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## Different Meanings of Intangible Assets and Knowledge

And their Implications for Management and Innovation

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**'Knowledge' and 'Culture': Organisational Intangibles and their Tangible Value**  
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# Different Meanings of Intangible Assets and Knowledge

## And their Implications for Management and Innovation

**Thomas Diefenbach**, Research Fellow, Centre for Human Resources & Change Management, Open University Business School, The Open University, United Kingdom

### Abstract

*'Intangible assets', 'knowledge' and other similar terms (together: 'non-tangible assets') are being widely used in several approaches in business studies and other social sciences. Non-tangible assets can be defined very differently and, hence, have very different meanings. In this sense, the objects of reasoning as well as the implications for their management and innovation are also very different. In this paper, the main definitions and meanings of the terms most commonly used in the wide area of knowledge management, their embeddedness in different strands and modes of reasoning are being investigated and discussed. Special attention is drawn to their different, positive as well as negative implications for the management of 'non-tangible assets' and to how innovation consequently is understood.*

**Keywords:** Intangible assets, Knowledge, Intellectual Capital, Capabilities, Knowledge management, Performance measurement, Innovation

### On the Search for Intangible Assets and Knowledge

Based on earlier approaches (Polanyi 1958, Granovetter 1973, Wernerfelt 1984, Itami/Roehl 1987, Sveiby/Lloyd 1987), attempts to identify, understand, and manage non-tangible assets of business organisations came up especially in the early 90s (Prahalad / Hamel 1990, Nonaka 1991, Barney 1991, Grant 1991, Kaplan / Norton 1992) and have intensified since then. Such business-oriented approaches with terms like intangible assets, data, information, knowledge, intellectual capital, value drivers, or capabilities in the centre of their reasoning cope with the same main problems, particularly:

1. How can one define and identify, assess and measure (some) non-tangible assets of and between organisations?
2. What are the implications for the management and long-term development of these assets and the consequences for people and organisations?

Irrespective, or even because of numerous approaches there is still no clarity or consensus about most definitions and criteria for these non-tangible assets, and their meaning and identification as different types (Gröjer, 2001, p. 698). The provision of several examples, as interesting and as helpful as this might be for gaining new insights, is not sufficient for a systematic investigation into the problems of their identification, management and development. The more examples provided, the less clear becomes the 'object of reasoning'. Whether or not one commonly accepted definition, set of criteria

and meaning of non-tangible assets are possible or desirable might be questionable. However, since these terms are tools to better understand and manage organisations and their business, there is a need to identify as clearly as possible the different definitions, criteria and meanings of these terms, as well as their implications for management and of innovation.

In this paper it will be demonstrated that there are very different schools of thoughts coping with non-tangible assets. They use different definitions, have different focal points and hence, lead to different insights. In order to enable a close comparison of these strands and their implications the following sections are structured alike. Each section will cope with one approach. In part a) of each section, the main idea and central term(s) of non-tangible assets as well as their meaning(s) will be described. In part b) the strengths and weaknesses of the approach and its central term(s) will be discussed in detail as well as their implications for management and innovation.

In the second section it will be investigated how *intangible assets* are being understood in *financial accounting*. It will be shown that precise criteria provided by financial standards and statements have some advantages. At the same time they lead to a very narrow understanding of these assets, their management and long-term development. After this, in the third section it will be referred to *information and communication technologies (ICT)* - and how they cope with *data, information, and explicit knowledge*. On the one hand, ICT-based systems have led to new dimensions and possibilities for coping with information. On the other hand, attention will be drawn to the fact that at present, there are more problems and open questions than



solutions as to how data and information can be managed, accessed and used efficiently. In the fourth section it will be investigated how *performance measurement* and strategic management systems (e.g. balanced scorecard) contribute to a new and different understanding of *intangible assets* and *intellectual capital*. However, since the great enthusiasm of the 1990s has died away, it will be argued that 'measurement fever' and 'figure-based' management do have their limits and imply many more problems for management and innovation than might have been realised so far. The fifth section copes with *knowledge* and *capabilities* stemming from several strands in *knowledge management*. Such terms do not only reflect the widest understanding of non-tangible assets, but also relate to learning, change and innovation, and imply new business models (e.g. 'learning organisation'). Nevertheless, at present this strand can perhaps be best described as 'under construction'. There is still a lack of precise definitions, criteria, classifications and theories as well as a common understanding of their relevance. Interestingly, at the same time there is a strong need for widening the knowledge-oriented perspective. Finally, the sixth section provides a systematic overview and some conclusions.

## **Intangible Assets from an Accounting Perspective**

### **Main Idea, Central Terms, and their Meaning**

In 1922 John Stuart, president of Quaker Oats Company, made the following statement (Cravens/Guilding 2001, p. 198): 'If this business were to be split up, I would be glad to take the brands, trademarks and goodwill, and you could have all the bricks and mortar - and I would fare better than you'. What he was interested in were these 'things' which are recognised from an accounting and investors' perspective as the difference between book and market value ('Tobin's Q' or 'market-to-book-ratio') and are capitalised as '*intangible assets*' and '*goodwill*'.<sup>1</sup>

As today's economy and business become more and more immaterial (Gröjer 2001, p. 695), knowledge- and service-oriented there has been much effort in financial accounting to cope with these trends. International accounting standards on intangible assets were released recently (IAS 38 2003), accompanied by concept statements and statements (e.g. FASB Statements No. 141 and 142), and attempts to cope with the voluntary disclosure of business information about unrecognised intangible

assets (FASB 2001b, 2003).<sup>2</sup> From a financial accounting perspective the main idea is to identify intangible assets a company possesses as precisely as possible. In this sense, according to paragraphs 7, 10, 13, 19 IAS 38 intangible assets are defined as follows:

