MATTERS OF CONCERN: HYPE OF SUPPLY-CHAINS AND HOPE OF MANAGEMENT ACCOUNTING

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ABSTRACT

Purpose: The concern of this paper is epistemological. It explores whether and how the emerging post-bureaucratic forms in organisations have presented a new organizational ontology and developed "matters of concern" among the researchers regarding the suitability of prevailing management accounting practices. Focusing on management accounting within supply-chains, the paper aims to unpack the researchers' concerns over the ambiguity of management accounting roles therein.

Methodology: This is based on a state-of-art review. It evaluates the researchers' "matters of concern", highlights the discursive effects of supply chains on the conventional wisdom of management accounting and articulates how researchers have raised the issues of ambiguity being imposed on management accounting's calculative regimes.

Findings: Researchers focus not only on the issues within management accounting per se but on the complexities embedded in the supply-chains and the reciprocal presence between management accounting and such complexities. The "matters of concern" have been raised around seven interrelated aspects: supply-chain relationships, performance measurement and management control, decision-making, trust, supply-chain risk, reverse logistics, and sustainability. These were taken to speculate an ambiguity the roles of management accounting and create a "condition for possibility" for revisiting the "relevance lost" thesis of management accounting.

Originality – This articulates a space for an epistemological debate about the knowledge progress through raising the issue of ambiguity of management accounting with respect to the new post-bureaucratic forms.

Keywords: Supply-chain, Management accounting, Inter-firm relationships, Inter-firm accounting, Matters of concern.

1. Introduction

How may we best understand any voyage of knowledge development when disciplines become controversial in their epistemological stances? Emerging shifts in management accounting practices from its mechanistic forms to post-mechanistic flexible forms combined with a breaking up conventional ontology of organisational configurations, a growing dispersion of such practices over to so-called globalisation effects and the advancement of management accounting research trajectory through a constant consultation of social and organisational theories, bring us once again back to this question (Hopper, Storey, & Willmott, 1987; Lukka & Modell, 2010; Tinker, Merino, & Neimark, 1982; Wai Fong, 1986). The question is a starting point for us to rethink about how practical management accounting issues become translated into academic controversies and disputes leading to matters of interest through matters of concerns to ultimate matters of fact (Latour, 2005). Consequently, such a question leads us to think about how management accounting knowledge is advanced in terms of articulating how associated tools and technologies work or even do not work.

In order for this question to be addressed and for a debate about how such knowledge advancement trajectories can be unpacked into an epistemological discussion, we chose supply-chain management research that has developed a set of practical management accounting issues. While the increase in global interconnectedness and the rise of neoliberal economic and political agenda made markets volatile, intertwined and a battleground for an unprecedented competition, supply-chains have become an emerging from of organisational ontology along with dramatic implications for the conventional economic organisations. On the one hand, they become flexible and responsive social institutions to contend with challenging conditions fixated with limited resources, increasingly demanding customers and dissatisfied shareholders. On the other hand, technologies and tools which facilitated the old regime of organisations are now being replaced with new ones as the former are found to be irrelevant and outdated (Wickramasinghe & Alawattage, 2007). That much brings us enough practical management accounting issues leading to debates, controversies and disputes among the academic research community.

We thus approached supply-chain management literature published in both management and accounting journals for us to focus on management accounting's uses in supply-chain contexts and to determine the underlying issues transpired in epistemological terrains where we were able to discern the knowledge in management accounting's functional responses to supply-chains, and vice-versa. Here, supply-chains are considered to be an ontological representation of the above organisational change manifesting a global connectivity, a structural flexibility and a technological laboratory (Kraus & Lind, 2007). In such a shifting context, management accounting is coming to occupy different functions creating multiple meanings and ontologies. Despite a plethora of "new" ideas of management accounting are developed, extended and popularised, questions are now heard from various corners as to whether these new ideas are suitably embedded in supply-chain infrastructures and how unintended consequences could be eliminated if contradictions occur when using and applying these ideas. By engaging in a state-of-art review of the above literature, our aim is to address the above epistemological question and to offer a theoretical discussion on how management accounting knowledge is advanced.

Our aim is thus not to supplement previous reviews which enhanced our understanding about the role of management control systems (Caglio & Ditillo, 2008; Kraus & Lind, 2007; Meira, Kartalis, Tsamenyi, & Cullen, 2010) and management accounting techniques (Håkansson & Lind, 2006) in inter-organizational setting. Instead, we transcend such efforts

in three respects: identifying the issues that have been raised due to the social transition from its industrial to post-industrial ontology, exploring whether accounting researchers grasp these issues and respond to them, and examining the extent to which there is an agreement between accounting researchers regarding these issues. We achieve such aims by drawing on the notion of "matters of concern" to penetrate the literature for an epistemological discussion about the issues in knowledge advancement rather than document research outputs and describe what was found and how. By focusing on matters of concern, we rather explore the underlying issues, subsequent controversies and eventual epistemological faith on management accounting for supply-chains.

The paper thus undertakes a review of the literature that discusses the presence of management accounting within the context of supply-chain and paves the way for a new stream of research addressing the issue of ambiguity of management accounting. For this to happen, first, it reviews the authors' readings of the post-industrial society and their reflections on how the conventional organisational boundary became blurred and how such changes are now implicated in permeating new "matters of concern". Then, it evaluates the researchers' matters of concern to highlight the discursive and rhetorical effects of supply-chain management on the conventional wisdom of management accounting and articulate how researchers have addressed some of the issues of ambiguity being imposed on management accounting's calculative regimes. Lastly, it provides some epistemological directions for further discussions on the issues at hand that would permeate empirical research.

This paper is thus structured as follows: Section 2 identifies the research problem and constructs namely, matters of concern within supply-chains. This proceeds to Section 3 to describe the methodology and research site. Section 4 discusses the findings and finally, Section 5 concludes the paper.

2. Research problem and constructs

This section deals with a self-reflexive question emanated from the management accounting change scenario highlighted at the outset. The question here lies in the implications of social transition from a bureaucratic to a post bureaucratic organizational form and the subsequent roles of "matters of concern" in redefining the nature of new management accounting being practised within the new organizational ontology being transformed. The question is an important point of departure for the penetration of the literature for us to see how the academia permeates a set of epistemological questions with regard to the faith of management accounting's manifestation in new organisational ontology.

