

Measuring your Company's Intellectual Performance



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Abstract

Intellectual capital is rapidly becoming a very important measure of the company's future performance. It is therefore vital that indicators and measures are developed, to allow managers to handle this variable better. The qualitative report of a large study among Northern European small and medium sized enterprises are reported, and the first conclusions are drawn. Previous research has highlighted the status of intellectual capital, as a snapshot, in what we call the balance sheet approach. Based on the result of our study, we suggest the adoption, alongside the balance sheet approach, of a profit and loss approach, which could help companies monitor the flows among different components of intellectual capital and between intellectual and financial capital.

Visualising More of the Value Creation

Management theory has gradually accepted that "hidden" assets (knowledge of employees, but also customer and supplier relations, brand loyalty, market position and knowledge) increasingly play a major role for the survival of more companies. "*(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*" wrote Thomas Steward in *Fortune* almost five years ago¹. These "assets" are hidden because they do not show up on the balance sheet of companies. At the same time, as business journals and magazines demonstrate almost daily, many senior executives realise that successful companies will be those who do the best job of capturing, nurturing and leveraging what employees know.

This should not be surprising since in many instances the hidden assets have overtaken financial holdings, real estate, inventories, and other tangible assets in reflecting the most valuable part of many companies. Just look at the difference between a company symbolising the industrial era, General Motors, and one symbolising the information era, Microsoft. The market capitalisation of GM in 1996, which has considerable traditional assets, is approximately \$ 40 billion. Microsoft, which has few such assets apart from its headquarters buildings in Seattle, has a market capitalisation of some \$ 70 billion! The ratio between a company's market value and the cost of replacing its assets (Tobin's q) is getting larger in most industries, not only in service industries, but in all businesses where companies integrate smart technologies, software, electronics and total solutions into their existing products.

The crux is that it is individuals, not the company, that own and control the chief source of competitive advantage--the knowledge of organisational members. Nevertheless, as Peter Drucker has said², in the knowledge era the company needs to serve and nurture the "knowledge worker". But, at the same time the knowledge worker needs the value creating processes and infrastructure of the organisation, as well as conversations with other knowledge workers to unleash and leverage their knowledge.

This is why concepts like hidden assets, intangible resources, or most recently "intellectual capital" often say more about the *future* earning capabilities of a company than any of the conventional performance measures we currently use. If the top-fifty programmers suddenly left Microsoft, the share price of the company is likely to drop dramatically. The absurdity is that while a company may just have gone into "intellectual bankruptcy", the short-term profits may very well rise since

¹ Steward, T.: "Your Company's Most Valuable Asset: Intellectual Capital." *Fortune* No. 7, Vol. 130: 28 - 33 (1994).

² Drucker, P.: "The Age of Social Transformation." *The Atlantic Monthly* Vol. 274, No. 5, November: 53 - 80 (1994).

costs have been lowered! Thus, it should not be surprising that the Securities and Exchange Commission in the US have recently indicated they will soon require an intellectual capital supplement to companies' annual reports.³

So, how can companies better visualise and even measure the growth and/or decline of intellectual capital, the "intellectual performance" of the company? This is the managerial issue we address in this article. To this end we have studied how companies could set up their own systems for visualising and measuring intellectual capital. The overall objective of the study was to *develop and later test a process model of intellectual capital*. By process model we mean a model that takes a dynamic view of intellectual capital, that is, show how intellectual capital grow/decline over time. This article reports the findings from the first, *qualitative* phase of our study. The findings from the second, *quantitative* phase will be reported subsequently.

After reviewing our conceptual lens we discuss the research approach applied. Then, we present the findings of our study in the form of examples of intellectual capital process models of some firms. Finally, we draw ten conclusions regarding our managerial issue.

Conceptual Lens

Our study, deductive in nature, rest on recent literature in the strategic management and organizational studies' realm that attempt to better understand the basis for sustainable competitive advantage. It is not the purpose of this paper to provide an exhaustive literature review of knowledge management, but solely to highlight some of the building blocks of the conceptual lens used to shed more light on the managerial issue we address.

The Pursuit to Know More About Intellectual Capital

Until the 1980s mainstream management theory focused on companies' environment (read: industry structure) as the basis for understanding competitive advantage. In line with neo-classical economics, resources were assumed to be homogeneously distributed within industries, and in addition easily accessible by competing firms. Thus, the role of management was to figure out smart ways to combine products and markets given the bargaining power of suppliers and customers, entry barriers, and potential substitute technologies and/or products. The strong message of the economist-driven "industrial organisation" line of thinking⁴ was to worship the environment rather than the inside of the firm.

³ SEC Workshop on Reporting of Intangible Assets, New York, April 11-12, 1996.

⁴ Porter, M.: Competitive Strategy. New York, Free Press (1980).

In the 1980s, what was later called the "resource-based" perspective of the firm challenged this view. Elaborating some elements that had already been brought forth by Edit Penrose in the 1950s⁵, followers of this school of thought suggested that competitive advantage did not arise only via various product-market combinations in a given industry. On the contrary, it was mostly due to differences in organizational resources of different kinds⁶. Because resources cannot always be transferred or imitated, we must look *inside* the firm to find the real sources for sustainable differences in the resources. In other words, worship the inside of the firm, not just the environment.

Pushing these ideas further ahead Barney⁷ developed four criteria for assessing what kinds of resources would provide *sustainable* competitive advantages: (1) value creation for the customer, (2) rarity compared to the competition (3) imitability and (4) substitutability. The only resource that seems to pass this acid test is "knowledge"--regardless of whether you call it invisible assets, absorptive capacity⁸, core competencies, strategic assets⁹, core capabilities¹⁰, intangible resources¹¹, organizational memory¹², or other concepts carrying similar meaning.

The introduction of these ideas coincided with a seminal work in the management area, namely Itami and Roehl¹³. Although not defined by the authors, invisible assets are considered as the most important resource in the production processes of firms. These assets, the author claims, are based on information. They can include anything from brand loyalty (the result of information from the company to the environment), to technological or technical skills (with information flowing from

⁵ Penrose, E. T.: The Theory of the Growth of the Firm. New York, Wiley (1959).

⁶ Wernerfeld, B.: "A resource based view of the firm." Strategic Management Journal 5(2): 171 - 180 (1984); Dierickx, I. and K. Cool: "Asset Stock Accumulation and Sustainability of Competitive Advantage." Management Science December: 1504 - 1514 (1989).