1. Non-monetary asset without physical substance
2. Identifiable (it can clearly be distinguished from goodwill)
3. Controlled by an enterprise as a result of past events (the enterprise has the power to obtain the future economic benefits flowing from the underlying resource and can also restrict the access of others to those benefits)
4. Held for use in the production or supply of goods or services, for rental to others, or for administrative purposes
5. From which future economic benefits are expected to flow to the enterprise
6. The costs of the asset can be measured reliably (e.g. market price, expenditures that can be directly attributed to R&D, benchmark, or fair value with reference to an active market)

According to these criteria, basically only intangible assets stemming from or covered by contractual/legal rights are identified as such and can be capitalised (e.g. agreements and contracts, rights, patents, copyrights, franchises. FASB 2001a, pp. 68-76). From an accounting perspective the identification, capitalisation and valuation of intangible assets might seem to be difficult.<sup>3</sup> However, from a more general perspective the definition and criteria formulated are the most precise in the whole field of non-tangible assets. Such narrow definitions have the great advantage that they lead to a relative clarity concerning the objects of reasoning, their understanding and assessment. And they are much appreciated and welcomed. Intangible assets captured by accounting standards in the balance sheet or disclosures provide crucial information for accountants, shareholders and investors, for their assessment of a company's

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<sup>2</sup>For extensive information on financial accounting standards, voluntary disclosure of intangible assets and related performance measurement models see FASB 2001a, 2001b, 2003, AAA Financial Accounting Standards Committee 2003, and Alexander/Britton/Jorisson 2003, pp. 216-231. In addition, many countries have developed their own standards for intangible assets (for example, concerning Germany and Switzerland see Herzog 1997, Deutsches Rechnungslegungs Standards Committee e.V. 2001 and Diefenbach/Vordank 2003).

<sup>3</sup>Gröjer, 2001, p. 696 draws attention to the fact that it took 10 years to release IAS 38.

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<sup>1</sup> In this section it will be mainly referred to as intangible assets.



values and their related decisions. In this sense, the narrow definition in financial accounting sometimes seems to be underestimated in the general rush of knowledge management.

### **Implications for Management and Innovation**

The above stated definition and criteria of intangible assets suggest a certain understanding of their management and innovation. In particular, it depends on whether or not relevant objects correspond with the criteria and are capitalised.

If objects are recognised as intangible assets according to financial accounting rules, they meet, in principle, two crucial requirements: 1) *economic aspects* ('held for business purpose', 'expected future economic benefits' and, most important, 'reliable measurement of their costs'<sup>4</sup>) and 2) *legal aspects* ('controlled by an enterprise', i.e. possession and power). Both aspects primarily draw managers' attention to legally protected and tradable intellectual property (mainly rights, patents, R&D-intensive products) and, to a lesser extent, to the field of R&D. In this sense, managers might be motivated to concentrate more on product innovation since they are provided with figures showing the value of such intangible assets.

Nonetheless, intangible assets defined in such a way are still understood and treated like *physical commodities*. Intellectual assets are digitally stored, owned by the organisation, devaluated over time and sometimes bought and sold. Managers care about them like merchants, and administrators. The generation care about the goods they are responsible for. The generation and use of intangible assets identified in such a way *is subject to a kind of short-term interest of exploitation as efficient and intense as possible*.<sup>5</sup> Such a traditional economic understanding does not necessarily lead to deeper concerns about how to treat and develop them in a long-term and sustainable manner. Hence, the capitalisation of intangible assets according to accounting standards might send false signals to managers. Furthermore, the capitalisation of some intangible assets may draw the attention away from the fact that these are 'merely' the legal and monetarised form of knowledge and other intangible assets. They only show the results, not the causes. They are only the tip of the iceberg, the final products but not the whole range of values which

enabled them. Most of a company's intangible assets do *not* meet the criteria and are, therefore, not captured in its balance sheet or financial statements (e.g. human, social and organisational capital, i.e. skills and knowledge, forms of co-operation, knowledge sharing and development, structures and processes and the like). But even if something is not taken into account, in a certain sense it is recognised and managed accordingly - as not being important, only of some instrumental use, easy to replace or as something which can be neglected at all. Therefore, a company's abilities to develop new products and processes, to be innovative and able to change does not necessarily appear on the management and innovation agenda. So, again, financial accounting does not provide sufficient information for decision-making.

It seems that there is only little room in double-entry bookkeeping to cope with the above mentioned problems. Since information on a company's assets and financial performance fulfil certain functions and, therefore, have to meet specific criteria and expectations, there are not many opportunities or necessities for a modification of the criteria concerning intangible assets. A balance sheet is a balance sheet, nothing more or less. However, it seems that accountants and investors are very aware of the disadvantages of such precise criteria and their sometimes delusive nature (FASB 2001b, p. 10, AAA Financial Accounting Standards Committee 2003, p. 181). The development of and discussions about voluntary disclosures indicates that there is a tendency in financial accounting to widen the understanding of what the values of a company are - namely quantitative *and* qualitative, financial *and* non financial assets. Such additional approaches draw the attention not only to the whole range of intangible assets, opportunities and risks, challenges and changes. Much more, they can be seen as an innovative approach in financial accounting and asset-oriented management.

### **Data, Information, and Knowledge from an Information and Communication Technologies (ICT) Perspective**

#### **Main Idea, Central Terms, and Their Meaning**

With the rise of information and communication technologies (ICT), coping with *data*, *information*, and *knowledge* has come increasingly onto the management agenda. The main idea of ICT-systems is to provide tools for acquisition, storage, use, sharing and development of data, information and knowledge in an electronic/digital form. ICT-based systems can be divided into two major areas: *a) storage and retrieval systems* (mainly internet, intranet, databases and data warehouse solutions, electronic libraries, yellow pages, document and

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<sup>4</sup> Paragraph 18 of FASB Concepts Statement No. 1 'Objectives of Financial Reporting by Business Enterprises' states this clearly (FASB 2001a, p. 74): 'The information provided by financial reporting is primarily financial in nature - it is generally quantified and expressed in units of money. Information that is to be formally incorporated in financial statements must be quantifiable in units of money.'