The demise of traditional bureaucratic form of organization

We know that bureaucracy seeds spirit of capitalism and that the contours of bureaucratic organizational forms had been a means to the ongoing process of rationalization which Max Weber perceived as the driving value of Western society. These bureaucratic forms were distinctively modern in the potent emphasis on direct control and strict rules and regulations through which organizations are run (Salaman, 2001) and the management control systems aimed at attaining the preset specific objectives became a system surveillance where such rules and regulations are at work for maximizing the financial wealth of organisations

(Wickramasinghe & Alawattage, 2007). That much was unproblematic in the pre-neoclassical world.

However, the discourse of globalization and the revolutionising information and communication technologies are now colonising the traditional bureaucratic organization to be a boundary-less, network-based form (C. Mabey, Salaman, & Storey, 2000). The issue of flexibility is, also, one of the important strands in the drive against the orthodox form of organization. This led to an inevitable paradigmatic shift from bureaucracy to post-bureaucratic forms (Olsen, 2006). These new forms carry the capacity to depart from the rigid rules and regulations and circumscribed procedures and to celebrate instead the new watchwords such as teams, lateral communication, and informality (Christopher Mabey, Salaman, & Storey, 2001). A proliferation of new organizational forms has been introduced as alternatives to bureaucracy: supply-chain management and process engineering; strategic sourcing; joint ventures; networks; and virtual organizations (Wickramasinghe & Alawattage, 2007).

An inevitable question being posed at this juncture is whether the current management accounting practices, which have been rooted in the bureaucratic regime of organization, would be relevant. Or, whether these developments would problematize the relevance of management accounting and lead to the imposition of a more complex and hybridized regimes of management accounting. Hopwood (1996) was, without a doubt, one of the first accounting scholars who proclaimed the need to consider social and organizational changes in management accounting research.

To date accounting research has largely ignored such changes and their implications for financial decision making and control. Having earlier given little or no consideration to the informational implications of matrix structures and the financial aspects of project oriented forms of organization, the accounting research community is largely continue to be satisfied with its fixation on the traditional hierarchical organization (Hopwood, 1996:589-590).

However, management accounting scholars have not yet acknowledged the uncertain implications of such changes in organizational structure. The nature and the role of management accounting within these new forms are still characterized by ambiguity and indeterminacy.

To address such a question, there is a need to understand the underlying principles of post-bureaucratic forms and to investigate the issues being raised as a result of such social transition and whether management accounting scholars grasp these issues and respond to them. In order for an epistemological discussion to be held, as we mentioned at the outset, in this paper, we try to open the black box of management accounting practices within the new post-bureaucratic organizational forms for us to see how the research community operates exploring whether or not these new forms have been relinquished by the conventional wisdom of management accounting, whether new facts have been constructed and accepted, or controversies are still intact.

Why matters of concern?

This paper draws on the notion of matters of concern as being espoused by Bruno Latour and his follows who promote the Actor-Network Theory (ANT) (Latour, 2005, 2008), a constructivist approach to social theorisation. Using ANT, we try to explore how matters of concern are constructed within management accounting combined with the new post-bureaucratic forms as arenas for discussion, controversies and critiques. A "matter" of concern is "what happens to a matter of fact when you add to it its whole scenography, much like you would do by shifting your attention from the stage to the whole machinery of a theatre" (Latour, 2008: 39). This is, as in our case, what will happen to management accounting when it is intermingled in the emerging post-bureaucratic form and what concerns being developed among researchers. Matters of concern can extend the early insight that management accounting is not just object functioning within organizational boundaries but knots of practices emergent in varying assemblages and entangled in these new post-bureaucratic forms.

Latour (2008:39) argues that "matters of fact were indisputable, obstinate, simply there whereas matters of concern are disputable and their obstinacy seems to be of an entirely different sort: they move, they carry you away, and, yes, they too matter." As Ripley et al. (2009:6) shows, such matters result in a methodology that is "constructive, rather than deconstructive; one that assembles the subject as richly diverse, historically situated, infinitely complex and engaged with its own inherent contradictions and controversies." Talking in the light of these intrinsically contested matters of concern then can nudge us towards opening up problematic vistas for management accounting researchers in which uncertainties and critique are embedded in.

Management accounting research within the post-bureaucratic forms can be augmented by articulating controversies that underlie the relevance of management accounting within these new forms. This approach opens a platform for debates over the applicability and relevance of current management accounting techniques to different organizational forms, the need for new techniques, and the refinement of current practices to comply with this social transition.

We believe that mapping of scientific disputes about matters of concern in management accounting research community in relation to the new organizational forms will enable us to move outside the confines of the conventional wisdom of management accounting research, which impose blinkers on our thinking, and to start to overflow organizational boundaries and to include new actors. Supply-chain is used as a powerful case which marks such emerging ramifications to understand the change in management accounting. Stating upfront matters of concern and analyzing controversies within academic community can sound like a road map, in this research, to examine how certain calculative tools in management accounting became reciprocally influential in the construction of supply-chain.

3. Research site and methodology

Since the aim of this paper is to engage in an epistemological investigation as to how a particular trajectory of knowledge advancement can be ascertained by focusing on supply-chain and management accounting, we undertook a two-phase analysis: a pilot review and the main review. The former aimed to determine the emerging issues in supply-chain research that would pave the way for a broader review and to discern a refined approach for the eventual analysis that addresses our epistemological question. For this to happen, a thorough

scanning of all relevant peer-reviewed journals from their inception to the first quarter of 2012 is accomplished. Based on ABS Academic Journal Quality Guide, papers are selected from different categories, which authors think relevant: accountancy journals, operations, technology and management journals, strategic management journals, general management journals and business ethics and governance journals. We utilize search keywords supplychain, management accounting practices and management accounting techniques. The relevant papers are selected based on the criteria that the paper is published in a journal with a good rank¹, and that the paper discusses the relationship between management accounting and supply-chain either in explicit or implicit way.

