Old wine in new bottles? A preliminary exploration of management accounting in cloud business models

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Abstract

This paper begins to explore how management accounting has evolved over recent years, with a particular focus on web and cloud business models. In recent years the web has developed to include social media, rich user interaction and businesses without 'bricks and mortar' and 'high street shops'. In this context, this paper explores how management accounting techniques and/or practices are used to provide key decision-making information to businesses operating within this environment.

The research here is based on an exploratory case study, which we call WebAccounting (WA). Using some constructs on general organisational change put forward by Dawson (2003), we interpret the process of change in the business and resulting changes in management accounting. Our preliminary results show that, at least in this case organisation, there has been a shift in focus to decision-relevant revenues. We also observed that key performance indicators are mainly non-financial, and are based on and driven by the increased focus on revenues. Additionally, WA inadvertently used some traditional management accounting techniques, albeit in a 'new' manner.

Due to this paper's exploratory nature, we cannot claim generalizability of results. However, given the novel nature of our findings and the lack of research to date on new business models and management accounting practices, we hope to encourage further research.

1. Introduction

The genesis of this research was a conversation between us, the two present researchers. In the course of the conversation, it became apparent that approaches of some modern businesses in terms of how they are organised and operate is quite different from previous. This may effect management accounting; for example, we pondered what would be the role of management accounting/management accounting information in firms like Google, Twitter and Facebook. As will be detailed later, the outcome of our conversation was to undertake research to begin to explore management accounting within organisations in today's somewhat virtual business environment.

Many writers (e.g. Burns and Vaivio, 2001; Sulaiman and Mitchell, 2005) suggest that Johnson and Kaplan's (1987) publication, *Relevance Lost*, ignited a debate on the potential future development of management accounting, for instance via 'new' and 'advanced' management accounting techniques. Since then, several writers have re-visited the 'relevance' issue - see for example Bhimani and Bromwich (2010), Otley (2008), Scapens and Bromwich (2010). Otley (2008) notes that while there will always be a role for financial analysis in business decision-making, such tasks are no longer the sole realm of management accountants, as technology has disseminated the ability to produce and use such information. Otley (2008) also adds that even the traditional security of a budgetary control system is under threat, with not much consensus over alternatives. The rapid pace of technological change is of particular interest here. In the two decades or so since the work of Johnson and Kaplan, the capability and availability of technology has vastly increased. And, as Scapens et al. (2003) note, technology is a driver of management accounting change, even more so presently with the increased use of the Internet as a space for conducting business. Whether or not technological advances in the past two decades have been beneficial to society in general, or to business, is not debated here (see Parker (2011) for an interesting summation). Our focus is on whether and how more recent technological developments may have changed the ways decision-relevant information (i.e. management accounting information) is gathered and used.

Particularly in the past decade, what has been termed the 'Information Age' (see for example Castells, 1996) has triggered changes to both the daily lives individuals as well as how business is done. With respect to the latter new business models have emerged. As this paper explores management accounting practices within an organisation adopting a 'new' business model, it is important the meaning of this term be defined at the outset. A business model is, as Magretta (2002) puts it, the story which explains how an organisation works. It answers questions such as "who is the customer", "what does the customer value", "how can we make money", and "how can we deliver what customers want at an appropriate cost". Based

on the story of American Express travellers cheques, Magretta (2002) recounts how a successful business model may offer a better alternative to existing methods (cheques rather than cash) or replace the old ways of doing things (cheques replacing letters of credit). Thus, a business model implies some deliverable product or service of an organisation. Currently however, traditional terms such as 'product' or 'service' which are used in a general business and management accounting context, may be difficult to readily apply to an organisation - for example, what product or service do companies like Facebook or Twitter actually offer to users? And how do they make money? What do they offer as a 'better alternative', or what 'old service' do they replace? The answer in these two organisations may be that these companies utilise their large user/customer databases to leverage advertising or other income sources. In other instances, businesses which are more readily associated with a product or service have dramatically altered how the product or service is 'delivered' - for example Amazon.com in (electronic) books, Apple's iTunes in music, or Google in advertising (see also Böhm et al., 2010). Such changes have resulted in new business models that are different from any previous business models. And, within these new business models, how management accounting is practised and (possibly) changed from traditional practices has not been the object of much academic research, at least in the management accounting literature. In using the term 'management accounting', the broadest possible sense of the discipline is implied here, which may incorporate roles such as business partner, controller, finance expert, 'bean-counter' and so on. This broad meaning of management accounting is proposed here for two reasons. First, it is unlikely that a company like Google, for example, could have grown to its present size without some form of management accounting/management control system - although it might not be termed so within the organisation (Otley, 2008). Secondly, there are many smaller businesses which apply new business models, and some of these may not have a formal accounting and/or finance function at all.

Having set a scene of new types of business model, in this paper we aim to offer an initial exploration of what constitutes management accounting practices in businesses which have adopted some newer technology driven business models, and how management accounting practices have changed (or not). Thus, the focus of our research is businesses that have evolved during, or were founded since, the advent of what consultants term the Web 2.0 environment - which is detailed later. To this end, the next section (Section 2) describes the extant literature on how management accounting techniques in general have evolved in recent decades, as well as outlining some approaches to studying processes of organisational change. Next, Section 3 briefly outlines cloud business models in particular and provides detailed findings from an exploratory case of an accounting software company. Finally, Section 4 offers some discussion and concluding comments.

2. The development of management accounting over time

Historically, from about 1840 to 1970, management accounting did not experience radical change; more evolution than revolution brought about new developments and approaches (Bromwich and Bhimani, 2010). Up to the 1970s, the business world experienced a consistent change from being supply- to becoming demand-driven. One of the main management accounting practices of that time - allocating overheads to cost objects based on labour hours - was unaffected by these changes, as mainly practice (but also the academic world) kept employing this 'simplistic' way of allocating costs (Johnson and Kaplan, 1987, p.237); and, this was still the dominant form of allocating costs in the UK by the beginning of the 21st century (see Brierley et al., 2001). Management accounting theory up to the late 1970s/early 1980s did not mirror the reality of business conditions for organisations (Johnson and Kaplan, 1987), be that because management accounting had lost its connection to the organisation (Hopwood, 1983), or because practices and their needs became invisible and inaccessible to management accounting research (see Kaplan, 1984; 1983). Therefore, management accounting as an academic research discipline enjoyed a relatively undisturbed existence up to this point. By then, however, questions about management accounting's right to exist[1] became louder and culminated in Johnson and Kaplan's seminal book "Relevance Lost - The Rise and Fall of Management Accounting".

To Johnson and Kaplan (1987), management accounting had by the end of the 1980s already lost a major part of its initial power to influence and support decisions inside organisations. When Johnson and Kaplan (1987) expressed their concerns, it constituted a major wake-up call to researchers and practitioners in the field. They argued management accounting had lost its ability to influence decision-making processes. They saw the issue mostly arising from management accounting systems at that time, providing the wrong signals for decision-making as well as the stronger influence of financial accounting and reporting systems. A sole focus on financial indicators - instead of on the processes, transactions and events that brought them about - drove the management accounting agenda from the front end; in other words, the targets set by financial reporting (such as quarterly earnings reports) influenced the data and consequently the information produced by management accounting functions (Johnson and Kaplan, 1987). Thus, with a greater emphasis on financial accounting, cost reduction, productivity improvement, performance management and ultimately the management of the intrinsic value of a corporation got shifted out of the focus of the management accountant, and effectively become part of the realm of the

[1] Even in 2010, authors like Bhimani and Bromwich see a strong need to discuss the *"raison d'être"* (pp.93-96) of management accounting which is linked to its claim to quantitative decision-making influences. They state that this always seems to happen when "rapid shifts" in the economy and business environment occur.

general finance function (Bhimani and Bromwich, 2010, for instance state that "firms do not generally use different accounting systems for financial and management accounting and these systems seem to reflect financial accounting requirements" p.16).

