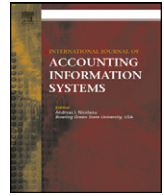




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On the convergence of management accounting and financial accounting – the role of information technology in accounting change



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ABSTRACT

In this article we theorize and conceptualize the recent convergence of management accounting (MA) and financial accounting (FA) with the advancements in information technology (IT), and explicate not only how this convergence is manifested in the technical and technological domain, but also how it is reflected in their convergence at the behavioral and organizational level.

Drawing on the analytical model by Hemmer and Labro (2008), in which the forward-looking perspective of FA leads to forward-looking MA, we build a conceptual framing to analyze this convergence. According to this framing, information technology (IT) serves as a facilitator, catalyst, motivator, or even an enabler for the convergence of MA and FA. We further argue that convergence is a much broader phenomenon than claimed by Hemmer and Labro. It firstly covers the technical and technological domain, including the intentional integration of information systems and software, as well as the intentional combination of methods or standards, extending thereafter to the behavioral and organizational domain with the (un)intentional alignment regarding both functions and processes as well as the (un)intentional convergence regarding both work and roles. The applicability of this conceptual framing is illustrated with a set of examples.

We present illustrations of the manifestations and outcomes of convergence in both the technical and technological domain (related to accounting standards, discretionary reporting, performance measurement, transfer pricing, competitor, customer and contractor analysis, due diligence in M&As), and the behavioral and organizational manifestation domain (related to accounting processes, work and the role of accountants, incentive systems, accounting and control in

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multinational companies, the control of business networks, the board of directors and venture capitalists). Based on our observations, we conclude that the forward-looking FA elements are often intertwined with MA, and vice versa, and that convergence in the technical and technological domain appears to precede convergence in the behavioral and organizational domain. In most of our observations, IT plays an important or even crucial role in this convergence process. In the light of these convergence observations, we open several avenues for further research.

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1. Introduction

Accounting is a changing phenomenon, where both management accounting (MA) and financial accounting (FA) activities, technologies and concepts are continuously evolving and redefining themselves, and are becoming increasingly intertwined, converging realities.¹

In their analytical study, Hemmer and Labro (2008) suggested that the development of FA towards a forward-looking perspective will lead to forward-looking MA. They expressed concerns over the divided nature of accounting as a field of research, in which MA and FA are perceived as separate realities. In their paper, they showed with a theoretical model that MA and FA are not independent, and argued that the properties of financial reporting influence the quality of MA. To substantiate this, they modeled convergence in the technical and technological domain, without raising the question of how this convergence is manifested in practice, or whether this convergence has any relation to the behavioral and organizational domain (see Orlikowski, 1991, 1992). Recently, Weißenberger and Angelkort (2011) provided the first evidence for how the convergence of MA and FA has behavioral and organizational effects. According to their findings, this convergence has led to increasing consistency in financial language, resulting in greater effectiveness of control from the perspective of management and in co-operation between controllers and financial accountants.

Information technology (IT) has played and will play a major role in the development of accounting information systems (AIS) by providing “the push that drives accounting activities” (Vaassen and Hunton, 2009). For example, the adoption of enterprise resource planning (ERP) systems has improved the quality, accessibility and timing of accounting information for managers (O’Leary, 2000; Granlund and Malmi, 2002), as well as improving transaction processes and allowing firms to have more flexibility in earnings management and the timing of earnings releases (Brazel and Dang, 2008). Although the role of IT within MA and FA is acknowledged with the clear message that accounting and control cannot be studied apart from IT (Dechow and Mouritsen, 2005; Granlund, 2011), no studies have yet analyzed the role of IT in the relationship between MA and FA. Similarly, academic research focusing on the integration of information systems has not placed major emphasis on how accounting itself is changing (Rom and Rohde, 2007). In addition, attempts that highlight the plurality of inputs and outputs of accounting change are trapped within a modernist dichotomy, which defines boundaries such as in versus out, external versus internal, and organization versus context (Quattrone and Hopper, 2001), leaving the interaction between MA and FA unexplored.

The main purpose of this study is to initiate discussion on the multifaceted nature of the current relationship between MA and FA. Hence, the objectives of the paper are to:

- theorize and conceptualize the relationship between MA and FA, particularly their convergence; and
- explicate not only how this convergence of MA and FA is manifested in the technical and technological domain, but also how it is reflected as a convergence of MA and FA in the behavioral and organizational domain.

¹ Historically, the development starting in 19th century from the solid concept of accounting was followed by accounting divergence, which started during the industrial era of mechanization. The diverging MA and FA followed their own logic of development. In FA, the development has been driven by crises and the regaining of trust; in contrast, within MA, the development of business, mechanization and digitalization, and the need to control and make rational and rapid operational decisions has defined its change path (Ikäheimo and Taipaleenmäki, 2010). The divergence is not discussed further in this paper, which focuses on accounting convergence during the era of digitalization.

To illustrate the level of theorizing in this study, we apply Llewellyn's (2003) classification for theorizing qualitative research. The concepts of MA and FA are typical examples of differentiation, wherein their meanings have lived separate lives in the academic literature. They may not have been intentionally theorized to become different; nevertheless, their relationship with each other may have unintentionally been forgotten in academia, creating a duality of concepts. In this study, we conjointly theorize and conceptualize this convergence of MA and FA, focusing on the role of IT and its influences not only in the technical and technological (T&T), but also in the behavioral and organizational (B&O) domain, "bridging" the gap created by this conceptual divergence. Thus, we problematize the current state-of-the-art thinking (level two: theorizing by differentiation), using the advancements in IT as a context for showing how MA and FA are converging in the T&T domain, and how this convergence is impacting on individuals and organizations in the B&O domain (level four: theorizing settings) (Llewellyn, 2003).

These contributions will hopefully encourage other researchers to consider the nature of the relationship between MA and FA, both in research settings and in interpreting as well as explaining the results. In addition, our study demonstrates that the relationship between MA and FA and its development, as such, are also fruitful directions for research (see Appendices 1 and 2). For the standard setters, such an approach offers important understanding concerning how the quality of MA may influence the quality of financial reports. From the practitioners' point of view, this study will assist them in more broadly contemplating MA- and FA-related phenomena in reporting, control and decision-making, as well as how choices in the T&T domain are reflected in the B&O domain.

We limit our analysis to the development towards the convergence of MA and FA, following the model by Innes and Mitchell (1990) and Cobb et al. (1995), and leave the forces (e.g. Kasurinen, 2002) that might challenge or slow down the convergence of MA and FA for future research. Previously, Ikäheimo and Taipaleenmäki (2010) have analyzed the historical development of divergence and convergence of MA and FA. The present study provides some reflections to their conclusions on the recent trend of convergence.

We define the convergence of management accounting and financial accounting to be a contemporary phenomenon, in which both intentional integrating and aligning actions of human actors and changes in contingencies are shifting MA and FA towards one another, forming newly observable connections between them, through which they affect and interact with each other. These connections are typically affected by information technology, and frequently become observable through information systems. The manifestations and outcomes of this convergence, which are mainly intentional but sometimes also unintentional, are involved in all elements of accounting (accounting processes, accounting information users and producers, accounting methods and standards, and accounting information systems), and they can be observed within the technical and technological as well as the behavioral and organizational domain. Although this convergence might lead to the state of a unified entirety, we nevertheless emphasize that in our view these two separate fields are currently converging, but not fully converged, i.e. there is already an intersection where these disciplines heavily overlap. However, they are not, and will potentially never become fully integrated.

For illustrative examples of convergence, we use earlier studies as indirect empirical evidence and our own experiences from the field. We have also had open informal discussions with several Chief Financial Officers (CFOs), controllers and auditors on the convergence of MA and FA. We have analyzed these findings and observations using our conceptual framing. Although our analysis on convergence mainly concerns larger and publicly listed business organizations, some manifestations of convergence can also be observed in SMEs and within the public sector. Our theorizing settings are not dependent on the perceptions of agents in a specific organization. Instead, we attempt to generalize our context-bound manifestations and outcomes of convergence based on earlier studies and informal discussions with practitioners.

The structure of this paper is as follows. We first create the conceptual framing for the convergence of MA and FA, assuming the earlier divergence of MA and FA. We start with the evolving ultimate purposes of MA and FA, and how this evolution is related to the convergence, as suggested by Hemmer and Labro (2008). We adopt and further develop their ideas by adding the role of IT and the domains of convergence (technical and technological as well as behavioral and organizational), together with the manifestations and outcomes. Second, the manifestations and outcomes of convergence are illustrated within the technical and technological domain and the behavioral and organizational domain, where the manifestations and outcomes of convergence in the former domain precede those in the latter. In Appendices 1 and 2, we also propose several avenues for further research. Third, we discuss the major issues emerging in our paper and their academic consequences.

2. Conceptual framing of the convergence of management accounting and financial accounting

Our conceptual framing of the convergence of MA and FA is based on the following questions: (1) what are the ultimate purposes of accounting information, (2) how has the function and orientation of accounting recently evolved, and (3) how are information technology and systems involved in the convergence of MA and FA? Applying this conceptual framing, we provide some illustrative examples in Section 3 of the manifestation and outcomes of this convergence. Similar converging features were already observed in the survey results of Joseph et al. (1996), which showed that the influence of MA on FA was most apparent in larger and publicly listed companies. Converging features have also been documented by Granlund and Lukka (1998a), as well as Lukka (2007), who reported in his study on the change and stability of MA that although the measurement principles of FA were similar to those of MA, the reports were produced by relying on separate parallel systems.

2.1. The ultimate purpose of accounting

The ultimate purpose of accounting can be classified into two categories: control and decision making (Zimmerman, 2000). Within MA, control encompasses planning, cybernetics, administrative and cultural controls as well as compensation systems, while decision making involves strategic and operational decisions (Malmi and Ikäheimo, 2003; Malmi and Brown, 2008). Within FA, control refers to stewardship accounting, in which management is accountable to the stakeholders, especially to investors, dependent on the resources given to them, and decision making refers to the valuation focus in which information is provided to investors to make informed decisions (Hemmer and Labro, 2008). Although the institutions and practices of MA and FA seem to be very different from each other, their ultimate purpose is similar to that suggested above: decision making (MA)/valuation (FA), and control (MA)/stewardship (FA).

MA has evolved from backward-looking control purposes towards forward-looking information systems for strategic planning and control, and for decision making. Traditionally, MA has focused on annual controls in stable and restricted competitive operating environments due to the managers' need for historical information in order to understand performance and to control accountability in their organization (Granlund and Lukka, 1998a,b; Granlund and Malmi, 2002; Ikäheimo and Taipaleenmäki, 2010). However, certain forward-looking elements, such as those of budgeting and capital investment calculations, have been part of the MA information, even before the most recent changes in accounting. Certain trends, such as globalized competition, business networks, and the increased importance of securities markets as allocation mechanisms for financial resources, have characterized the operating environment of businesses. As a consequence, new MA information needs have emerged, and future-oriented, forward-looking information to support strategic planning and decision making is required (e.g. Granlund and Lukka, 1998a,b; Cadez and Guilding, 2008; Goretzki et al., 2013).