⁷ Barney, J.: "Types of Competition and the Theory of Strategy: Toward an Integrative Framework." Academy of Management Review Vol. 11, No. 4: 791 - 800 (1991)

⁸ Cohen, W. and D. Levinthal: "Absorptive Capacity: A new perspective on learning and innovation." Administrative Science Quarterly 35: 128-152 (1990).

⁹ Amit, R. and P. J. H. Schoemaker: "Strategic assets and organizational rent." Strategic Management Journal 14: 33 - 46. (1993)

¹⁰ Zander, U. and B. Kogut: "Knowledge and the Speed of the Transfer and Imitation of Organizational Capabilities: An Empirical Test." Organization Science Vol. 6, No. 1, January-February: 76 - 92 (1995).

¹¹ Hall, R.: "The Strategic Analysis of Intangible Resources." Strategic Management Journal 13: 135 - 144 (1992).

¹² Walsh, J. P. and G. R. Ungson: "Organizational Memory." Academy of Management Review Vol. 16, No. 1: 57 - 91 (1991).

¹³ Itami, H. and T. Roehl: Mobilizing Invisible Assets. Cambridge, MA, Harvard University Press (1987).

the environment to the company), to internal goodwill (presumably helped by free flow of information inside the company).

Likewise, the well-known and widely applied concept of core competencies¹⁴ is another example of a source of sustainable competitive advantages from this perspective. To identify core competencies and distinguish them from "non-core" competencies, the authors suggest three tests: core competencies should be suitable for application in many different markets; they should create a significant contribution to customer value; and, in line with Barney, competitors should have problems imitating the core competencies of a company.

The next logical step for scholars trying to better understand the nature of knowledge was to categorise it. Although many categories have been suggested, like embodied knowledge¹⁵, encoded knowledge¹⁶, embrained knowledge¹⁷, procedural knowledge¹⁸, the most frequently used *distinction* is tacit vs. explicit knowledge. This distinction, suggested by Polanyi¹⁹, and later exploited by many authors in the strategic management realm, most recently Nonaka and Takeuchi²⁰, is indeed a fundamental one. It seems to us that we have reached the limits of present understanding of knowledge - - at least in the management realm - - by revisiting one of the basic issues the Greek philosophers struggled with, namely the distinction between mind and body. In more modern times, the famous Cartesian dualism comes to mind as well, namely the distinction between *res cogitans* (thinking substance), and *res extensa* (extended substance).

To sum up, strategic management research seems to have shifted its focus from looking outside at the industry structure to uncover the "true" basis for sustainable competitive advantage to a realisation that heterogeneously distributed resources provide more fertile soil for such advantages.

¹⁴ Prahalad, C. K. and G. Hamel: "The Core Competence of the Corporation." Harvard Business Review May-June: 71-91 (1990); Hamel, G. and C. K. Prahalad: Competing for the Future. Boston, Harvard Business School Press (1994).

¹⁵ Zuboff, S.: In the Age of the Smart Machine: The Future of Work and Power. New York, Basic Books (1988).

¹⁶ Blackler, F.: "Knowledge and the Theory of Organizations: Organizations as Activity Systems and the Reframing of Management." Journal of Management Studies November: 863 - 884 (1993).

¹⁷ Argyris, C. and D. A. Schön: Organizational Learning: A Theory of Action Perspective. Reading, Addison-Wesley (1978).

¹⁸ Winter, S. G.: "Knowledge and competence as strategic assets:: in D. Teece (ed): The Competitive Challenge - Strategies for Industrial Innovation and Renewal; Cambridge, MA, Ballinger: 159 - 184 (1987).

¹⁹ Polanyi, M.: The Tacit Dimension. London, Routledge & Kegan (1966).

²⁰ Nonaka, I. and H. Takeuchi: The Knowledge-Creating Company. New York, Oxford, Oxford University Press (1995); Nonaka, I.: "The Knowledge-Creating Company." Harvard Business Review November-December: 96 - 104 (1991); Nonaka, I.: "A Dynamic Theory of Organizational Knowledge Creation." Organization Science Vol. 5, No. 1: 14 - 37 (1994).

The acid test of imitability led to realisation that knowledge, often in the guise of "core competencies" should be the real nexus of attention in companies. Finally, in a Newtonian-inspired reductionism, scholars have tried to slice knowledge into its finest elements, seemingly hitting the wall at the old distinction between a tacit and an explicit knowledge component.

The Pursuit to Measure Intellectual Capital

In a parallel stream of research, some scholars in academia and in practice have focused on the implications of the resource and/or knowledge based view for the daily management of companies. More precisely, on what to measure and, thus, implicitly subscribing to the view that "what you measure you can manage".

Usually, what is measured in companies is also what is managed. But as Albert Einstein pointed out, what can be measured is not always important, and what is important can not always be measured! Although the stock market is showing us that intellectual capital is far more important than money and other traditional assets--a fact that is consistent with the resource-based perspective--only a few companies are making a serious effort to capture, measure and better manage it. For the reasons discussed above, most management practitioners simply do not seem to take the capturing, measuring and managing of intellectual capital seriously.

Nonetheless, Eccles²¹, for example, described the trend towards qualitative performance measurements, including innovation, personal, and customer satisfaction, instead of mere financial evaluation. Building on this work Kaplan and Norton²² introduced the "Balanced Scorecard" technique to help managers combine performance measurements from different perspectives (i.e. knowledge development perspective, infrastructure perspective, customer perspective, and financial perspective) on a daily basis. Along these lines scholars have tried to measure competencies²³, technological knowledge²⁴, the meaning of employee-knowledge and other "intangible resources"²⁵.

²¹ Eccles, R.: "The Performance Measurement Manifesto." *Harvard Business Review* January - February: 131 - 137 (1991).

²² Kaplan, R. and D. Norton: "The Balanced Scoreboard - Measures that Drive Performance." *Harvard Business Review* January - February: 71 - 79 (1992); Kaplan, R. and D. Norton: "Putting the Balanced Scorecard to Work." *Harvard Business Review* September - October: 134 - 147 (1993); Kaplan, R. and D. Norton: *The Balanced Scorecard*; Harvard Business School Press, Boston MA (1996).

²³ Klavans, R.: "The measurement of a Competitor's Core Competence"; in G. Hamel and A. Heene (eds): *Competence based competition*; Chichester, Wiley: 171 - 182 (1994); McGrath, G., I. MacMillan, et al.: "Defining and Developing Competence: A Strategic Process Paradigm." *Strategic Management Journal* Vol. 16: 251 - 275 (1995).

