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Are Management Accountants Equipped to Deal with Intellectual Capital?

1 Introduction

Intellectual capital (IC) consists of the non-physical sources of value related to employees' capabilities, organisations' resources and way of operating and the relationships with their stakeholders (Lönnqvist, 2004). It is considered important for the competitiveness of many companies regardless of the industry. For example, Johnson and Kaplan (1987) have suggested already in the late 1980s that IC might be the most important thing regarding the performance of a company. It is to say, e.g., that knowledge and skills of employees, customer relationships and the culture of the organisation are, in addition to physical resources such as facilities and equipment, the key determinants of the success of most companies.

According to Lev (2001), an organisation's "intangible assets are non-physical sources of value (claims to future benefits) generated by innovation (discovery), unique organisational designs, or human resource practices". Intangible assets and IC can be considered synonyms. Examples of different types of IC are presented in Table 1.

A key purpose of management accounting is to provide the management with relevant information for decision-making. While IC is important and should thus be managed, we can question whether management accounting is equipped with suitable tools and methodologies for providing information about it. Because IC is immaterial and non-physical by nature, measuring and managing it is difficult. Therefore,

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TABLE 1. Intellectual capital of an organisation (Lönnqvist et al., 2005).

Human Assets	Relational Assets	Structural Assets
– Attitude	– Brands	– Culture and values
– Competencies	– Contracts and arrangements	– Documented information
– Education	– Image	– Immaterial properties
– Knowledge	– Relationships with customers and other stakeholders	– Processes and systems
– Personal properties (e.g. creativity and entrepreneurship)		– Working atmosphere

management accounting for IC is a challenging task.

This paper questions whether management accounting is equipped with suitable tools and methodologies for providing information about IC. The methods and frameworks presently available for the management accounting of IC are evaluated in relation to the various tasks that management accounting is commonly concerned with. For example, management accounting tools may be needed to evaluate investments in IC, to measure IC, to determine the monetary value of IC and to report on IC to stakeholders. The paper covers various management tools such as individual measures and measurement systems, valuation methods and reporting frameworks for IC. The evaluation is based on reviewing existing literature.

A classification of management accounting tools for different managerial purposes related to IC will be presented as a result of this paper. The methods chosen are representative, quite well-known and rather widely utilised. They do not represent merely traditional management accounting methods. Instead, a part of the methods has origins in other fields of research, such as intellectual capital and knowledge management. This classification is proposed for use as a guideline when selecting a suitable management accounting methodology for a particular purpose. In addition, this study provides knowledge of the current state of the management accounting of IC and identifies areas requiring further improvement.

2 On the purpose of management accounting

The role of management accounting continues to undergo changes. Scorecard keeping has been one of management accounting's traditional roles. However, at present, management accountants are no longer only scorekeepers of past performance (Kaplan and Atkinson, 1998). Management accounting should meet the information requirements in today's global, technology-driven world and at the same time management accountant's role has transformed from ″score-keeper″ to ″business support″ (Burns and Vaivio, 2001).

Management accounting information serves several major roles in organisations. The major objective of management accounting is to provide information for decision-making (see. e.g. Horngren, 2004; Kaplan and Atkinson, 1998; Laitinen, 2003; Neilimo and Uusi-Rauva, 1997). Kaplan and Atkinson (1998) emphasise that management accounting should be designed to help decision making *within* the firm.

According to Kaplan and Atkinson (1998),

management accounting should support managers in their planning and control activities. Similarly, Drury (1992) and Burch (1994) identify two objectives for management accounting: planning or decision-making and control (see e.g. Kulmala, 2003). Radebaugh and Gray (1997) use somewhat different approach. They state that management accounting should provide information for two purposes. Firstly, routine internal reporting should provide information regarding cost management and the planning and controlling of operations. Secondly, non-routine internal reporting should provide information for strategic and tactical decisions (e.g. pricing, investments and long-range plans).