This procedure results in a shortlisted 50 papers published in 15 peer-reviewed journals. The list of journals, their rank and related papers is displayed in Table 1

Table 1: List of journals reviewed

Journal	ABS Rank	No. of Articles
Journai	2010	No. 01 Articles
1 Aggountancy Journals	2010	
1- Accountancy Journals:	*	
Accounting, Organizations and Society	4*	8
Management Accounting Research	3	6
• Contemporary Accounting Research	3	2
British Accounting Review	3	1
Accounting Horizons	3	2
2- Operations, Technology and Management Journals:		
• Journal of Operations Management	4	4
Production and Operations Management	3	1
• International Journal of Production Economics	3	8
• Supply-chain Management	3	8
• International Journal of Production Research	3	1
• International Journal of Operations and	3	1
Production Management		
• International Journal of Physical Distribution	2	3
and Logistics Management		
3- Strategic Management Journals:		
Strategic Management Journal	4*	1
4- General Management Journals:		
British Journal of Management	4	3
5- Business Ethics and Governance Journals:		
• Journal of Business Ethics	3	1
Total Articles		50

Drawing on the pilot review's findings, the decision is made to concentrate only on two journals categories which are accountancy journals and operations, technology and

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¹ Papers published in grade 1 journals (according to ABS) have been excluded.

management journals to investigate the "matters of concern" as the number of papers published in other journals categories (i.e. strategic management journals, general management journals, and business ethics and governance journals) and which contribute in this topic is limited as displayed in table 1. All relevant journals within these two categories have been considered including grade 1 journals. Also, more keywords such as inter-firm relationships, inter-organizational relationships, management accounting, and inter-firm accounting have been used to expand the scope of the review process in order to get in-depth knowledge about the topic.

Some of the papers selected in the first phase have been excluded in the second phase due to their irrelevancy to the objectives of this paper. The main review covers the journals from their inception to the first quarter of 2013. This procedure results in a list of 158 papers published in 14 peer-reviewed accounting journals and 17 peer-reviewed operations, technology and management journals. The list of journals, their related papers is displayed in Table 2. Full lists of paper selected for the pilot review and main review are shown in table 3 and table 4 (Appendix 1).

Table 2 List of journals reviewed

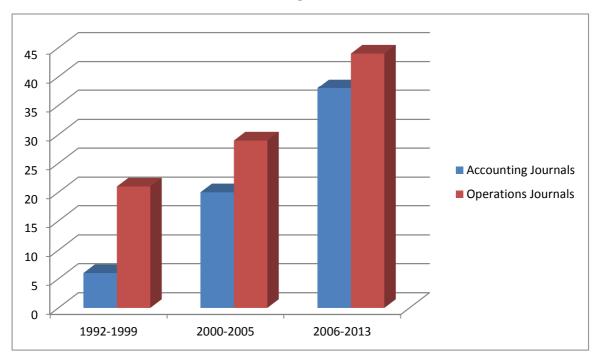
Journal	No. of Papers
1- Accountancy Journals:	
Journal of Accounting Research	1
Accounting Review	6
Accounting, Organizations and Society	21
Contemporary Accounting Research	2
 Accounting and Business Research 	1
Accounting, Auditing and Accountability Journal	1
British Accounting Review	1
Management Accounting Research	23
 Journal of Accounting and Public Policy 	1
Accounting Horizons	2
Journal of Accounting, Auditing and Finance	1
Managerial Auditing Journal	1
 Journal of Accounting and Organizational Change 	2
 International Journal of Accounting Information Systems 	1
2- Operations, Technology and Management Journals:	
Journal of Operations Management	1
 International Journal of Production Economics 	10
 International Journal of Operations and Production Management 	4
 Supply-chain Management: An International Journal 	10
International Journal of Production Research	8
 Computers and Industrial Engineering 	2
Total Quality Management and Business Excellence	1
 International Journal of Logistics: Research and Applications 	5
International Journal of Logistics Management	10
 International Journal of Physical Distribution and Logistics Management 	8
Journal of Purchasing and Supply Management	4
Journal of Business Logistics	8
Business Process Management Journal	2
Benchmarking: An International Journal	6
• International Journal of Productivity and Performance Management	6
 European Journal of Purchasing and Supply Management 	3
Journal of Supply-chain Management	6
Total Articles	158

4. Findings and analysis

Our review of 158 papers suggest that while Accounting, Organizations & Society and Management Accounting Research dominate, the research on management accounting and supply-chain has been published in a variety of peer-reviewed journals, not only in

accounting journals. This indicates the growing interest in this area of research. Also, as shown in Figure 1, our review reveals that the interest in investigating the reciprocal presence between management accounting and supply-chain complexities has become widespread from its humble beginnings in the 1990s with 27 papers to commendable position with 131 papers by the first quarter of 2013. It is also clear that operations management journals are more interested in the relationship between management accounting and supply-chain, a direction shown by accounting journals since 2000.

Figure 1



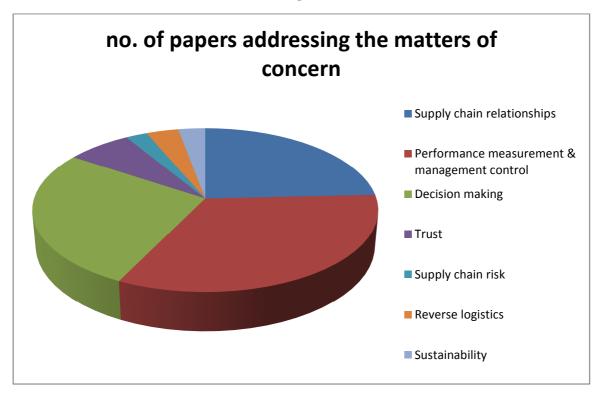
The majority of the papers have no explicit theory. The great majority of the remaining papers are based on transaction cost economics theory (21 papers). In a few cases have researchers drawn upon other theories like agency theory, contingency theory, structuration theory, actor-network theory, etc. The literature reveals a large stream of empirical papers (99 papers) compared to conceptual papers (33 papers), literature review papers (10 papers), and other types of papers. This can be attributed to the researchers attempt to deepen our knowledge of how management accounting can intermingle in supply-chain context by studying the phenomena in its real setting. It can also be noted that, there is a preference for case study (76 papers) over the other methodologies (i.e. survey, field study, etc.). Interviews, questionnaires, documentary analysis, and observations are the most preferred methods for data collection. Secondary data, informal discussions, and group discussions are utilized in few cases.

As mentioned before, this review represents a new direction in this field of research by focusing on "matters of concern" as an alternative route to study such relationship. Seven major issues has been addressed that researchers grasp as "matters of concern":

• Supply-chain relationships

- Performance measurement and management control
- Decision making
- Trust
- Supply-chain risk
- Reverse logistics
- Sustainability

Figure 2



Notably, as displayed in Figure 2, most reviewed papers exclusively revolve around supply-chain relationships, performance measurement, and decision making. Only few researchers highlight the other "matters of concern". This leaves an immense research gap in this area.

In the following section, we shall delve into the details of the literature. We hope this can guide researchers to navigate through a large stream of papers in this area of research.