Traditionally, FA information and especially financial statements have served the stewardship role of accounting, where management is accountable to shareholders and other stakeholders for past performance. For stewardship purposes, management uses backward-looking annual and quarterly financial reports to discharge accountability pressures (Zeff, 2005; Ikäheimo and Taipaleenmäki, 2010). FA has evolved from backward-looking stewardship accounting to its contemporary forward-looking valuation focus, assisting investors in their decision making (Jones and Luther, 2005; Eierle and Schultze, 2008; Hemmer and Labro, 2008). To conclude, we argue that both these fields of accounting are within the same accounting realm, with similar ultimate purposes in their endeavors.

Although the development of MA and FA appears to have differed, a recent paper by Hemmer and Labro (2008) showed that they are not independent of each other. Their analytical model for the stewardship role of FA indicates no rational reasons to integrate MA and FA, since there is no special need for information flow between them. However, where FA is mainly assisting investors in their decision making, i.e. with increased valuation focus, it is rational to connect MA with FA to generate information for the valuation of company assets in financial statements. The authors showed that the optimal precision that needs to be built into a company's management accounting systems (MAS) is directly linked to the properties of the financial accounting systems (FAS). Thus, there is a clear motive in those companies where FA is targeted at investors' decision making to integrate FA and MA. This would especially be the case in companies that follow the IFRS or the US GAAP standards.

2.2. From narrow to broad: Towards the future and long term in accounting

The operating environment and the nature of business operations have become increasingly future-oriented. This has recently set new requirements for MA to become more future- and business-oriented, which in turn has led to the use of forward-looking accounting information, including non-financial measures. Information technology in the form of ERP systems has led to increased emphasis on forward-looking accounting information and has enabled the production of better short-term forecasts, instead of relying on outdated plans, assisting the planning of business processes (Scapens and Jazayeri, 2003). In strategic management accounting, attention is directed towards the long-term perspective, where non-financial information provides leading indicators of future business financial performance and information on the external operating environment, i.e. markets and competitors (e.g. Bhimani and Keshtvarz, 1999; Guilding et al., 2000). In practice, one of the most common strategic management tools, the Balanced Scorecard (BSC), incorporates typical measures that indicate the above-mentioned elements from the viewpoint of management and investors, balancing and integrating MA and FA information. Simultaneously, both the work and role of accountants have changed. Most research providing evidence for development in MA has been related to the change in the role of MA and accountants towards the support of planning and more strategic decision making in business operations (Joseph et al., 1996; Granlund and Lukka, 1998a; Burns and Vaivio, 2001).

The trend in FA of moving away from a stewardship approach towards a decision-making approach, emphasizing fair values and transparency, is recent and dramatic. The most fundamental change has been the development from historical cost accounting to fair value accounting. A major objective of historical cost accounting is to satisfy the stewardship goals of financial reporting, whereas fair value accounting focuses on the valuation goals of financial reporting (Penman, 2007). The evolution of standard setting towards fair value accounting started in the US in the early 1990s (Landsman, 2007), with a similar trend occurring since 2003 in IFRS standards (Troberg, 2007). These changes reflect the shift in the ownership of public companies from local shareholders towards institutional investors, such as pension and mutual funds, which highly value transparency and the future success of investments.

This development in the financial statements of publicly listed companies has the following aims: the balance sheet becomes the primary vehicle for conveying information to shareholders; all assets and liabilities are recorded at fair value; true economic income is reported in the income statement, i.e. changes in company value during the accounting period; and current earnings cannot be used to forecast future earnings (Penman, 2007). Fair value accounting would in principle fill the information asymmetry gap between investors and financial analysts in terms of corporate-level strategic choices and the company management's ability to mobilize these choices into future business success. These fair value requirements pose major challenges to the quality of MA, the main source of forward-looking information for fair value accounting (Hemmer and Labro, 2008). In addition, recent corporate governance-related attempts at openness in operations with shareholders and other stakeholders have expanded the traditional stewardship role of FA from mere discharging of accountability to shareholders towards broader corporate transparency requirements and practices, and accountability to the whole of society. On the other hand, we can also observe increased "internal transparency", enabled by management reporting information systems. While accounting reports in paper format dominated in the past, it is now typical even for top executives to be able to drill-down in multiple dimensions, from the top-level financials – revenue or profitability – down to the transaction level, by using these online electronic reporting systems.

This evolution in the function of accounting is illustrated in Fig. 1, which also summarizes the change towards a broader orientation of accounting. We emphasize that while the short term and history are still reflected in accounting, the orientation now includes, and to certain extent focuses on the long-term future and broader accountability.

2.3. Modern information technology: Towards accounting integration and convergence

In the previous section, we argued that MA and FA are not independent of each other. In this section, we add IT as a vital element interconnecting MA and FA, with its various roles in this convergence. The roles played by IT in accounting and control processes cover the entire continuum of roles from efficiency enhancement to a more abstract mediating role (Granlund, 2011). IT creates an information environment that facilitates integrated and flexible operations (Orlikowski, 1991; Arnold et al., 2011), and has become an essential, inescapable carrier of

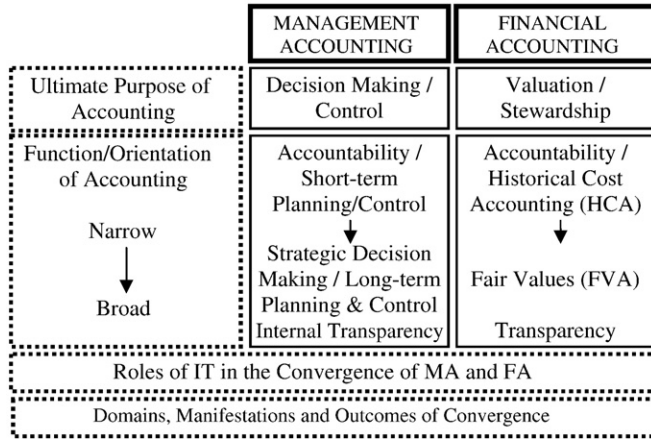


Fig. 1. From narrow to broad: Towards the future and long term in accounting.

accounting information (Granlund and Mouritsen, 2003; Hyvönen et al., 2006; Granlund, 2011). This has enabled and facilitated the materialization of the purposes of accounting through the use of technologies such as the Internet and digital communications, software and database solutions (Dechow et al., 2007a).

Previous studies mainly focusing on MA have demonstrated that changes in corporate management are driven by an integrated information platform facilitated through information technology innovations, such as tightly integrated ERP systems with shared database and Internet solutions (Davenport, 1998; Granlund and Malmi, 2002). Recent research also indicates that IT innovations, such as ERP systems, support and integrate both internal and external business processes, thus opening a broader basis for management control (Granlund and Malmi, 2002; Granlund and Mouritsen, 2003; Hartmann and Vaassen, 2003; Granlund and Taipaleenmäki, 2005). Similarly, business organizations are also integrating and aligning MA and FA systems and processes in which external corporate reporting creates the basis for management reports (Joseph et al., 1996; Granlund and Lukka, 1998b). Moreover, in those cases not adopting ERPs, systems can be integrated using conventional best of breed solutions in which each function may have its own independent system or standalone system components for standard packages and/or custom software (Hyvönen, 2003).

Based on these studies, the convergence of MA and FA would be facilitated or even enabled by modern accounting information systems that base their architecture and design on integration. These digitalized systems may lower the costs of maintenance, although implementation is typically costly. Information technology may reduce the time needed for processing transactions and integrating accounting information. It may also increase the quality of integrated accounting information, and as a result increases the attractiveness of using it (Brazel and Dang, 2008). We argue that digitalization is a necessary prerequisite or a key facilitating element for the contemporary convergence of MA and FA.

In order to understand the impacts of modern information technology, we need to consider how the current information technology and systems influence accounting integration and convergence in general.

Transaction-based FA information can be used as base data for MA in comparing it with budgets, or can be stored in transaction databases to be refined, converted, or analyzed further for control and decision-making purposes using such means as customer or product-related metadata associated with each transaction. In other words, FA data are frequently stored as raw data in transaction-oriented accounting information systems and are transferred further directly or through an interface, if needed, to MA information systems designed for analyzing and reporting (Hopper et al., 1992; Joseph et al., 1996; Lukka, 2007).² In Fig. 2, we illustrate how the

² In ERP-mediated routines, the collection, manipulation, reporting, and discussion of corporate data are achieved through systematic recording of transaction data. As noted by Chapman (2005, 686), ERP systems are fundamentally bound with the organizational processes of accounting: "ERPs seek to systematize and co-ordinate (and in original aspiration to do so completely) record keeping, the design and implementation of structures of categorization and aggregation of transactions, ultimately allowing for the generation and manipulation of comprehensive virtual perspectives on the nature and flow of operations and resources."

FA information is refined into management information systems on the main level of accounting processes. This path has become shorter, and the interfaces are partly vanishing, particularly as accounting information systems become more integrated. Simultaneously, as data and information are increasingly flowing from FA to MA, and vice versa, these two fields are, in our view, converging, which is one of the likely changes in accounting arising from ERPs and integrated information systems (see Rom and Rohde, 2007). Fig. 2 is also informed by the control framework of Hartmann and Vaassen (2003, 126), which extends the control frameworks “from a knowledge management perspective to include the information system and the communication process, supporting knowledge creation and integration.” This framework consists of three domains central to the control of organizations: the information, communication, and business domains. The framework of Hartmann and Vaassen, however, lacks two important elements for this study. Firstly, it focuses on MA and internal control and ignores FA-oriented reporting practices and the clear relationship between FA and MA. Secondly, it does not clearly explicate the relationship between data, information, and knowledge, which are important for analyzing the level at which the convergence of MA and FA takes place. We bring these elements strongly into this picture and distinguish two domains for convergence analysis: the technical and technological (T&T), and the behavioral and organizational (B&O) manifestation domains.

In order to increase understanding of the role played by IT in convergence, we describe here the different levels of integration, which can be considered as a continuum (Granlund and Malmi, 2002). Accounting information systems vary from spreadsheet solutions and specialized software packages to more integrated information systems, such as modules in ERP systems (e.g., Dechow and Mouritsen, 2005; Hyvönen et al., 2008).³ In this study, we recognize four possible types of accounting integration with information technology. *Firstly*, metadata integration basically requires shared concepts and descriptions when fully integrating specialized software packages, as in the case of MA software using metadata from FA software. *Secondly*, both MA and FA modules may be integrated, for example, within an ERP system. In this case of data integration, data are only stored and maintained in one place. *Thirdly*, when information is combined from various sources, such as consolidated data for a management report from a data warehouse, into a BI (Business Intelligence) system, this can be considered as information integration. *Fourthly*, when integration only occurs at the level of a user interface, so that the information user does not even know that the information is dynamically gathered from a number of databases or data warehouses, such as within an electronic workspace, the type of integration is virtual (user interface) integration (cf. Paulheim and Probst, 2010; Paulheim, 2011). If both MA and FA use the same or integrated software tools, several typical integrated challenges arise. These challenges can be related to certain factors such as the design of the accounting model in the information system (e.g. the need to use the same revenue recognition rules in MA and FA if sales management forecasts sales deal values, but corporate management only compares the actual revenue with the revenue forecast), secondary organizations for analysis and reporting (e.g. the need to carefully define cost centers, if the legal entity organization for FA reporting and the business unit organization for MA reporting have to be built up by combining the same cost centers differently), or allocation rules for the overheads (e.g. the need to use the same allocation methods in budgets and bookkeeping), meeting all the requirements from all of the different accounting perspectives.

