German project and in the course of the European project. The set covers about 80-90% of the factors SMEs mention as relevant for business success (Mertins, Will, Wuscher 2007) which is sufficient considering the highly context-sensitive nature of IC.

**Table 1:** Harmonised IC factors

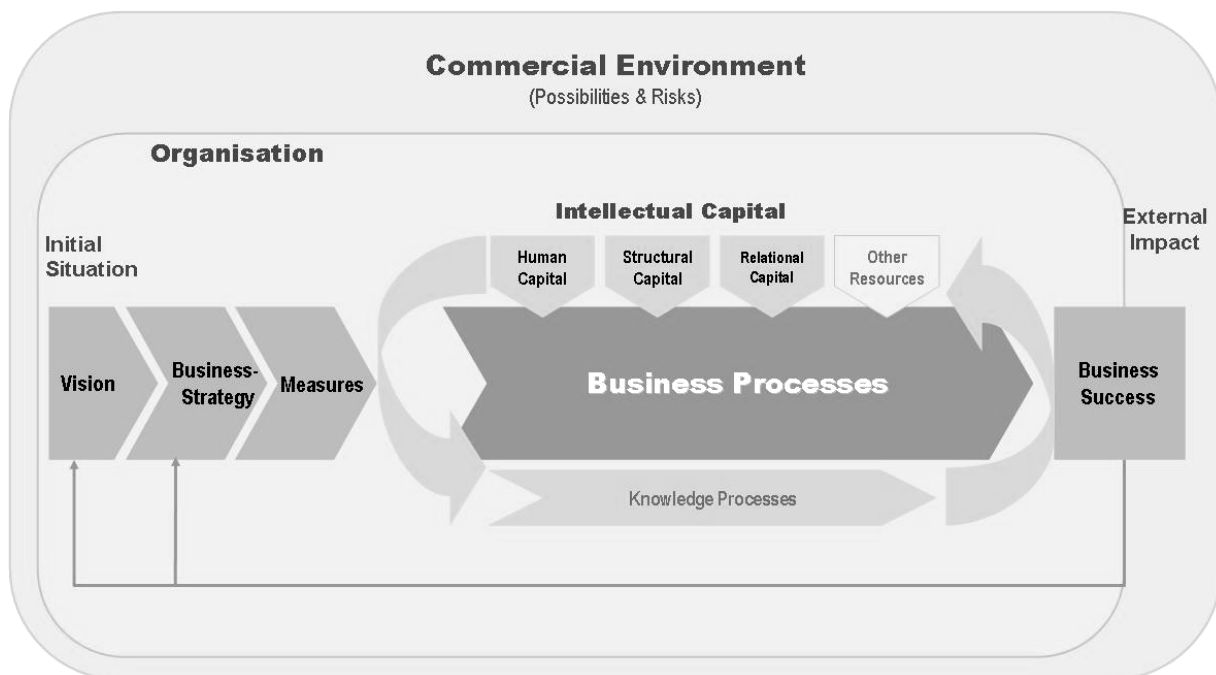
Type of IC	IC Factor	Definition
<b>Human Capital</b>	Professional Competence	The expertise gained within the organisation or in the employee's career: professional training, higher education, training courses and seminars, as well as practical work experiences gained on-the-job.
	Social Competence	The ability to get on well with people, communicate and discuss in a constructive manner, nurturing trust-enhancing behaviour in order to enable a comfortable co-operation. Furthermore the learning ability, the self-conscious handling of critique and risks as well as the creativity and flexibility of individual employees.
	Employee Motivation	The motivation to play a part within the organisation, to take on responsibility, committed to the fulfilment of tasks and the willingness for an open knowledge exchange. Typical sub areas are for example satisfaction with the labour situation, identification with the organisation, sense and participation of achievement.
	Leadership Ability	The ability to administrate and motivate people and to develop and communicate strategies and visions and their empathic implementation. Negotiation skills, assertiveness, consequence and credibility as well as the ability to create a scope of self dependant development belong to this IC factor.
<b>Structural Capital</b>	Internal Co-operation and Knowledge Transfer	The manner how employees, organisational units and different hierarchy levels exchange information and co-operate together (e.g. conjoint projects). The focused knowledge transfer among employees and between generations.
	Management Instruments	Tools and instruments supporting the efforts of leadership and therefore have an impact on the way how decisions are made and what information paths are incorporated in the decision-making process.
	IT and Explicit Knowledge	The computer assisted working environment including all elements of explicit knowledge. Among these are for example specific technical operating principles, networks, fileserver, intra- and extranet, databases, internet and software applications including the content.
	Product Innovation	Innovations of great importance for the future of the organisation. Characterised by the fact, that they will bring new products into being or fundamentally change existing products and eventually result in a patent application
	Process Optimisation and Innovation	Optimisation and improvement of internal procedures and processes, e.g. continuous improvement of all business processes as well as idea management in order to gather suggestions of improvement
	Corporate Culture	The corporate culture comprises all values and norms, influencing joint interaction, knowledge transfer and the working manner. Compliance to rules, good manners, "Do's and Don'ts" and the handling of failures are important aspects of this factor.
<b>Relational Capital</b>	Customer Relationships	Relationships to former, current and potential customers. The management of these relations comprises activities like sales and marketing, CRM and face-to-face customer cultivation by employees.
	Supplier Relationships	Relationships to former, current and potential suppliers. The management of these relations comprises activities concerning purchases and the cultivation of suppliers.
	Public Relationships	Relationships to the public. Including the relationships to former and potential employees and the public in general, all activities of public relationship management as well as corporate citizenship, e.g. supporting regional activities.
	Investor Relationships	All relations to investors - external and internal investors - i.e. banks, owners, stockholders. The management of these relations comprises all activities providing specific information to the faction, e.g. accountability.
	Relationships to Co-operation Partners	All relations to professional associations, bodies, and societies. The management of these relationships comprises activities like joint acquisition of customers, suppliers, investors as well as an active knowledge transfer on R&D partnerships, best-practice transfer and networking activities.