²⁴ Bohn, R.: "Measuring and Managing Technological Knowledge." *Sloan Management Review* Fall: 61 - 73 (1994).

²⁵ Hall, R.: "Intangible Sources of Sustainable Competitive Advantage"; in G. Hamel and A. Heene (eds) *Competence based competition*; Chichester, Wiley: 149 - 169 (1994).

Building on the Balanced Scorecard approach, Skandia, one of Sweden's leading insurance companies operating internationally, is one of the pioneering companies in developing, and implementing a systematic way of visualising and measuring intellectual capital. It has come to view intellectual capital as both what is in the heads of employees ("human capital") and what is left in the organisation when people go home in the evening ("structural capital"). The latter, in turn, is sub-divided into three areas, called Customer Focus, Process Focus, and Renewal and Development Focus. Although in somewhat different forms, the initiative of Skandia²⁶ has been followed by other companies, including Dow-Chemicals, CIBC, Hewlett-Packard, Canon²⁷.

Our Views

In this article we subscribe to the basic views of the resource-based perspective of the firm. In turn, this allows us to build on the work by scholars like Eccles, Kaplan, Norton, as well as Skandia and other companies. To sum up, our conceptual lens through which we address the managerial issues of this study is that:

Intellectual capital is the sum of the "hidden" assets of the company not fully captured on the balance sheet, and thus includes both what is in the heads of organizational members, and what is left in the company when they leave;

Intellectual capital is the most important source for sustainable competitive advantages in companies;

An important managerial responsibility is to manage the intellectual capital of the company better;

The growth and decline of intellectual capital can be called "intellectual performance" and can be visualised and measured;

A systematic approach to visualise and measure intellectual capital is increasingly valuable to companies regardless of the industrial, size, age, ownership, and geographical dimensions.

Research Approach

The overall objective of this study was to develop and later test an intellectual capital process model which will provide the basis for assessing intellectual performance, given the conceptual lens

²⁶ Oliver, D., D. A. Marchand and J. Roos: "Skandia Assurance and Financial Services"; IMD Case, GM 624, (27 April 1996)

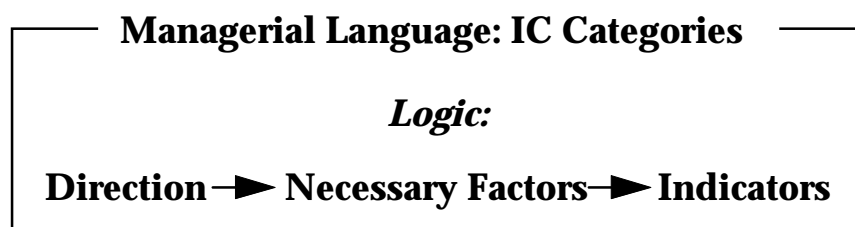
²⁷ see "Competing on Knowledge"; Special Advertising Section, *Fortune*, September 9 (1996)

outlined above. As previously mentioned this article reports the findings from the first, *qualitative* phase of the study.

Methodology

The first step was to develop an intellectual capital model for possible use in companies. To this end we applied a qualitative research methodology, interviews in the spirit of Yin²⁸. The reasons for this were twofold. *First*, the state of theoretical development in the area of intellectual capital is not solid. From the above discussion on literature it follows that some of the recent initiatives come from companies, applying and modifying more scholarly approaches. In general, there has not been much empirical research in this area, validating or falsifying (in a Popperian sense) the preliminary conclusions drawn. *Second*, we desired to pay detailed attention to micro-level aspects that are barely accessible to quantitative approaches, like dimension of human interaction, and language used by managers. Through the interviews we hoped to: (1) learn which categories of intellectual capital are meaningful to managers, (2) suggest metrics for capturing the relevant intellectual capital growth/decline in companies, (3) develop sample intellectual capital *process* models, and (4) achieve further insights into the assessment of intellectual performance.

The interviews were semi-structured in nature, using a pre-developed interview guideline including many open-ended questions.²⁹ Questions were asked regarding the vision and/or direction of the company, time scale of this direction, the strategy and various "intellectual capital" concepts used, their meaning, what distinctions of intellectual capital (or the local concepts used by managers) made most sense in the company, what would "make or break" the expressed vision and/or direction, and suggestions on how to measure such factors, and corresponding time scales. We followed the simple logic of grounding the discussion in the language used by managers. Managers were thus encouraged to use their own words to express the direction of the company, and then asked to articulate the necessary factors that would indicate whether or not the articulated direction was being successfully pursued. Based on this we then jointly listed indicators for each of these factors. This logic is outlined in Figure 1.



²⁸ Yin, R. K.: *Case Study Research*; Sage Publications, London (1989)

²⁹ The interview guideline can be obtained from the first author.

Figure 1: Logic of interviews

Industrial and Geographical Setting

The setting of our study is Northern European, small and medium-sized companies across different industries. We have worked with a governmental venture capitalist wishing to develop an approach to complement the already existing financial capital-oriented models used to evaluate its portfolio of company investments. A study of intellectual performance in *smaller* companies could also complement the many publicised examples of very large companies' practices in this area.

The venture capitalist specialises in funding small and medium sized limited companies (typically between 1 and 100 employees) which form small *networks* to compete internationally. Typically initiated by one or two companies, these networks could include between three and seven small or medium sized companies. These companies would bring to the party a unique business activity, resulting in a higher-level, network-level business system competing with larger companies. Since 1990, this venture capitalist has funded the formation of some 250 networks including almost 2,000 small or medium sized companies.³⁰ Figure 2 illustrates a typical network.