4.1 Matters of concern

The introduction of supply-chain notion opens up a long standing epistemological debate between researchers regarding what are perceived as the inherent nature and proper boundaries of management accounting. This debate has centred on the old theme: "the relevance/irrelevance of management accounting". Smith et al. (2005) raise two questions:

do we need new management accounting techniques to comply with supply-chain context? If we don't, will management accounting techniques be used in a different manner than previously?

Some researchers argue that current management accounting techniques can play an integral role in the constitution and maintenance of effective supply-chain (Ramos, 2004). Seal et al. (1999) addresses three key roles for management accounting in supply-chain context: the make-or-buy decision, partnership management and measuring partnership performance. Mouritsen and Thran (2006) identify five areas where management accounting can contribute to supply-chain: integrated planning, cost saving, joint product development, outsourcing, analyzing the network mode of governance.

On the other hand, Kulmala et al. (2002) argue that supply-chain necessitates the introduction of innovative management accounting techniques without abandoning the traditional techniques. While, Tomkins (2001) believes that the perception of management accountants regarding their roles and the way of using management accounting techniques should be changed, not the management accounting techniques. However, this debate requires further research to be resolved properly. In the following sub-sections, we try to understand the reciprocal presence between supply-chain and management accounting in terms of "matters of concern". The art of understanding the discursive effects of supply-chain on the conventional wisdom of management accounting can be done by focusing on these concerns, controversies, and critiques rather than simply focusing on some technical issues.

Supply-chain relationship

The term "supply-chain relationship" is the backbone of supply-chain; it serves as a road map to guide organizations to effectively manage their supply-chains. With the advent of e-collaboration models and increasingly turbulent and competitive business markets, companies therefore tend to build close and long-term relationships with their suppliers and customers to stay ahead of competition, enhance profitability along the chain, and improve supply-chain agility (Handfield & Bechtel, 2002). Until recently, however, supply-chain relationship had not been placed high in the management accounting research agenda with only a few papers addressing it. But this is changing.

In 1992, one of the very first papers addressing the role of management accounting in supply-chain relationships had been published in Management Accounting Research, wherein Munday (1992) stresses the importance of sharing management accounting information between buyers and suppliers for continuous improvement purposes.

Cost data, previously utilized only for internal reporting purposes, may now have to be provided for external clientele (Munday, 1992:250)

This paper then was followed by many papers in which researchers, who became increasingly interested in this field, have strived and endeavoured to provide coherent evidences on the importance of management accounting in managing and improving supply-chain relationships and search for new calculative tools that help management accounting to retain its power in face of this new challenge. Twenty five papers seek to locate management accounting within a broader context of social transformation represented in supply-chain and to build a bridge between these two disciplines and suggest pathways for future development.

Twenty one papers present management accounting as an enabling contributor to ensure the effectiveness of buyer-supplier collaboration, control and determine any potential improvement opportunities (Agbejule & Burrowes, 2007; Agndal & Nilsson, 2009, 2010; S. W. Anderson & Dekker, 2009a, 2009b; Axelsson, Laage-Hellman, & Nilsson, 2002; Coad & Cullen, 2006; Cooper & Slagmulder, 2004; Cooper & Yoshikawa, 1994; Dekker, 2003; Drake & Haka, 2008; Fayard, Lee, Leitch, & Kettinger, 2012; Frances & Garnsey, 1996; Free, 2007; Kulp, 2002; Manunen, 2000; J. Mouritsen, Hansen, & Hansen, 2001; Munday, 1992; Norek & Pohlen, 2001; Ramos, 2004; Schulze, Seuring, & Ewering, 2012; Seal et al., 1999).

[... both in inter- and intra-organizational environments, accounting may play a *constitutional role* in the establishment and management of trusting and collaborative business relationships that goes beyond the technical to a more symbolic level (Seal et al., 1999:320).]

Four papers introduce management accounting as a language which facilitates communication and negotiation along the supply-chain (Agndal & Nilsson, 2010; Dekker, 2003; Norek & Pohlen, 2001; Ramos, 2004). Two papers use management accounting as a tool for mitigating information asymmetry and behavioural uncertainties (Agndal & Nilsson, 2010; Cooper & Slagmulder, 2004). Three papers highlight the role of supply-chain practices in the successful implementation of the calculative management accounting techniques (L. M. Ellram, 2002; Möller, Windolph, & Isbruch, 2011; Zsidisin, Eliram, & Ogden, 2003).

The major thrust of most of these papers is that whilst supply-chain relationships are usually organized by developing shared meanings and interdependence relationships (Seal et al., 1999), management accounting practices can change supply-chain relationships ontology to go beyond the technical level and can lead to the achievement and understanding of these social behaviours. Understanding this can serve to advance knowledge on supply-chain relationships. In an attempt to make sense and support of this idea, many papers base their discussion on a set of calculative tools such as open book accounting (Agndal & Nilsson, 2010; Axelsson et al., 2002; Fayard et al., 2012; Free, 2007; Möller et al., 2011; J. Mouritsen et al., 2001; Ramos, 2004; Seal et al., 1999), interorganizational cost management (Agndal & Nilsson, 2009; Coad & Cullen, 2006; Cooper & Slagmulder, 2004; Cooper & Yoshikawa, 1994; Fayard et al., 2012; Möller et al., 2011), target costing (Agndal & Nilsson, 2009; Axelsson et al., 2002; Cooper & Yoshikawa, 1994; L. M. Ellram, 2002; Fayard et al., 2012; J. Mouritsen et al., 2001; Ramos, 2004; Zsidisin et al., 2003), total cost of ownership (S. W. Anderson & Dekker, 2009b; Ramos, 2004; Zsidisin et al., 2003), activity-based costing (Axelsson et al., 2002; Dekker, 2003; Drake & Haka, 2008; Fayard et al., 2012; Norek & Pohlen, 2001; Ramos, 2004; Schulze et al., 2012), and balanced scorecard (Axelsson et al., 2002; Ramos, 2004).

In 1996, Gietzmann (1996) raised a question regarding whether the management accounting calculus developed during the period of U.S. pre-eminence is still relevant in the era of Japanese practices. This question represents one of the early examples of how supply-chain relationship is being turned into a matter of concern. Gietzmann (1996:612) stresses the issue of the origins of traditional management accounting calculus (e.g. make or buy calculus) within "an ideology of dichotomous choice between the invisible hand of market based transacting and the hierarchical control of vertical integration" which is no longer consistent with the current flexibility regime and technological advancement. Seal et al.