Because more comprehensive integration can occur when building the software interface for transferring transaction data, for example from bookkeeping software and a customer relationship management (CRM) system to the database of a multidimensional reporting system (e.g., OLAP, online analytical processing), differences can be distinguished between MA and FA. One of these differences arises from the impacts of the normative requirements in the field of FA. These normative-oriented transaction data are typically processed with certain conversion and accounting rules before the data are transferred to the MA system, where they are refined, analyzed, and further reported. Important differences to be considered in designing and constructing the accounting model in the MA information systems include the flexibility and scalability requirements for the architecture to enable rapid, easy responses in the accounting models to changes in the dynamic business environment, as well as a lean accounting and finance function (Granlund and

³ We acknowledge that even if an ERP system may directly serve FA work (e.g., regular reconciliations and consolidations), its recognition of MA may appear to be fragile, as suggested by Dechow and Mouritsen (2005). They found in their case that while FA operations were performed using an SAP ERP system itself, most of the MA data were routed via supplementary reports generated by the add-on information queries using SAS technology. However, in these cases the integration and hence convergence of MA and FA may also occur at other levels.

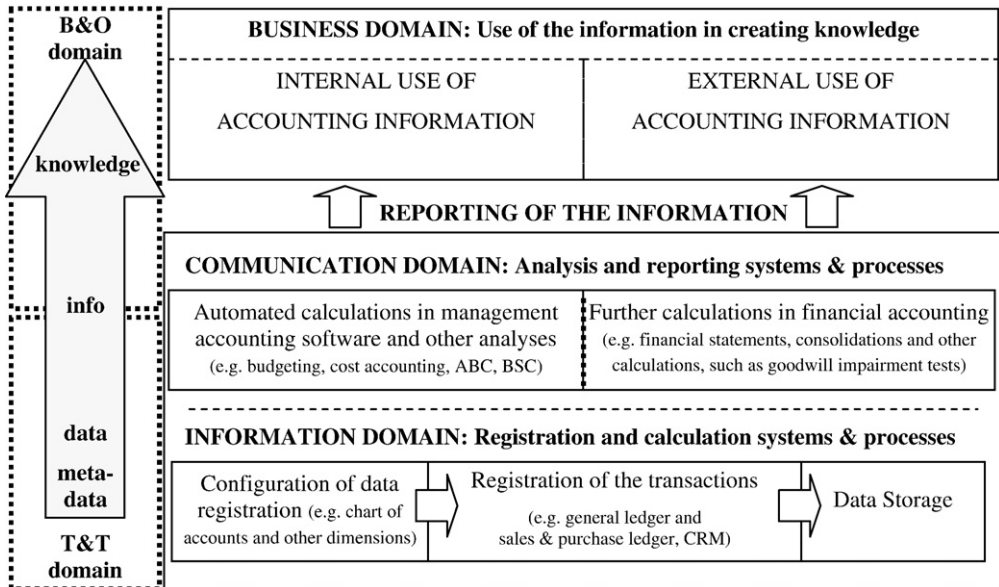


Fig. 2. From the registration of accounting data to the reporting of information, and the use of knowledge with accounting information systems.

Taipaleenmäki, 2005). Furthermore, the user interface and opportunities for tailoring it play a key role in current accounting information systems.

Contemporary analysis-oriented accounting information systems and management reporting software packages can be used by various managerial levels up to the top executives in the management team and the accounting professionals in a manner similar to integrated information systems (van der Vecken and Wouters, 2002; Rom and Rohde, 2007). Their competencies concerning FA principles and standards as well as MA techniques may vary significantly. Consequently, many important decisions on information systems have been made by accounting professionals in order to guarantee that the viewpoints and needs of both MA and FA have been considered in terms of these two different end-user groups. These decisions concern the architecture, accounting rules and logics, the interface between accounting information systems, the design and configuration of accounting models within these applications, as well as the configuration of the functionalities in accounting software packages and the accounting modules in ERP systems (see Dechow et al., 2007b; Wagner et al., 2011).

We also fully recognize the problems, risks and costs caused by information technology and its integration, which are associated with the relationship between MA and FA. In addition to implementation costs and the fact that integrated information systems, particularly ERPs, may cause some loss of flexibility in the business processes (Davenport, 1998; Dillard and Yuthas, 2006; Rikhardsson and Kræmmergaard, 2006), the dominance of information technology may create a pseudo-trust in accounting systems. For example, once the automated accounting rules used for converting FA data to MA information are defined, they become more complex and challenging to maintain in the dynamic operating environment. Unless they are managed and re-defined during changes, the accounting information may become insufficient or incorrect. In addition, integrated information systems may lead to a situation where accounting information for operational control is mixed with strategic accounting information, resulting in accounting information that serves neither the operative nor the strategic control of the business (e.g., Cooper and Kaplan, 1998). Alternatively, constantly changing MA requirements can endanger the tight schedules or quality of FA reporting.

To conceptualize the role of information technology in the convergence of MA and FA, we adopt and simultaneously refine for analysis purposes the terminology from the theory of change introduced by Innes and Mitchell (1990), who identified facilitators, motivators, and catalysts for accounting change (see also Cobb et al., 1995). When IT acts as the *facilitator* for convergence, the role of IT, in our view, is necessary but

not solely sufficient for the convergence to occur. In these circumstances, the technological advancements undoubtedly increase the potential for convergence or literally facilitate and support certain manifestations of the convergence when they would otherwise, without this technology-related facilitation, remain less significant. When IT assumes the *catalyst* role in convergence, the impact of information technology is directly associated with the timing of change; in other words, IT increases the pace of the convergence, shifting it earlier than it would otherwise occur, or predates it. Finally, the *motivating* role of IT refers to its general influence on convergence. In such cases, IT establishes the ground for change and justifies or necessitates, or even forces it in a general manner. In its strongest manifestation, when IT per se initiates the convergence, it takes the form of an *enabler* of convergence. Although the above-described roles of IT may appear to be quite clear, in reality they are not as straightforward or easy to identify, since IT may simultaneously have various roles or characteristics from several roles. In addition, IT has divergent roles in different organizations. Thus, the role of IT, including that in accounting convergence, is ultimately an empirical question. The role of IT in MA and management control change has earlier been examined by Burns and Vaivio (2001) and Granlund (2001), but it has remained fully unexplored in FA and in the relationship between MA and FA, especially with regard to the change within this relationship.

To summarize, advancements in information technology, especially regarding modern and integrated accounting information systems, provide enhanced possibilities to organize and therefore to integrate accounting and finance processes. Hence, these systems also act as a facilitator, catalyst, motivator or even the enabler for the convergence of MA and FA. The need to integrate these two accounting viewpoints forces accountants to consider the differences and similarities between MA and FA, especially on the level of accounting information and accounting rules.

3. Manifestations and outcomes of accounting convergence

In this section, we present illustrative examples of manifestations of the convergence between MA and FA. This convergence is manifested in multiple ways. We divide these manifestations and outcomes into those within the technical and technological (T&T) manifestation domain, and those within the behavioral and organizational (B&O) manifestation domain (Orlikowski, 1991, 1992). The convergence in the T&T domain includes manifestations and outcomes associated with technical or technological elements of accounting or related information systems, whereas the convergence in the B&O domain includes manifestations and outcomes dominated by organizational and social processes, as well as the use of accounting information in creating knowledge (see Roberts and Scapens, 1985; Orlikowski, 1991, 1992). The integration and combination activities mostly take place in the T&T domain (e.g., accounting metadata, data within systems or software; accounting data or information associated with methods and standards). The intentional alignment of MA and FA functions or processes and intentional convergence of the work and role of accountants, on the other hand, take place in the B&O domain and are related to accounting information or knowledge (see Fig. 3). In the B&O domain, alignment and convergence may also turn into unintentional manifestations or outcomes. Although Fig. 3 may give an impression of causality, we do not argue for causal relations, and fully acknowledge that the relationships could be blurred or even reversed or mutual (Dechow and Mouritsen, 2005). In this article, we later focus on those MA and FA convergence manifestations in which there is a shift of domain from T&T towards B&O.

Many of these manifestations and outcomes are interrelated, but for analytical purposes we first present them separately and later proceed to offer some examples of their relationships. In particular, the relationships between the two domains of convergence, where T&T convergence manifestations expand towards B&O convergence manifestations, are of great interest, as illustrated in Fig. 3. An integrated IT environment or ERP system does not automatically bring integration to a firm, but may change the mindset of organizational members, resulting in B&O initiatives (Dechow and Mouritsen, 2005). Furthermore, we emphasize that the manifestations and outcomes are multifaceted and can be observed from various perspectives. We acknowledge that our list is not exhaustive or complete; rather, it is illustrative, emphasizing the extensiveness of the intertwined relationship between MA and FA, and how these relationships have recently become stronger. In our analysis, we identify both one-way and two-way convergence between MA and FA, and we apply the concepts of facilitator, catalyst, and motivator (Innes and Mitchell, 1990; Cobb et al., 1995) to describe the type of convergence, i.e. how MA and FA relate to each other in each discussed convergence manifestation.

3.1. Convergence manifestations and outcomes in the technical and technological domain

In this section, we analyze the MA and FA convergence manifestations and outcomes in the T&T domain. Firstly, we closely examine one of the most important and recent manifestations, namely

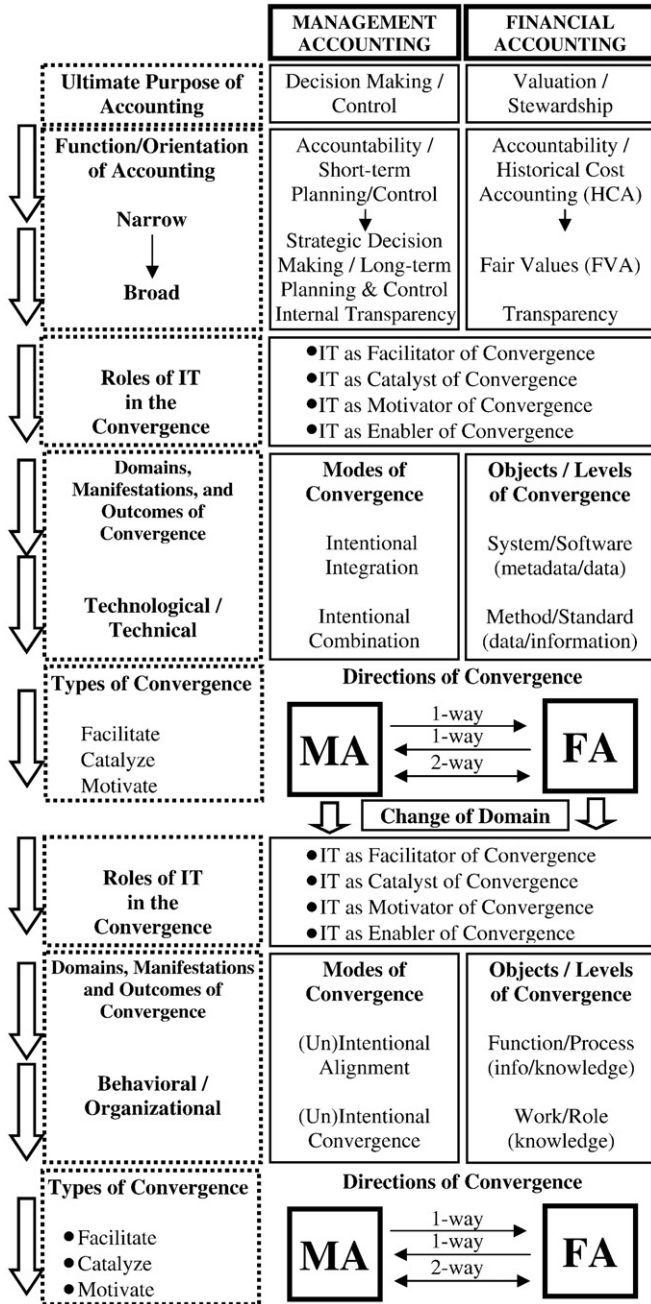


Fig. 3. Conceptual framing for analyzing the convergence of MA and FA.