Within each project the data has been collected by applying basically the same method. But as the German and the European project's method and categorisation slightly differ, the results have been examined separately. Within the German project 42 valid data sets could be collected, and 25 within the InCaS project. The results allow drawing quantitative and qualitative conclusions about the strategic relevance of particular IC factors and how this relevance differs depending on the main business sector.

## 2.2 Method

The ICS method developed and implemented in both projects primarily supports companies in managing their IC according to their individual strategic objectives. As a secondary benefit, it was used to collect the data which is analysed in this study. It was developed incorporating previous experiences from Sweden, Denmark, Austria and other European countries, taking the German ICS guideline as a basis for the European InCaS methodology. The InCaS methodology mainly consists of a structural model and a procedural model, serving as a framework for the ICS implementation. The actual data collection process within the two pilot-projects has been standardised by obliging the companies to follow the same method and to use a tool-box for data collection which provides templates and automated visualisations of the ICS results in the respective company and allowed later aggregations.

The starting point of the ICS process is the organisation's vision and strategy taking into account the possibilities and risks encountered in the business environment. The Intellectual Capital of a company, represented by the described IC factors (cf. section 2.1), is understood as intangible resources utilised in the business processes to achieve business success. All of those elements are summarised in the structural model (cf. figure 1) and are being defined and assessed in the course of the ICS process.



**Figure 1:** InCaS Structural Model (Alwert, Bornemann, Kivikas 2004).

The ICS implementation process according to the InCaS methodology is divided into five steps with each step building on the prior one. The main part of the ICS process is conducted in a workshop setting with a project team consisting of members of all main organisational units and hierarchy levels. The ICS workshops are moderated by a specially qualified external ICS trainer.