Around the same time as Johnson and Kaplan (1987) published their work, the emergence of Activity-Based Costing (ABC) acknowledged the business realities for most organisations where a considerable increase of overhead costs and a relative decrease of direct costs highlighted the need for new management accounting instruments (Al-Omiri and Drury, 2001; Bhimani and Bromwich, 2010; Johnson and Kaplan, 1987; Miller and Vollmann, 1985). Compared to the more evolutionary approach up to this point, the introduction of ABC marked a quantum leap in management accounting theory and - to some extent - practice during the 1980's (Innes et al., 2000; Kaplan and Bruns, 1987). Since then, other techniques and tools have emerged, such as the Balanced Scorecard (Kaplan and Norton, 1992), life-cycle costing (Shields and Young, 1991) and throughput-accounting (Dugdale and Jones 1998). Other terms such as Economic Value Added™ and strategic management accounting are also encountered in the management accounting profession - however Otley (2008) argues these may be outside the traditional expertise of management accountants.

In some senses, not much has actually changed since the publication of Johnson and Kaplan's criticism, and the discipline of management accounting seems in itself quite stable. For example, textbooks still focus on management accounting dogmata such as treating direct labour as a variable cost and using labour hours as a cost allocation base for assigning overheads. This 'textbook inertia' grants direct labour a kind of 'nonplus-ultra' status in the discipline (although the newer throughput accounting approach treats direct labour as fixed; Dugdale and Jones, 1998). In both theory and practice, this seems unwavering even to the present day. The goal of tracing indirect costs to cost objects, a procedure which seemed clear-cut for decades, has become a conundrum with many theoretically acceptable, but practically either unfeasible or too resource-intensive approaches (e.g. Bhimani and Bromwich, 2010, cite evidence that Activity-Based Costing has only a 20% deployment rate in the UK and the US; see also, CIMA, 2009). At second glance, however, management accounting practices have developed; a number of newer techniques and approaches have made it into the mainstream management accounting body of knowledge, such as, target and kaizen costing (Monden and Hamada, 1991) and the earlier mentioned throughput accounting techniques (theory of constraints; Dugdale and Jones, 1998). If we were to consider the rhetoric of professional bodies such as the Chartered Institute of Management Accountants (CIMA), then - arguably - the role of the management accountant has also evolved from a mere provider of cost information to an 'in-house consultant' and business partner in all things operational and strategic

(Bhimani and Bromwich, 2010), therefore venturing into areas where skills "are able to add little value" (Otley, 2008, p. 235). In these areas, the management accountant is also contested by other specialist functions like operational management or information systems.

Thus far, it has been argued that change to management accounting techniques and practices is a relatively recent phenomenon. This is not to suggest that traditional techniques are no longer used. Based on recent evidence, both traditional and new management accounting tools do not seem relevant, judging from their quantitative distribution in a recent CIMA (2009) study. The results of that survey among 439 CIMA-affiliated organisations portray management accounting as still playing a strong role within organisations; on average, 33 management accounting tools are used in order to support operations, managerial decision-making and strategic deliberations. Both 'traditional' (pre-1980s) and 'new' management accounting techniques are in use throughout organisations, but the use of some other 'new' techniques is less widespread. The CIMA (2009) study concludes that traditional accounting tools are on average preferred to the more complex and 'new', or as the authors of the study note "the more traditional tools of variance analysis and overhead allocation remain the most popular" (2009, p.11). On the profitability and pricing side, the use of newer techniques such as customer profitability analysis and product/service profitability analysis was more prevalent than traditional techniques such as break-even analysis. Interestingly, 50% of respondents were from the service sector, with 32% of the overall respondents been classed as 'other services' i.e. not financial and not professional service firms. The latter are the particular focus of our research here, with an emphasis on changing business models and changing management accounting practices. Thus, at this point, it could be speculated that in service firms more novel approaches to management accounting might be expected on the pricing and profitability side than on the costing side - this point will be developed later.

Against the background of change in management accounting since the late 1980's, technological change has also occurred. The emergence and growth of the Internet has brought about a radical change in how business can be done. This has affected both existing brick-and-mortar businesses that expanded their operations online (e.g. car brands which generate a large proportion of their sales online, such as Ford, Audi or BMW; see Experian Hitwise, 2011) as well as businesses that were founded online with no high-street or other obvious physical presence. Research into how this technological development has affected management accounting practices is scarce, but it could potentially create new foci in terms of modified or completely new approaches to management accounting, even a move away from cost- to revenue-driven operations and strategy. As the authors of the CIMA (2009) study state

> Using the right tool for the right context means that practices change as organisations' needs change, and also as new tools are introduced, proven and disseminated throughout regions or industry sectors. The management accountant should reassure users that such a 'turnover' in the use of tools is natural and beneficial, and does not signify a sudden lack of confidence in a tool, or an admission that its former application was a mistake. (p.5)

In essence, the CIMA (2009) report as quoted above is suggesting that management accounting tools will change according to changing business contexts. And, it quite clearly suggests that 'turnover' (or change) is in fact beneficial. However, it does not elaborate on the meaning of term 'new'. Thus far, we have portrayed a new management accounting technique/practice as something which is in opposition to, or somehow different from, traditional ways of doing things. However, this is a narrow definition of 'new'. Does 'new' imply a completely new and revolutionary approach, or an evolution of an 'old' technique? For example, Otley (2008) is somewhat critical of some new techniques, commenting that some 'newer' techniques like ABC are in fact not novel. For the purposes of this paper, a 'new' management technique/tool/practice is taken to mean either (1) a completely new and hereto unreported method or, (2) an evolution of a traditional approach[2].

A key question for researchers is of course where one might investigate if any new management accounting techniques have emerged or evolved. Technologically-driven business model change, may be a fruitful field for management accounting researchers. At this exploratory point in our research we could postulate that in the face of a radical change to how business is done, management accounting might 'respond' in one of three ways. First, new and unforeseen management accounting techniques might come about. In other words, has a "fundamental disruption" to how things are done occurred (Burns and Scapens, 2000, p. 20). Such a change in management accounting might be termed revolutionary (Burns and Scapens, 2000; Nelson and Winter, 1982). Second, changes may occur to existing ways of doing things. Such evolutionary change is typically grounded in existing practices and "shaped by a combination of random, systematic and inertial forces, which together create the context out of which new practices emerge" (Burns and Scapens, 2000, p.13). Third, practices may remain relatively stable, with little or no change. This final outcome is less likely in the face of more radical technological. On the other hand, whether technology can trigger revolutionary change to management accounting practices is also subject to debate. For example, Enterprise Resource Planning systems have been reported in the literature as having both direct and indirect impacts on management accounting systems and the work of management accountants (Granlund and Malmi, 2002) i.e. some change has occurred; but these systems

[2] A good example is the Economic Value Added™ which is regarded as a 'new' performance measurement tool, but is based on the much older Residual Income.

have not necessarily been a driver of change (Scapens and Jazayeri, 2003). Thus, by reason of elimination, if new business models were to bring about change to management accounting practices, it would most likely present as evolutionary - stemming from existing ways of doing things. By using the term 'evolutionary', we adopt a similar stance to Burns and Scapens in that we are not proposing "only the fittest survive" (2000, p. 13)[3]. Rather, we speculate that although Web 2.0 may present a radically new and different way to do business, management accounting is likely to respond in a less radical and path-dependent way. This assertion is based on two factors 1) although Web 2.0 may entail new ways of doing business, business fundamentals remain e.g. making a profit and, 2) as noted by Burns and Scapens, "revolutionary change is likely to be possible only as a result of major external change" (2000, p.13). The Internet has, over time, changed how we lead our lives and how business is done, and that may be coined as a 'revolution' in the common sense of the word; however, the Internet too has evolved. It could not be said that there was a point in time when the Internet suddenly encountered a major change like that envisaged by Burns and Scapens (2000). Thus, although firms may have emerged who use the Internet to do business in a new way, these new ways are more likely to have evolved in line with technological advances - which in themselves typically follow an evolutionary path (Nelson, 1994).