<sup>5</sup> There is empirical evidence that managers reduce R&D expenditures to meet short-term earnings targets (AAA Financial Accounting Standards Committee 2003, p. 180).

content management systems), and *b) communication systems* (mainly e-mail, groupware, on-line meeting systems, chat-rooms). Since such attempts mainly concentrate on 'technical' aspects (and refer to people and the social dimension only in a more abstract form as 'users' and 'general conditions') they might be called a 'narrow' understanding of knowledge management.

From an ICT-perspective, the distinction between data, information and knowledge is quite common. 'Data' can be defined as a single sign with a defined meaning, 'information' as several logically related data and 'knowledge' as the subjective and context-dependent understanding and sense-making of information.<sup>6</sup> From an ICT-perspective data and information must be transferable into digital format ('0' and '1'), must meet the standards of technology and traditional logic (some allow 'fuzzy logic'), and they must fit into the formats of computer languages, software programs and tools. Provided this is the case, there are no criteria or requirements whatsoever concerning their semantics and content.

### **Implications for Management and Innovation**

With the emergence of ICT-systems coping with data and information has reached a new dimension and quality. Particularly in the past 20 years such systems were not only themselves a field of revolutionary technological innovation but they also enabled managers and knowledge-workers to find and use new ways for co-operation, processes and problem solutions. Nowadays these are not only opportunities but necessities: A company could not organise its internal processes and external relations, people could not cope with the flood of incoming and outgoing information, and could not keep pace with the changes in their business environment without ICT-systems, at least not as fast and efficiently as possible and necessary. ICT-systems improve the availability, access to and use of data, information and explicit knowledge with regard to quantity, time and space dramatically. In this sense, attempts to cope with data, information and knowledge are essential (and have always been so for human beings, organisations, and societies). From a wide knowledge management perspective, ICT-systems and their supportive functions for management and contributions to innovation, sometimes might not be appreciated appropriately.

But there is also the other side of the coin. Because of the ease and/or necessity to generate, transmit and copy digital information they are available in large numbers. ICT-systems generate

automatically, and as intended, a steady flow and increase of data and information on a daily basis. There is already more information available, relating to every topic, than one can cope with – a development that has led to the well-known problem of *information overload*. For management this can easily lead to a 'paralysis by analysis' (Hopwood 1987, p. 224).

From an individual's perspective, this sheer amount of data and information might lead people to the conclusion that they have 'much more information than needed'. However, this is only 'half of the truth'. Since ICT-systems can easily create or turn into a jungle of information, there is a great need for further information and knowledge – namely, where to find the information needed, how to access it and how to decide which information is relevant and important. People often realise that they can't use sources and tools sufficiently as they don't know how and where. In this sense, there is also a *lack of crucial information*. This is a very basic paradox of ICT-systems; at the same time there is too much and too little information. Both contradicting tendencies of piling up ever more information and the perceived lack of information antagonise each other. At the same time as ICT-systems solve problems for the management of data and information they create a *vicious circle of information overload and lack of information*.

Storage and retrieval of data and information draw the attention to another problem. Many ICT-systems are mainly designed and used in order to cope with very large amounts of data and information, to cope with *quantities*. Of course, as mentioned above, this technology-driven innovation has led to new opportunities and is even a necessity in the information age. However, data, information and explicit knowledge are often still treated and managed according to traditional economic thinking. People regard data and information as digital 'things', as commodities which have to be piled up properly and possessed securely - *searching and saving as the modern forms of hunting and gathering*.

Such an understanding is based on the traditional economic paradigm of scarcity of goods. Of course, the idea may make sense - at least, sometimes and to a certain extent - when it is about physical commodities. However, digital goods are not scarce but abundant. *Abundance, not scarcity, is the economic problem of information societies!* Many economists and managers haven't yet understood this fully and still treat data and information with the old recipes for scarce material goods. ICT-based knowledge management is often still knowledge *administration*. Of course, in recent years programs and tools were developed which provide increasingly better opportunities to cope more 'intelligently' with large amounts of data and information (e.g. taxonomies, semantic networks,

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<sup>6</sup>This is only one possible definition of knowledge (see section 5 for further definitions). According to this definition it is controversial whether or not ICT-systems store and provide "knowledge".

intelligent agents). These might be seen as more examples of technological innovation in ICT and there is a great need for further development of such solutions. But from a management perspective it is not so much about technical solutions. There is a need for a new and different understanding of digital goods.

For example, ICT-systems are developed mainly with regard to technical possibilities. Individuality, context-dependency, and social embeddedness of human reasoning and actions are still not taken into account sufficiently. Sharing and using of data and information is still more technology-driven than people-oriented.<sup>7</sup> However, even with the most sophisticated ICT-systems, nothing is really managed (DeTienne/Jackson 2001, p. 5), even with all the necessary information available, problems are not solved, processes are not improved and new business models are not implemented.<sup>8</sup> The basic problem might be described as follows: There is the 'quantitative realm' of figures, data and information and there is the 'qualitative realm' where people individually and collectively make sense of them, i.e. gain knowledge and use them for decisions and actions. The crucial question is how they are or how they can be linked together. In this sense, there is still much room in ICT for further improvements and development in order to cope with data and information not only efficiently, but appropriately (Damodaran/Olphert 2000, p. 405).

## **Intangible Assets and Intellectual Capital from a Performance Measurement-Perspective**

### **Main idea, Central Terms, and Their Meaning**

'Intangible assets' (and/or 'intellectual capital') are being seen quite differently from a performance measurement perspective. The basic idea might be described best by Kaplan/Norton's dictum 'What you measure is what you get' (Kaplan/Norton 1992, p. 71). It is based on the assumption that 'quantifiable targets are generally more effective motivators of performance than targets based on non-quantifiable dimensions of performance' (Cravens/Guilding 2001, p. 205).