Step 1 comprises the description and definition of the business model, i.e. defining the value creating model, the external business environment, the main strategic objectives and the business processes and business success. The data presented in this article was gained within Step 2: An ICS team consisting of members from different hierarchical and functional levels across the firm is assigned to the task. As the self-assessment by the team members will later be reflected in the ICS, representativeness is crucial in order to avoid a too subjective or biased self-perception. Starting point

is the identification of IC factors, which are important for the value-adding business processes and strategic business success. The main factors in the areas of Human (e.g. Professional Competence, Employee Motivation), Structural (e.g. Internal Co-operation and Knowledge Transfer, Product Innovation) and Relational Capital (e.g. Customer Relationships, Relationships to Co-operation Partners) are defined. The assessment of IC factors identifies their status quo in respect to their strengths and weaknesses. In order to measure the importance of IC factors two approaches are possible. Within the project “Wissensbilanz – Made in Germany” the project teams set up a cross impact matrix that captured the interrelations of IC factors, business processes and success. Within the first implementation of InCaS the companies just ranked their IC factors regarding the perceived importance for achieving their strategic objectives. The implementation of the more sophisticated version is planned for the second InCaS implementation.

In the course of the following steps indicators for monitoring IC factors’ development are collected (step 3), all information is gathered and interpreted (step 4) and finally the actual document is produced (step 5).

### 3. Results

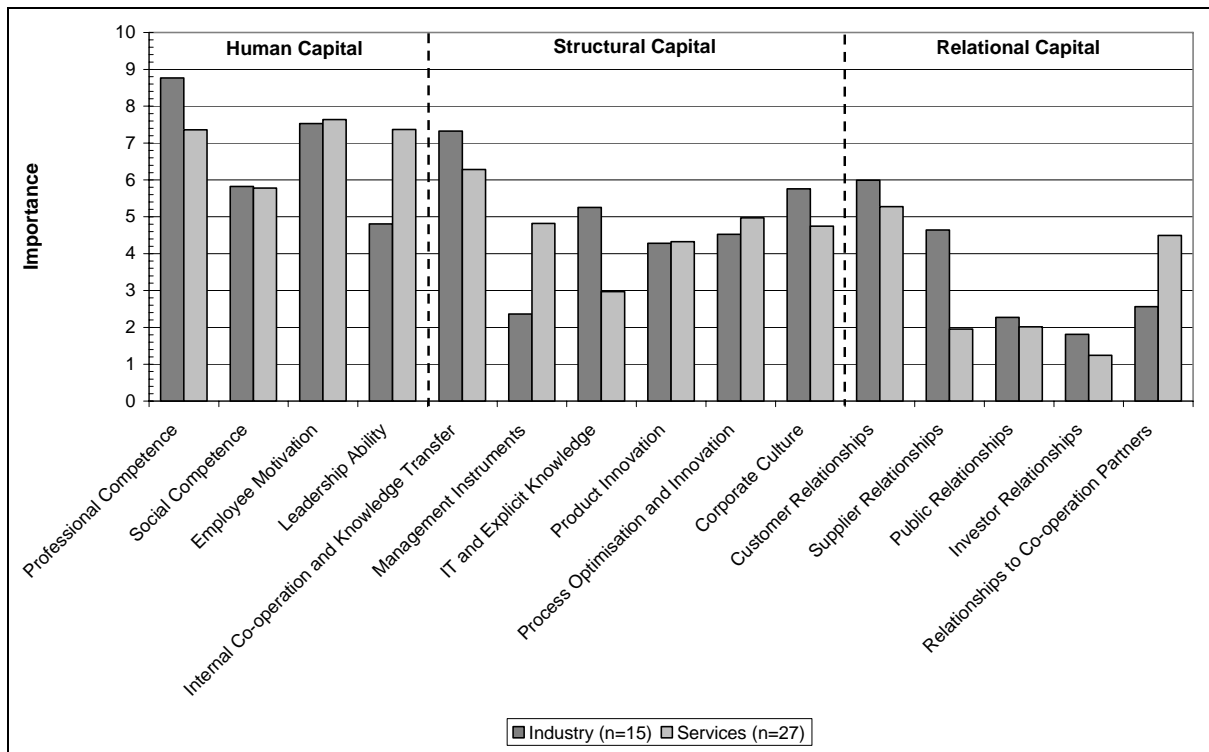
#### 3.1 Results from the German pilot-project “Wissensbilanz – Made in Germany”

The objective of this study is to find out if there are any significant differences between sectors regarding the perceived importance of IC factors and delineate some basic strategic recommendations. The German SMEs have been grouped according the major sectors Industry and Services which resulted in n=15 for Industry and n=27 for Services. The group “Industry” includes branches such as producers of machinery and equipment, electronics, tools, steel, etc. The “Service” sectors represents branches such as business services and IT services, multimedia services, medical care, consumer services etc. Table 2 shows the totals by group (Industry vs. Service) and variable (IC factor).