At its best, management accounting supports many different activities in an organisation, for example, it enhances decision making, guides strategy development and evaluates existing strategies, contribution and performance (Kaplan and Atkinson, 1998). Atkinson et al. (1997) argue that management accounting information should also help organisations change, that is, to recognise the need for initiating change and suggest the appropriate response to an environmental change as well as to avoid inhibiting change. To fulfil different tasks effectively, the information provided needs to be appropriate. In other words, information should be usable, i.e. presented in the right form, and reliable. In addition, the information must be available in good time before the decision making. (See e.g. Laitinen, 2003)

3 Challenges in accounting for intellectual capital

Almost twenty years ago Johnson and Kaplan (1987) published their book "Relevance Lost: The Rise and Fall of Management Accounting" in which they criticised the managerial relevance of the management accounting tools used at that time. The current accounting tools were considered to provide inadequate information about the non-financial aspects of an organisation's performance. Johnson and Kaplan (1987) suggested that because of overemphasis on quarterly planning management accounting was somewhat unable to provide information about the actual performance of a company. It also guided management accounting to focus too much on reaching short-range financial performance. That is to say, performance measures concentrating too heavily on short-range financial performance produced misleading information as well as information that was not considered relevant for improving operations. Johnson and Kaplan suggested that instead of concentrating merely on monthly or quarterly based financial measures, non-financial measures should also be used. Since then management accounting has evolved and there is nowadays a lot of experiences on accounting for non-financial factors, e.g. product quality, delivery accuracy (see e.g. Stivers et al., 1998; Vaivio, 2001).

Nowadays, IC is considered an important factor of most companies' success. Especially in knowledge-intensive organisations performance is strongly based on IC. (see e.g. Lönnqvist et al., 2005; Stewart, 2001; Sveiby, 1997) While most managers are aware of the importance of their organisation's IC they lack means for obtaining information about it (Dion, 2000; Neely et al., 2002; Nordika, 2000). When we consider the roles of management accounting described in the previous chapter, it would seem natural that management accounting should be able to provide the information needed also in the case of IC. However, it seems that manage-

ment accounting is lacking tools and procedures that would provide managers with important information regarding a key aspect of an organisation's performance. Managers are thus forced to run their businesses without knowledge about the key resources of their organisation. This situation resembles the situation described by Johnson and Kaplan twenty years ago. Therefore, we may question whether management accounting is again losing its relevance, at least when it comes to those companies for which IC is very important.

There are several reasons why IC is a challenging area for management accounting and accounting in general (see e.g. Abernethy et al., 2003). First, IC and the various intangible resources it consists of are non-physical and immaterial. These immaterial phenomena cannot usually be visually observed nor counted. Second, IC consists of a stock of intangible resources, e.g. brands and organisational culture, which are created over time. For example, organisation's image or the knowledge of employees increases (or decreases) over time without a clear link to any specific transaction, e.g. investment or purchase. As accounting is strongly based on transactions of different items, observing the changes in IC is challenging. Third, determining the monetary value of IC is problematic because it is difficult to find out how a certain specific intangible asset contributes to a company's earnings. In addition, contrary to many tangible assets, e.g., equipment and land, there is usually no market for trading IC (with the exception of immaterial properties such as patents).

Despite the problems described above, there are some management accounting methods, e.g. balanced performance measurement systems, which may be appropriate in the context of IC. For example, some performance measures of non-financial factors (e.g. employee competencies) can clearly be linked to IC. In addition, many specific tools for measuring and managing IC have been developed during recent years. Calculated Intangible Value and Value Added Intellectual Coefficient are examples of such methods. Many of the tools have also been developed within other disciplines than management accounting, e.g. in the fields of knowledge management and IC (or intangible assets) management.

4 Needs for management accounting information about IC

In the following section specific managerial situations requiring information about IC are discussed. The four topics discussed include 1) the measurement and management of performance, 2) supporting IC related investment decisions, 3) determination of monetary value of an organisation's IC and 4) reporting on IC to stakeholders. The list is not exhaustive. However, the situations discussed include some of the key areas where managers need information about IC.

4.1 Measurement and management of performance

In order to manage an organisation's performance, managers and employees alike need information about various factors that are considered important. Management accounting and performance measurement in particular aim to provide this information. In addition to just providing information, performance measurement can be used to motivate, emphasise the value of the factor that is measured, direct employees to do the right things, clarify targets, create com-

petition and make it possible to use result-based compensation (Uusi-Rauva, 1996).

Traditionally, performance of a company has been viewed through financial issues (e.g. revenues or profits) and also through factors related to its operational activities (e.g. quality, productivity or effectiveness). Nowadays, performance of an organisation is considered a wider concept. Performance is approached from different perspectives, e.g. using financial, customer, internal process or learning and growth perspectives (Kaplan and Norton, 1996). In addition, other stakeholders can be taken into account when measuring and managing performance (see e.g. Neely and Adams, 2000). If the factors considered important determinants of an organisation's performance are related to IC, management accounting should be able to provide tools for measuring and managing their performance.