Several performance measurement systems were developed in the 1990s: Balanced Scorecard

(Kaplan/Norton 1992, 2001 a,b), EFQM Excellence Model (EFQM 2003 a,b), Intellectual Capital Index and Skandia Navigator (Nonaka 1991, Sveiby 1998, Edvinsson/Brünig 2000) – to mention only the most well-known systems.<sup>9</sup> The main ideas behind such attempts are to specify an organisation's strategy via multi-dimensional targets and, at the same time, to measure its performance. For this, financial and non-financial assets crucial for a company's performance are identified and measured in one framework by indicators. These aim to quantify qualitative values ('intangible assets') and to find cause-and-effect linkages between them and future financial performance ('performance and management circle', Mabey et al. 2002, p. 127). Although performance measurement systems can be very different, they have, in principle, the same criteria concerning non-financial intangible assets; they must be 1) identifiable by indicators and 2) quantitative measurable (in addition, some systems require that intangible assets must be measured in monetary units/financial dimension). Although they often use different terms and might have different categories they cope, more or less, with the same bundles of intangible assets (Collis 1994, p. 145, Sveiby 1998, pp. 28–31, Edvinsson/Brünig 2000, pp. 19–49, Johanson / Martensson / Skoog 2001, p. 433, Bontis 2001, p. 57, EFQM 2003a, pp. 5, 13–15):<sup>10</sup>

1. financial perspective: return-on-investment, cash flow
2. customer perspective: customer satisfaction, relations, reputation and loyalty, sales and delivery figures, market share, brand, trademarks, image, impact on society
3. internal perspective: structures, processes, routines, resources, technologies, databases, strategy, management, culture
4. employee perspective: human capital (qualification, experience, knowledge and skills), employee satisfaction, innovation and learning

In this sense, and in contrast to financial accounting, the terms 'intangible assets' and/or 'intellectual capital' are based on a much broader definition and understanding. They can comprise almost everything of non-physical and non-

<sup>7</sup> DeTienne/Jackson 2001, p. 5–6 draw the attention to this fact: 'However, the effective and successful sharing of the more elusive tacit knowledge will not usually come from a knowledge management team dictating what knowledge to share nor from well-constructed databases, but rather from cultivating a corporate culture that encourages sharing among employees and by facilitating communication throughout the organisation.'

<sup>8</sup> A 'techno-centric approach to knowledge management is not sufficient to achieve the necessary organizational culture and context which will promote organisational learning.' (Damodaran/Olphert 2000, 405).

<sup>9</sup> Furthermore, several large research projects were initiated by the European Commission (e.g. MAGIC, MERITUM, EPROS, PRISM) in order to investigate the possibilities of classification, measurement and reporting of intangible assets. In addition, every major management consultancy jumped on the bandwagon and developed their own or modified existing systems. For an overview of performance measurement systems see, for example, Neely 2002, for critical comments Leadbeater 1999 and Bontis 2001.

<sup>10</sup> The four perspectives mentioned in the text refer to the balanced scorecard-model but differ slightly (for an excellent critique on Kaplan/Norton's concept see Norreklit 2000 and Gröjer 2001, pp. 707–708).

monetary existence (Leadbeater 1999, Bontis 2000, Nabitz et al. 2001).

### **Implications for Management and Innovation**

Because of its multi-dimensionality, a strategic management system 'encourages managers to present measures of performance rather than discussing performance in abstract terms' (FASB 2001a, p. 53). Hence, taking such approaches results in new insights into, and increased recognition of the non-financial core capabilities and enablers of companies, highlighting their importance in an organisation's strategy, processes and performance. Strategic management systems help 'to look beyond traditional assumptions of what creates value for organisations.' (Bontis 2001, p. 47). In this respect, they may contribute a lot to innovation in managerial thinking.

Having said that, current understanding of performance measurement (e.g. Neely 2002) implies some problems for the management of intangible assets and innovation. On the one hand, there are many 'technical' problems related to the measurement of intangible assets, such as: problems of quantifying qualitative data; finding appropriate indicators and measures; linking different dimensions together; ill-defined and overlapping categories; giving proof of cause-and-effect linkages and the like (Norreklit 2000, Bontis 2001, Gröjer 2001). Such problems are 'in the nature of things' and can be dealt with to a certain extent and in a more or less practical manner.

But there are some problems of principle connected with strategic management systems. As mentioned, it is the intention of performance measurement to capture intangible assets crucial for an organisation's performance via quantitative indicators and measures. This can be seen in a wider socio-economic context. It seems that, similar to the 'efficiency-fever' during the days of Scientific Management and in the long tradition of rationalisation, *there is a general tendency to 'measure everything that can be measured and to make everything measurable that is not yet measurable!*' If it was felt that there is 'something' missing, the inherent logic of such systems suggests creating *more* quantitative indicators and measures. It is another sign, some might even say *sin* of our times to give quantitative data such great attention. This 'measurement fever' or rush for figures has consequences. Figures and quantitative assessment are not only in the centre of economic reasoning but have entered every aspect of public, social and private life. They become more and more dominant and one can hardly prove anything if one cannot provide figures or percentages.

In people's perceptions such indicators often reach the status of 'objective truth'.<sup>11</sup> From a performance measurement perspective, management and innovation are primarily understood as improving the figures and indicators, and perhaps the measurement system itself. Whether or not the 'real' issues, processes and actions are being improved at the same time, is not necessarily the case.