(1999) responded to Gietzmann critique through the introduction of a more strategic approach of make or buy calculus which facilitates the formation of alliances between buyers and suppliers. However, Kulmala et al. (2002) and Seal et al. (2004) have voiced the same concern and criticize traditional management accounting practices for being rooted within and restricted by organizational boundaries ideology.

Traditional cost management practice has limited its scope to the boundaries of the firm. There is only little information available on accounting techniques used in the partnership situation ((Kulmala et al., 2002:42)

Another concern that shapes the thinking of many researchers is related to the role of management accounting in facilitating information sharing between supply-chain partners. Four critiques have levelled against management accounting with regard to information sharing. The first critique is related to the diversity of management accounting systems and lack of mutually accepted practices between supply-chain participants which are considered major constraints to effective information sharing and as a result effective relationships (Kajüter & Kulmala, 2005; Kulmala et al., 2002; McIvor, 2001; Ramos, 2004; Schulze et al., 2012; Seal et al., 1999). The second critique hinges on the new interorganizational techniques (e.g. open book accounting, target costing, etc.) that have been introduced by management accounting researchers to support collaborative information sharing without considering companies' willingness to accept and apply new ideas and whether these techniques make sense in light of today's complex and volatile business environment. Many researchers (Caglio & Ditillo, 2008, 2012; Håkansson & Lind, 2004; Kulmala, 2004; Kulmala et al., 2002; Seal et al., 2004; Tomkins, 2001) argue that introducing and building new interorganizational techniques and systems should be subject to careful analysis of several factors (e.g. the information is likely to be produced by participating companies and its uses, the different forms of business alliances, and the willingness to share information.), and not just because they seem rationally apposite. Seal (2001:488) argues that management accounting is utilizing these new techniques to expand its scope to ensure the success in the current competitive arena, however, the price is "a loss of identity and coherence."

The third critique holds that there is an imbalance in cost and benefit sharing among supply-chain participants as the majority of benefits accrued from sharing management accounting information are obtained by buyers while eroding the suppliers' profits (Free, 2007; McIvor, 2001; Norek & Pohlen, 2001). The last critique that has been raised is related to the ambivalent behavioural implications of sharing management accounting information. Many researchers (Drake & Haka, 2008; Frances & Garnsey, 1996; Masschelein, Cardinaels, & Van den Abbeele, 2012; Schloetzer, 2012; Seal et al., 2004; Thrane & Hald, 2006; Van den Abbeele, Roodhooft, & Warlop, 2009; Windolph & Moeller, 2012) criticize previous studies in which they always take the benefits of sharing management accounting information for granted, however, in practice, supply-chain partners can be confronted with different problems (e.g. power/domination nexus) resulting in losses derived from information sharing. Thrane and Hald (2006) argue that management accounting while seeking to create closer alignment between the company and its external constituencies, can create conflict of interest between entities within the company. Drake and Haka (2008:31) claim that management accounting may "magnifies the strategic uncertainty regarding opportunistic behaviour".

It is now clear that from the 2000s onwards, the interest in studying supply-chain relationships has vastly grown among management accounting scholars. Numerous papers have been published since 2001 in leading accounting and operations journals. The driving

force behind this shift is that researchers start to recognize that supply-chain relationships may indeed problematize the regime of accounting practices as a result of increasing complexity, necessitating the acceptance of supply-chain management control systems by everyone (Ramos, 2004), mixing the ownership of business units (Kulmala et al., 2002) and collaborating with suppliers not viewing them as enemies (Cousins & Menguc, 2006). As a result the issue of supply-chain relationships has moved into the centre of attention recently.

The lesson that we can draw here is that supply-chain relationship is still very much a matter of concern rather than a fully-fledged object. These matters are still disputable and open for further controversies and debate between researchers.

Performance measurement and management control

Why does Performance Measurement (PM) matter? The answer may lie in Sir William Thompson's (Lord Kelvin) famous dictum which he uttered more than 150 years ago:

When you can measure what you are speaking about, and express it in numbers, you know something about it, but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meager and unsatisfactory kind (Niven, 2005:21).

Even, ancient cultures, like Babylonians and Egyptians, were aware of the importance of PM and were preoccupied with measuring time more than 5000 years ago (Nair, 2004). So, the impetus for PM is not new.

Global competition, technological change, and rapidly changing business environment have created the need for the development and implementation of well-designed and comprehensive Management Control (MC) systems rather than just PM systems. In the words of management accounting gurus Robert Kaplan and David Norton (2001:158):

[... the experience affirms that management control systems matter. It's not just what is measured but how the measurements are used that determines organizational success.]

Such systems are necessary not only to gauge organization's progress toward achieving competitive advantage but also to evaluate and manage business processes and activities.

As companies move to supply-chain thinking, PM and MC systems have become matters of interest to both academics and practitioners alike, since they have been perceived as critical drivers of supply-chain success. Researchers believe that such systems are intended to address different key issues such as diagnosing and improving supply-chain performance (S. W. Anderson & Dekker, 2009b; Aramyan, Lansink, Vorst, & Kooten, 2007; Banomyong & Supatn, 2011; Chae, 2009; Melnyk, Stewart, & Swink, 2004; Tummala, Phillips, & Johnson, 2006), promoting supply-chain relationships (S. W. Anderson & Dekker, 2009b; Banomyong & Supatn, 2011; Chan & Qi, 2003), evaluating the effectiveness of strategies (Chan & Qi, 2003; Cousins & Menguc, 2006; A. Gunasekaran, Patel, & Tirtiroglu, 2001), enhancing decision making process (Aramyan et al., 2007; Chan & Qi, 2003), controlling and communicating performance (Banomyong & Supatn, 2011; Melnyk et al., 2004), and

promoting trust-building (S. W. Anderson & Dekker, 2009b). Nevertheless, PM and MC systems remains a surprisingly controversial and unsettled area within supply-chain context.

The area of PM and MC systems within supply-chain context has become a subject of interest for many scholars and heated academic discussions since the early 1990s. Numerous papers have been published with the aim of providing updated knowledge in this area. Of the 57 papers that we found in our review, 14 papers seek to highlight the importance of PM and MC systems as vital tools for managing supply-chain. Many papers posit and provide evidences that PM and MC systems can enhance supply-chain relationships (Bryceson & Slaughter, 2010; Coletti, Sedatole, & Towry, 2005; Gopal & Thakkar, 2012; Hald & Ellegaard, 2011; Hoek, 2001; Hofmann & Kotzab, 2010; Mahama, 2006; Martin & Patterson, 2009; J. Mouritsen et al., 2001; Nicolaou, 2008; Rahman, 2002; Vélez, Sánchez, & Álvarez-Dardet, 2008). Coletti et al. (2005:496) argue that control systems aimed at reducing relational risk promote greater cooperation, which is observed by participating collaborators. This observed cooperative behavior allows collaborators to build trust in one another, and this trust reinforces the positive effects of the control system in eliciting future cooperation. Luca et al. (2010) discuss the role of PM systems in assessing readiness of companies to engage in new quality programs within supply-chain context. Also, PM systems have been perceived as benchmarking tools that can enable best practice performance (Estampe, Lamouri, Paris, & Brahim-Djelloul, 2013).