To sum up, it is likely that empirical research of businesses who have adopted new business models, such as those possible with Web 2.0, will provide evidence of changes to management accounting. And, although change is probable, we would in general predict that any changes are likely to have evolved from what we have thus far termed traditional management accounting techniques. To borrow from and alter Davidson's (1963) analogy, we might expect to find old wine in new bottles; in other words the older, more traditional techniques may still be in use in a new way. It may also be possible that what we have described as newer techniques have also somehow evolved alongside business models such as those driven by Web 2.0 - an instance of newer wines in new bottles. We do not rule out the possibility of revolutionary change, rather based on the existing body of literature, on balance a more evolutionary trend is likely. Section 3 describes the results of our initial exploratory research. First, the next section provides a brief overview of how change may be studied and interpreted.

[3] For a more detailed debate on the evolutionary nature of management accounting see Johansson and Siverbo (2009).

2.1 Studying change

Thus far, we have painted a picture of both stability and change; the former in that 'traditional' management accounting techniques seem to have remained in use; the latter in that technology has, particularly in recent years, changed how business is done. Studying change in organisations, and in particular to management accounting practices, can adopt many theoretical approaches, which we briefly explore in this section.

Classical perspectives of organisational change, originating in organisational theory, focus on change as a *static* phenomenon (see for example Lewin, 1951). There is normally a focus on change *outcomes*, whereby any 'processes' of change are deemed as stages prior to any new static state. A second approach lies within contingency theory, which argues that the best way to structure and manage organisational change depends on, or is *contingent* upon, the circumstances of a particular organisation. Furthermore, as the contingent factors vary across organisations, it is also believed that the methods used to manage change should vary as well (see for example, Burns and Stalker, 1961; Donaldson, 1987). Third, a 'consulting' approach to change is largely informed by a consultative rather than an academic perspective to the study of change. The approach is often associated with scholars at Harvard Business School, who are also established management consultants. Kanter et al. (1992, p. 383), provides a typical example of this approach, where they propose the "Ten Commandments for Executing Change". This prescriptive orthodoxy of a consultative approach is continued by Kotter (1996), in which he provides a 'recipe' for successful change.

The approaches just described all stem from organisational theory. Such theories pay less attention to the subjective dimensions of change. Pettigrew suggests that research on organisation change which is "acontextual, ahistorical and aprocessual" will yield inadequate explanations of change (1985, p. 15). According to Pettigrew what is needed is to "go beyond the analysis of *change* and begin to theorise about *changing"* (1985, p. 15). He adds that the classical literature has a tendency to regard change projects as "a single unit of analysis", and change itself as "either a single event or a set of discrete episodes" (1985, p. 23), whereas, in contrast, Pettigrew insists change should be viewed as a process rather than a static event, where a process can explain: "how the possibilities and limitations of change [...] are influenced by history [...], relationships between interest groups in and outside the firm [and] mobilisation of support within the power structure" (1985, p. 24). Pettigrew (1987) later developed his ideas into a framework that has been used to guide some research of organisational change. Dawson (2003) presents a processual framework of organisational change similar to that put forward by Pettigrew.

His contribution comprises three main components, namely: (1) context; (2) substance; and, (3) politics. Substance of change consists of four sub-dimensions namely: scale, characteristics, timeframe and centrality of change. These sub-dimensions are not static and overlap with contextual and political dimensions of change (Dawson, 2003). Context refers to internal and external context (similar to Pettigrew's views), which Dawson views as "central to understand […] the route to change" (2003, p. 8). Politics refers to internal and external political activity such as "power relations and political processes" that can influence decision-making and agenda-setting in processes of change (Dawson, 2003, p. 9). Dawson's framework assumes there is no single notion or account of change - multiple subjective accounts and stories of change are possible (2003, p. 10). Such differing accounts of change are possible due to a combination of political and contextual factors; individual experience may be reshaped in a group context; differing groups have different stories; stories may be revised over time (2003, p. 90). Dawson also emphasises the subjective nature of processual research; universal laws are not sought (2003, p. 86), rather interpretation and meaning (2003, p. 87).

Approaches to studying change mentioned thus far are typical of the study of organisational change in general. In the management accounting literature, much has been written on change - and stability - of management accounting practices. As noted by Van der Stede (2011), the study of management accounting change is hardly a new phenomenon. First, several institutional approaches have been adopted by researchers to analyse management accounting practices. A number of old institutional economics informed studies have provided evidence of how management accounting practices can change, although exhibiting a taken-for-granted nature (see for example Burns, 2000; Burns and Baldvinsdottir, 2005; Burns and Scapens, 2000; Coad and Cullen, 2006; Lukka, 2007; Siti-Nabiha and Scapens, 2005; Soin et al., 2002). New institutional sociology has also been adopted to explain the convergence of management accounting practices in response to such external influences as political pressures, regulatory changes and cultural factors (see for example, Collier, 2001; Modell, 2003; Nor-Aziah and Scapens, 2007; Seal, 2006; Tsamenyi et al., 2006). And, several studies using institutional phenomena such as rules and routines have also been undertaken (see for example, Quinn, 2011; Van der Steen 2011, 2009). Second, structuration theory approaches have been adopted by several researchers to analyse change and stability in accounting systems. Recent examples include work by Coad and Herbert (2009) and Jack and Kholeif (2008), but as described by Englund et al. (2011), structuration theory has been used in accounting research for the past 25 years or so, dating back to Roberts & Scapens (1985). Third, Actor Network Theory has also been adopted by some researchers to study management accounting change, although possibly less so than structuration or institutional approaches. Some examples include Alcouffe et al. (2008), Dechow and Mouritsen (2005) and Lowe (2000).

Work underpinned by theoretical approaches such as institutional theory, structuration theory or actor-network theory is, as reflected in the above mentioned literature, useful to study the detailed nature of management accounting practices and systems. However, as stated in Section 1, the thrust of this paper is to explore the management accounting practices in use in organisations that have adopted newer technology driven business models, and to get an initial appreciation of how these practices evolved. Here, we do not propose to interpret in detail phenomena such as rules, routines, institutions, structures, networks etc. - although all these may help determine exactly why change occurs (or does not). Here, a processual approach to analysing the nature of change is deemed more appropriate, as later we reveal (Section 4) that management accounting change seems to be logically derived from business modle change.. Later in Section 4 we also begin to analyse these changing management accounting practices using the lenses of context, politics and substance as set out by Dawson (2003). These concepts, not only are useful to study the process of change as it is actually happening, but also to understand retrospectively, how and why change happened.

3. 'New' business models

As noted earlier, the evolution in technology has changed in society at all levels, accounting included. According to the management accounting literature, drivers of management accounting change can be identified in three broad categories, namely: (1) increasing globalisation; (2) improved technologies; and, (3) improved methods of production (Burns et al., 1999; Russel and Siegel, 1999; Scapens et al., 2003). Information technologies and systems in particular have advanced dramatically since the 1970s. With the advent of cheap and portable computing power and integrated networks over the past three decades, the nature of information technology-based tasks performed within the management accounting realm have changed dramatically (Scapens et al., 2003). Information systems and information technology are no longer the confine of the finance or accounting function; rather they have evolved to encompass all levels and all functions of an organisation (Burns et al., 1999; Scapens et al., 2003). In fact, Enterprise Resource Planning systems (ERPs) appear to have become a common feature of globally-connected large organisations (Davenport, 2000). Management accountants in such organisations thus frequently draw on such technology to produce detailed management information. ERPs, with their broad coverage of organisational functions and real-time information provision, also permit accounting information to be more readily available throughout an organisation (Dechow et al., 2007). Indeed, as technology has developed over time, some management accounting techniques and controls have become embedded within software (Burns and Quinn, 2011).