accounting standards-related topics, where the convergence may make a difference in the research setting. After this, we shed some light on other examples of manifestations and outcomes, such as Intellectual Capital and other discretionary reporting, performance measurement, transfer pricing, competitor, customer and contractor analysis, and due diligence in mergers and acquisitions. We do not limit our approach to one-directional convergence from FA to MA (see Hemmer and Labro, 2008; Weißenberger and Angelkort, 2011). In addition, in Appendices 1 and 2 we present research opportunities within each of the fields of these manifestations and outcomes.

3.1.1. Accounting standards

The harmonization of international financial reporting standards has had a major influence on the convergence of MA and FA. Here, we discuss goodwill impairment, segment reporting, and the adoption of FA principles in MA.

Among the most interesting examples of fair value accounting are Statement of Financial Accounting Standard (SFAS) 141, *Business Combinations* in 2001, and International Financial Reporting Standard (IFRS) 3, *Business Combinations* in 2004, which define the concept of goodwill and its components. *Goodwill* is the result of the synergy values between companies and the going concern values of an acquired company (Johnson and Petrone, 1998; Troberg, 2007). Goodwill has to be allocated to the core businesses, i.e. so-called cash generating units. According to SFAS and IFRS, although goodwill cannot be depreciated, an impairment test must instead be carried out on a regular basis. Since it is based on the management's estimations concerning future cash flows, the impairment test is closely intertwined with MA. Cash flow forecasts should be based on the management's best knowledge of the future. In practice, it is necessary to have support from MA, in the form of budgets concerning the near future, as well as the latest estimates and forecasts. Depending on the industry, this support should even extend to a five-year period and should include assumptions and estimations, thus also carrying some major uncertainties.

In the goodwill impairment test, the ultimate purpose of FA is to assist shareholders in decision making by providing fair values of goodwill. The manifestation of convergence, i.e. the process of generating fair values for financial reporting from MA, is facilitated by IT, making calculations and information transfer easier and faster. The process is based on the intentional integration or combination of activities by the management. Goodwill impairment is an example in which the quality of forward-looking MA information directly affects financial reporting, because MA provides support, i.e. facilitates, the estimation of fair values for goodwill impairment, as suggested by Hemmer and Labro (2008).

Another example illustrating the role of accounting standards in the convergence of MA and FA is *segment reporting*. According to SFAS 131, *Disclosures about Segments of an Enterprise and Related Information*, and IFRS 8, *Operating Segments*, material elements in defining the segments, of which financial information is to be reported to stock markets are the risk factors and profitability drivers in the business itself. In addition, the standards require that the financial statement breaks down the segments in a manner similar to that for financial information used by the executives, as well as the members of the board, and generated in the internal MA and reporting processes of the company. In principal, segment reporting should be aligned with the organization and management structures used in the company. This has resulted in the need for corporate MA and FA information systems to be integrated, since MA information is also expected to be used for external financial reporting.⁴

The ultimate purpose of segment reporting stems from the need for shareholders to value companies in making their investment decisions. Segment reports increase the transparency of managerial activities by assisting shareholders in evaluating the origins of growth and profitability. IT facilitates this manifestation of convergence by making segment reporting easier and faster in all stages, from gathering and combining the data to reporting the information. Depending on the company, the mode of convergence in segment

⁴ As regards international accounting and financial reporting standards, it has to be noted that auditors have also started to pay attention to management accounting and reporting processes and systems in publicly listed companies. Auditors naturally have a role, for instance, in auditing goodwill impairment tests, which may include significant subjective judgments based on MA. Furthermore, in publicly quoted companies, auditing processes can extend to profit forecasts, one of the most significant pieces of information communicated to the stock markets. On the other hand, it can be argued that the convergence of the two fields of accounting is finding one of its forms in the auditors' role development path: the traditional control role has recently become increasingly complemented by auditing-related consultancy services, as auditors are increasingly acting in supervising the client company in the most challenging issues of FA. These include accounting for goodwill and segment reporting, as suggested above.

reporting may occur either through the intentional integration or the intentional combination of MA and FA. The information for segment reports of financial statements is motivated within the IFRS environment and facilitated by MA.

It is also noteworthy that these segment reporting requirements in FA may also motivate changes in internal MA reporting, such as in those cases where the management is concerned that the primary or secondary segments currently followed in the internal reports would bring about too much transparency in a competitive situation if this information was to be publicly disclosed in FA. Thus, in the case of segment reporting, the original convergence, in which MA facilitates changes in FA, may result in a two-way influence in the T&T domain, in which FA (standard setting) also motivates changes in MA (internal reporting practices).

Simultaneously, there are needs to synchronize budgets and forecasts with FA, i.e. taking into account all the necessary standard-based adjustments, such as R&D expense capitalizations or stock option-related and other FA adjustments (e.g., vacation salary accruals), to ensure that forward-looking MA information can be compared with actual financials. IT facilitates this intentional alignment and combination of FA principles in MA budgets and forecasts. FA principles motivate the solutions within budgets and forecasts and simultaneously facilitate them.

To conclude, accounting standards, especially those concerning forward-looking information (Hemmer and Labro, 2008) and increased transparency of segments, have increased the role of MA information in preparing appropriate financial statements. These require both forward-looking MA-based cash flow estimates for fair valuation and managerial information on business units.

3.1.2. Other examples of convergence manifestations and outcomes in the T&T domain

3.1.2.1. *Intellectual Capital and other discretionary reporting.* Intellectual Capital (IC) reporting is one of the aspirations arising from changes in what drives company valuation, in this case intangible and knowledge-based assets, information on which is important for both managers and investors. The Intellectual Capital reporting guidelines in Denmark (Mouritsen et al., 2001; MERITUM, 2002; DMSTI, 2003) can be considered as one of the most significant developments in this sense. The Danish practice aims at tying corporate management systems and external reporting processes closely together, mainly including non-financial, leading measures. Forward-looking information from the internal accounts may also be voluntarily disclosed, for example, by publishing earnings guidance (Cotter et al., 2006; Anilowski et al., 2007). MA information is used in providing this guidance based on the best knowledge available, and these reports may, depending on the quality of MA systems, have value for investors in share valuation and decision making by increasing the transparency of business. In addition, new types of responsibility reports, such as the Global Reporting Initiative (GRI, 2006), constitute a fundamental change from the traditional MA and FA division, aiming to integrate financial, social, and environmental reporting. In all these examples, FA normatively motivates the convergence, MA provides data for more extensive reporting to stakeholders, and IT facilitates this process.

3.1.2.2. *Performance measurement.* MA and FA are materially integrated and combined in performance measurement systems (PMS). For example, a PMS based on a balanced scorecard (BSC) may include operative performance indicators or strategic measures tied to critical success factors (e.g., Fisher, 1992; Kaplan and Norton, 1992, 1997). The balance between the various dimensions in the BSC is undoubtedly one of the most concrete signs of MA and FA convergence, in which these two fields of accounting integrate to form one single entity. The non-financial indicators typically represent the leading, forward-looking MA information, incorporated in the very same scorecard, and also balanced with lagging FA-based financial measures.

If we view performance measurement systems as integral parts of the management control system package (Malmi and Brown, 2008), we may see that data are combined from various sources to achieve purposeful information. Actually, there is evidence that information system integration is directly associated with the perceived success of the performance measurement system (Chapman and Kihn, 2009). The mode of convergence depends on the case and the measures used by the company, although it may vary from an intentional integration to a combination of accounting and non-financial information.

In the case of performance measurement systems, FA facilitates MA by delivering financial information for MA purposes.⁵

3.1.2.3. Transfer pricing. Transfer pricing, particularly in large multinationals, combines features from both MA (control) and FA (stewardship). From the viewpoint of MA, the definition of transfer prices is extremely important for profit center level profitability analyses, operational planning and control. As national interests and tax aspects typically set limitations on the possibilities for using different transfer prices, especially in international business environments, it can be argued that the impact of the external FA can in this sense be very direct in internal financial control mechanisms, since FA forms the basis for corporate taxation. Earlier, these limitations were not as serious, and tax optimization was an important element in defining transfer prices (Gruber and Mutti, 1991).

Currently, the major valuation method for transfer pricing, i.e. the arm's length principle, is based on market values, and is defined in the OECD (1995) Guidelines for Multinational Enterprises and Tax Administrations, thereby ensuring that taxes are allocated fairly between countries. The market-based method typically requires benchmark information from the markets. In addition, it has renewed the requirements set for the budgeting process in order to gain reliable forward-looking information for the basis of transfer price planning. Earlier, when the cost plus transfer price method was in use, the price was internally determined based on the previous actual costs. When there are no actual markets for products, production costs should form the basis for valuation. When designing the cost accounting system, aspects related to transfer pricing should also be considered in advance to meet the criteria of FA, MA, and taxation. On the one hand, MA facilitates FA by delivering information on costs for financial reporting and tax purposes; on the other hand, FA also acts as a motivator by having a direct influence on the calculation methods of costs for MA purposes defined by the tax administrators (Cravens, 1997).

3.1.2.4. Competitor, customer, and contractor analysis. Competitor analyses and competitor-focused accounting (e.g., Guilding, 1999; Gordon and Loeb, 2003), which are closely related to MA and reporting, lean heavily on the FA information disclosed by competitors. The costs and financial structures of companies have always to a certain extent, at least at the corporate level, been available to competitors. Following the increased transparency of business segment reporting, financial statements establish the largest open-pit gold mine for competitor analyses in MA. The markets already contain forward-looking financial information, such as the values of intangible assets (e.g., goodwill, patents, brand values and other intangible assets). This information is useful at the corporate level in aiding competitors to make strategic decisions, as well as to a certain extent other decisions (e.g., price-related information for operative decision making at the business-unit level).

Typically, companies have also analyzed their customers' basic financial indicators for customer profiling, customer segmentation and customer life-cycle planning for business management, in which all the available FA information may be used for planning and decision-making purposes. Similarly, contractors and other essential business partners in the supply chain may also be analyzed from the financial perspective for managerial purposes.