However, Bryceson and Slaughter (2010:343) have expressed a concern regarding the role of PM in supply-chain relationships:

[...goal incongruence can easily develop even in well-managed supply-chains if and when there are significantly divergent management issues associated with the operational and corporate arenas of a business – and when the reporting information used as performance metrics do not address these differences.]

While it is obvious that such concern can be important, it is likely to be so in cases where inappropriate performance measures are used. So, using appropriate PM systems can allay goal incongruence concern. This leads directly to another concern, however, since the characteristics of appropriate PM and MC systems are blurred. Many papers have set some factors and criteria for choosing specific control pattern or metrics (Cäker, 2008; Chua & Mahama, 2007; Cuganesan, 2006; Cuganesan & Lee, 2006; Cuthbertson & Piotrowicz, 2011; Donada & Nogatchewsky, 2006; Angappa Gunasekaran & Kobu, 2007; Langfield-Smith & Smith, 2003; Morgan, 2004; Vosselman & Meer-Kooistra, 2006).

However, the literature on this concern is confusing and conflicting in that some researchers argue that current PM and MC systems are adequate for supply-chain environment whereas others provide evidences for the contrary. In 1994, Caplice and Sheffi (1994:11) claimed that:

The problem in our opinion, is not that there is a need for developing novel performance metrics based on new physical or financial qualities. Existing metrics, if used properly, can capture the critical elements of the logistics process: time, distance, and money are still the basis of all logistics management. Rather, we feel there is a pressing need for

companies to reevaluate (or to analyse for the first time) their performance measurement systems.

So they have suggested a set of criteria for evaluating performance measures (Caplice & Sheffi, 1994, 1995). Also, Zimmermann and Seuring (2009) and Chia et al. (2009) demonstrate that the ideas embodied on the Balanced Scorecard (BSC) can be transferred from a company level to a supply-chain level.

However, on the other hand, two major concerns have been sparked on the occasion of the use of current PM and MC systems within supply-chain context. The first concern is that current PM and MC systems are still restricted by organizational boundaries and have not extended individual companies (Chow, Heaver, & Henriksson, 1994; Morgan, 2007; Veen-Dirks & Verdaasdonk, 2009). This limitation makes it difficult for the firm to take advantage of, for example, any cost-reduction synergies that exist across the supply-chain (2009:467). Vosselman and van der Meer-Kooistra (2009:278) raise another concern that traditional control systems can be an obstacle for trust building between supply-chain partners. Above a legitimate threshold of control, it might entail local switches into gain frames. Such switches entail the risk of opportunistic behaviour and, therefore, the risk of instability of the relationship (2009:278). The other concerns are related to the inability of one control system to fully integrate the requirements of supply-chain (S. A. Seuring, 2006), social and environmental aspects are not fully taken into consideration in the current PM systems (Cuthbertson & Piotrowicz, 2008), lack of proper metrics that can measure the value created internally and throughout the supply-chain (Lambert & Burduroglu, 2000).

In response to previous concerns and other concerns, 15 frameworks and models have been introduced for measuring performance and selecting measures (Aramyan et al., 2007; Beamon, 1999; Bhagwat & Sharma, 2007; Brewer & Speh, 2000; Bullinger, Kühner, & Van Hoof, 2002; Carpinetti, Galdámez, & Gerolamo, 2008; Comelli, Féniès, & Tchernev, 2008; Giannakis, 2007; A. Gunasekaran, Patel, & McGaughey, 2004; A. Gunasekaran et al., 2001; Lambert & Pohlen, 2001; Ramanathan, Gunasekaran, & Subramanian, 2011; Stainer, 1997; Thakkar, Kanda, & Deshmukh, 2009; van Hoek, 1998). Out of the 15 frameworks, 5 frameworks are mainly based on balanced scorecard (Bhagwat & Sharma, 2007; Brewer & Speh, 2000; Bullinger et al., 2002; Carpinetti et al., 2008; Thakkar et al., 2009).

The balanced scorecard developed in this paper provides a useful guidance for the practical managers in evaluation and measuring of SCM in a balanced way and proposes a balanced performance measurement system to map and analyse supplychains (Bhagwat and Sharma, 2007:43).

[... it emphasizes the interfunctional and interfirm nature of supply-chains and recognizes the need to ascertain the extent to which firms effectively work together and the extent to which functions are coordinated and integrated (Brewer and Speh, 2000:91).]

However, Schmitz and Platts (Schmitz and Platts, 2004:235) criticize the model introduced by Brewer and Speh (Brewer & Speh, 2000):

[... the basic and central concept of the BSC as we understand it, is the translation of corporate objectives and measures into targets and metrics on lower levels, which can be acted upon. Unfortunately, exactly this vital part for the success of the BSC, is left out by Brewer and Speh.]

In 2000, van der Meer-Kooistra and Vosselman (2000:51) introduced a management control model *consists of three control patters* (market based, bureaucracy based, and trust based patters) *and of contingency factors that influence the choice between the patterns*. This model has been criticized by Caglio and Ditillo (2008) and Thrane (Thrane, 2007):

[Control between organisations is regarded as either following a trust/relational, hierarchical/bureaucracy or market-based pattern. Such an approach, however, reduces the complexity of a given phenomenon (Thrane, 2007:267).]

Another three frameworks have been suggested by Mouritsen and Thrane (2006), Dekker (2004), and van der Meer-Kooistra and Scapens (van der Meer-Kooistra & Scapens, 2008) for the control of inter-organizational relationships.

Tracking papers in this area shows that there is a lack of consensus between researchers regarding the relevant PM and MC systems within supply-chain context and that researchers have polarized into two divergent camps: those who believe current performance measurement and management control systems can be blessing for supply-chain participants in their quest for competitive advantage and those who believe such systems can be curse as they can seriously inhibit the ability of companies along supply-chains to successfully adapt to changes in the business environment. Proponents of the latter camp believe that the time is ripe to revolutionize current systems and practices and to introduce new – or, at least, to offer a new look to some older – systems. Despite researchers' efforts in studying PM and MC systems within supply-chain context, they are unlikely to become "black box" routines.