These same information technology advances have also changed how business is done. Bhimani and Bromwich (2010) capture the essence of business change in the past decade or so very eloquently:

> The 'fluid' organisation is a 21st century phenomenon. In less than a decade, the forces of globalisation, digitisation, technological advance and novel information exchange possibilities have altered the nature of organisational structuring and flows (2010, p.53).

Web 2.0 has had an enormous impact on how businesses have adapted or emerged as the Internet itself has developed. Web 2.0 may be taken to mean companies that solely do business on the Internet (B2C, B2B), or businesses that have adapted to the challenges presented by the Internet. O'Reilly summarises the main features of Web 2.0 businesses as follows:

- services, not packaged software, with cost-effective scalability;
- control over unique, hard-to-recreate data sources that get richer as more people use them;
- trusting users as co-developers;
- harnessing collective intelligence;
- leveraging the long tail through customer self-service;
- software above the level of a single device;
- lightweight user interfaces, development models, and business models (2007, p.37).

O'Reilly describes the above competencies as a "gravitational core" rather than a set of "hard boundaries" (2007, p.18). Some well-known businesses readily match some of the above competencies. For example, Amazon.com are known to leverage the long tail of less well-known books to increase profitability[4]; Apple Inc's iTunes crosses multiple devices.

Web 2.0 *per se* is not a business model template - defining the Internet as a participatory and user-defined web does not necessarily clarify how companies operate; this is where the term 'cloud computing' (or simply 'the cloud') comes in. Cloud computing is a more specific business model detailing how a company delivers a service. It depicts the Internet as a computing platform. It shares many of the characteristics that O'Reilly (2007) defined for Web 2.0, such as on-demand self-service, scalability or elasticity (Böhm et al., 2010; Mell and Grance, 2011), but on the other hand, cloud computing is not about user participation (such as open source projects, social media, or wikis see Brodkin, 2008).

[4]See Anderson (2009) for more illustrations of this phenomenon.

Whereas Web 2.0 is a summative term for the current concepts of how the Internet works, evolves and exists, cloud computing is a specific business model.

In a cloud-computing business model, the main 'product' sold is a service (see e.g. Knorr and Gruman, 2008; Mell and Grance, 2011); this ranges from software as a service (SaaS), to platform as a service (PaaS) up to a fully functional infrastructure, also sold as a service (laaS). Essentially, the cloud has enabled former products as services over the Internet. This, for example, removes the need to download, to install, or to maintain software or a physical server. The delivery as a service is more likened to the delivery of a utility instead of a product (Böhm et al., 2010; Mell and Grance, 2011). This may necessitate a change in how these former products generate revenue, as well as a different perspective on costs and revenues - see later.

An illustrative example of a cloud-based business may be useful at this point. inDinero.com is a US-based accounting software company. The company offers accounting software to smaller businesses via its website i.e. the software operates in a cloud-computing environment. The software connects directly to user's bank accounts as the basis for financial control. Prospective users can choose from a free service up to a plan costing $49 per month. A read of the staff blog on the company's website reveals that the software has developed rapidly stemming from many user requests. In some instances, these developments have included integration with other similar/competing software. The user interface is simple, and, based on the number of enhancements in the first year or so of business, it would seem the software development cycle is short. Thus, briefly, this example depicts several of the above-mentioned characteristics of Web 2.0 businesses as detailed by O'Reilly (2007). There are some other more well-known examples of Web 2.0 type business models which we could use as illustrations - for example O'Reilly (2007) mentions firms such as Google, eBay, Mapquest, Amazon, PayPal and Flickr. However, the important point from the inDinero.com illustration above is that smaller companies too can replicate their larger counterparts in adopting such business models. This is particularly important from the research presented here in that access to smaller companies is likely to be more forthcoming for our exploratory research, as will be detailed in the next section.

3.1 Research Methodology

In order to interpret management accounting practices of companies that have adopted some form of Web 2.0 business model, an interpretive research approach is necessary. While a quantitative method such as surveying may glean what management accounting techniques used by any organisation, for the purposes of this study, we aim to determine both what techniques are used, as well as how these techniques evolved.

Thus, to endeavour to achieve our aim of exploring what constitutes management accounting practices in businesses which have adopted a new Web 2.0 type business model, a case study method has been selected as the primary research method. Yin defines a case study as "an empirical enquiry that investigates a phenomenon within its real-life context" (2003, p. 13). One of the main design issues was whether to use a single case study or multiple cases (Yin 2003, p. 39). Single case studies represent a more risky strategy, and given the exploratory and on-going nature of this research, a multiple case study approach would be deemed most appropriate. However, at this exploratory stage of our research we chose a single case in order to identify and investigate relevant themes and issues to inform future research. Case study methodologies have been commonly used in management accounting research and Scapens (2004) provides some useful guidance. Scapens (2004) suggests four main steps to undertaking a case study, namely: (1) preparation; (2) collecting evidence; (3) assessing evidence; and, (4) identifying and explaining patterns. For the research here, preparation involved identifying a suitable case (see below) and developing an outline questionnaire as the basis for interviews. The questionnaire asked respondents to select management accounting tools and techniques they already used, might consider using, may be dropping or do not use at all. It is envisaged the questionnaire will develop over time as our research work extends. The collecting evidence step here involved semi-structured interviews, with respondents asked questions on their business model, the business' history, and use of information for decision-making purposes - i.e. management accounting techniques and practices. Interviews were recorded, transcribed and then analysed to determine the type and degree of management accounting undertaken and tease out contextual, political and substance factors which brought about change (as outlined in Section 2). As this paper reports only on an initial exploratory case (see below), patterns to other cases are not possible here. As our work progresses patterns may of course emerge and we will dig deeper into the processes of change. The longer term objective of this study is to conduct a more extensive study across several business sectors. This will increase the robustness of our findings over time. Given the exploratory nature of the research, our selection of cases was based on smaller enterprises, as opposed to attempting to get access to larger businesses such as those previously mentioned.

3.2 Research findings

This section first outlines the case organisation. Then, we detail on the empirical findings on management accounting techniques used and the information used for decision-making at the case organisation.

3.2.1 The process of change to a Web 2.0 type organisation at WA

Here, the exploratory case study is an accounting software firm operating in the UK/Irish market. The company, which is called WebAccounting (WA) for the purposes of this study, was founded about 10 years ago and is classified as a micro organisation according to EU criteria[5]. The company was approached through personal contacts of one the authors and agreed to an initial interview. In additional to this interview, we analysed information on the company website, user documentation and instructional videos to support findings from the interview. One of the two co-founders of WA was interviewed to gain an initial sense of the information used for decision-making and what comprised management accounting practices. The interviewee, who is called Founder1 (FO1) for the purposes of this research, was provided with an outline questionnaire in advance of the interview. The questionnaire, as noted above, centred on the management accounting information used within the business, as well as general questions on the company's profile and the competitive environment. The remainder of this section outlines the development of the organisation from the time of founding to date.

WA was founded around a decade ago by FO1 and a close family member. The sole focus of the WA was the provision of accounting software for the small business market. At the time FO1, explains how their software distribution method was compact disc:

> When we first started, our desktop software was too large to download. It was 26MB, which is nothing now, but then it was too much to ask people to download on dial-up. So we had to send the software out on CD and there was quite a cost to do that.