In competitor, customer, and contractor analyses, external FA from the markets is used for the internal purposes of the company, and this FA information is then further combined with MA information, i.e. extending the information sources of MA. The enabler and facilitator role can also be adopted by business intelligence (BI) solutions⁶ and other information systems containing data from multiple sources.

⁵ Similarly, in activity-based costing, actual FA data can be refined to deliver meaningful MA information for decision making and control purposes. These ABC systems with extensive datasets are also enabled by special software, and the emergence of ABC is tightly connected to advancements in IT. In addition, the adoption of ABC in MA has influenced the structure of income statements in FA, as operative expenses were allowed to be reported based on the type of activity and in the inventory valuation (Innes and Mitchell, 1995).

⁶ BI systems are defined as "specialized tools for data analysis, query, and reporting (such as OLAP and dashboards) that support organizational decision-making that potentially enhances the performance of a range of business processes. BI systems are complemented by specialized IT infrastructure (including data warehouses, data marts, and Extract Transform & Load "ETL" tools) which is necessary for their deployment and effective use" (Elbashir et al., 1998).

3.1.2.5. Due diligence in mergers and acquisitions. In the due diligence processes of mergers and acquisitions (M&A), acquirers focus on reviewing and ensuring that the target of acquisition corresponds to the buyer's value and risk expectations of the M&A. Typically, due diligence consists of legal, technological, human resources-related, and financial aspects (Sánchez and Goldberg, 2006). MA information, such as budgets, forecasts, and cost and profitability analyses, play an increasingly important role in due diligence processes. Fair valuation of M&A requires a proper understanding of the management reporting systems used by the acquired company. The focus in M&A is directed towards the acquired company's ability to generate future positive net cash flows, and hence towards forward-looking accounting information.

This due diligence process also creates the basis for impairment testing of goodwill. How successful this process is also defines the nature of financial reporting in the future. Therefore, due diligence is not only a valuation process at that moment but it also builds a reputation for company management being capable to perform M&A activities and influence the future profitability of the company.

To conclude this section on the technical and technological domain, we observed various manifestations and outcomes of convergence between MA and FA. These observations are summarized and reflected against our conceptual framing in Table 1. The abbreviations are explained in Appendix 3. They are facilitated and enabled by information technology at many levels. These examples of convergence seem to be not solely driven by the forward-looking needs of FA (see Hemmer and Labro, 2008), but also by the fact that MA is needed for control and decision making, and FA for valuation and stewardship purposes. Earlier, we argued that convergence in the technical and technological domain is a prerequisite for convergence in the behavioral and organizational domain, as suggested in Fig. 3. Next, we move to convergence in the B&O domain.

3.2. Convergence manifestations and outcomes in the behavioral and organizational domain

In this section, we analyze how MA and FA converge in the behavioral and organizational domain. We argue that the convergence of MA and FA in the T&T domain precedes convergence in the B&O domain, as IT extends its effects into the sphere of mental efforts by influencing cognition (see Orlikowski, 1991, 1992) through changes in the mindsets of employees (see Dechow and Mouritsen, 2005) and increased business process agility (Raschke, 2010). Similarly, Hartmann and Vaassen (2003) have argued that within a control framework, the 'business domain' (i.e., essential business processes, knowledge creation and integration, management control), the 'communication domain' (i.e., MA, internal control, and communication of information), and the 'information domain' (i.e., accounting information systems and other ICT applications) are causally linked. They claim that this causality arises from the fact that business process controls also require controls, i.e. an "effective way in which knowledge is created and integrated," in the other two domains of communication and information, that is through "effective processes of communicating reliable and relevant information" and the "efficient design and working of information systems."

In our analysis, we concentrate on the relationship between the T&T and the B&O domains. For the sake of simplicity, we exclude other relationships between human agents and technology, as well as institutional properties (see Orlikowski, 1992).

3.2.1. Certain specific accounting processes

In this section, we identify various aspects of accounting processes where MA and FA are converging. For various reasons, there are certain needs to purposefully align the function and practices of MA and FA, especially certain accounting processes, where the timing and organizing of work within MA and FA are converged.

One of the most obvious accounting processes showing manifestations of convergence arises from the need to synchronize the timing of MA and FA processes, particularly those including a comparison of actualized FA data and forward-looking MA information, and using these FA data to update, for example, profitability and cash flow forecasts. On the other hand, the IFRS segment reporting requirements (statutory reporting) for listed companies, as discussed earlier, and disclosure of profit warnings, considered later in this section, are based on forward-looking accounting methods, such as rolling forecasts, to update previously published earnings guidance (discretionary reporting), also leading to synchronized accounting process scheduling.

Table 1

Summary of the manifestations and outcomes of MA and FA convergence in the technical and technological domain (see Appendix 1 for abbreviations).

	Accounting standards: goodwill impairment	Accounting standards: segment reporting	Accounting standards: FA principles in budgets/forecasts	Intellectual Capital and other discretionary (e.g. environmental) reporting	Performance measurement	Transfer pricing	Competitor, customer, and contractor analysis	Due diligence in M&As
Primary field of accounting	FA	FA	MA	FA	MA	MA/FA	MA	FA/MA
Ultimate purpose of accounting	V	V	C	V/S	C	C/S	D	V/D
Function of accounting	FV	TR	PC	TR	PC	PC/TR	SD	FV/SD
Role of IT in convergence	F	F	F	F	E	F	F/E	F
Domain of convergence	T&T	T&T	T&T	T&T	T&T	T&T	T&T	T&T
Mode of convergence	INT COM	INT COM	INT COM	INT COM	INT COM	INT COM	COM	COM
Object / Level of convergence	S/S M/S	S/S M/S	S/S M/S	S/S M/S	S/S M/S	S/S M/S	M/S	M/S
Type of convergence	F	F & M	M & F	M	F	F (MA)/ M (FA)	F	F
Direction of convergence	MA⇒FA (1-way)	MA↔FA (2-way)	MA↔FA (2-way)	MA⇒FA (1-way)	MA⇐FA (1-way)	MA↔FA (2-way)	MA⇐FA (1-way)	MA⇒FA (1-way)

IT can also play a role in the design of accounting functions (Lucas and Baroudi, 1994). Another example of these convergence manifestations emerges in the increasing outsourcing of accounting functions, even to offshore locations (Nicholson et al., 2006). Recently, it has also become possible to generate MA information via accounting service providers. This development has been enabled and facilitated by advances in information technology. For example, an accounting agency, also acting as an application service provider (ASP), typically provides the client with a hosted integrated accounting system, and Internet connections also enable the running of MA from a distance. It can be further argued that certain software applications and IT solutions have not only enabled the integration of MA and FA, but also increased the standardization of MA, contributing to its global homogenization (Granlund and Lukka, 1998b; Ikkäheimo and Taipaleenmäki, 2010). This, in turn, can enable or at least facilitate the outsourcing of MA.

Publicly listed companies are required to disclose profit warnings to the stock markets without any unnecessary delay. Profit warnings indicate that previously published earnings guidance based on earlier profit expectations is no longer valid. MA provides crucial input for generating profit warnings. It may be argued that recent developments in future-oriented accounting methods, such as budgeting and especially rolling forecasting, partly result from the need for these profit warnings. These procedures are based on extensive IT-assisted variance analyses, which are used in tracing the reasons for the differences between forecasted and actual financials. Variance analysis may offer an explanation for profit warnings. In the case of a profit warning, MA and FA processes are closely aligned and hence the regulation of the financial market is reflected in MA practices.

In addition to these examples, there also exists an alignment of the managerial mind-set with the reporting time span. Thus, the reporting cycle for external purposes conquers the minds of managers and executives. Within the company, the time span is defined based on the external reporting cycle, and in publicly listed companies, on quarterly reporting. For the executives, it would be of great importance to meet the expectations set by the stock market and the financial analysts. Therefore, the performance of executives is tested every three months, as suggested by Graham et al. (2005).

In this case, the FA-based time span may also be adopted in MA for planning and control purposes. IT does not have any direct major role in this convergence, except for the fact that IT indirectly facilitates, or even enables shorter reporting lead times in both MA and FA. The time span imposed by the financial markets may have a major influence on executives. First, it may lead to an intentional alignment of MA and FA in the minds of executives and managers, in which FA motivates executives to adopt this mindset to act promptly, resulting in timely behavior for business operations and, as a consequence, to implement and use planning and control systems that are purposeful for their reporting needs. Second, the alignment of this time span and mindset may lead to unintentional and even undesired alignment of MA and FA, since executives may be motivated to adopt an FA-based time horizon, which might be too short for managing business operations. As a result, the company may end up with myopia, or short-sighted behavior, and attempt to increase the following short-term financial result while simultaneously sacrificing strategic operations that increase value (Roychowdhury, 2006; Cohen and Zarowin, 2010).

Another example of mindset alignment is “target budgeting”. Here, the financial analysts’ forecasts and expectations may play a significant role in the financial control and management processes of publicly listed companies. There are strong indications that financial analysts’ forecasts do affect the budgeting process, and such discussion on target profits has recently been generated by research on corporate finance (Jensen, 2004). It has been observed that instead of creating a budget that reflects current business conditions, target profitability levels can be directly absorbed from the analyst reports into the internal budgeting process. Such target profit thinking may easily lead to over-optimistic budgetary targets and even unwanted artificial target-based manipulation of FA figures or business activities, such as delaying strategically important projects or acting with myopia and reducing costs from other operations (e.g., R&D), which are inevitably associated with success and shareholder interests over the long term (Graham et al., 2005).

In this case, MA is used for control purposes, with the budgeting process being motivationally affected by the financial analysts’ FA-based targets. Intentional alignment may lead to higher requirements within an organization where FA motivates processes in MA for planning and control. This may also result in unintentional alignment when unrealistic targets are set within an organization, and frustrations among the employees due to alienated FA-based targets for MA purposes. This unintentional alignment may also lead to earnings management or even accounting fraud, since management may be motivated to show that they have achieved the targets set by the analysts. In such a case, FA-based unrealistic targets for MA facilitate FA manipulation. Although IT is used in the process of setting targets, it has a minor facilitating role in this process alignment. To summarize convergence in these specific accounting processes within organizations, MA and FA are frequently closely converged in the process input (for example, financial analysts’ expectations for budgeting targets), and in processes itself (such as scheduling), or in the process output (such as profit warnings).

3.2.2. Other convergence manifestations and outcomes in the B&O domain

3.2.2.1. *Specific features of the work and role of accountants.* The need for more comprehensive understanding of accounting and recent IT innovations has changed the nature of accountants’ work, including the competence requirements. The recent development path of accountants’ roles has shown a convergence of MA and FA that has been manifested in significant ways. Empirical findings have indicated that information technology changes accounting work (e.g. Quattrone and Hopper, 2001; Lodh and Gaffikin, 2003; Scapens and Jazayeri, 2003). Based on empirical findings by Caglio (2003) on the role of IT in accounting convergence, the boundaries between MA and FA may also undergo considerable changes with regard to the introduction of integrated information systems, and ERP systems in particular. The line between MA and FA becomes blurred, resulting in hybridization between the traditional professional profiles of the MA and FA (Caglio, 2003). According to Caglio (2003, p. 143): “This implies, for these ‘hybrid’ positions, the construction of a broader vision of the firm as a whole, as well as of an understanding of all processes and events from a double perspective, from a financial accounting view and from a management accounting point of view.”