Decision making

According to (Biswas & Narahari, 2004), decision making within supply-chain framework is a complex process. They attributed this complexity to:

Some of the important reasons for the complexity of the decision making process are: large scale nature of the supply-chain networks, hierarchical structure of decisions, randomness of various inputs and operations, dynamic nature of interactions among supply-chain elements (Biswas and Narahari, 2004:704-705).

In the same vein, Julka et al. (2002:1757) have pointed out two major factors behind the complexity of supply-chain decision making process:

The first challenge is that the information across all the departments and enterprises is distributed, dynamic, and

disparate in nature. Secondly, in a present-day enterprise, decision centers reside in different departments.

However, although being regarded as one of the most complicated processes, decision making is one of the most key attributes toward the development of more collaborative relationships between supply-chain partners (Biehl, Cook, & Johnston, 2006). According to (Biehl et al., 2006), effective supply-chain decision making necessitates a step ahead from the traditional adversarial nature of companies to a more open and collaborative relationships which spurs supply-chain partners to engage in resources assignment, information flow maintenance, activity mapping, joint problem solving, and future plans preparation. Awareness of the benefits and challenges of supply-chain decision making have attracted the interest of many researchers from both management accounting and supply-chain disciplines to this research area.

We have found 47 papers dealing with his subject. 34 papers highlight the prominent role of management accounting and its calculative tools in supporting supply-chain decision making. Joyce (2006) and Whicker, Bernon, Templar, and Mena (2009) stress the importance of management accounting information in making better informed decisions. Phua, Abernethy, and Lillis (2011) argue that the choice management control pattern affects the decision of whether or not to switch to new suppliers.

[... firms with trust-based controls experience the most difficulty in switching suppliers; firms with market-based controls experience the greatest ease; and firms with bureaucratic-based controls and hybrid controls lie between these extremes (Phua et al., 2011:1797).]

Three major decisions have been of particular concern to researchers which are supplier selection, outsourcing, and order management. Some researchers are inclined to use particular management accounting tools, such as total cost of ownership (Bhutta & Huq, 2002; Carr & Ng, 1995; Cavinato, 1992; Chen & Yang, 2003; Zeger Degraeve & Roodhooft, 1999; L. Ellram, 1993, 1994; L. M. Ellram, 1993, 1995, 1996; L. M. Ellram & Maltz, 1995; L. M. Ellram & Siferd, 1993; L. M. Ellram & Siferd, 1998; Hurkens, van der Valk, & Wynstra, 2006; LaLonde & Pohlen, 1996; Maltz & Ellram, 1997; Weber, Hiete, Lauer, & Rentz, 2010; Wouters, Anderson, & Wynstra, 2005), activity-based costing and its development (Askarany, Yazdifar, & Askary, 2010; Chen & Yang, 2003; Zeger Degraeve & Roodhooft, 1999; Dekker & Van Goor, 2000; Everaert, Bruggeman, Sarens, Anderson, & Levant, 2008; Fernie, Freathy, & Tan, 2001; LaLonde & Pohlen, 1996; Lere & Saraph, 1995; Lin, Collins, & Su, 2001; Stapleton, Pati, Beach, & Julmanichoti, 2004; Weber et al., 2010), open book techniques (Agndal & Nilsson, 2008; L. M. Ellram, 1996), and target costing (L. M. Ellram, 1996; Newman & McKeller, 1995) in depicting how management accounting can support these decisions:

[... TCO analysis supports a whole spectrum of decisions, from very routine day-to-day operating decisions, such as how much volume should be allocated to a certain supplier, to strategic decisions, such as how to reengineer a process and whether the firm should be even in a particular business (Ellram and Siferd, 1998:66).]

ABC can provide substantial assistance with the cost aspects of the decision-making process (Stapleton et al., 2004:594).

Other researchers have set their sights on using these tools in building mathematical programming models, with which managers can make better supply-chain decisions. Kirche, Kadipasaoglu, and Khumawala (2005) present a mixed-integer programming model for order management which incorporates activity-based costing and theory of constraints approaches. This model has been criticized by Khataie et al. (2010:5009):

Although the model introduced an important concept, it had some limitations such as: the restriction of fulfilling orders completely which does not allow the company to reduce its residual capacity through partial acceptance of the orders; the inventory cost of the common part was not reflected and the overhead costs were not clearly illustrated.

Hence, Khataie et al. (2010) develop the model introduced by Kirche et al. through the application of weighted goal programming. Two other models have been developed: one for supplier selection decision based on total cost of ownership and activity-based costing (Z. Degraeve, Labro, & Roodhooft, 2005) and the other for "incentive planning for global supplychain quality management" based on activity-based costing (Hung, 2011:7337).

As many researchers were interesting in highlighting the evident role of management accounting and its tools in supply-chain decision making, other researchers began to raise new concerns. These concerns revolve around three interlocking issues. The first issue is related to the ideology within which management accounting is rooted. Christopher and Holweg (2011:64) argue that today's dynamic and turbulent business environment has forced the companies to change the conception of flexibility from dynamic flexibility to structural flexibility which "builds flexible options into the design of supply-chains" in order to enable companies along the supply-chain to contend with the challenges regarding technology, demand, etc. According to them, however, management accounting presents a major hurdle in the drive toward structural flexibility.

[... will require revisiting the management accounting procedures that are used to evaluate different supply-chain decisions. We need to move away from a focus on the achievement of "lowest global cost" to serving the centres of gravity within a flexible supply-chain structure (Christopher and Holweg, 2011:64).]

Labro (2006) points out to the tendencies of management accounting thinking to the 80/20 rule as a tenet of good cost management and decision making practices. As a result, design phase has been perceived as the most appropriate place for cost management efforts, "decisions are made that subsequently compel the incurrence of the cost in an immutable way", and little attention is given to cost management efforts in further stages of product life cycle (Labro, 2006:504). The problem, from Labro point of view is that the evidence for 80/20 rule is only anecdotal:

I have pinpointed to a lack of empirical evidence of the generally accepted rule that 80 per cent (or even more) of the

costs are committed during product design, although they are incurred only later on in the product life cycle (Labro, 2006:507).

But even if the 80/20 rule proves factual, the 20 per cent of costs left uncommitted at the design stage is still a vast amount of money, which is amenable to collaborative cost reduction efforts (Labro, 2006:504)

Gietzmann (1996), S. W. Anderson, Glenn, and Sedatole (2000), and Sartorius and Kirsten (2005) have expressed a concern regarding the way in which management accounting contributes to make or buy (outsourcing) decision as it views the problem narrowly and limit it to production costs and purchasing costs.