In addition, even with the most elaborated performance measurement systems, only *some* intangible assets, core capabilities or value drivers can be quantified and measured by 'hard' indicators. Quantitative indicators can measure, to a certain extent, some aspects of motivation and customer-orientation, for example, quality of communities of practice, internal co-operation and informal knowledge sharing, innovation. Hence, the performance radar is not really capturing them. Even worse, they might be totally neglected (Gröjer 2001). During the process of taking measures and quantitative-based reasoning, figures can become so dominant that it is easily forgotten that many pieces of crucial information are not in the framework. *Figure-based management and innovation have much closer limits than one might think.*

Furthermore, the nature of many intangible assets is not being taken fully into account. Many of these assets are not only *intangible*, but *vulnerable*. They are not machines or mechanical connections, which can be measured relatively easily, but human and social capital; as soon as you start to measure them, you influence them at the same time (Granovetter 1973, Bourdieu 1983, Nahapiet/Ghoshal 1998). Now, the idea of performance measurement is that intangible assets can be influenced in a positive manner (from a company's point of view), i.e. to increase their effectiveness and efficiency, performance and output in accordance with a company's strategy and goals. However, many intangible assets react highly critically to being measured and, hence, behave in ways which were not anticipated and might be negative (again, from a company's perspective). Take motivation for example: It is well-known that an intrinsic motivation is often stronger than an extrinsic one; that intrinsically motivated people do more and perform better. As soon as one would try to capture,

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<sup>11</sup> Of course, figures can be considered as 'objective' since mankind has agreed upon the decimal system and the positions and relations of numbers within it. But when they are related to 'real' issues their meaning depends on basic assumptions and decisions, for example: What targets are regarded as the most important and dominant ones? Which aspects shall be measured and, hence, will be taken into account? By which indicators real issues shall be measured? What are the re-relationships between targets and measures? Such systems and measurement in general are based on subjective assumptions, values and beliefs, and, most important, certain interests of groups and individuals. There is no objectivity whatsoever in strategic management and performance measure systems.

measure, and manage this motivation it would change into something different, would diminish in value and disappear. The same would happen to commitment, trust, creativity, communities of practice, internal co-operation and informal knowledge sharing, innovation, customer-orientation, leadership and so forth. In this sense, performance measurement influences peoples' perceptions, behaviour and actions more strongly, and often in a different way than it had been assumed and anticipated. It deeply cuts into corporate culture, how people are treated and respected, enabled and encouraged or impeded and de-motivated to co-operate, share and contribute to a company's performance. Of course, it might be possible to formulate referring indicators and to 'manage' such intangible assets accordingly, i.e. to manage through measurement, setting of numeric targets and a comparison of quantitative data. It might be that some people will follow that idea. But the majority will learn how to cope with such measures, e.g. to provide what is expected and to 'work to rules'. The bottom line is that the performance measurement system indicates an increase in performance and value whereas at the same time much more unrecognised performance and value *decreased* or might have been even destroyed! To put it in a nutshell: *There are many intangible assets of high value which can't be measured. And there are many intangible assets of high value which will be destroyed while trying to measure and manage them based on quantitative data. Innovation in performance measurement does not necessarily lead to improvements in management.*

The problem of figure-based decision-making increases further if one takes into account the relationship between strategic targets and the different perspectives of strategic management systems. On one hand, non-financial perspectives and measures, e.g. concerning customers, employees, and processes, imply a concentration on core capabilities, value drivers of a company and their long-term development. On the other hand, companies' top strategic targets are usually of a financial nature (maximisation of EBIT, ROI, Cash Flow, Shareholder Value<sup>12</sup>). Although all targets are being brought together in the same framework and adding different perspectives to the financial perspective has led to a wider and a more 'balanced' understanding, it is only financial performance which matters for most companies in the end. Accordingly, managers orientate and base their decisions primarily and/or finally on financial figures in order to meet the requirements of the budget. Since these are normally in the time frame

of a budget year, managers still tend to have a short-term orientation. Hence, concerning non-financial aspects there might be a strong tendency towards short-termism (Malina/Selto 2001, p. 51) and disregard of issues with long-term implications (strategic thinking, development of core capabilities, change and innovation).

Finally, coping only with figures might work for financial problems - provided the problem (and its causes) can be clearly restricted to this dimension. But it does not work for intangible assets and/or multi-dimensional problems. At best, figures provide *some* information on particular *aspects* of issues. But they provide little or no information on circumstances, reasons, causes, and implications. What managers and employees need for decision making is sufficiently meaningful information. But measures and meaning do not automatically go hand in hand (Alvesson/Kaerremann 2001). Sense-making and judgment are based on further and other information. Assessment, sense- and decision-making is eventually based on *estimation*, not *calculation*. In this sense, performance measurement is not about trying to quantify anything that seems to be of value. Identification and valuation of many intangible assets do not necessarily mean to quantify them or even to transfer them into a financial or monetary dimension. The challenge for management, therefore, is not to find *the* performance measurement system which transforms a company into a sophisticated high-tech machine controlled through quantitative data, but to identify as clearly as possible the *limits* to which measurement makes sense – and to keep an eye, or even both eyes, on all those valuable aspects of an organisation which slip through the net of quantitative performance measurement, and would be better not captured by it.

## **Knowledge and Capabilities in Knowledge Management in Resource Based View**

### **Main Idea, Central Terms, and Their Meaning**

In the 1980s it became widely accepted and finally clear that societies, economies, and organisations are not only based on natural resources, bricks and mortar, industry or even services, but that there is something more basic. The term 'information society' gave the first idea, although directed more towards the emerging information and communication technologies. An even broader understanding was formulated by Nonaka 1991, p. 96: 'In an economy where the only certainty is uncertainty, the one sure source of lasting competitive advantage is knowledge.' *Knowledge* or *capabilities* are regarded as '*the*' value-drivers of

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<sup>12</sup> For example, Kaplan/Norton 2001a, pp. 92 and 96 argue strongly against stakeholder scorecards and for an overall goal in the sense of shareholder value.

organisational performance (De Gregori 1987, p. 1243, Prahalad/Hamel 1990, p. 81 and 82, Nahapiet/Ghoshal 1998, p. 242, Teece 1998, p. 71).