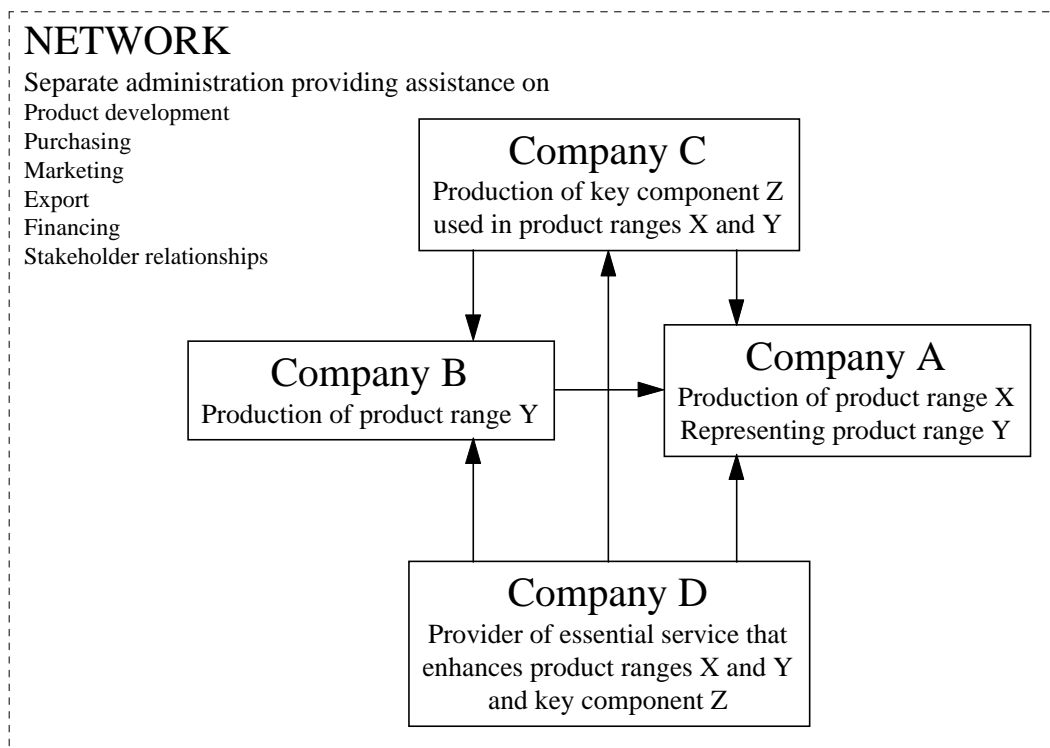


Figure 2: Example of typical network

³⁰ It should be noted that this network approach has become a role model for similar initiatives in both Canada and New Zealand.

From this population we selected a sample of five small companies for our interviews in Phase 1, representing three networks and including some very small companies to test the applicability of results at different scales. Our selection represent both production and service oriented firms. As depicted in Table 1, these companies are quite small, represent different industries and, in general, do not have much in common.

	Alfa	Beta	Gamma
Number of participants in the network	4	4	3
Number of employees	9	1	54
Turnover	£1.0 millions	£0.07 millions	£3.3 millions
Earnings before taxes	(£40) thousand	N/A	£80 thousand
Business	Electric equipment production	Industrial design	Mecatronics production
Share of business through the network	65%	100%	30%
Type of clients	Health care	Industrial	Offshore
Age	5 years	7 years	12 years

Table 1 (contd)

	Delta	Epsilon
Number of participants in the network	3	3
Number of employees	6	2
Turnover	£0.7 millions	£600 millions
Earnings before taxes	£230 thousand	(£72) thousand
Business	Mechanical processing	Consulting
Share of business through the network	30%	100%
Type of clients	Engineering	Utilities
Age	11 years	1 year

Table 1: Overview of sample companies

Our selection of companies was primarily pragmatic, we wanted to talk to companies that had a few years of experience, involving managers that would be willing to be interviewed and openly allow us to access potentially sensitive company data. Moreover, recognising the nature of the companies,

very small, we wanted companies that had made some effort to articulate a company vision or direction. Finally to be able to “test” whether it would be possible to have an intellectual performance system for a single-person company we included one of these and one 2 person company. Out of an initial sample of 25 companies, the selection of the five was made in close collaboration with the venture capitalist, based on these criteria

Data Gathering

We collected our data through interviews lasting approximately half a day per interviewee. The interviews were semi-structured and were carried out by two persons. We interviewed 1 - 4 people in each company and the five companies were selected, as mentioned above, from different industries and from different size categories. Each company interview was followed up through the collection of documentation and through telephone discussions.

Findings

Main Categories of Intellectual Capital

Our first finding was to note the extremely positive reactions from our sample during this process. Comments of the type “Finally they [the venture capitalist] have understood what it is all about”, “Aha! I now see that my problem is in converting human capital to structural capital and not about pouring more money into new IT-systems from external suppliers”, “Finally I can talk about what I have been using my gut feeling for, for so long” have been abundant.

Our second finding pertains to categories of intellectual capital. An *a priori* investigation of the sample/population companies gave a very detailed basis for an intellectual capital “distinction tree” for the population of companies supported by the venture capitalist as pictured in Figure 3 below.