By 2007, the company had gradually reduced the volume of software distributed on compact disc and during this year physical distribution ceased, to be replaced by a download only option for all customers. Between 2008 and 2010, the company developed its online offering and currently does not promote sales of its desktop software .The online service offered by WA is a cloud-computing based model, where the software is solely online and customers can choose varying levels of functionality according to the needs

[5] Extended details of the business are not given to retain anonymity.

of their business. When questioned on why WA decided to move to a cloud-based model, FO1 detailed how the kernel of the plan originated from the firm's own experience as it grew:

> In 2007 when we started to offer the software as download, we were starting to experience the problems of a growing team. For a long time, it was just myself and Founder 2, but we had collaborations with external developers too. We always had issues with version control of the code, as we were in different locations.
>
> So we started to look at our own internal systems. First, there was our calendar. Nobody could make meetings. The real big issue was around our customer data. We had only one database for customers, on one computer. To make these things available to everyone we would have to upgrade to an expensive version of Microsoft Business Server or something. So we found a CRM and started to use GoogleDocs.
>
> These changes were transformative. Location did not matter any more. We could maintain a centrality of customer data. And once we got into online, I started thinking, well actually all small businesses are the same in that we all have distributed workforces. Even if you are just one person, your accountant is not in the same office as you, your books are not in the same office and even you're not in the same office as you. So I thought the accounts totally have to be online.

With this idea in hand, FO1 conducted some market research with customers. Initial reactions from customers were somewhat sceptical and fearful of accounting information being stored online. However, when FO1 explained to customers that data could only be seen by the customer themselves and other specific users defined by the customer, then "people's whole tone changed" and they accepted the concept of doing accounting online. This convinced FO1 that an online business model was the way forward, and there was no other UK/Irish firm offering such online accounting software to small business at the time. Thus in 2007/2008, WA raised investment capital through new and existing investors, as well as through a government investment programme, to embark on the development of an online accounting software solution. An external developer was engaged and an internal project manager/developer was also appointed. By 2010, the public beta version of the software was available to customers and this has since been enhanced on a continuing basis as more features have been added and customer feedback incorporated. Thus, by early 2011, WA was able to provide an online small business accounting software service to both new and existing customers. WA was now within the Web 2.0 business environment.

3.2.2 The business model at WA

A closer look is warranted on how WA evolved to be a cloud-based business. Before they opted for a SaaS model, WA provided a 'hard copy' of their software in the form of a (tangible) compact disc and delivered it by mail to the customer, thereby constituting a more 'traditional' business model. That was

followed by a short period where WA provided their software as a downloadable file. Soon thereafter, WA started developing and changing their business model to a cloud-based model in 2008, with the service going live two years later. This move from a traditional packaged software distributor to online accounting software changed the way WA operates, and later we begin to interpret how decision-making information changed over this time.

Currently, WA generates most of their revenue from subscriptions to their accounting software[6]; the subscriptions are renewed annually. However, in the SaaS model, the software is not installed on the customer's systems; there is no requirement to download, install or update by the customer, whose accounts and financial data are hosted on an external system. Once a customer decides not to renew their subscriptions, access can be easily revoked. A customer has no upfront cost for access to the service. This model is a typical for a customer lock-in strategy, where companies provide access to their services at a very low or even no cost, but generate a steady cash flow from subsequent subscriptions. As Verona and Prandelli (2002) put it, the "customer is constrained by past choices, and when they switch from one brand of technology, product or website to another, they incur costs" (p.300). They continue that a company can use this cost-aversion and lock customers in. Other models on the web include pay-as-you-go (Sultan, 2011) or pay-per-use (Böhm et al., 2010), where the customer is charged by what they actually consume.

A closer look is warranted, though, on how value is actually delivered to the customer. WA rents its technology infrastructure from an IaaS-provider in order to deliver their SaaS to the customer. However, this is not done in a linear vertical sequence of operations through to the end customer, but rather following the definition for a value network (Stabell and Fjeldstad, 1998; Sturgeon, 2001, as cited in Böhm et al., 2010). The resources the customer employs (server, access, software, data, maintenance, security, etc.) are delivered in parallel rather than in a linear sequence. In addition, the IaaS-provider adds an incremental value directly to WA's customers, since it is them who offer a full up-and-running infrastructure provision. In early 2012, WA also offered a billing and payment service to their customers by using a third-party application provider. This enabled WA's customers to offer their customers a payment option within their own accounting records, and rendered WA - for the purposes of our study - into an initial prime example of an organisation taking on different roles within the value network (for more on roles within the cloud-computing based value network, see Böhm et al., 2010). The customer might be unaware of this, as they only deal with WA as the application provider and not other providers

[6] There are a small number of customers using the desktop version of the software, but new customers do not have this option.

in the value network. Therefore we argue, similar to Böhm et al., (2010), that this model is more akin to a value network than a value system.

The cloud-computing basis of WA is not only their model to generate revenue, but also their internal decision information provider and controlling system. It enables them to generate not only financial, but also more crucial non-financial metrics. For instance, when a potential customer navigates to the WA website, Google Analytics monitors links they click. From the Google Analytics reports, WA can trace a number of factors such as 1) the origin of the search (organic versus from a pay-per-click service such as Google Ads), 2) the geographic origin of the search, and 3) what links are clicked following the initial landing on the page. In particular, WA are interested in the percentage of customers that click on their 30 day trial sign-up link. If the customer signs up for the trial period, then WA monitor in two main ways what customers do in an effort to convert as many trial customers to paying subscription customers as possible. First, a trial sign-up is communicated to "the whole team" by email (FO1). At the same time, a record of the customer details are automatically passed to a customer relationship management (CRM) system. Once within the CRM, customers are contacted automatically to encourage them to become full subscribing customers. Second, the activity of the trial customer is monitored to assess their engagement level. For example, FO1 states that "if we see they do sales invoices every day, then there is a chance we can retain them". WA can track customer activity in minute detail, but they cannot see any monetary values associated with customer transactions, thus keeping customer confidentiality. This minute detail analysis assists in offering customers the correct subscription level. Currently, WA offer multiple service levels based on a monthly subscription price. WA endeavour to convert as many trial customers to full subscribing customers, and this "conversion ratio" as FO1 termed it, is a key measure for the company. In addition to this, once customers have subscribed WA monitor their 'churn rate', or customers who do not renew subscriptions. This process is, according to FO1, a "more manual process where we have to check if their credit card just expired or have they cancelled the subscription".

FO1 emphasised that this new business model had presented quite a challenge for the company:

> We realised that we were going to have this big chasm to overcome, and it wasn't just the capital cost of developing the product, but we were then going to have that operational chasm, while we build up a sufficient number of subscriptions, so we were always aware of that. I know that they call it the 'hockey stick' effect.

In the context of WA, the 'hockey stick' effect relates to a quasi product life cycle, whereby subscriptions remain quite flat at the outset, but then reach a critical mass and then subscription levels spike. FO1 commented that venture capitalists to the SaaS sector may be quite familiar with this concept. In comparison to their previous business model, FO1 noted that costs were lower and considered fixed. For example, costs of hosting the software on a hosting platform are fixed, there are no distribution costs, and software development costs are also fixed. From a software development perspective, the cloud-based business model allowed WA to have a much tighter control of the development and versions of the software. This is also marketed as having advantages for accountants who may have issues maintaining all clients on the same software release when traditional packaged software is used. And, finally as noted by FO1 above, a key attribute of the WA software service is that it is not bound by location or access. For example, the features list on the company website outlines how individual employees, statutory accountants or business partners can be granted permission to view a businesses' data. Additional features such as automatic security backups and online support tools provide further advantages for end-users in comparison to the traditional packaged accounting software. In summary, as FO1 put it "this is where it's going, online"; this would seem to offer several advantages to accounting within smaller businesses over manual accounting records or using traditional offline software. Having now briefly outlined the business model at WA, the final part of this section (below) examines how management accounting and decision-making information may have changed as a result of the changed business model at WA.

3.2.3 Management accounting techniques and practices within the new business model

As outlined above, WA altered its business model in 2010 to a cloud-based from a more traditional software distribution model. This change in the way of doing business brought about a number of changes to the information used by WA managers and the Board of Directors to make decisions. In particular, FO1 reported a shift in emphasis from costs to revenues as well as an increased importance of non-financial data. The key management accounting and decision-making practices - which in the main were enacted by mangers given the relatively small size of WA - are now outlined.