**Table 2:** Totals by group and variable

IC Factor		Industry (N=15)	Service (N=27)
		N	N
Human Capital	Professional Competence	15	27
	Social Competence	12	22
	Employee Motivation	14	25
	Leadership Ability	9	22
Structural Capital	Internal Co-operation and Knowledge Transfer	15	23
	Management Instruments	9	18
	IT and Explicit Knowledge	12	15
	Product Innovation	8	17
	Process Optimisation and Innovation	10	21
	Corporate Culture	13	19
Relational Capital	Customer Relationships	14	23
	Supplier Relationships	14	12
	Public Relationships	10	13
	Investor Relationships	8	10
	Relationships to Co-operation Partners	6	22

Figure 2 shows the IC factors’ Strategic Importance Index for the two sectors Industry and Services, combining the frequency (how many companies named the factor?) and the relative influence (how strong does the factor affect the company’s strategic objectives?) of each IC factor.



**Figure 2:** Strategic importance of IC factors within the sectors Industry and Services

Comparing the two sectors the differing importance of two Human Capital factors is remarkable. Whereas Professional Competence (comprising formal qualification as well as experiences gained in practice) plays the major role for Industry, it is Employee Motivation which has been perceived as the most important IC factor for Services. Another Human Capital factor – Leadership Ability – has been perceived by Services as considerably more important regarding business success than by SMEs belonging to Industry.

Major differences between the sectors occurred regarding Structural Capital factors, too. Whereas IT and Explicit Knowledge (summarising all electronic information and data bases) has a much higher impact on the strategic business success in Industry, the difference for Internal Co-operation and Knowledge Transfer (including all structures for face-to-face knowledge sharing, e.g. in project teams, communities of practice etc.) is still visible, but less significant. On the contrary, Management Instruments (e.g. management by objectives, reporting structures, controlling systems etc.) are perceived as having a much higher impact on business success in Services than in Industry. Whereas there seems to be no difference in Product Innovation based on the combined index shown here, more service companies have named the factor, but its relative influence on business success is higher in Industry (those differences are balanced out in the combined index).

The two major differences in the Relational Capital lie in Supplier Relationships (higher strategic relevance in Industry) and Relationships to Co-operation Partners (higher strategic relevance in Services).