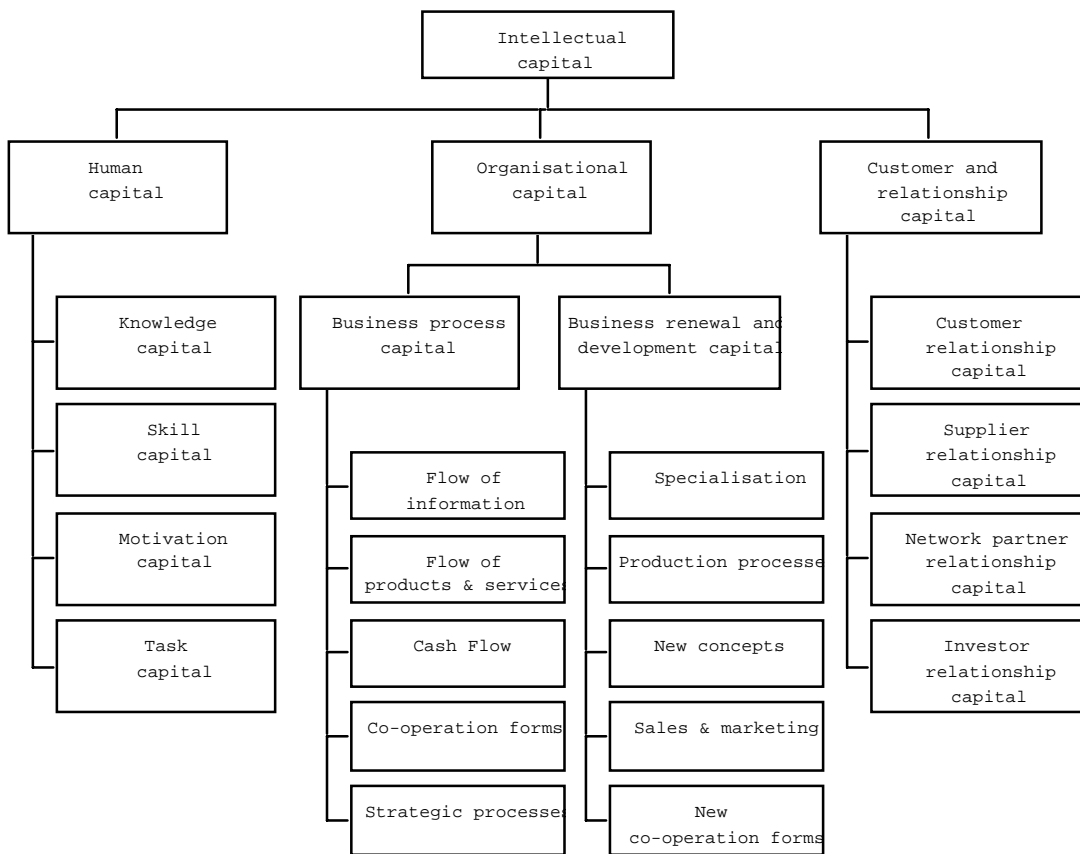


Figure 3: Limited distinctions of intellectual capital

However, it became clear during the interviews that not all of the categories in Figure 3 were equally important for the companies. Moreover, our dialogue with the venture capitalist indicated that some categories were considered more important than others in their evaluation. As a consequence of this we found that four categories, pictured in Figure 4, represent “cut-off” points for a skeletal intellectual capital distinction tree. These categories/distinctions were to become the language of intellectual capital and intellectual performance.

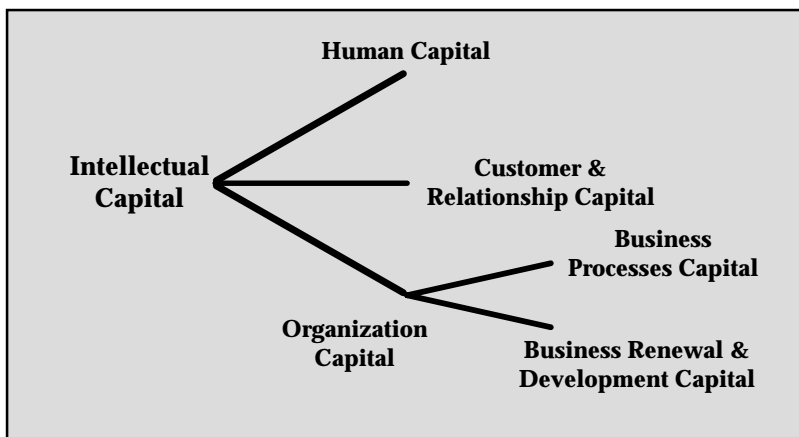


Figure 4: Five main categories of intellectual capital

Intellectual capital models forming the basis for intellectual performance models

Our second finding is the specific company models developed from the interviews. For space reasons we present two of the five models below³¹. These findings follow the logic of Figure 1

The model for Gamma Company is depicted in Figure 5.

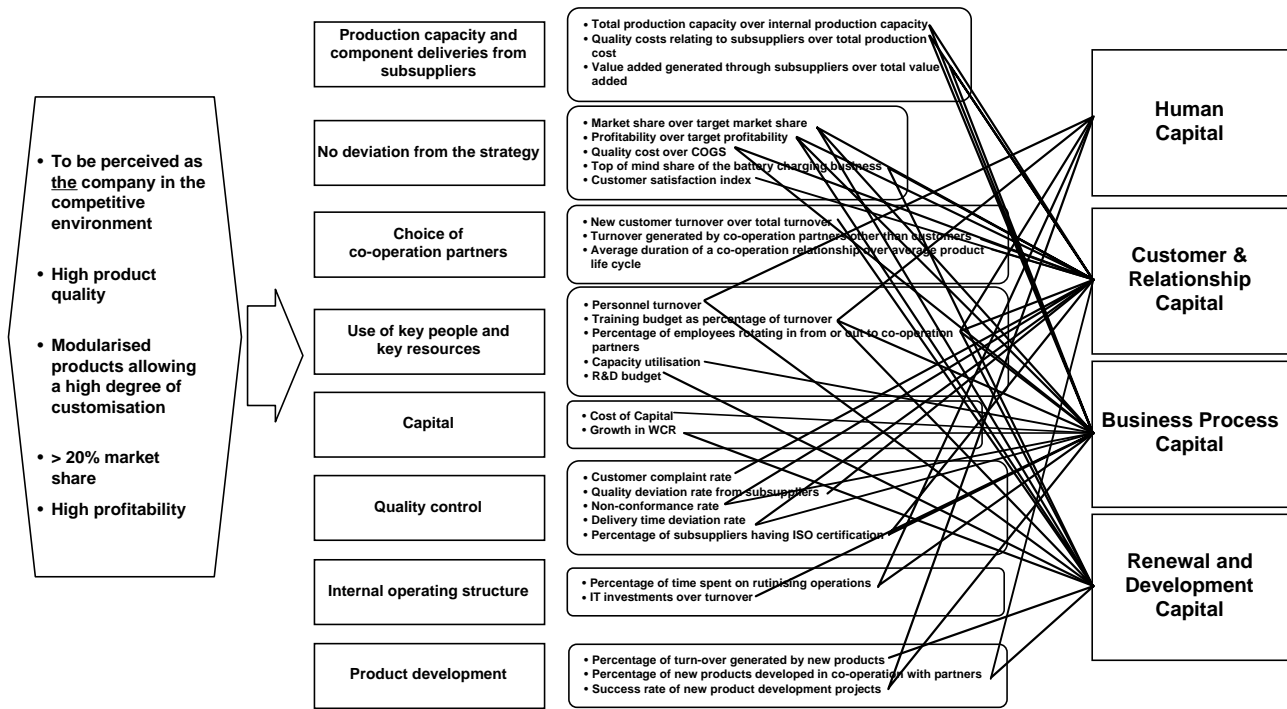


Figure 5: Model for Gamma Company

With reference to the company summarised in Figure 5, our findings can be summarised as follows:

This company espoused a “strategy” that seems to contain elements of goals (e.g. “more than 20% market share”), direction (e.g. “to be perceived as the company in the competitive environment”) and generic strategies in the Porterian sense (e.g. “high quality” together with “high profitability” together with “high degree of customisation” and together with “perceived as the company” can be interpreted as a typical differentiation strategy).

Not less than eight factors surfaced that would make or break this strategy. These factors are listed from top to bottom in the order in which they were mentioned which could indicate a cognitive familiarity ranking of them. The deeper we dug in these rankings, the more time was needed in order to produce an additional factor.