Major strands can be seen in knowledge-oriented approaches (Polanyi 1958, Nonaka/Takeuchi 1995, Teece 1998, Sveiby 1998) and resource based view (Wernerfelt 1984, Prahalad / Hamel 1990, Barney 1991, Grant 1991). Although anything but one coherent theory, in this paper such approaches will all be termed as 'knowledge management'.<sup>13</sup> Generally speaking, this strand copes with the whole range of individual and collective acquisition, creation, codification, storage, use, dissemination, transfer, sharing and development of knowledge.<sup>14</sup> In the field of business studies<sup>15</sup> 'knowledge' is usually a very general term, its definitions uncountable;<sup>16</sup> 'there are almost as many definitions of organisational capabilities as there are authors on the subject' (Collis 1994, p. 144-145). Perhaps a good general definition can be seen in knowledge as 'justified true belief' (Nonaka 1994, 15), 'personalised information' (Alavi/Leidner 2001, p. 109) respectively. In this sense, Polanyi's distinction between tacit and explicit knowledge<sup>17</sup> (Polanyi 1958) is crucial for many knowledge-oriented approaches. Besides this, there seem to be no widely used definition or generally accepted criteria clarifying what knowledge is. Much more, by now there had been only few attempts to classify knowledge/intangible resources systematically.<sup>18</sup> One suggestion for identifying and classifying intangible assets systematically might be as follows (Diefenbach 2005):

1. *human capital*: tacit knowledge and individual competence for organising oneself and for (inter-) acting within or with one's environment
2. *social capital*: interpersonal relations and the aspects resulting from such relations for which there is no external reason (e.g. contractual or legal claim, social position)

<sup>13</sup> In addition, there are approaches which differentiate between 'knowledge management' and 'managing knowledge'. Because of limited space we won't cope with this issue.

<sup>14</sup> Approaches based on the resource-based view concentrate only on resources which provide a sustained competitive advantage (Wright/McMahan/McWilliams 1994, p. 303 – 304 summarized the criteria formulated by Barney 1991, p. 105 – 109: '1) the resource must add positive value to the firm; 2) the resource must be unique or rare among current or potential competitors; 3) the resource must be imperfectly imitable; and 4) the resource cannot be substituted with another resource by competing firms.').

<sup>15</sup> It is seldom referred to definitions of 'knowledge' in science of science, philosophy, or psychology.

<sup>16</sup> For different perspectives on and definitions of knowledge see Alavi/Leidner 2001, p. 109-112.

<sup>17</sup> Tacit knowledge can be described as 'rooted in action, experience, and involvement in a specific context', explicit knowledge as 'articulated, codified, and communicated in symbolic form and/or natural language' (both Alavi/Leidner 2001, p. 110).

<sup>18</sup> Holsapple/Joshi 2002, p. 52-55 delivered one of the most comprehensive, although more pragmatic than systematic classification of knowledge and intangible resource by now.

3. *cultural capital*: official and informal norms, values and rules of a particular community (dyad, family, peer group, organisation, society, nation, people, mankind)
4. *statutory capital*: statutory capital describes person-independent positions in a social system and exclusive possibilities and responsibilities arising from or linked to such a position or role
5. *informational and legal capital*: any explicit meaning of something that can be identified and demarcated individually without being necessarily internalized, shared or understood by one or more individuals
6. *imbedded capital*: non-separable explicit knowledge embedded either in immaterial structures and processes or material goods (,artefacts').

### Implications for Management and Innovation

With the concentration on knowledge it again became clear that organisations are 'social events' and that business processes and outcomes are consequences of human knowledge, people's skills, decisions and actions. Knowledge management is about *people*, how *they* gain, use, and share knowledge. It draws attention to the fact that data and information have value, make sense and might be useful for particular purposes *only from a human perspective*. Following this idea it is not only about the possession of crucial knowledge, but to what extent people and organisations are able to adopt, integrate, use and develop it constantly. This idea relates to other strands:

Firstly, the use and development of knowledge implies *learning*. Again, it is about people. Simon (1991, p. 125) laid stress on the fact that 'all learning takes place inside individual human heads; an organisation learns in only two ways: (a) by learning of its members, or (b) by ingesting new members who have knowledge the organisation didn't previously have'. Hence, management of people is seen now as a strategic approach (Sisson/Storey 2002, p. 33).

Secondly, developing knowledge and learning might be seen not only as an end in themselves, but also as a tool for coping better with current issues or trying new ideas. Both aspects consequently refer to the idea of *innovation* as 'a process in which the organisation creates and defines problems and then actively develops new knowledge to solve them' (Nonaka 1994, 14). In this sense, it is not 'only' about innovation of products, technology, processes or structures, but about individuals' as well as organisations' ability to innovate and to develop their appropriate competencies and capabilities (especially training and development of employees, Sisson/Storey 2002, pp.143-167). It is 'an organisation-wide process of focused and sustained

incremental innovation' (Bessant / Francis 1999, p. 1106), referring to continuous improvement and/or change of the very basic aspects of organisations, i.e. people's understanding and the way they reason, act and work together.

And thirdly, seeing knowledge management in close connection to double-loop learning leads to the search for formulating and implementing new business models, to the ideas of institutionalised *change*, *organisational learning* and a *learning organisation* (for example Barker/Camarata 1998, King 2001, Mabey et al. 2002, pp. 303-327, Roper/Pettit 2002).

In this sense, knowledge management and corresponding approaches definitely have contributed to, and improved managers' understanding of the 'core capabilities' and 'value drivers' of their companies (Holsapple/Joshi 2002) as well as their sense for change and innovation. Knowledge management has led not only to new insights (e.g. Lee/Choi 2003, Sharp 2003) but is seen by many as a new and fruitful paradigm (Nahapiet/Ghoshal 1998).