### 3.2 Results from “InCaS: Intellectual Capital Statement – Made in Europe”

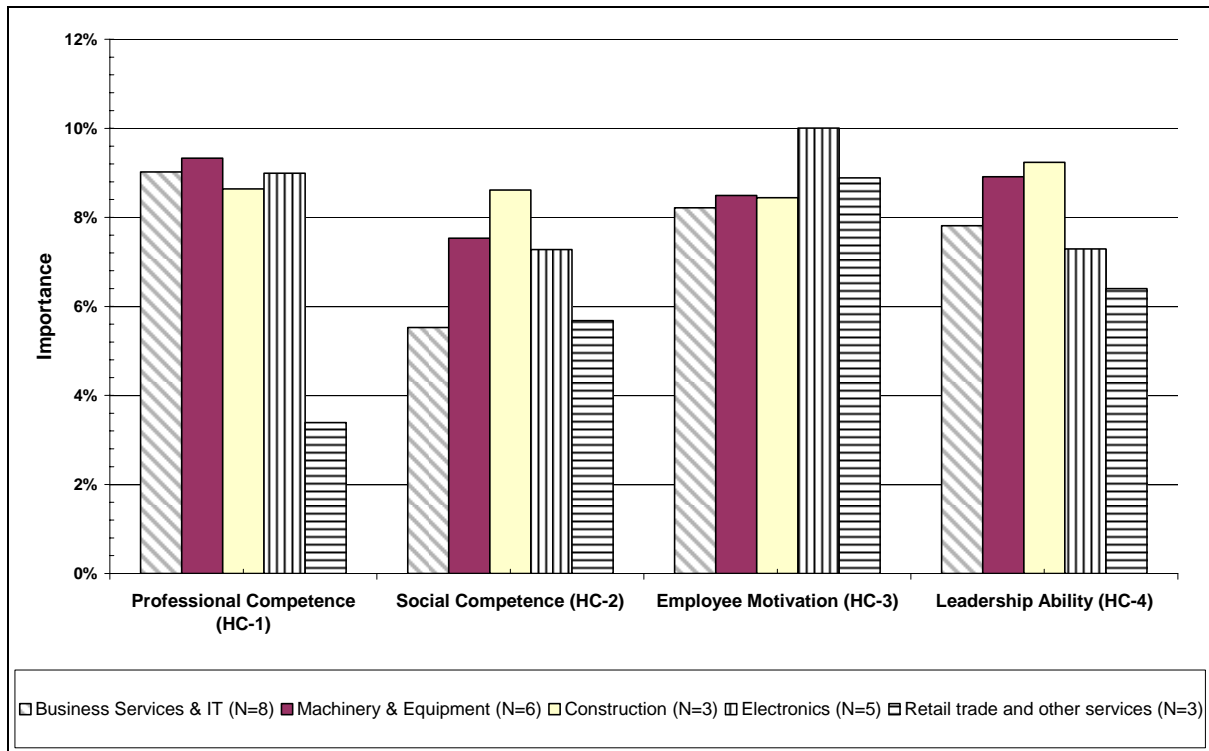
Based on the results of the German project, the European pilot-project InCaS distinguishes five project specific branches or sectors:

- Business services & IT (8 SMEs)
- Machinery and equipment (6 SMEs)
- Construction (3 SMEs)
- Electronics (5 SMEs)
- Retail trade and other services (3 SMEs)

The participating SMEs have been asked to rank the IC factors regarding their perceived importance for achieving strategic objectives. In general it became obvious that for all sectors Human Capital is the most important type of IC. Interestingly the importance of the IC types differs only slightly within the sector Retail trade and other services. Relational Capital is most important for Business services and IT and Retail trade and other services both belonging to Services. For all sectors apart from

Retail trade and other services and Business services and IT Structural Capital is the second most important type of IC.

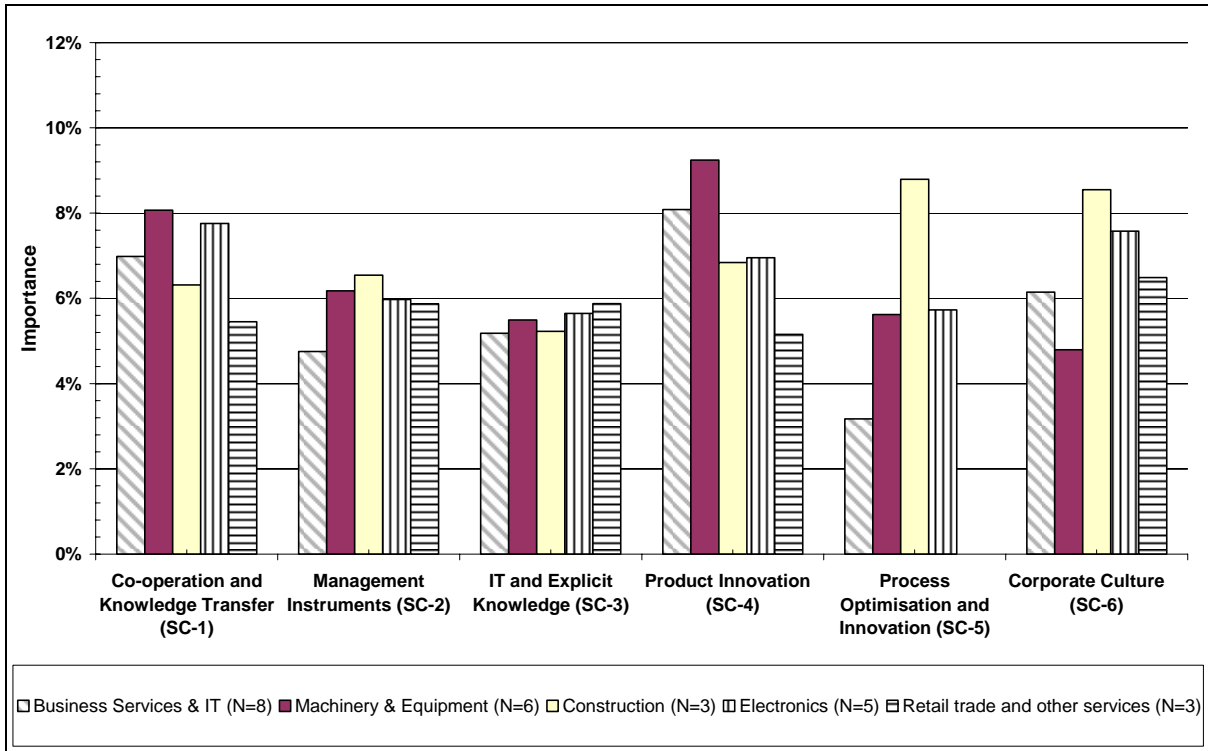
Regarding Human Capital Professional Competence plays only a minor role for the sector Retail Trade and Other Services. Often this business area does not require a formal professional qualification but a high motivation which explains why Employee Motivation is perceived as most important within Human Capital by companies belonging to this sector. Nevertheless this is not necessarily true for all companies belonging to Services. In this case companies belonging to Business Services & IT perceive Professional Competence as most important within Human Capital as this sector requires highly specialised technological expertise.