More business-oriented accounting staff, specifically business controllers, have taken key roles in the business processes of many companies (Friedman and Lyne, 1997; Granlund and Lukka, 1998a). Typically, the finance department as a corporate support function with its administrative origins has to operate with

scarce resources, particularly in SMEs (e.g., Granlund and Taipaleenmäki, 2005). Research has already provided evidence that not only the CFO but even business controllers and management accountants have roles both in MA for control purposes and in the statutory FA for stewardship purposes. Thus, the role change does not refer to role replacement, but rather role expansion (e.g., Granlund and Lukka, 1998a; Granlund and Taipaleenmäki, 2005). On the other hand, the controllers, who are responsible for FA-related reporting from a subsidiary to the parent company, are in most cases also harnessed in the reporting processes involving MA. In other words, the integration of MA and FA work duties may also be driven or even triggered by modern information technology, due to the need to understand the information systems dealing with both MA and FA, or via a decrease in accounting resources, since enhanced automated processes ultimately lead to a decrease in the number of people needed to do the work.

To illustrate our conceptual framing for analyzing the convergence of MA and FA, we describe how Intellectual Capital (IC) reporting in the technical and technological domain of convergence can lead to convergence in the behavioral and organizational domain regarding the work and role of accountants. The visibility of this MA-based IC information also provides tools for planning and control purposes. IT facilitates the generation of such information, and the process of generating IC information is intentionally aligned for external and internal purposes. In this case, the need to provide FA information to external parties motivates the generation of IC information in MA. MA facilitates this information to the FA, but simultaneously offers opportunities for the internal control of IC. Accountants assume a hybrid role in the case of IC, directed both to MA and FA.

3.2.2.2. Incentive systems. In incentive systems, MA and FA interact on various levels. First, compensation is typically based to a large extent on financial measures such as earnings and ROI (Murphy, 1999; Chakhovich et al., 2010). These measures are based on FA data. In addition, incentive systems typically include other key elements based on MA measures. Such comprehensive incentive systems could also be based on BSC.

Second, executive remuneration systems have become more transparent, either due to legal requirements, for example in the US and the UK, or due to the recommendations of good governance. These remuneration reports clarify how executives have earned their rewards. Thus, some elements of management control system information are disclosed in the financial statements or related material, because incentive systems with their behavioral consequences would be value relevant for evaluating the financial motivation of executives and the future success of the company (Abowd, 1990).

The above-mentioned behavioral features are one of the most apparent elements of accounting convergence. In the incentive systems, according to their 'circular logic', the desired behavior is purposed to be achieved on the basis of performance-related targets derived from operational MA information. This may eventually lead to corporate success, as reflected in the operational result and financial statements, thereby increasing the market value of a publicly listed company. Either via stock-based compensation systems or other bonus plans, the earned rewards would be positively reflected in future performance levels, which again eventually affects corporate-level financial indicators. Incentive systems as one of the key elements of management control may also take the opposite course, resulting in an unintended or undesired convergence, as they may motivate managers to manipulate the financial results presented in FA reports (Graham et al., 2005). This has been the case in share-based systems, particularly executive stock options, in which executives have opportunities to become extremely wealthy if share price development is exceptionally good (Bebchuk and Fried, 2004).

Applying our conceptual framing for analyzing the convergence of MA and FA, performance measurement-related convergence in the technical and technological domain can lead to convergence in the behavioral and organizational domain regarding incentive systems and their behavioral implications. At the technical and technological level, IT acts as a catalyst, as well as a motivator and facilitator, to intentionally integrate or combine elements of MA and FA. The facilitating role also extends to the B&O domain, as the incentive systems are based on performance measurement systems.

3.2.2.3. Accounting and control in multinational companies (MNCs). In large multinational enterprises, various legal entities prepare their own financial statements in processes involving not only the people responsible for FA, but also controllers focused on MA. Due to the international setting between the parent company and its subsidiary, there must be people responsible for MA who are also familiar with local FA norms in multiple

countries. Furthermore, IT enables and facilitates this remote financial and business control from a distance, as FA data are typically consolidated globally in shared accounting software, most likely with country-specific conversion and consolidation rules. These procedures ensure that the MA information also builds on FA-based raw data, with the same principles being shared within the same group of global MNC. IFRS-driven harmonization is increasingly contributing not only to international financial reporting, but also to the financial control of MNCs. One of the earliest pieces of evidence of this perspective is documented in [Joseph et al. \(1996\)](#), who noted the advances in IT, and reported the integration of systems for data capture, uniform reporting procedures and a lack of discretion at the unit level in both internal and external information and reporting processes. They further argued that (p. 91): “These characteristics would seem to suggest that management accountants working at the head offices of large, multi-divisional, quoted companies are most likely to see an impact of external reporting on their companies’ internal accounting systems and management decisions.” The global acceptance of IFRS norms also places MNCs’ MA into the regime of fair value accounting. Thus, there is a strong need within MNCs to have accountants mastering local GAAP, IFRS, and MA at various levels of the organization.

Applying our theoretical framework for analyzing the convergence of MA and FA, we find that the transfer price-related convergence in the technical and technological domain can lead to convergence in the behavioral and organizational domain in terms of the implications for accounting and control in MNCs.

3.2.2.4. Control of business networks. One of the trends in the contemporary business environment is undoubtedly the networking of mutually dependent companies requiring the control of inter-organizational relationships (e.g., [Dekker, 2004](#)). A company within a business network may have started to partially replace or complement FA with MA for communicating with business partners. This would especially be the case when the networking business partner may have changed the transparency of MA or even corporate boundaries and interfaces between the legal entities. ERPs may enable the design of MA systems in inter-organizational relationships where organizations exchange information with business partners ([Nicolaou, 2008](#)). This is a result of business environments in which tight networks have forced companies, especially smaller ones, to collaborate closely with each other, either under the direction of the dominant company or as a group of equal partners.

Within this network collaboration, companies may coordinate and manage the planning and execution of their business operations in a controlled manner. This requires that the companies in the network also disclose their MA information to the other members of the network. This so-called open book principle (e.g., [Kajuter and Kulmala, 2005](#)) guarantees that accounting information is shared between legal entities, for example, in an effort to build trust in a customer–supplier relationship. Furthermore, the shared information certainly does not only focus on FA, as members in the network may also share cost accounting and strategic MA information ([Kulmala et al., 2002](#)).

There are increasing pressures to disclose forward-looking accounting information for purposes such as building a shared understanding concerning product life cycle profitability, while the costs during the product life cycle are incurred by different companies within the network or for creating a strategic technology roadmap for the future ([Miller and O’Leary, 2007](#)). MA information, focused on inter-organizational cost management (e.g., [Cooper and Slagmulder, 2004](#); [Coad and Cullen, 2006](#); [Mouritsen and Thrane, 2006](#); [Agndal and Nilsson, 2009](#)), may even take over and dominate traditional FA information in the communication between network members regarding supplier selection, joint product design or joint manufacturing process development, for example, in the form of chained target costing and value engineering within a value chain.

The convergence of MA and FA is particularly manifested at the level of middle management in the networked organizations, where MA in the form of forward-looking information for planning is regularly compared with FA-based actual financials. Often, the openness of accounting is limited. The limited openness of timely MA and FA information is complemented by periodic quarterly or annual FA reports. These reports are also used for evaluating the quality of companies in the network as well as judging whether the outcome of network co-operation has resulted in a fair sharing of network success.

Applying our theoretical framework for analyzing the convergence of MA and FA, [Fig. 4](#) shows an example of how contractor analysis-related convergence in the technical and technological domain can

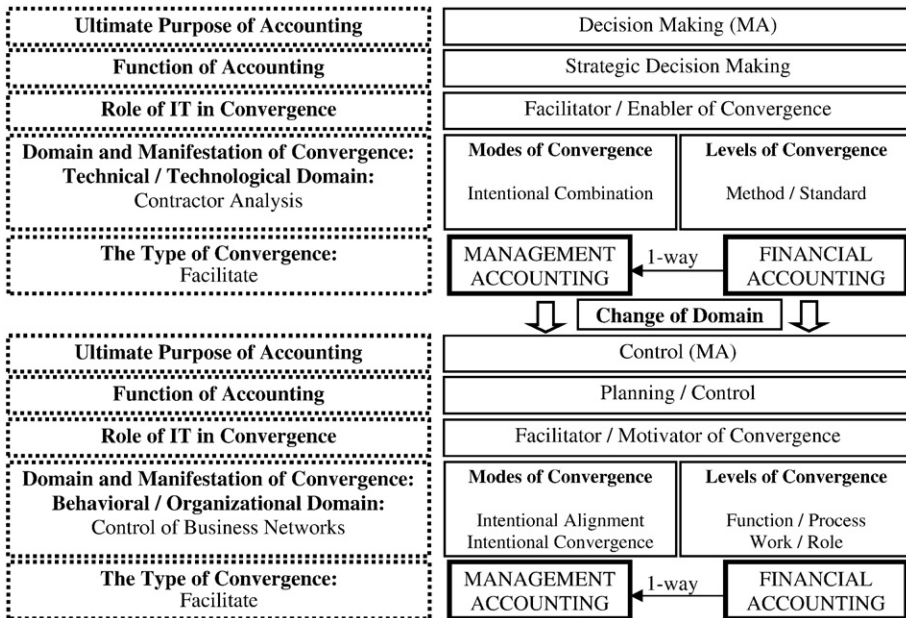


Fig. 4. Contractor analysis and the control of business networks.

lead to convergence in the behavioral and organizational domain in terms of the control of business networks. As illustrated above, both MA and FA information are used for planning and control. Information processed through open books facilitates or even motivates the intentional alignment of accounting and control processes, with the work of accountants and the behavior of middle management being based on both MA and FA information.

3.2.2.5. *The board of directors and venture capitalists.* Boards of directors demand forward-looking financial information for planning and decision making, especially in growth companies. One of the most commonly observed examples of this is the ‘hands-on management’ practiced by venture capitalists. The finance and control information systems as well as accounting information receive more attention in those growth companies with venture capital finance than in other SMEs. For example, [Granlund and Taipaleenmäki \(2005\)](#) concluded that a venture capitalist requires certain sophistication from the control systems of a firm. They also pointed out that especially those venture capitalists who do not pursue hands-on management practices may require reliable control and reporting systems due to the physical distance from the funded business operations. In publicly quoted companies, the role of the board of directors is emphasized firstly in the judgments based on forecasts and the latest estimates in order to communicate earnings guidance to the stock market. Secondly, it is the responsibility of the board members to make the assumptions, judgments and decisions as regards the goodwill impairment test under IFRS.

Applying our conceptual framing, we find that the due diligence related convergence in the technical and technological domain can lead to convergence in the behavioral and organizational domain, particularly regarding the role and decisions by the board or venture capitalists, as illustrated above. IT plays an important facilitating role in the intentional alignment of MA and FA in the work of the board of directors.