³¹ The remaining models can be obtained from the first author

A number of indicators were identified for each factor. This identification process progressed at varying speeds. On a scale with financial capitals to the left, organisational capital in the middle and human capital to the right, the speed with which managers were able to identify relevant and precise indicators decreased from left to right. This meant that we had a large number of independent indicators to choose from for financial capital measures, less so for organisational capital and least of all for human capital.

It was difficult to come up with a listing of more than five indicators for any one factor, based on the suggestions provided. Additional indicators suggested were not measuring different "dimensions" of the factor considered. In some instances we ended up with only two indicators.

The process of phrasing the indicators in terms of the intellectual performance language developed was done by the authors. To validate these findings, the result, i.e. the model, was presented to the managers interviewed for comments. Only some of the allocated indicators were revised based on these comments.

Picturing the model, like in figure 5, helps to establish a visual ranking of the intellectual capital categories necessary for succeeding with the articulated strategy. In this example, Business Process Capital seems to be ranking the highest.

The model for Epsilon Company is depicted in Figure 6.

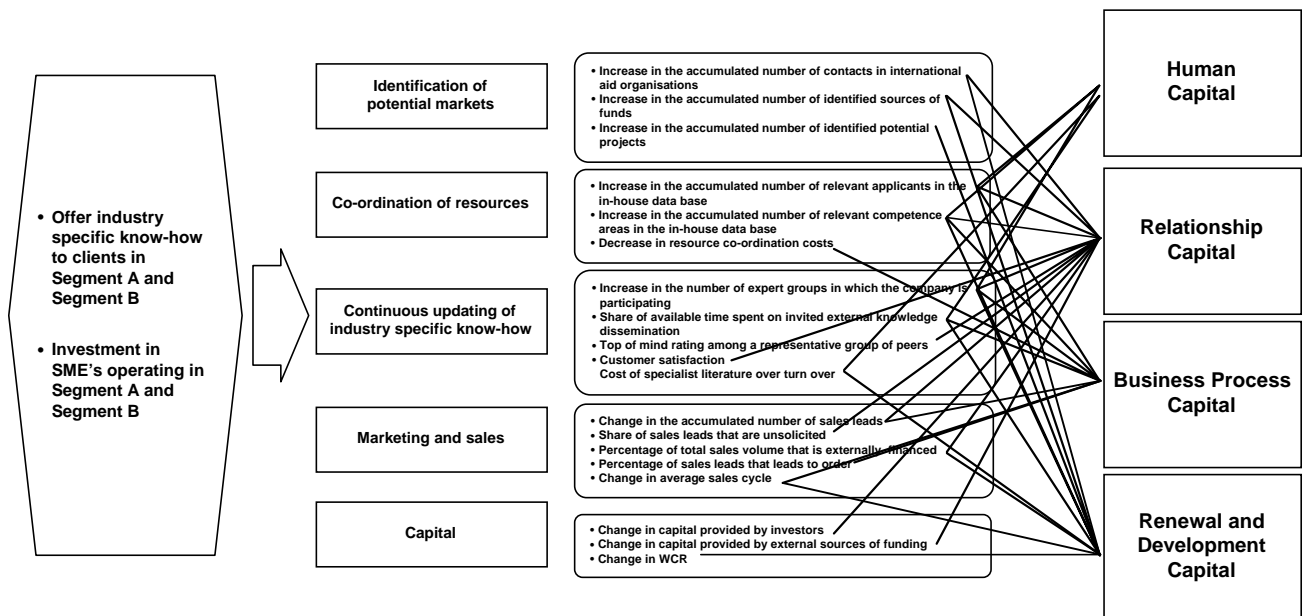


Figure 6: Model for Epsilon Company

Findings for company Epsilon partially validate the previous conclusions:

The company espoused a “strategy” that seems to contain elements of goals (e.g. “to achieve .. (a financial goal)”), direction (e.g. “to invest” and “to offer know-how”) and strategic intent in the Hamel sense (e.g. “to avoid redundancies” together with “utilisation of available resources” together with “being first in a new market situation that we will create” can be interpreted as a form of strategic intent).

Five factors surfaced that would make or break this strategy. The ranking method followed was the same as the previous example, and we experienced the same difficulty in the elicitation of the factors as before.

The explicitation of indicators for each factors also followed the same dynamics as before. As with company Gamma, the maximum number of independent indicators was five; this time, though, the minimum number was three.

The same process was followed for the phrasing of the single indicators, with the authors' wording checked by the interviewees.

Relationship Capital was the most important necessary factor for success.

Conclusions

Intellectual performance, that is growth/decline of the intellectual capital of the company, is increasingly interpreted as an early warning signal of subsequent financial performance. Simply because they say more about future earning capabilities, we are convinced measures of intellectual capital will increasingly be at the forefront in discussing the health and value of companies, inside and outside the organisation. Given this background, ten conclusions surface from our study:

First, there seem to be three prerequisites for developing an intellectual capital system. First of all, the company/unit must be mature enough to have gone beyond the stage of discussing business performance solely in financial terms. Loss-making companies in the sample were far more concerned with the short-term financial performance, and had marked difficulty in addressing intellectual capital issues. Second, the company/unit must have a clearly defined business idea or direction. Companies which satisfied this condition could relate intellectual capital issues to their activity more readily than others. Finally, there must be a clear operational commitment to moving ahead which is visibly supported by top-management. This was evident in comments made by the interviewee during the interviews.

Second, the intellectual capital system should capture only the intellectual capital growth or decline that impact the long-term earning capability of the business. Therefore, effort to identify and

measure intellectual capital must be rooted in the business vision, mission or strategy of the company/unit since intellectual capital is a consequence of strategy. This was actually a premise we worked upon, and no data coming from the study disproves this conviction. We believe that this requirement provides the starting point for what to measure and, eventually what to manage even better in all such efforts.

Third, the companies studied for this article convinced us that the intellectual performance system must also be rooted in the *language* of the company/unit. Important concepts used in conversations and texts around the vision, mission, strategy, and success factors must be identified, like “leading”, “product knowledge”, “the company”, “high product quality”, “high profitability” and “customer integration”, and the meaning of these concepts must be uncovered. The authors tried to rephrase the concepts completely, using standard theoretical terms, but in these cases the managers did not recognise their own statements, and the statements themselves sometimes lost their meaning. Intellectual capital knowledge, then is self referential³².

Fourth, to be measured, intellectual capital obviously needs to be categorised. The objective is to create the new language that will be used in the company to discuss and evaluate intellectual performance. To create an indicator with operative, practical use it is essential that the indicator in question be precise and robust. To achieve these goals, the scope of the measurement has to be limited to a manageable level, and here is where distinction becomes useful.