**Figure 3:** Importance of Human Capital factors (“InCaS”)

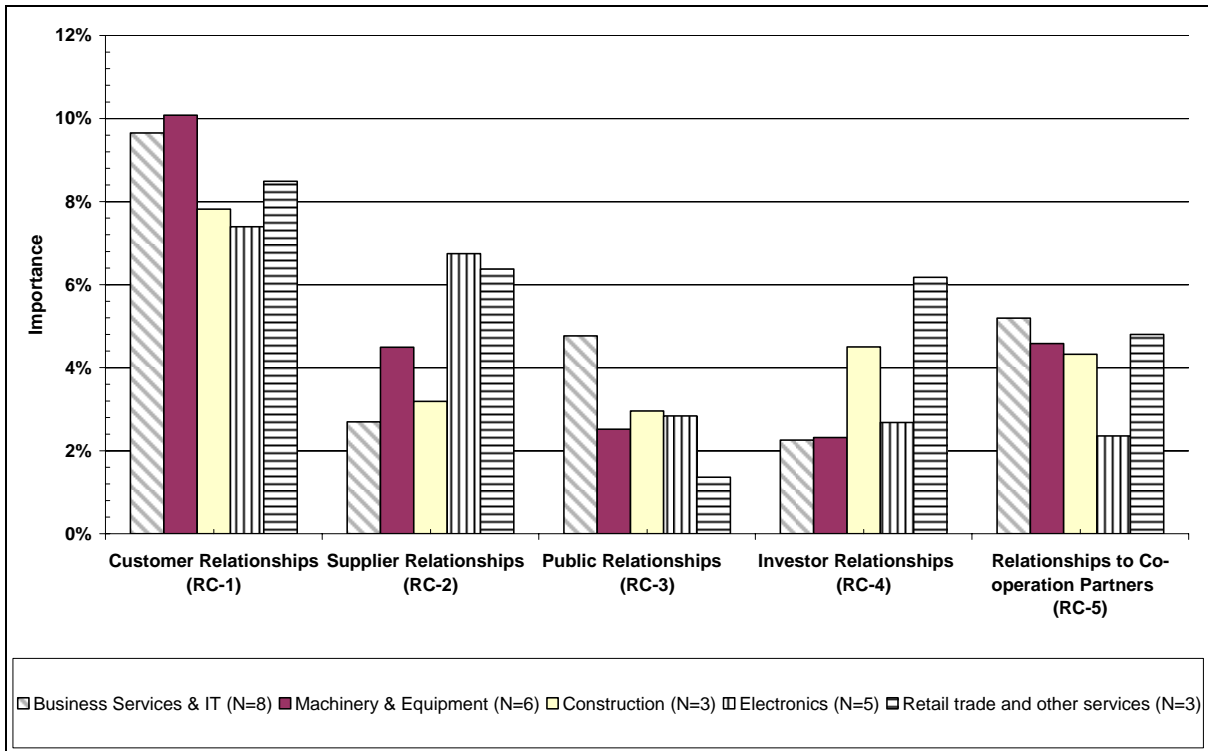
Within Structural Capital it is first of all mentionable that Process Optimisation and Innovation has not been mentioned by companies belonging to Retail trade and other services at all. Corporate Culture is perceived by this sector as most important within Structural Capital. This does not surprise as this factor is highly associated with the Human Capital factor Employee Motivation.