Performance measures of financial and operational factors are usually quantitative and based on objective data. Measuring these factors is usually not too difficult because the data can often be obtained quite easily. The factors related to IC, also termed intangible success factors, are more difficult to measure because they are immaterial by nature and there may not be any information systems in the organisation that would capture these phenomena (Lönnqvist, 2004). Therefore, many of the measures related to IC are based on subjective assessments (e.g. customer and job satisfaction surveys) and the information is commonly in qualitative form.

At least the following criteria can be identified for the management accounting tools that are to be used in managing the performance of factors related to IC. First, the performance measurement system should be able to capture factors related to IC. Second, the measurement system should be applicable at different organisational levels. For example, measuring IC in a large organisation using a single indicator or few indicators at the company level may not provide information that is detailed enough in order to be considered relevant in improving performance at lower organisational levels. Third, the measurement system should provide information that is relevant in the context of a specific organisation. For example, certain measures, e.g. those related to patents, may be important for some organisations but irrelevant for others.

4.2 Support investment decisions

The importance of making sound investment decisions cannot be underestimated. A right decision enhances a company's competitive advantage; a poor one erodes it. (Adler, 2000) Investments can be divided into several types, for example, capacity, new, quality improving, productivity, environmental, replacement, maintenance, and research and development investments (Sandberg and Söderström, 2003). The greatest difficulty for decision makers is to form an adequate, objective basis for the decision. The degree to which decision support is used for investment varies, e.g., according to the size of the investment. However, the quality of the decision foundation is always important (Sandberg and Söderström, 2003). Advantages of the investment should be compared to other alternatives and the options should be evaluated from different point of views using, e.g., financial, operational and environmental perspectives (see e.g. Epstein and Roy, 1997).

Management accounting provides information that supports investment decisions. Despite the fact that traditional approaches for

investment appraisal (e.g. Return on Investment (ROI), Net Present Value (NPV) or Payback Period) are commonly used, they have been criticised for number of grounds. For example, they are unable to account for the non-financial benefits that characterise the investment. R&D investments, e.g., may in addition to creating new products and related revenues lead to improved competencies of employees. Another problem is their short-time focus, since some investments take many years. (Adler, 2000)

Investing in IC is an important issue for any organisation. Examples of investing in IC include research and development, increasing customer loyalty, improving brand recognition and developing the competencies of employees. It is difficult to see that any organisation could be able to compete in the long run without making investments into these kinds of factors. However, it is more difficult to estimate the payback of these investments than those made on physical assets, e.g. a new production line. It is uncertain how, when and where the investments in IC will create profits.

The uncertainties mentioned above are related to the nature of the IC investments. Investment in, e.g., employee competencies does not necessarily affect *directly* the profitability of a company. It may first improve customer satisfaction and loyalty and may later lead to improved profits. Thus, the relationship is indirect and time lag between the initial investment and the expected improvement in, e.g., profitability is uncertain. There is also a risk that the expected financial results are not realised. In some cases, it would be useful to be able to evaluate also the effects of investments in other factors (e.g. customer satisfaction and loyalty) than financial issues. Further, the effects of improving employee competencies (or other types of IC) do not solely benefit the company making the investment. Also other stakeholders may benefit from these improved competencies. For example, another company may obtain these benefits if it is able to hire the employee. The effects of investments in IC may also benefit society in many ways, e.g. improve employment or create business opportunities for other companies. This situation is called the knowledge spillover effect (Abernethy et al., 2003).

Generally, it has been estimated that an investment in IC would create twice as much benefits to a company when compared to a similar investment on a physical asset (Abernethy et al., 2003). However, the benefits of investing in different intangible assets are likely to vary in different situations. In some case, it may be beneficial to invest in the competencies of employees while in some other case investing in research and development would be more profitable. It would be highly important to be able to determine which assets (e.g. employee education, patents, customer relations or brands) will create the biggest benefits in a particular case, i.e. to choose the optimal portfolio of investments in IC. In addition, it would be important to know what amount of investment on a particular asset would create optimal benefits.