However, knowledge-oriented approaches may promise more than they can deliver at the moment. Very often only *examples* of knowledge are being provided<sup>19</sup>, and clear definitions, precise criteria and classifications only exceptionally.<sup>20</sup> What exactly is meant by 'knowledge' is far from clear (Turner/Jackson-Cox 2002); the term is often used as a mere buzzword. 'Researchers seem to have difficulties in saying something distinct about the specific content of the knowledge that presumably is so central to their work' (Alvesson/Kaerremann 2001, p. 998). Knowledge-based models and reasoning about management, how to be competitive and innovative on a knowledge basis often remain somehow vague and too general to be of great use.

And there is an interesting anomaly in this approach. Although knowledge is mainly understood in a very general sense, it seems that knowledge-oriented reasoning concentrates and narrows more and more on commercially useful knowledge that works (As Demarest 1997, p. 375).<sup>21</sup> In addition, knowledge is regarded relatively unproblematic. The idea of current knowledge management seems to be deeply rooted in utilitarianism, pragmatism and result-orientation

(see, for example, Soon et al. 2002). Of course, there is nothing wrong with being pragmatic and result-oriented – especially when it is about organisations since they are tools for specific purposes. Having said this it seems that because of an uncritical utility interest, current trends in knowledge management comprise some problematic aspects such as:

### Gaps in Knowledge Management

With the concentration mainly on those intangible assets which are commonly regarded as of direct use and utility for a company's performance, other crucial aspects and sources of knowledge are being underestimated or neglected:

1. 'Human capital' is mainly understood as formal qualifications and work experience (Rosen 1996) but it is somehow forgotten that people possess a huge range of very different skills and are able to do much more than work more efficiently according to their tasks and by request / command.
2. 'Social capital' ('weak ties' (Granovetter 1973), interpersonal relations, obligations and expectations, information channels, and social norms (Coleman 1988, p. 95, 102 – 105) or 'networks of relationships' (Bourdieu 1983, Nahapiet/Ghoshal 1998, p. 243, Gant/Ichniowski/Shaw 2002, p. 296) is mainly unconsidered in knowledge management. Work on social capital seems to be carried out in isolation from other issues. This is not very helpful since social capital is often a very crucial aspect of the acquisition, use and dissemination of knowledge, especially since organisations are social communities (Staples et al. 2001, p. 3).<sup>22</sup>
3. The same is true, perhaps even to a greater extent, for psychological aspects of knowledge. Although 'tacit' knowledge is widely cited it appears that in knowledge management literature, very few attempts have been made to investigate the aspects relevant for tacit knowledge.<sup>23</sup>

### Linear Understanding of the Management of Knowledge

That some aspects of knowledge are not being taken into account sufficiently might find further explanation in the fact that many managerial models and theories tend to describe organisational issues as rational and linear. From a knowledge-oriented

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<sup>19</sup> For example, Wernerfelt 1984, p. 172, Prahalad/Hamel 1990, p. 81-82, Barney 1991, p. 101, Teece 1998, p. 71, Funk 2003, p. 67.

<sup>20</sup> In sociological approaches (Granovetter 1973, Bourdieu 1983, Coleman 1988) and 'Scandinavian' models clearer definitions and/or even well-defined categories are being provided (Collis 1994, p. 145, Sveiby 1998, p. 28-31, Edvinsson/Brüning 2000, p. 19-49, Johanson/Martensson/Skoog 2001, p. 433).

<sup>21</sup> Demarest 1997, p. 377 defines commercial knowledge as 'an explicitly developed and managed network of imperatives [strategy, goals, plans], patterns [models of procedures], rules [guidelines] and scripts [set of rules], embodied in some aspect of the firm, and distributed throughout the firm, that creates marketplace performance.'

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<sup>22</sup> Mueller 1996, p. 757 draws the attention to the fact that „what is truly valuable is the 'social architecture' that results from ongoing skill formation activities, forms of spontaneous co-operation, the tacit knowledge ...”.

<sup>23</sup> Johanson et al. 2001, p. 415 draw the attention to the fact that unique drivers for a firm's performance „might be feelings, values, beliefs, relationships, fear and dreams.”

perspective, knowledge and innovation are often being regarded as 'things' and processes which can be organised logically and neatly. It seems that the same false assumptions which have influenced some of the main traditional theories on management, strategy, decision-making processes, and organisational behaviour again play a central role in many current knowledge management models. In contrast, there are good reasons to believe that the issues are more complicated. As Alvesson / Kaerremann 2001, p. 1012 mentioned: 'Knowledge is a concept far too loose, ambiguous, and rich, and pointing in far too many directions simultaneously to be neatly organised, co-ordinated, and controlled.' In addition, Salaman/Storey 2002 draw attention to the important fact that organisational learning, innovation and change are not only related to 'objective' structures and processes but also to different perceptions, understandings and subjective business models and theories. This is especially true for managers and their roles. Again, concerning management of knowledge and innovation, sometimes very rational and linear functions are being ascribed to managers. For example, a manager 'sets the direction, provides the field of interaction, selects the participants in the field, establishes the guidelines and deadlines for projects, and supports the innovation process' (Nonaka, 1994, p. 31). This may describe some of the responsibilities of managers to a certain extent. But it does not provide an appropriate basis to investigate managerial and organisational issues. There is a much wider picture needed that addresses and includes, for example, the individual, socio-institutional context as well as critical theory in management and knowledge management.