The process of making meaningful categories seems to be fundamentally a *distinction making* process³³, that is, to separate one thing from something else, for example the distinction between revenue generated by a consultant selling his time and the consultants enabling of potential revenues through a transfer of his knowledge into standardised, documented products and processes. The second may ultimately generate more money for the company but it will have a short term negative effect on corporate cash flow.

Simply because it establishes what is considered important for the company, categorising must be more of a top-down than a bottom-up process. This came out very strongly even in the very small companies we interviewed.

Fifth, the vehicle for measuring intellectual performance is the set of indicators used for each intellectual capital category. *It is these indicators that permit measurement*, not the categories. Contrary to the method of categorising, developing and refining measurements seems to be more of

³² von Krogh, G. and J. Roos: “What You See Depends on Who You Are”; *IMD Perspectives for Managers*, September, No. 7 (1995); von Krogh, G. and J. Roos. *Organizational Epistemology*, MacMillan, St. Martin's Press (1995).

³³ Kelly, G. A.: *The Psychology of Personal Constructs*; Norton, New York (1955).

a bottom-up process simply because these measurements must make sense to the people who do the measurement and be understood by those who are to be measured. The discussions involved in developing indicators often increases the awareness of what is really important in the *daily life* of people in a company.

Sixth, the balance sheet approach to intellectual capital is inherently a “snapshot in time” of the intellectual capital situation and does not provide information on the transformation of one intellectual capital category into another. Let us take the example of the company pictured in Figure 7. Figure 7 shows the intellectual capital situation at the end of four consecutive time periods using the balance sheet approach and expressed in indices to facilitate comparison.

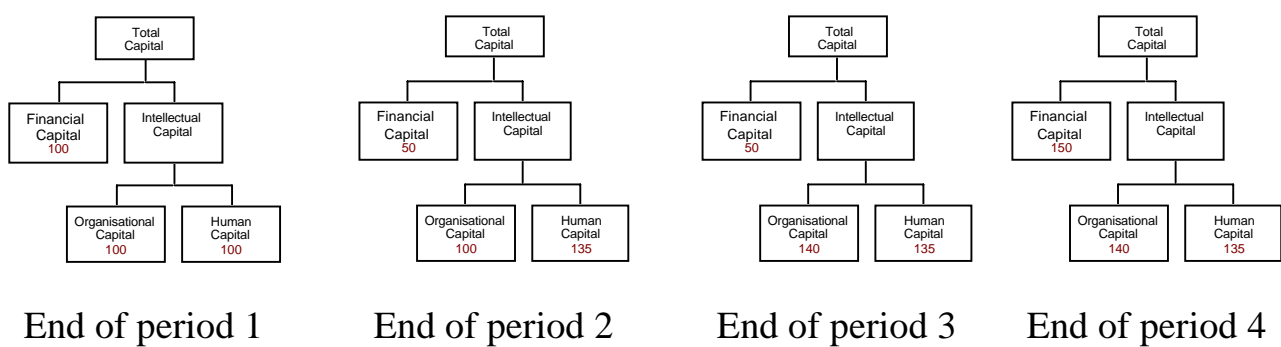


Figure 7: Intellectual capital balance sheets

In this example we can see the end results but we do not know the cause of these changes. In order to understand the cause of these changes we need to introduce an approach that takes into account the flows between different intellectual capital categories (a form of P&L approach) as illustrated in Figure 8.

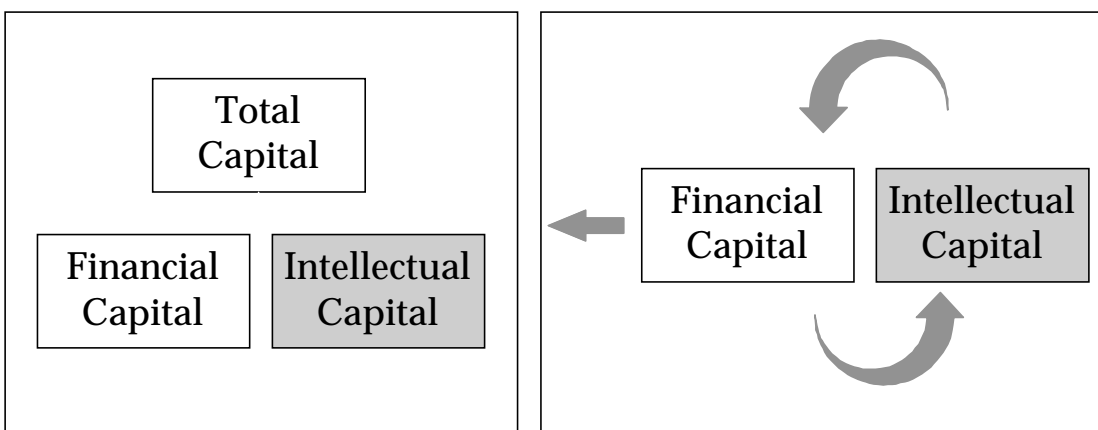


Figure 8: The balance sheet approach to intellectual capital (to the left) and the “P&L” approach to intellectual capital (to the right)

If we do this we will get the following, clearer picture of the events that actually take place in Figure 7 (see Figure 9).