To conclude this section, we observed that convergence in the technical and technological domain precedes the manifestations and outcomes brought about by the convergence of MA and FA in the behavioral and organizational domain, similar to what has been suggested by [Hartmann and Vaassen \(2003\)](#). These manifestations and outcomes are facilitated and enabled by information technology on many levels. Our

Table 2

Summary of the manifestations and outcomes of MA and FA convergence in the behavioral and organizational domain (see Appendix 1 for abbreviations).

	Accounting processes: synchronized reporting schedules	Accounting processes: reporting time-span – mindset alignment	Accounting processes: Profit warnings	Accounting processes: target budgeting	Accounting processes: outsourcing	Specific features of the work & role of accountants	Incentive systems	Accounting and control in Multinational Companies (MNCs)	Control of business networks	The Board of Directors and venture capitalists
Primary field of accounting	MA	MA	FA	MA	MA	MA/FA	MA	MA	MA	MA
Ultimate purpose of accounting	C	C	V	C	C	C/V & S	C	C	C	C
Function of accounting	PC	PC	TR	PC	PC	PC/TR	PC	PC	PC	PC
Role of IT in convergence	F	(F)	F	(F)	F/M	F/M	(F)	F (M)	F/M	F
Domain of convergence	B&O	B&O	B&O	B&O	B&O	B&O	B&O	B&O	B&O	B&O
Mode of convergence	ALI	ALI	ALI	ALI	ALI CON	ALI	ALI CON	ALI CON	ALI CON	ALI
Object / Level of convergence	F/P	F/P	F/P	F/P	F/P W/R	F/P	F/P W/R	F/P W/R	F/P W/R	F/P
Type of convergence	M	M	M	F & M	M	F & M	F & M	M	F	F
Direction of convergence	MA⇌FA (1-way)	MA⇌FA (1-way)	MA⇒FA (1-way)	MA⇌FA (2-way)	MA⇌FA (1-way)	MA⇌FA (2-way)	MA⇌FA (2-way)	MA⇌FA (1-way)	MA⇌FA (1-way)	MA⇌FA (1-way)

observations are summarized and reflected against our theoretical framework in Table 2. Abbreviations used in Table 2 are explained in Appendix 3.

4. Discussion

In our conceptual framing, we argued that FA has shifted from historical cost-based stewardship accounting towards increased transparency for all stakeholders and fair value-based accounting for facilitating shareholder decision making, thus leading to the need for a close relationship between MA and FA (Hemmer and Labro, 2008). We identified several areas in which this has already apparently occurred, particularly in standard setting and other discretionary disclosures to investors, although it is also the case in other fields, such as M&A activities, competitor analysis, accounting in MNCs, accounting processes, the control of business networks, and the work of board of directors.

These observed manifestations and outcomes of convergence in accounting all showed a major element of forward-looking information or increased transparency. The first manifestations of the accounting convergence are technical or technological, not least due to the fact that IT is the major facilitator, catalyst, motivator, or even the enabler of this phenomenon. As convergence proceeds, the manifestations seem to become more behavioral and organizational (Orlikowski, 1991, 1992), and we may argue that the convergence in the T&T domain precedes that in the B&O domain, as suggested by Hartmann and Vaassen (2003).

The illustrative examples and the proposed research topics (see Appendices 1 and 2) show that consideration of the current convergence trend raises new interesting topics and angles which also have obvious relevance for accounting practice. We have earlier emphasized that a new relevant field of research may remain unobserved without an open-minded exploration of research questions beyond the borders of a safe, narrow focus on solely MA or FA. We are not arguing that the current advancements in these fields are obscure, but rather that we may add something new and relevant to these prior achievements by thinking out of the box, looking into accounting from the outside.

What are the lessons for standard-setting authorities and practitioners to learn from this type of study? For regulation bodies, it would be of great importance to gain a proper understanding of how MA works locally and globally. For example, the Sarbanes-Oxley Act⁷ (SOX) of 2002 was intended to increase public trust in FA and the integrity of the financial reporting process in the US, covering issues such as auditor independence, corporate governance, internal control assessment, and enhanced financial disclosure. Through fair value accounting and internal control, SOX motivates changes in MA to meet these SOX-based requirements. The most commonly used framework for internal control, COSO, adopts a broad perspective of risks covering both strategic and operative management control systems. In the case of SOX, IT mainly facilitates this convergence by improving opportunities for cost efficient internal control to identify material weaknesses in financial reporting and to provide reasonable assurance on the quality of MA information, which can in turn be used for financial reporting purposes. SOX regulation has revealed a lack of sufficient resources for their accounting function in general (Doyle et al., 2007). In addition, SOX regulation has incurred extensive costs for companies, since the affected companies have had insufficient resources to adopt it appropriately. This has resulted in the delisting of several companies, including Adecco (press release 11.4.2004) from Switzerland, Bayer (press release 5.9.2007) from Germany, and Stora Enso (press release 7.12.2007) from Finland. Moreover, some have reported that they cannot properly follow the regulations due to a lack of accounting staff. Therefore, a close connection between the standard setting bodies or other regulations and management accountants, practitioners or academics would lower the risk of overly demanding, flawed or otherwise unsuccessful accounting standards and other norms.

For the practitioners, we have offered an analyzed, outlined framework based on research for promoting understanding of their daily activities within converging accounting. We have offered an alternative answer to the questions of how accounting has recently changed so much and why. We have also opened up doors for designing and further developing the accounting function, systems and processes within companies, where the interface between MA and FA seems to offer grounds for better accounting structures and practices. Although the observations we have presented here may be self-evident for some of the practitioners, we theorize and conceptualize how the changes in the T&T domain are also reflected in the B&O domain. Our conceptual framing may assist in understanding these relationships. Without a proper understanding of these connections, the consequences of changes in the T&T domain may result in unfavorable and unexpected consequences in the B&O domain, as well as in business practice.

For academic researchers, we have offered many new research questions that may provide a broader perspective for conducting relevant research. This may have a positive impact on society and improve the status of accounting researchers not only within the academic community, but also within accounting practice. In Appendices 1 and 2, we have proposed future research avenues within the fields of MA and FA and their convergence, classified in the various fields discussed earlier.

Although our illustrative examples of convergence primarily concern larger and publicly listed companies, we acknowledge that some of the observed elements are also manifested in SMEs⁸ and hence may at least partially be contextually generalized to another environment. Furthermore, the convergence of MA and FA is most likely not the only technology-driven significant change worthy of further analysis in the field of accounting. Similarly, convergence does not only concern accounting, which seems to be only the tip of an iceberg. This phenomenon involves all fields of business economics (accounting, marketing, business management etc.), and it would be of great benefit for future research to explore these crossroads and interfaces between various fields, which to a large extent are currently an unexplored no-man's land.

⁷ The Sarbanes-Oxley Act of 2002 (Pub. L. No. 107-204, 116 Stat. 745), also known as the Public Company Accounting Reform and Investor Protection Act of 2002, and commonly called SOX or Sarbox, is a United States federal law signed into law on July 30, 2002 in response to a number of major corporate and accounting scandals including those affecting Enron, Tyco International, Peregrine Systems, and WorldCom. These scandals resulted in a decline in public trust in accounting and reporting practices.

⁸ Actually, Lukka and Granlund (2003), drawing on the notion of a loosely coupled system, propose that management and financial control systems should be relatively light and simple, in the environment where creativity and flexibility are needed (see also Granlund and Taipaleenmäki, 2005). In our view, this would suggest a simple and solid accounting system with close interaction of MA and FA.

This type of broader perspective challenges current institutions, such as academic journals, positions and teaching. Academic journals could pay more attention to cross-disciplinary efforts and carefully evaluate their potential for providing more relevant questions for research. Academic positions could be broader, and a broader perspective on research topics should be tolerated. In teaching, some cross-disciplinary courses with professors from different fields could be adopted. With these requirements, we are not arguing that all activities have to be focused on these cross-disciplinary efforts, but rather that these efforts should be tolerated and supported. Without conscious institutional concerns, this will not happen, and as shown in this paper, there are clear reasons to move in a cross-disciplinary direction.

In the near future, this convergence will, in our view, continue, and the future may even see fully (re-)integrated accounting. One technology-enabled path for such a development may be based on XBRL (eXtensible Business Reporting Language; an open standards-based way to communicate business and financial information), with which investors and other outside stakeholders may construct their own information set on a continuous basis (Debrecey and Gray, 2001; Debrecey et al., 2005). Using XBRL enables each data item to be precisely defined and related to other data items according to a standardized taxonomy (Hunton, 2002). This may make standardized accounting information visible even on a daily basis, reported using interoperable information systems. In the case of XBRL, IT acts as an enabler of converging MA and FA, where regulatory bodies of FA encourage voluntarily (SEC in 2004) or require (South Korea in 2007) the adoption of XBRL, thereby motivating FA to enter into the area of detailed analysis of business, an area which traditionally has been the terrain of MA alone. Simultaneously, the standardization of taxonomy across companies improves the data analysis of all stakeholders (Debrecey et al., 2005; Yoon et al., 2011; Alles and Debrecey, 2012), and may also be adopted in MA.

Furthermore, modern information technology may increasingly transfer some accounting work to non-accountants (e.g., transaction registration to the logistics function or shop floor workers (Quattrone and Hopper, 2001; Rom and Rohde, 2007), or reporting and analysis to the accounting information end-users as a form of 'self-service'), and hence blur the cross-functional borders and transform the entire accounting field as it potentially converges and integrates tightly with other business processes. Although technological innovations constantly emerge and fade away, as Granlund (2011) quite plausibly suggests, our view is that there will always be important general lessons to be learned from analyses of contemporary technologies. Therefore, we do not rule out the possibility that technological development and its implications for corporate practices in the long term may change or even reverse this MA and FA convergence that we currently foresee.

Although we agree with Hemmer and Labro (2008) that MA and FA are converging, we do not agree with their methodological conclusion, in which they suggest that management accounting researchers should concentrate on an economics-based research agenda driven by a single theory, with large sample sizes and quantitative analysis methods, favoring the views of Zimmerman (2001). We also argue that convergence is much broader than claimed by Hemmer and Labro (2008). Based on our observations on convergence, we can easily argue quite the contrary: in order to gain proper understanding of the richness of convergence, we need a rich set of theories and methodologies, as suggested by Granlund (2011) and McKnight (2011).

5. Conclusions

Accounting and its major fields, MA and FA, are undergoing major changes, one of which seems to be a shift towards the convergence of MA and FA, the focus of this paper. The ultimate purpose of MA and FA is the same. This includes evaluation of past performance for informative and accountability purposes, and plans for the future to make rational capital allocation decisions. The recent trend shift of MA from history-based short-term planning and control to future-oriented strategic planning and control, and FA from historical cost accounting for stewardship purposes to fair value accounting for valuation purposes and decision making, as well as increased transparency for broader stewardship have planted the seeds for the convergence between MA and FA. Why convergence was not a clear direction earlier can be explained by the previous lack of a key element, i.e. information technology that could facilitate, catalyze, motivate, or even enable the convergence first in the technical and technological domain and later in the behavioral and organizational domain. Our conceptual framing bridges the gap between the concepts of MA and FA

within a setting of advances in IT, explaining the manifestations and outcomes of convergence within these domains (cf. [Llewellyn, 2003](#)). Based on our analysis, the convergence of MA and FA in the technical and technological domain appears to precede convergence in the behavioral and organizational domain (see [Hartmann and Vaassen, 2003](#)). The manifestations and outcomes of the convergence presented in this paper indicate that IT has had a dominant role as the facilitator of this process. While the integration of information systems has extensively been adopted by companies, a general trend of convergence has become more obvious due to the increasingly advanced technological platforms.