As noted earlier, investment capital was raised by WA to fund the move to a cloud-based business model. In particular, an equity investment changed the internal decision-making process in terms of the formality of Board meetings. As FO1 put it "I can't go off and make a decision now. I can make a decision and inform them what I think we should do". Board meetings became a monthly affair where "financials" were presented and budgets discussed. The "financials" as noted by FO1, are the normal financial statement type outputs from their own software - which they use to capture the financial data of the

business. WA also prepare an annual budget (using a spreadsheet) and this budget is reviewed on a quarterly basis at the Board meetings. FO1 also noted that the company prepares its annual statutory accounts and corporate tax returns by engaging external accountants, but FO1 describes this information as “not even slightly” useful.

The key management accounting practices at WA centre on decision-relevant revenues. FO1 commented that the company has few variable costs, and that the fixed costs are readily known. Thus, the main thrust of performance management is ensuring that “we have enough revenues to cover fixed costs”. To this end, the company focuses on two key measures 1) the number of new subscriptions, and 2) the attrition rate. The latter refers to the number of customers who do not renew annual or monthly subscriptions. New subscriptions, total subscription numbers, total subscription revenues and the attrition rate are tracked within the WA’s internal systems and reported on a regular informal basis as well as at the Broad meetings. Additionally, WA also track how trial customers use their software in order to convert them to ‘real’ customers. There was no evidence that the level of conversion from trial to subscription customer, or related information on trial customers coming from Google Analytics was used as a performance measure, but potentially such data could be useful in explaining changes in the attrition ratio.

FO1 commented that given the relatively high level of fixed costs - the majority being labour costs - that no detailed analysis of costs is undertaken on a regular basis. For example, fixed costs are not allocated to products, although FO1 noted “I did think about this once”. FO1 did comment on calculating costs of some “events”, which in essence involved calculating the costs of holding events like training sessions or software promotions and comparing these costs with the revenues gained. As noted by FO1, if the company is considering incurring additional costs, a simple analysis of revenues and costs forms the basis of the decision (i.e. basic cost-volume-profit (CVP) analysis):

> Here is where we're at, here is where we need to be; if you want that extra cost, then we're going to have to increase revenues by X in order to accomplish that.

Thus, the management accounting practices at WA focus primarily on revenue-related reporting. Based on the findings at WA, the next section discusses and explores in some detail the nature of management accounting practices which have evolved in a cloud business environment, such as that experienced by WA.

4. Discussion and concluding comments

Based on this initial exploratory case, management accounting seems to have evolved in some ways in the cloud-based business environment. Of the initial empirical findings from WA, the most prevalent outcome was the clear indication that decisions are not based on costs, which seem to contrast with a focus on 'decision-relevant costs' as portrayed in most management accounting text books. Due to the relatively high amount of upfront capital costs (such as development costs) as well as costs for hosting the software on third-party servers, fixed costs are high. Given that the variable costs per customer subscription (such as the credit card charge) are, in turn, rather small, they are not deemed relevant to decisions. It follows that this company's main focus is on acquiring subscriptions and, therefore, customers, which put revenues at the centre of attention. We would thus hypothesise that in such a Web 2.0 or cloud environment, the focus is more likely to be on **decision-relevant revenues**, which (based on the evidence from WA) are a key contributing factor to the decisions to be made in board meetings, the reports provided to investors, as well as various performance measures used to judge their (financial and non-financial) well-being.

Another interesting result from our interview with FO1 was that, in spite of not necessarily knowing management accounting terminology, some common management accounting techniques were in fact utilised. In other words, FO1 was using some techniques based on need rather than name. This became rather apparent when we asked FO1 about various techniques used. FO1 was not familiar with the terms Breakeven or CVP analysis, for example. FO1 was quick to link this to an approach they followed at WA and pointed out that, in that regard, they were looking at the number of subscriptions they had, the fixed costs they needed to cover and the "easy enough to figure out" (FO1) variable costs. This directly relates to the decision-relevance of their revenues rather than the costs, which can be seen from the constant update of the break-even figure which is then taken, as previously mentioned, into Board and management meetings. So, for example, FO1 described when a board member asks to add a cost, FO1 would be quickly able to calculate how many additional customer subscriptions would be necessary in order to cover it – a somewhat 'classic' application of the CVP analysis.

The performance measurement system used at WA is semi-formalised. There are standard key performance indicators (KPIs) which are used in decision-making, but they are not necessarily provided in a standard reporting format. As mentioned earlier, the KPIs are based on customer revenues; inadvertently, the KPIs could be viewed within several cause-effect relations, similar to a simplified version of a balanced scorecard – a **lean scorecard** to some extent. At a closer look, various cause-and-

effect relationships between the revenue-focused KPIs emerge. As FO1 put it, first they observe the number of unique hits to the website, which in turn is separated into so-called 'organic' hits (i.e. intentional hits coming from search engines) and 'advertised' hits (e.g. from Google ads). This information is gathered using Google Analytics. Then, the number of people taking out a trial of the software is captured within their systems ("trialists"), based on which another KPI, the engagement level, is calculated. The cause-and-effect relation becomes clearly apparent when a higher level of engagement is assumed to result in a higher number of subsequent subscriptions. If the engagement level drops, the amount of contact to that customer is analysed and tracked in order to get that customer back on board. These are referred to as "conversion rates" by the FO1.

However, the most important KPI which was emphasised several times by FO1 is the attrition rate (also called 'churn rate'). If the attrition rate increases, it means that the renewal rate decreases at the same time, which in turn has a direct impact on the revenues. This is the most scrutinised KPI by WA's Board and management. As FO1 stated:

> [...] we're tracking that [the attrition rate] to somebody whose subscription expires, and what we're looking for is - because they sign up with their credit card details- is automatic renewal, so [...] every morning we log into [the system] and see if anybody's [...] credit card failed overnight, and then we have to send them a standard email informing them that their credit card failed and asking them to [...] remedy it, so we track that [...] if their credit card failed because it just expired, they got a new card or [...] is it because they don't want to use the software.

Eventually, these non-financial indicators, which clearly show several inter-related cause-and-effect relationships, lead to a financial indicator, namely cash in the bank; this is done informally by "looking at the money that came into our accounts", however, this is "not tracked and measured" (FO1).

So what does this mean in terms of management accounting practices at WA? Earlier, we mentioned organisational change (including change to management accounting) can be interpreted using a processual change framework such as that of Dawson (2003). The business model transition at WA from packaged software to online SaaS happened relatively smoothly. Associated changes to management accounting practices appear to be highly grounded in the context of the business environment. In this SaaS environment, revenue generation is more important than cost control - as costs are relatively fixed. In addition, as FO1 put it, the online (SaaS) model "is the way to go" thus any changes to the organisation were likely to be quite central to the survival of the organisation (c.f. substance of the change; Dawson, 2003). A further contextual factor for WA is their size; in essence its small size implied changes were more likely to be accepted and any internal political issues could be relatively easy controlled (FO1 made

no mention of any political battles as WA changed to a SaaS model). In addition, there are no formally trained accountants employed at WA, which may imply a context whereby any evolving management accounting techniques are not constrained by a professional training background. In terms of management accounting techniques, the process of change to the creation and adoption of new KPIs for WA followed the context of organisational change. In essence, the KPIs and the greater importance of decision-relevant revenues, mirrored the business context. And, any new or evolving developments to management accounting practices were viewed as been necessary to the business model adopted by WA. In other words, there was little place for resistance to change. Additionally, as revenue was now the key determining factor towards profitability, any new or changed way of reporting (e.g. the KPI's mentioned earlier) was not only central to the changed business model, but also politically acceptable to the Board and external investors (Dawson, 2003). In summary, what WA has to an extent revealed, is re-focused versions of existing management accounting practices (such as the application of CVP, although FO1 had no textbook knowledge of what CVP is). We could describe such re-focused practices as'new wine in old bottles', which may be particularly fruitful as our study progresses to further organisations, as this suggest simultaneous change and stability in management accounting techniques. This isa recurring conceptual issue in the extant literature on change to management accounting practices (see for example Burns and Scapens, 2000; Quinn, 2011; van der Steen, 2011) which has received less empirical focus to date.