4.3 Determination of monetary value of IC

There are two main ways for determining the value of a company: based on the company's financial statement (balance sheet) or based on its market value (stock market). Nowadays, the two values differ quite a lot (see e.g. Andriessen, 2004; Edvinsson and Malone, 1997). Market value is often much higher than book value. One explanation for the gap is the companies' IC, which is for the most part not included in

the financial statement. For example, the value of customer relationships, experiences of employees or organisational culture cannot be determined based on the financial statement. In order to understand and determine the real monetary value of a company, the value of both financial and IC related factors should be estimated. According to Kallunki and Niemelä (2004), the assessment should comprise three elements: strategic analysis, analysing financial statements and predicting future development. The problems described earlier related to measuring IC and evaluating investments in IC also affect the determination of the monetary value of IC. For example, in the case of IC the financial effects of investments (other than the cost) do not necessarily appear immediately or at all. Thus, the value of IC seems to be conditional, i.e. the monetary value is a result of utilising the assets.

The valuation of a company is necessary when a company or a part of it is being purchased. Especially in a knowledge-intensive organisation book value may represent only a small portion of its actual (or assumed) value. Those companies often have only a few physical assets while their competitiveness relies heavily on their IC. Therefore, they may be underestimated in the markets unless they can prove their actual worth, i.e. show the value of their IC. The ability to show the value of a company's IC may also help in acquiring external financing. (Bontis, 2003) Individual intangible assets may also need to be valuated because they constitute the value of the whole company's IC. In addition, determining the monetary value of individual intangible assets, e.g. patents or brands, may be needed in case they are sold separately. However, there is no market for most individual intangible assets, e.g. organisational culture or employee welfare.

The valuation of a company might be considered a task more in the scope of financial accounting, not management accounting. However, the valuation of IC consists of understanding many aspects of an organisation's performance that are non-financial and related to internal operations. Therefore, it can be considered a natural task for management accountants.

4.4 Reporting on IC to stakeholders

Because of the importance of IC for many companies, disclosing financial or non-financial information about it is sometimes considered desirable. For example, reporting on IC may be required in order to reduce the information asymmetry between management and investors; the managers have detailed knowledge, e.g., about investments in IC whereas investors do not (Abernethy et al., 2003). The need for reporting on IC to stakeholders is closely related to the discussion presented in the previous chapter regarding the inability of financial statements to describe IC. Reporting (or disclosing information) has many significant effects on the decisions of different stakeholders, both inside and outside a company. In fact, information disclosure has a dual impact: information affects outsiders' perceptions and market values, and on the other hand, outsider's perceptions affect management's decisions (Lev, 1992).

In recent years, managers have started to report information about the company additional to that found in financial statements. The motivation for these voluntary information disclosures is that reports provide the opportunity to communicate more policy and future-oriented information about the company (Radebaugh and Gray, 1997). For example, many companies provide information that is relevant

to the assessment of human resources (e.g. information about management, organisational structure, labour and employment), information related to social responsibility (e.g. community welfare, public safety and environment) or information about research and development activities (see e.g. Radebaugh and Gray, 1997).

According to Lev (1992), the impact of voluntary disclosures will depend on the credibility of management. It is argued that, ultimately, management accounting will be required to report and verify non-financial information (e.g. environmental and social) to the same standards that financial information must meet (Crawford, 2005). A key problem in reporting on IC to stakeholders is the difficulty in creating a reporting method that produces comparable information about the IC of different organisations in a standard form. This is due to the fact that some assets are highly important to one organisation and irrelevant to another. Also finding reliable performance measures that could be used as a basis for IC reporting is a problem. Thus, a question is whether the reported information should be managerially relevant and company specific or comparable and universal in nature. It seems difficult to meet all these criteria at the same time.

5 Methods and frameworks for the management accounting of IC

In this section of the paper, seven methods for management accounting of IC are examined. The methods are chosen on the basis of whether they can contribute to some of the needs of management accounting discussed in the previous section. These methods include balanced performance measurement models, balanced IC measurement models, Calculated Intangible Value, Value Added Intellectual Coefficient and Intellectual Capital Efficiency, Danish Guidelines, Meritum Guidelines and Real options. Each of the methods is evaluated systematically according to the above mentioned tasks. In addition, some other features of the methods, such as their applicability to practice, are discussed.