For Machinery & Equipment is – within Structural Capital – Product Innovation the most important IC factor. This is also true for Business Services & IT as both sectors have to compete on markets which are characterised by rapid technological change. Within Electronics it is often not possible to enforce higher prices by launching new products as this sector is mostly selling commodities like for example electronic semiconductors. Correspondingly Process Optimisation and Innovation is most important for Electronics as they need to control their costs by improving the efficiency of their business processes.



**Figure 4:** Importance of Structural Capital factors (“InCaS”)

Not surprisingly Customer Relationships is the most important IC factor within Relational Capital for all sectors. The largest differences between the sectors occur regarding Supplier Relationships and Investor Relationships. Whereas Supplier Relationships are perceived by Electronics and Retail trade and other services as second most important within Structural Capital it seems to be of minor importance for Business Services & IT and Construction. Investor Relationships are regarding the sectors Business Services & IT, Machinery & Equipment and Electronics negligible whereas it seems to be more important for Construction and Retail trade and other services.



**Figure 5:** Importance of Relational Capital factors (“InCaS”)

#### 4. Conclusions

Table 3 summarises the major differences between the sectors Industry and Services within the German pilot-project, showing the three most important IC factors for achieving strategic business success:

**Table 3:** Strategically most important IC factors (German pilot project)

Sector	Rank		
	1.	2.	3.
Industry	Professional Competence (HC)	Employee Motivation (HC)	Internal Co-operation and Knowledge Transfer (SC)
Services	Employee Motivation (HC)	Professional Competence (HC)	Leadership Ability (HC)

As already illustrated it has become obvious that Human Capital plays the major role within the analysed SMEs' business activity overall. Nevertheless, whereas all three most important factors in the surveyed service companies are HC factors, there is one SC factor among the three most important factors in Industry, giving a hint to the higher importance of (formal) structures in this sector. This observation may be verified by the differences in the HC factor Leadership Ability and the SC factor Management Instruments. Possibly, Leadership Ability is perceived within Services as highly important as this business activity requires reacting to new situations which do not allow complete standardisation of processes. It requires highly skilled management personnel in order to manage these unexpected situations adequately. Supporting instruments for this explicit management process may help the responsible management staff.

The greater formalisation and standardisation of value-adding processes in the Industry sector may result in the lower impact of single managers and leaders. Accordingly, the predominance of Professional Competence within Industry could be caused by the highly specialised tasks and processes within this sector which require specific expert knowledge. In contrast to this, service companies seem to rely on motivated employees even more than on their expertise, as the order of the HC factors in this sector shows.

Trying to derive strategic recommendations for knowledge management activities in those two main sectors, it has to be emphasised that these results are not yet statistically representative. Nevertheless, some basic learnings may be retained: Depending on the formalisation and standardisation of the business model and the business processes, the Industry sector should focus on elaborating knowledge management activities based on formal structures and explicit knowledge (codification strategy). Service companies, on the other hand, really have to focus on the recruitment and development of their individual employees if they want to ensure long-term and strategic business success (personalisation strategy). What seems to be true internally can consistently be observed externally, i.e. in the Relational Capital factors: Whereas it seems to be strategically crucial to build up partner networks in the Services sector, the Industry sector still relies much more on Supplier Relationships, optimising the supply chain as a linear input-output process.