Our initial results need to be regarded with caution: we present only a single case here and thus results are not generalisable to a broader population. However, it has generated a strong case for further research into similar Web 2.0 companies in order to extend the findings here. Since research into the field of management accounting and Web 2.0 organisations thus far is scarce, we expect this area to provide opportunities for further and interesting research in the future. However, even the very exploratory research presented here has provided initial evidence that management accounting does change in a Web 2.0 type business, but that changes are likely to be grounded in context. Additionally, although it is possible that 'new' management practices may emerge, these may be based on 'old' methods/techniques – but again this may be dependent on context. This 'context' issue is possibly the main weakness of our initial work, in that we have no other contexts to compare our work at WA to. It is also perhaps the most important question derived from the research presented here. That question revolves around the important of context in the story of change – a point clearly highlighted by the work of Dawson (2003) and Pettigrew (1997.1987.1985).

References

Alcouffe, S., Berland, N., Levant, Y. 2008, "Actor-networks and the diffusion of management accounting innovations: A comparative study", *Management Accounting Research,* vol. 19, pp. 1-17.

Al-Omiri, M. & Drury, C. 2007, "A survey of factors influencing the choice of product costing systems in UK organizations", *Management Accounting Research*, Vol. 18, pp. 399-424.

Anderson, C. 2009, *The Longer Long Tail: How Endless Choice is Creating Unlimited Demand*, Random House, London

Beer, D. & Burrows, R. 2010, "Consumption, Prosumption and Participatory Web Cultures: an introduction", *Journal of Consumer Culture*, Vol.10, No. 3, pp. 3-12.

Bhimani, A. & Bromwich, M. 2010, *Management accounting – retrospect and prospect*, Elsevier, London.

Böhm, M., Koleva, G., Leimeister, S., Riedl, C., Krcmar, H. 2010, "Towards a Generic Value Network of Cloud Computing", *Proceedings of the 7th International Workshop on Economics of Grids Clouds Systems and Services* (GECON) - LNCS 6296, edited by Altmann, J. and Rana, O. F., pp. 129-140, Springer, Heidelberg.

Brierley, J.A., Cowton, C.J., Drury, C. 2001, "Research into product costing practice: a European perspective", *European Accounting Review*, Vol.10, No.2, pp. 215 - 256.

Burns, J. 2000, "The dynamics of accounting change: inter-play between new practices, routines, institutions, power and politics", *Accounting, Auditing and Accountability Journal,* vol. 13, no. 5, pp. 566-596.

Burns, J. & Baldvinsdottir, G. 2005, "An institutional perspective of accountants' new roles – the interplay of contradictions and praxis", *European Accounting Review,* vol. 14, no. 4, pp. 727-757.

Burns, J. & Scapens, R. 2000, "Conceptualising management accounting change: an institutional framework", *Management Accounting Research*, vol. 11, no .1, pp. 3-25.

Burns, J. & Quinn, M. 2011, "The routinisation of management controls in software", *Journal of Management & Control*, vol. 22, no. 5, pp. 5-24.

Burns, J. & Vaivio, J. 2001, "Management accounting change", *Management Accounting Research,* vol. 12, no. 4, pp. 389-402.

Burns, J., Ezzamel, M. & Scapens, R. 1999, "Management accounting change in the UK", *Management Accounting,* vol. 77, no. 3, pp. 28-30.

Burns, T. & Stalker, G.M. 1961, *The Management of Innovation,* Tavistock.

Castells, M. 1996, *Information Age: Rise of the Network Society v.1: Economy, Society and Culture*, Wiley-Blackwell, Oxford.

CIMA, 2009, "Management Accounting survey – 2009 results" available at http://www.cimaglobal.com/en-gb/Thought-leadership/Research-topics/Management-accounting-in-different-sectors/Management-accounting-survey/ accessed, 19/10/2011.

Coad, A. & Cullen, J. 2006, "Inter-organisational cost management: towards an evolutionary perspective", *Management Accounting Research*, vol. 17, pp. 342-369.

Coad, A. & Herbert, I. 2009, “Back to the future: New potential for structuration theory in management accounting research?”, *Management Accounting Research*, vol. 20, pp. 177-192

Collier, P. M. 2001, “The power of accounting: a field study of local financial management in a police force”, *Management Accounting Research*, vol. 12, no. 4, pp. 465-486

Davenport, T.H. 2000, *Mission Critical: Realising the Promise of Enterprise Systems*, Harvard Business School Press, Boston.

Davidson, S. 1963, “Old wine into new bottles”, *The Accounting Review*, vol. 38, no. 2, pp. 278 - 284.

Dawson, P. 2003, *Reshaping Change: A Processual Perspective*, Routledge, London.

Dechow, N. & Mouritsen, J. 2005, "Enterprise resource planning systems, management control and the quest for integration", *Accounting, Organisations and Society*, vol. 30, pp. 691-733.

Dechow, N., Granlund, M. & Mouritsen, J. 2007, "Interactions between information technology and management control" in *Issues in Management Accounting*, eds. T. Hopper, D. Northcott & R. Scapens, London.

Donaldson, L. 1987, "Strategy and structural adjustment to regain fit and performance: in defence of contingency theory", *Journal of Management Studies*, vol. 24, no. 1, pp. 1-24.

Dugdale, D. & Jones, T.C. 1998, "Theory of constraints: transforming ideas?", *British Accounting Review*, vol. 30, no. 1, pp. 71-93.

Englund, H., Gerdin, J., Burns, J. 2011, “25 Years of Giddens in accounting research: Achievements, limitations and the future”, *Accounting, Organizations and Society*, vol. 36, pp. 494 -513.

Granlund, M. & Malmi, T. 2002, "Moderate impact of ERPS on management accounting: a lag or permanent outcome?", *Management Accounting Research*, vol. 14, pp. 299-321.

Hopwood, A. 1983, “On trying to study accounting in the contexts in which it operates”. *Accounting, Organization and Society*, Vol. 8, No. 2/3, pp. 287-305.

Innes, J., Mitchell, F. & Sinclair, D. 2000, "Activity based costing in the UK’s largest companies: a comparison of 1994 and 1999 survey results", *Management Accounting Research*, vol. 11, pp. 349-362

Jack, L. & Kholeif, A. 2008, “Enterprise Resource Planning and a contest to limit the role of management accountants: A strong structuration perspective”, *Accounting Forum*, vol. 32, no. 1, pp. 30-45.

Johansson, T. & Siverbo, S. 2009, “Why is research on management accounting change not explicitly evolutionary? Taking the next step in the conceptualisation of management accounting change”, *Management Accounting Research*, vol. 20, no. 2, pp. 146-162.

Johnson, H. & Kaplan, R. 1987, *Relevance Lost: the Rise and Fall of Management Accounting*, Harvard University Press, Boston.

Kanter, R.M. 1983, *The Change Masters: Corporate Entrepreneurs at Work*, Routledge, London.

Kanter, R.M., Stein, B.A. & Jick, T. 1992, *The Challenge of Organizational Change: How Companies Experience it And How Leaders Guide It*, Free Press, New York.

Kaplan, R.S. & Bruns, W.J. 1987, *Accounting and Management: Field Study Perspectives*. Harvard Business School Press, Boston.