Balanced performance measurement models, e.g. the Balanced Scorecard and Tableau de Bord, are quite easy to apply to practice and thus the models are within the reach of a wide audience (Epstein and Manzoni, 1997; Kaplan and Norton, 1996; Lönnqvist, 2002; Lynch and Cross, 1991; Maisel, 1992; Neely et al., 2002; PMA, 2001; Toivanen, 2001; Tuomela, 2000; Uusi-Rauva, 1987). An obvious strength of balanced performance measurement models is their ability to cover different kind of factors. However, it is unclear how well suited the balanced performance measurement frameworks are for identifying which parts of IC should be measured. Balanced performance measurement models usually provide information which is for the most part not meant to be reported outside the organisation. Because the information is context dependent, comparing, e.g., different companies would be challenging even if the information were to be disclosed. Balanced performance measurement systems are not useful in supporting the investment decisions or in monetary valuation of IC.

Balanced intellectual capital measurement systems are similar to balanced performance measurement systems with the difference that they are focused on IC. Intangible Assets Monitor by Sveiby (1997) and Value Chain Scoreboard by Lev (2001) are examples of such measurement systems. These frameworks focus on identifying an organisation's intangible success factors. However, they often lack concrete

means for designing the performance measures of intangible success factors and sometimes lack the connection to other, e.g. financial, success factors. When considering the needs of management accounting, the properties of the balanced IC measurement models are similar to those of the balanced performance measurement systems.

Calculated Intangible Value (CIV) is a method that is based on the assumption that a company's premium earnings, i.e. the earnings greater than those of an average company's ones within industry, result from the company's IC (Stewart, 1997). That is to say, by utilising tangible assets, a company can reach only an average level of earnings – the premium is generated by IC. The data for the method is found from the financial statement of companies except for the data for the average return on tangible assets in an industry. CIV can provide an estimate value of a company's IC which is comparable with other companies. This figure can be used in external reporting. It is also possible that CIV could support the evaluation of investments. CIV does not seem useful in measuring and managing performance of an organisation. Other IC valuation methods include Intangibles Scoreboard developed by Lev (see e.g. Hurwitz et al., 2002) and Weightless Wealth Tool Kit by Andriessen (2004).

Value Added Intellectual Coefficient (VAIC™) and Intellectual Capital Efficiency (ICE) are measures for evaluating the efficiency of IC within, e.g., a company. The method is based on assumption that measuring and developing the value adding of a company might have an effect on the company's market value. The data needed for the execution can be found in the financial statement of companies. (International Business Efficiency Consulting, L.L.C, 2002; 2003; Pulic, 2002; 2004) VAIC can contribute to the valuation of IC but does not exactly present the monetary value of IC. VAIC figure is comparable among companies and can be reported to external stakeholders. VAIC contributes to the measurement and management of performance by giving a figure of overall performance (efficiency) of IC. VAIC cannot be used in supporting investment decisions.

The Danish Guidelines are about constructing an IC statement. An IC statement is a report, similar to a financial statement, that focuses on the organisation's knowledge management strategy (Danish Agency for Trade and Industry, 2000; Mouritsen et al., 2003). An IC statement is both a management tool used to generate value in an organisation and a communication tool to communicate to stakeholders how an organisation generates value from intangible assets. The model is suitable for performance measurement and management because the measures are derived from the business objectives of a company. Danish Guidelines are not useful in evaluating investment decisions or in the monetary valuation of IC.

Meritum Guidelines (Meritum, 2001) has been designed as a framework for the management and disclosure of IC for any kind of organisation. The information that the method provides can be used to construct an Intellectual Capital Report. It can be used to communicate to stakeholders the company's abilities and resources. Measurement and management of performance can also be seen as a strength of the method. Meritum Guidelines are not useful in providing support for investment decisions or in the monetary valuation of IC.

Real options is a possible approach for evaluating investment decisions related to IC. Traditionally, companies have evaluated their

investments using different investment calculations, e.g. discounted cash flow method and payback period of an investment. However, these conventional methods show their limitations when an investment decision must be made under conditions of significant uncertainty, such as investments in technology (Dixit and Pindyck, 1994). The idea of real options is to transfer the refined option pricing models used in capital market theory to the valuation of risky projects (Roll, 1994). Due to their flexibility, real options could be helpful for enhancing the possibility to make successful investment decision along with traditional investment calculations. (Ståhle et al., 2002) Real options may be used to describe the value of investments related to IC but they cannot contribute to the valuation of IC as whole. In addition, they cannot be applied to the measurement and management of performance or to the reporting on IC.