The manifestations and outcomes of these changes could be detected in the technical and technological as well as in the behavioral and organizational domain. Within the technical and technological domain, recent developments in activities, such as financial reporting and stock market regulation, voluntary disclosures, performance measurement, transfer pricing, competitor, customer and contractor analysis, as well as due diligence in M&A activities, all contain major converging elements in which IT plays an important, even pivotal role. Within the behavioral and organizational domain, we also identified several origins of the close alignment between MA and FA, including accounting processes, the work and role of accountants, incentive systems, accounting in multinational companies, the control of business networks, and the work of boards of directors.

The manifestations and outcomes of convergence illustrate that it may be purposeless or even misleading to use concepts MA and FA. We may, for example, analyze the performance measurement systems and incentive systems, where the technical-level convergence is apparently to a very large extent diffused in behavioral-level convergence, and which very concretely combines MA and FA on the data level within information systems, and the information level within reports. We argue that as the data can be combined from various information systems, it would be artificial to ask whether FA data become MA information, as they are combined with MA data for performance measurement reporting or for an incentive system. We would rather conceptualize this type of information purely and simply as accounting information or management control information.

Furthermore, due to the various outcomes of the convergence, it is also difficult to determine whether it would be possible to separately build solid theories of a cumulative nature for MA and FA. We believe that it is possible to use elements of more abstract theories within economics, such as transaction cost theory or principal-agency theory ([Hemmer and Labro, 2008](#)), or within sociology, such as structuration theory (see [Orlikowski, 1991, 1992](#)), and further develop accounting theories that are time-dependent and should be updated as accounting itself evolves. In addition, we need these accounting-specific middle-range theories, as they are useful for understanding current accounting practices. For the moment, MA and FA are undergoing a phase of drastic development, and one of the major features of this change is their convergence. Hence, in our view, paying attention to the relationship between MA and FA, and particularly to the convergence phenomenon, may contribute to potentially more meaningful results, and more practical and relevant theories ([Malmi and Granlund, 2007](#)) in accounting research. In future research, the various modes of this convergence should be empirically analyzed in more detail within their organizational settings – the intentional integration of accounting systems, the combination of accounting information, and the alignment of accounting processes, as well as the unintentional alignment and convergence of intertwined MA and FA. These may inform us about the potential risks of convergence, which are difficult to foresee. In Appendices 1 and 2, we have presented some potential avenues for future research regarding the convergence of MA and FA. Whether there will be a re-integration of accounting in the future remains unanswered.

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Appendix 1. Future research opportunities regarding MA and FA convergence arising from the technical and technological manifestations

Future research avenues – the technical and technological domain	
Accounting standards: (a) goodwill impairment, (b) segment reporting, and (c) FA principles in budgets/forecasts	From the research perspective, the observations mean that first, in order to understand fair value accounting, researchers should know more about the MA basis for estimating fair values (see Hemmer and Labro, 2008) and related processes. These practices may considerably vary between companies, and so may affect the outcome. Second, understanding the nature of business and related business strategies and methods to evaluate business performance may assist FA researchers in understanding the quality of segment reports and their role in valuing businesses within companies.
Intellectual capital and other discretionary (e.g. environmental) reporting	Intellectual capital reports convey information on the capabilities, i.e. future value generators of the company. From the research perspective, the connection between MA and FA in the field of intellectual capital and earnings forecasts is of great importance, and the relationship between the information content and quality of earnings guidance and the quality of MA systems would be worthy of further analysis. On the other hand, do these new types of discretionary reporting, such as GRI, illustrate the adopted MA practices, or are they mainly carried out to please outside stakeholders? Will these voluntary disclosures turn into non-discretionary disclosures governed by standards? Without the fundamental connections between MA and FA, these disclosures are solely 'window dressing' without any meaningful information content for investors.
Performance measurement	For further research, it would be important to identify how external measures and indicators followed by investors and analysts transform, if they do so, and are absorbed into the performance measurement systems within organizations. Do these external performance measures create stability, or do they create a solid basis for measurement that is flexible enough for organizational dynamics? Do companies also communicate internally using measures, such as BSC indicators, to the outside parties, and if they do so, why?
Transfer pricing	For researchers, it would be important to examine how the benchmarks for market-based transfer prices are determined – are they purposefully determined to avoid taxes, and how do they interrelate with other control related motives? The augmented use of off-shore service centers abroad and the international tax-based competition between governments increases the importance of defining arm's length prices, making this definition work more challenging because the value of intangibles could be difficult to benchmark.
Competitor, customer, and contractor analysis	For further research, the focus could firstly be switched to modern business intelligence tools in order to learn what kind of technologies and solutions are the most useful for competitor intelligence, and why that is. In addition, studies would be welcomed that analyze exactly how and why the non-accountant middle managers in various functions use external FA information in their daily work (e.g., in sales and sourcing decisions), and whether the new IFRS-based reporting practices increase the quality of information and its availability, so that those companies using it within the business processes improve their customer and contractor selection and ultimately their business performance. Furthermore, it would be worth studying what practices companies use in hiding their business-critical information from their competitors, as regards external reporting, and whether this is even one of the reasons for de-listing the business from the stock exchange.
Due diligence in M&As	For researchers, it would be of great importance to know how the competence of both the acquiring and the target company's accounting and finance personnel influences the process and outcome of M&A, or how the quality of the acquired company's MA and risk management systems influences the process and outcome of the M&A activity, in addition to how these are later reflected in future interest in M&As and the development of financial results, and whether we may observe these consequences in the impairment test of goodwill in the form of value reduction.

Appendix 2. Future research opportunities regarding MA and FA convergence arising from the behavioral and organizational manifestations

Future research avenues – the behavioral and organizational domain

<p>Accounting processes: (a) synchronized reporting schedules, (b) outsourced accounting (c) reporting time-span – mindset alignment, (d) profit warnings, and (e) 'target budgeting'</p>	<p>For researchers, synchronized FA and MA reporting schedules and time spans may play an important role, for example, in understanding inertia and resistance to change within accounting development projects, as well as why non-financial measures could be difficult to implement as a part of the reporting system. Concerning alignment of the time span and mindset, it would be important to analyze how external reporting frequency is related to the managerial mindset in the company in relation, for example, to strategic investments such as R&D, or other long term activities, or control system design.</p> <p>Outsourced accounting and its consequences for the quality of managerial information, as well as company success, would be of great importance both for listed and small- and medium-sized companies. The adoption of ERP systems may lead to more rapid financial reporting, and a tighter financial reporting schedule can indicate higher quality of MA and control. This would be of great interest in future research. Accounting service providers may offer better quality reporting, but at the same time companies lose the possibilities for ad hoc reporting and the competitive advantage of developing their own reporting practices, run by those close to business and strategy processes. In the case of profit warnings, the needs of the financial markets may have had a substantial influence on the development of rolling forecasting and variance analysis. How MA and FA interact in the case of profit warnings, and how the quality of MA influences the profit warnings and information asymmetry between the financial markets and company management is a matter of great importance without any current research knowledge. Comprehensive research evidence of the influence of profit expectations from the market on the budgeting target levels is still practically non-existent. Similarly, the consequences of such practices are entirely unknown, although they may have a significant impact on the internal control practices and strategic decisions.</p>
<p>Specific features of the work & role of accountants</p>	<p>For further research, this alignment of MA and FA may emphasize the power of accountants within the regime of fair value accounting, since they understand business as well as MA and FA. This may create a hybrid-type role of super-accountant, and even a trend towards accounting and finance oriented chief executive officers (CEOs). On the other hand, this complex set of roles may put pressures in another direction, where the interaction between MA and FA is too wide a responsibility for one person; therefore, the role of CFO might even be divided into two positions, but not necessarily between MA and FA roles. These are open for future research. Furthermore, the above-mentioned changes in competence requirements necessitate relevant and research-based academic accounting education.</p>
<p>Incentive systems</p>	<p>Both within and between organizations, the emphasis between MA- and FA-based incentive systems varies. In addition, some parts of MA-based systems are intended for strategic purposes, while others are operational and tactical. How have companies constructed these incentive systems, why and what are the consequences, and does the combined balance of MA and FA in a scorecard linked to incentive systems increase long-term business success? These questions still remain unanswered, although we are aware of how influential the incentive systems may be. In addition, when do the incentive systems become value-destroying tools, generating motivation for undesired earnings manipulation instead of value creating? This still remains a mostly unexamined topic.</p>
<p>Accounting and control in Multinational Companies (MNCs)</p>	<p>For further research, there will be increasing harmony in financial statements within MNCs. This trend is strengthened by the global acceptance of IFRS, which will also support the development of MA to reflect IFRS requirements. This may have a major role at least in developing countries and emerging economies in the development of MA. Especially if IFRS for SMEs are broadly accepted, non-listed companies will also undergo a similar development. It would also be important to understand how the adoption of global standards has improved the control of multinationals.</p>
<p>Control of business networks</p>	<p>For further research, it would be important to develop a model for financial reporting of networks, where MA may play a key role in providing information for evaluating the joint profitability and fair values of these collaborations and networks. Moreover, the nature of strategic management accounting for interorganizational communication purposes needs much more effort to understand, since in the globalized, networked business environment, these interorganizational information flows may have a pivotal role in the success of business ecosystems.</p>
<p>The Board of Directors and venture capitalists</p>	<p>For further research, the use of both MA and FA information in the boardroom requires an in-depth analysis that identifies and analyzes the processes, motives, and consequences. What is the role of ownership and the board structure, and how has the information set for the work of the board evolved over time? Future perspectives as well as explanations for the past are generated using MA information. How MA and FA are combined in the boardroom is still an unanswered question for researchers.</p> <hr/>

Appendix 3. Explanations for the abbreviations used in the convergence summary tables (Table 1 and Table 2)

Primary field of accounting	MA = Management Accounting, FA = Financial Accounting
Ultimate purpose of accounting	D = Decision Making, C = Control, V = Valuation, S = Stewardship
Function/Orientation of accounting	SD = Strategic Decision making, PC = Planning & Control (Long-Term), FV = Fair Values, TR = Transparency (internal or external)
Role of IT in convergence	F = Facilitator, C = Catalyst, M = Motivator, E = Enabler
Domain of convergence	T&T = Technological & Technical, B&O = Behavioral & Organizational
Mode of convergence	INT = Intentional Integration, COM = Intentional Combination, ALI = (Un)Intentional Alignment, CON = (Un)Intentional Convergence
Object/Level of convergence	S/S = System/Software (metadata/data), M/S = Method/Standard (data/information), F/P = Function/Process (information/knowledge), W/R = Work & Role (knowledge)
Type of convergence	F = Facilitate, C = Catalyze, M = Motivate
Direction of convergence	MA \leftrightarrow FA (1-way), MA \leftarrow FA (1-way), MA \rightleftarrows FA (2-way)

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