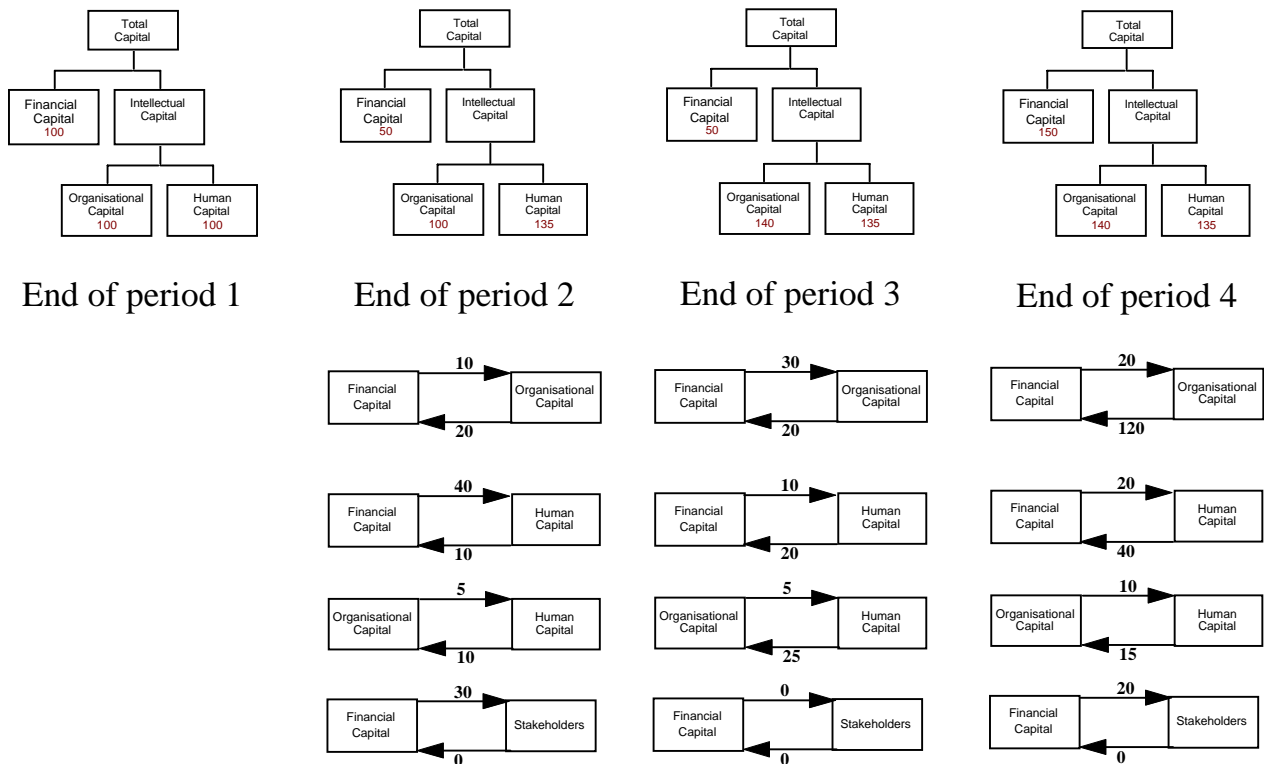


Figure 9: The balance sheet approach to intellectual capital (top) complemented with the “P&L” approach to intellectual capital (bottom)

It is important to note that only the financial flows (to and from financial capital) should add up. Organisational and human capital work in a completely different way, and investing in these two measures does not necessarily raise their level. IT systems can be bought, for example, but they might not be appropriate to the company and thus might not enhance the organisational capital.

With these two complementary approaches we can gain some new insights into the intellectual performance of this company like, for example that the return on financial investments from intellectual capital is higher than it seems. This type of efficiency measures can not be obtained unless both approaches are used, the same as with traditional accounting measures. Again analogue with the accounting world, efficiency measures facilitates managerial trade-off decisions.

In order to develop a P&L based approach to intellectual capital we believe that it is necessary to do two things. Firstly to develop suitable strategy specific indicators that can be consolidated into a given inter-intellectual-capital-flow category. Secondly to understand the firm specific time delays between cause and effect, or with reference to Figure 8 how long time before the arced arrow to the right generates the arced arrow to the left. Time delays are firm specific, strategy specific and dynamic, i.e. they change over time.

Seventh, there seem to be at least three complementary ways to derive indicators: (1) develop indicators grounded in the drivers of the vision and/or direction expressed; (2) develop indicators grounded in the intellectual capital categories selected; and (3) develop indicators grounded in inter-capital flows. There are many examples of the first type of indicators, which are company specific, in this article, since we based our study on these only. However, the second type of indicators surfaced as important in some interviews. An example is “Percentage of turnover attributable to products or services introduced during the last three years” as an indicator of Renewal and Development Capital and “Customer satisfaction index” as an indicator for Customer Capital. These indicators clearly belong to a group of generic indicators linked to specific intellectual capital categories. They are company independent, but their use and their ranking depends on the actual direction the company is taking.

The third type of indicators are used to measure the transformation of one intellectual capital category into another: as such, they are totally independent from their context, while their interpretation is once again strategy and context specific. An example of the third type is “Percentage of available man-hours spent on developing and maintaining an IT-based experience library” as an indicator for a flow from Human Capital to Structural Capital and “Cost savings due to use of an IT-based experience library in training new employees” as an indicator for a flow from Structural Capital to Human Capital.

Eighth, there are many analytical difficulties in handling indicators. Examples of these difficulties are:

Selecting the right indicators among the almost limitless number of potential ones.

Ranking the importance of indicators for a specific category.

Ensuring high precision for indicators

Establishing reliability of numerical values of indicators.

Tracing all sources of error or noise in the logic used to identify indicators, which may otherwise lead to erroneous or irrelevant indicators.

Tracking the high multicollinearity among many of the indicators, meaning that they are not reciprocally independent. This can be exemplified with the relationship between indicators “market share” and “customer satisfaction” were a change in one will have an effect on the other: increased customer satisfaction generates higher market share and increased market share

generates lower customer satisfaction³⁴. This makes it difficult to insulate any form of critical path or cause-effect relationship.

Ninth, it seems to us that any intellectual capital model must be scaleable; it should make sense for large as well as small companies, and for organisations, parts of organisations as well as individuals. This scalability is a prerequisite for comparison between entities in the same framework. If the model is scaleable it means that it could be consolidated along the distinction tree of intellectual capital, leading to an overall intellectual capital index, analogous to the ROA of a DuPont model. Moreover, if two intellectual capital models within the same framework are consolidated to one level above the highest intellectual capital category for which indicators are used then the consolidated models may be compared. This approach may help companies to go beyond the initial benefit of a unique intellectual performance system, that of only benchmarking against oneself over time.

Tenth, to be *viable*, an intellectual capital system needs to be aligned with existing managerial processes. When this happens, the system, in itself, becomes a valuable part of the intellectual capital of the company.

The Next Step

You have just read the outcome of the first phase of our empirical study of intellectual capital. The next step is to pick up on some of the conclusions discussed above and investigate a larger sample of small companies. In fact, we are in the middle of analysing the data from a survey of some 500 small and medium sized companies from the same population. This will allow us to develop a dimension-free process model for the capturing, measuring and *managing* of intellectual performance in companies, and arrive at an overall, consolidated intellectual performance index, like Return on Intellectual Capital (ROIC).

³⁴ Anderson, E. W., C. Fornell and D. R. Lehmann: "Customer Satisfaction, Market Share and Profitability: Findings from Sweden"; *Journal of Marketing*, Vol 58, July, 53-66 (1994)