**Table 4:** Strategically most important IC factors (European pilot-project InCaS)

Sector	Rank		
	1.	2.	3.
Business Services & IT	Customer Relationships (RC)	Professional Competence (HC)	Employee Motivation (HC)
Machinery & Equipment	Customer Relationships (RC)	Professional Competence (HC)	Product Innovation (SC)
Construction	Leadership Ability (HC)	Process Optimisation and Innovation (SC)	Professional Competence (HC)
Electronics	Employee Motivation (HC)	Professional Competence (HC)	Co-operation & Knowledge Transfer (SC)
Retail trade & other services	Employee Motivation (HC)	Customer Relationships (RC)	Corporate Culture (SC)

Table 4 summarises the ranking of IC factors regarding their perceived importance within each sector within the European project InCaS. First of all it is remarkable that similarities across the typical differentiation of sectors between Industry and Services occur. Business Services & IT – belonging to Services – and Machinery & Equipment – belonging to Industry – both perceive Customer Relationships as most important and Professional Competence as second most important for business success. This could possibly indicate that the traditional distinction between Industry and Services is improper for researching the strategic impact of IC. Rather companies should be classified by comparing the actual business models. In this case Business Services & IT and Machinery & Equipment show similar IC configuration possibly because they having similar business models. Both sectors have to deal with often very specified and varying customer needs – which explains the importance of Customer Relationships – and have to apply state-of-the-art technological expertise – which explains the importance of Professional Competence.

## **5. Outlook**

Following the scalable approach of InCaS, the second phase of ICS implementations has started at the beginning of 2008 using the more comprehensive version of the ICS method. As the SMEs will profit from phase I experiences and the practice-based learning approach, they are challenged to go through the ICS process a second time on their own with minimal external support.

Starting from the harmonised methodological framework, the main harmonisation objective of phase II was to evaluate the experiences of the first 25 pilot-implementations in order to come up with harmonised ICS content, such as typical IC factors and indicators. The first step in this evaluation (harmonised IC factors) has been made, as described in this paper (cf. section 2.1).

Further standardisation is necessary to fulfil several needs. One area of application is the communication of a SMEs IC to stakeholders like for example the financial market. Field reports and surveys have shown that complementing financial data with information on intangible resources can sharpen the view on SMEs' creditworthiness and valuation (Botosan, Plumlee 2000; Thomas 2003; Will, Alwert, Bornemann, Wuscher 2007). If some requirements about structure, content and length of an IC report are fulfilled (Wuscher, Will, Alwert, Bornemann 2006), it contributes to a more homogeneous rating of SMEs, than analysts' assessment based solely on information from annual financial reporting. Therefore it reduces risks for both banks and SMEs (Alwert, Bornemann, Will 2007). InCaS needs to work out these aspects in order to develop the ICS as a reporting instrument to close the existing gap and information asymmetry.

Despite the practical application areas for ICS it should focused on improving the method and enhancing the sample sizes in order to collect data for scientific purposes. This article presented the results from the German and European pilot-project but it has to be stated that the sample size was too small to allow drawing representative conclusions. Having achieved the desired level of harmonisation and quality standards within the project InCaS (Mertins, Wang, Will 2007), the future challenge is to trigger the development of an IC benchmarking concept in order to make ICSs more comparable between organisations which will generate an additional benefit for practical application and for researching IC within organisations. This IC benchmarking concept based on minimal reporting requirements would ensure quality and comparability of ICSs as a management and reporting instrument as well as an instrument for scientific data collection and analysis.

In order to go deeper in the process of understanding the problems of SMEs it could be helpful to analyse this set of data according to other groupings, such as the company's maturity level or lifecycle stage or the company's type of strategy. According to other studies (Pawlowsky et al. 2006) the way companies handle knowledge and the focus of IC management depends on their type of strategy. This could also be a suitable approach for the IC benchmarking concept with relevant practical implications: Bring together companies that are based on the same type of strategy and show a similar configuration of IC factors in order to share best practices and work on solutions for common IC challenges together.

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