### Functional and Uncritical Understanding of Knowledge

As mentioned above, in traditional knowledge management approaches knowledge and related issues are often seen as functional from the perspective of the organisation. However, organisations are, of course, social enterprises. In this sense, people might have shared vision and values but their views are not necessarily in line with the overall strategic objectives. Their interpretation of information, their knowledge and conclusions usually differ to a smaller or larger extent. Hence, knowledge 'is not necessarily functional, useful, and a generally good thing.' (Alvesson/Kaerremann 2001, p. 999). 'The favoured vocabulary – community, sharing, caring, nurturing social relations – is far from the conventional ideas of management as a bureaucratic phenomenon associated with hierarchy, formalisation, control and direction from above through 'rational' measures.' (Alvesson/Kaerremann 2001, p. 1006). *In this sense, taking a knowledge-oriented perspective seriously*

*suggests to take into account competing understandings and interpretations, contradicting perspectives, ideologies, and interests, struggles for power and primacy, dominance and leadership between individuals, within groups, organisations, and societies.*

### Conclusions

In the previous sections, some very different understandings of non-tangible assets were described and discussed. Although these are not categories in a methodological sense, but different strands overlapping and influencing each other some basic differences could be identified. Table 1 (see Appendix 1) provides an overview.<sup>24</sup>

Definitions cannot be right or wrong, they are settings and tools to identify and make sense of 'things'. They influence our understanding and how we cope with them - perhaps much more than we usually realize. In this sense, we managers should be aware at least of two aspects concerning the identification of non-tangible assets. One is that definitions and corresponding criteria identify only certain non-tangible assets and, at the same time, neglect others. Managers usually might have a good understanding which assets of their organization are being identified. They perhaps are not always aware of these non-tangible assets which are crucial for doing business but may not get the attention they deserve. And second, definitions set a framework in which reasoning takes place. Hence, they carry certain implications concerning management and innovation. One of the main insights might be that implications for management and innovation of non-tangible assets depend on how the terms are defined, by which criteria they are identified and being measured, and in which framework (of reasoning) they are set. Choosing and using specific definitions decide – to a certain extent - already the areas and directions in which further reasoning and actions will take place. Much more, people have, of course, different understandings and perceptions. Hence, especially within organizations there is not only a need to talk about issues but also how people perceive, define and interpret these. But whatever the differences between the several approaches might be, there is a strong tendency in all of them that non-tangible assets are being increasingly regarded as 'the' foundation and core of doing business. There are good reasons to believe that this is not a fad or fashion but part of a new era.

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<sup>24</sup> Earl 2001, p. 217 and King 2001, p. 13 provide similar overviews about different 'schools of management', 'learning organization strategies' respectively.



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**Appendix 1**

Table 1

**Main Approaches Concerning Intangible Assets and Knowledge in Business Studies**

<b>Approach</b>	<b>Financial Accounting</b>	<b>ICT-based Knowledge Management</b>	<b>Performance Measurement</b>	<b>Knowledge Management</b>
Terms	intangible assets (narrow understanding)	data, information, (explicit knowledge)	intangible assets (broad understanding), intellectual capital	knowledge, capabilities, value-drivers
main ideas	identification of intangible assets a company possess in legal terms and have a market or similar value	storage, retrieval and communication of data, information and explicit knowledge in digital / electronic form	identification and measurement of financial and non-financial aspects in one framework quantification of qualitative aspects finding cause-and-effect linkages between qualitative aspects and financial performance	whole range of individual and collective acquisition, creation, codification, storage, use, dissemination, transfer, sharing and development of knowledge focal point on people
criteria for the identification of non-tangible assets	non-monetary asset without physical substance controlled by the enterprise held for business purposes expected future economic benefits reliable measurement of the costs	syntax in accordance with traditional logic (some allow 'fuzzy logic') fitting into the formats of software programmes no criteria concerning content	Identifiable by indicators quantitative measurable (transferable into monetary / financial dimension)	no widely used or generally accepted criteria clarifying what knowledge is
measurement	monetary dimension (market price, costs or other financial assessment methods)	none	quantification in different dimensions	none
strengths of the approach for management and innovation	very precise criteria assessment of intangible assets is understandable by third parties	coping with large amounts of information independent from time and space new ways of co-operation and problem solving	new insights into, and increased recognition of the non-financial core capabilities of companies	use and development of knowledge lead to aspects of learning, to the ideas of change, innovation and new business models (e.g. 'learning organisation')
weaknesses and problems of the approach for management and innovation	attention is drawn to legally protected and tradable intellectual property short-term interest of exploitation no long-term interest in the development of a company's	information overload lack of crucial information piling up and administration of information similar to the treatment of physical commodities	measurement fever/rush for figures figure-based management and innovation have limits many intangible assets are vulnerable, some respond	lack of clear definitions, precise criteria and classifications of knowledge concentration on those intangible assets which are of direct use and utility

<b>Approach</b>	<b>Financial Accounting</b>	<b>ICT-based Knowledge Management</b>	<b>Performance Measurement</b>	<b>Knowledge Management</b>
	<p>of a company's capabilities for innovation</p> <p>most intangible assets are not being captured and, hence, neglected</p>	<p>commodities</p> <p>isolated sense-making</p>	<p>some respond negatively to being measured</p> <p>measures and meaning do not automatically go hand in hand</p> <p>lack of reasons for, explanations and understanding of the 'real events'</p> <p>short-term orientation because of dominance of budget-thinking / shareholder value-orientation</p>	<p>for a company's performance (utilitarianism and pragmatism)</p> <p>gaps: human and social capital as well as psychological aspects of knowledge are not being taken into account sufficiently</p> <p>linear, functional and uncritical understanding of the management of knowledge</p>
possible further developments / needs	<p>need to lay more stress on additional (qualitative) information provided by voluntary disclosures</p> <p>attention might be more drawn to enablers for long-term development</p>	<p>tools for coping 'intelligently' with information (e.g. taxonomies, semantic networks, intelligent agents)</p> <p>need for a new understanding of information as abundant goods</p>	<p>need for identification of the limits to which (performance) measurement makes sense as clearly and precisely as possible</p>	<p>need for clarification of terms, criteria, taxonomies</p> <p>need for widening the perspective</p> <p>implications for new business models</p>