There have been previous studies that have compared and classified different measurement and management methods of IC. For example, Andriessen (2004), Bontis (2001), Bontis et al. (1999), Luthy (1998), Lönnqvist (2004) and Sveiby (2001) have presented classifications of methods. The criteria used in these earlier studies have included, e.g., whether the methods provide monetary information or not and whether they can be used at different organisational levels or at top level only. This paper makes a contribution to this discussion by linking the analysis to the tasks of management accounting and the key challenges in the management of IC. An obvious limitation of this paper is choosing only seven methods or groups of methods for the basis of evaluation. There are many more available in the literature (Sveiby, 2001). However, the point was not to cover all methods but to provide an overall understanding of the situation by using few chosen examples. These examples represent, according to the authors' understanding, the state-of-the-art methods for the managerial purposes mentioned. Therefore, analysing them can be considered to provide a fair overall understanding of the state of management accounting for IC.

6 Conclusions and discussion

Table 2 presents a classification of IC management accounting methods as a summary of the analysis presented in previous section. The summary describes how each of the methods fits into the managerial tasks (i.e. can they be applied). It does not contain an evaluation of how good the methods are. The grey areas represent combination where a method is well suited to a managerial purpose. This classification is proposed for use as a rough guideline when selecting a suitable management accounting methodology for a particular purpose.

Based on evaluating the seven approaches, it seems that the current methods of IC management accounting are most suitable in measuring and managing the performance of IC related factors and reporting on IC to stakeholders. There is a lack of methods for determining the monetary value of IC and especially for supporting IC related investment decisions. This result is quite agreeable since the research on the management of IC has so far focused strongly on the measurement and reporting of IC. For example, these issues have been emphasised in large research projects such as the MERITUM project (Meritum, 2001), the project by the Danish Agency for Trade and Industry (2000) and the NORDIKA and FRAME projects (Frame, 2003). Because of the need to determine the monetary value of IC and to provide support in

TABLE 2. A classification of some IC management accounting methods.

	Measurement and management of performance	Support investment decisions	Determination of monetary value of IC	Reporting on IC to stakeholders
Balanced performance measurement models	**suitable**	**–**	**–**	**suitable for internal reporting**
Balanced IC measurement models	**suitable**	**–**	**–**	**suitable for internal reporting**
CIV	**–**	**provides some reference on company level**	**suitable**	**value of IC can be reported, comparable among companies**
VAIC & ICE	**provides overall value of IC's performance**	**–**	**–**	**efficiency of IC can be reported, comparable among companies**
Danish Guidelines	**suitable**	**–**	**–**	**suitable for internal and external reporting**
Meritum Guidelines	**suitable**	**–**	**–**	**suitable for internal and external reporting**
Real options	**–**	**suitable**	**provides merely value of investment, not value of IC**	**–**

IC related investment decisions, it seems rational to target more research in the future into designing methods that will better serve those purposes.

Another thing to consider is how good the existing methods are in what they are supposed to do. There are several studies that suggest that many of the methods are somehow problematic. For example, companies are having problems in designing and implementing performance measures related to IC (Dion, 2000; Neely et al., 2002). Andriessen (2004) has criticised the validity of the VAIC™ method by stating that the basic assumptions of the method are problematic and thus it produces dissatisfying results. There is not a lot of empirical evidence about utilising CIV in practice (Kujansivu and Lönnqvist, 2007), which suggests that it may not be considered very useful for managers. In conclusion, many of the existing methods seem problematic and they are not utilised actively in companies.

It seems that currently the managerial relevance of management accounting is problematic regarding some areas of the management of IC. On the other hand, it can be also questioned

whether management accounting is even supposed to evolve in such a way that it can handle IC related issues. There are also other fields, e.g., knowledge management and IC management that may be more suitable for this area since they focus especially on those phenomena. However, it may be not an either-or-situation; it may be just a question of different viewpoints. Management accounting tools may sometimes serve knowledge management, and perhaps vice versa. If management accounting is going to hold its status of a relevant support for management, then it is the authors' view that it must be able to provide managerially relevant information – even in those cases when it relates to IC.

How could management accounting be evolved to better cope with the challenging IC related phenomena? It seems that more research is needed that focuses on the most problematic areas discussed above. In addition, there seems to be many possibilities for research cooperation across disciplines by researchers working with management accounting, knowledge management, intellectual capital, human resources etc. This might produce some new ideas. However, research alone is probably not enough. Management accountants operating in companies should also take an interest in finding solutions for the IC related managerial tasks that actually work in practice. Testing the existing tools in practice is also necessary in order to find out which work and which do not and how they can be improved. ■

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