Kaplan , R. & Norton, D. 1992, "The balanced scorecard – measures that drive performance", *Harvard Business Review*, January/February, pp. 71-79.

Kaplan, R. 1984, "The Evolution of Management Accounting", *The Accounting Review*, Vol. 59, No. 3, pp. 390 - 418.

Kaplan, R. 1983, "Measuring Manufacturing Performance: A New Challenge for Managerial Accounting Research", *The Accounting Review*, Vol. 58, No. 4, pp. 686-705.

Kotter, J. 1996, *Leading Change: Why Transformations Fail*, Harvard Business School Press.

Lewin, K. 1951, *Field Theory in Social Science*, Harper & Row.

Lowe, A. 2000, "The construction of a network at Health Waikato: the 'towards clinical budgeting project'", *Accounting, Auditing and Accountability Journal*, vol. 13, no.1, pp. 84-114.

Lukka, K. 2007, "Management accounting change and stability: loosely coupled rules and routines in action", *Management Accounting Research*, vol. 18, pp. 76-101.

Magretta, J. 2002, "Why business models matter", *Harvard Business Review*, vol. 80, no.5, pp. 86-92.

Miller, J. and Vollmann, T. 1985, "The hidden factory", *Harvard Business Review*, vol. 63, No. 5, pp.142-150

Modell, S. 2003, "Goals versus institutions: the development of performance measurement in the Swedish university sector", *Management Accounting Research*, vol. 14, no. 4, pp. 333-359.

Monden, Y. & Hamada, K. 1991, "Target Costing and Kaizen Costing in Japanese Automobile Companies", *Journal of Management Accounting Research*, vol. 3, pp. 16-34.

Nelson, R., 1994, "The Co-evolution of Technology, Industrial Structure, and Supporting Institutions", *Industrial and Corporate Change*, vol. 3, no. 1, pp. 47 - 63

Nelson, R. & Winter, S., 1982, *An evolutionary theory of economic change*, Harvard University Press, Boston.

Nor-Aziah, A.K. & Scapens, R. 2007, "Corporatisation and accounting change: the role of accountants in a Malaysian public utility", *Management Accounting Research*, vol. 18, no. 2, pp. 209-247.

O'Reilly, T. 2007, 'What Is Web 2.0: Design Patterns and Business Models for the Next Generation of Software', Communications and Strategies, vol. 65, pp. 17-37.

Otley, D. 2008, "Did Kaplan and Johnson get it right?", *Accounting, Auditing and Accountability Journal*, vol. 21, no.2, pp.229-239

Parker, L.D., 2011, "Musing social media madness", *Critical Perspectives on Accounting*, 2011, in press.

Pettigrew, A. 1997, "What is processual analysis?", *Scandinavian Journal of Management*, vol. 13, no. 4, pp. 337-348.

Pettigrew, A. 1987, "Context and action in the transformation of the firm", *Journal of Management Studies*, vol. 24, no. 6, pp. 649-670.

Pettigrew, A. 1985, *The Awakening Giant: Continuity and Change at ICI*, Basil Blackwell, Oxford.

Porter, M.E. 1985, *Competitive advantage : creating and sustaining superior performance*. Free Press, New York.

Quinn, M. 2011, “Routines in management accounting: some further exploration”, *Journal of Accounting and Organizational Change*, vol. 7, no.4, pp. 337-357.

Roberts, J. & Scapens, R. 1985, “Accounting systems and systems of accountability — understanding accounting practices in their organisational contexts”, *Accounting, Organizations and Society*, vol. 10, no. 4, pp. 443-456.

Scapens, R. 2004, "Doing case study research" in *The Real Life Guide to Accounting Research – A Behind the Scenes View of Using Qualitative research Methods*, eds. C. Humphrey & B. Lee, Elsevier, Oxford, pp. 257-279.

Scapens, R. & Bromwich M. 2010, “Management Accounting Research: 20 years on”, *Management Accounting Research*, vol. 21, pp. 278-284.

Scapens, R., Ezzamel, M., Burns, J. & Baldvinsdottir, G. 2003, *The Future Direction of UK Management Accounting*, CIMA, London.

Scapens, R. & Jazayeri, M. 2003, "ERP systems and management accounting change: opportunities or impacts? A research note", *European Accounting Review*, vol. 12, no. 1, pp. 201-233.

Seal, W. 2006, "Management accounting and corporate governance: an institutional interpretation of the agency problem", *Management Accounting Research*, vol. 17, no. 4, pp. 389-408.

Shields, M.D. & Young, S.M. 1991, "Managing product life cycle costs: an organisational model", *Journal of Cost Management*, vol. 5, pp. 39-52.

Siti-Nabiha, A.K. & Scapens, R. 2005, "Stability and change: an institutionalist study of management accounting change", *Accounting, Auditing and Accountability Journal*, vol. 18, no. 1, pp. 44-73.

Soin, K., Seal, W. & Cullen, J. 2002, "ABC and organisational change: an institutional perspective", *Management Accounting Research*, vol. 13, pp. 249-271.

Stabell, C.B. & Fjeldstad, O.D. 1998, “Configuring value for competitive advantage: on chains, shops, and networks”, *Strategic Management Journal*, Vol. 19, pp. 413-437.

Sulaiman , S. & Mitchell, F. 2005, "Utilising a typology of management accounting change: an empirical analysis", *Management Accounting Research*, vol. 16, no. 4, pp. 422-437.

Sultan, N.A. 2011, “Reaching for the cloud: How SMEs can manage”, *International Journal of Information Management*, Vol. 31, pp. 272-278.

Tsamenyi, M., Cullen, J. & Gonzalez, J. 2006, "Changes in accounting and financial information systems in a Spanish electricity company: a new institutional theory analysis", *Management Accounting Research*, vol. 17, no. 4, pp. 389-408.

Van der Stede, W., 2011, “Management Accounting Research in the wake of a crisis: some reflections”, *European Accounting Review*, vol. 20, no. 4, pp. 605-623.

Van der Steen, M., 2011, “The emergence and change of management accounting routines” *Accounting, Auditing and Accountability Journal*, vol.24, no. 4, pp. 502-547.

Van der Steen, M. 2009, “Inertia and Management Accounting change”, *Accounting, Auditing and Accountability Journal*, vol.22, no. 5, pp. 736-761.

Verona, G. & Prandelli, E. 2002, “A Dynamic Model of Customer Loyalty to Sustain Competitive Advantage on the Web”, *European Management Journal*, Vol. 20, No. 3, pp. 299-309.

Yin, R. 2003, *Case Study Research – Design and Methods*, Sage Publications, California.

Web resources:

Brodkin, J., 2008, “Open source fuels growth of cloud computing, software-as-a-service”, *NetworkWorld*, [online]. Available at: <http://www.networkworld.com/news/2008/072808-open-source-cloud-computing.html> [Accessed 23 January 2012]

Experian Hitwise 2011. “German car manufacturers hot on the heels of Ford as the most searched for automotive brands online in the UK“. [press release] 09 May 2011, available at <http://www.hitwise.com/uk/press-centre/press-releases/ford-most-searched-for-automotive-brand-online/> [Accessed 01 November 2011]

Knorr, E. & Gruman, G., 2008, “What cloud computing really means”, *InfoWorld*, [online]. Available at: <http://www.infoworld.com/d/cloud-computing/what-cloud-computing-really-means-031?page=0,0> [Accessed 23 January 2012]

Mell, P. & Grance, T., 2011, “The NIST Definiton of Cloud Computing: Recommendations of the National Institute of Standards and Technology”, [online] National Institute of Standards and Technology. Available at:<http://csrc.nist.gov/publications/nistpubs/800-145/SP800-145.pdf> [Accessed 23 January 2012]

Sharma, P. 2009, “Core Characteristics of Web 2.0 Services”, TechPluto, [online], available at <http://www.techpluto.com/web-20-services/> [Accessed 01 November 2011]