The traditional management accounting literature, therefore, ignores certain costs that are incurred in the outsourcing decision because of the bounded rationality of the participants, opportunism and information asymmetry (Sartorius and Kirsten, 2005:83).

They agreed that make or buy decision requires revision from the management accounting perspective to be consistent with today's challenges (S. W. Anderson et al., 2000; Gietzmann, 1996; Sartorius & Kirsten, 2005).

The second issue is related to management accounting's calculative tools which are used to support supply-chain decision making. Although inter-organizational cost management and logistics cost management techniques have been developed to overcome the problems of the traditional techniques and to support decision making within supply-chain context, these techniques are not widely adopted in practice due to different inhibiting factors such as human behaviour (Bastl, Grubic, Templar, Harrison, & Fan, 2010; Song & Wang, 2009). Narayanan (2003) argue that using activity-based costing information in pricing decision can hurt the overall supply-chain if there is high customer diversity.

The last issue concerns the implications of supply-chain decision making on management accounting practices. Smith et al. (2005), Dekker (2008), Wouters, van Jarwaarde, and Groen (2007), Baiman and Rajan (2002), (Ittner, Larcker, Nagar, & Rajan, 1999) highlight such new decision making situations throw up new challenges for management accounting in terms of the choice of governance arrangements, cost management programs, accounting information system, and supplier selection and monitoring practices.

In conclusion, research in this vein placed its emphasis on investigating the role of management accounting in providing information to assist in the new supply-chain decision making processes and how new issues and matters of concern get reframed. Many researchers are seeking to settle a question concerning the relevance of management accounting in supporting decision making in the light of the new setting. Apparently, the question is still unsettled and subject to prolonged debate in the academic community.

Trust

Today's uncertain business environment and strong dependencies between supply-chain partners have created the need for the presence of trust concept. Such concept is necessary not only to increasing the level of cooperation between companies along the supply-chain but also to prevent conflicts between supply-chain partners (van der Meer-Kooistra & Vosselman, 2000).

There is no widely accepted definition of trust. Researchers interpret trust in different ways. Anderson and Weitz (1989) define trust as one party's belief that its requirements will be satisfied through actions carried out by the other party in future. Moorman et al. (1992:315) argue that trust is "a willingness to rely on an exchange partner in whom one has confidence." Kwon and Suh (2004) believe that trust can be built when one party is confident enough in other partner's reliability regarding fulfilment of obligations in the exchange.

Although trust is receiving a great attention in studying business relationships (Sahay, studies 2003), relatively few accounting have on trust within supply-chain context. A discussion could be witnessed from the early 2000s about the nexus between management accounting and trust. Most of the studies (10 papers) in this area have primarily focused upon the complex connections between governance and management control systems and trust. The key concern for those researchers is the direction of the relationship between trust and governance and management control and management control practices. Researchers' opinions are not unanimous and split about this direction. Tomkins (2001), Langfield-Smith and Smith (2003), Coletti et al. (2005), Jan Mouritsen and Thrane (2006), Cuganesan (2007), Langfield-Smith (2008), van der Meer-Kooistra and Scapens (2008), and Vosselman and Meer-Kooistra (2009) take the position that management control and governance practices facilitate the development of trust.

Management controls are related to trust in the sense that rather than primarily making trust a socio-psychological matter, they make it a matter of practice; rather than trusting the motivations of others all the time, management controls can extend practices irrespective of individuals' local motivations (Mouritsen and Thrane, 2006:273).

[...in collaborative settings, control induces cooperation, which, in turn, positively affects trust. Specifically, control systems aimed at reducing relational risk promote greater cooperation, which is observed by participating collaborators. This observed cooperative behavior allows collaborators to build trust in one another, and this trust reinforces the positive effects of the control system in eliciting future cooperation (Coletti et al., 2005:496)]

On the other hand, trust has been perceived by some researchers to affect the choice of management control systems (Cuganesan, 2006; Langfield-Smith, 2008) or become an alternative to control practices (Vosselman & Meer-Kooistra, 2006).

Managers' perception of goodwill trust and competence trust in the partners may influence the choice of alliance structure and control system, through their assessments of relational risk and performance risk (Langfield-Smith, 2008:362)

Another concern which has been raised recently is whether management accounting and its tools are vehicles for building or destroying trust. Kajüter and Kulmala (2005) and Vosselman and Meer-Kooistra (2009) argue that management accounting can help in building and warranting trust:

Trust is not an actor by itself, but it both acts through accounting and is the result of the sharing of accounting (Vosselman and Meer-Kooistra, 2009:277).

Free (2008:629) argues that although management accounting techniques are introduced as "amid 'trust talk", they may undermine trust between supply-chain partners:

Idealist accounts of accounting practice playing a constitutional role in the development of trust between trading partners need to be tempered by reference to the instrumental influences of self-interest and opportunism in many sectors (Free, 2008:649).

It is clear that researchers in this area of research can be conceptualized as belonging to two groups: one, whose interest is driven by investigating the direction of the relationship between management accounting and trust; and another, whose interest is driven by exploring the nature of the relationship. However, the above concerns still require further research attention. It is too early to judge the degree to which there is an agreement or controversies taking place between researchers in relation to this issue.

Emergent matters of concern

The instability of business environment and dynamics surrounding supply-chain helped trigger the emergence of new matters of concern: supply-chain risk, reverse logistics, and sustainability. These concerns have been reinforced by the increased global competitiveness, more stringent environmental regulations, and scarcity of resources. In the following, we will try to shed some light on these concerns.

Supply-chain Risk

As globalization, supplier base reduction, and increased dependence on outsourcing continue to intensify in today's business environment, companies are becoming more aware of the importance of measuring and managing supply-chain risk as a fundamental challenge to supply-chain (Trkman & McCormack, 2009). Jüttner et al. (2003) argue that supply-chain risks can have a great impact on a company's ability to survive, deliver products to market or provide services to customers.

Supply-chain risk can be defined as the inability of the company to satisfy customer needs due to the occurrence of inbound supply incidents (Carter & Rogers, 2008). There are several circumstances which can create supply-chain risks (Giunipero & Eltantawy, 2004). Chopra and Sodhi (2004) claim that the major categories of supply-chain risk include: capacity, delays, disruptions, intellectual property, inventory, procurement, receivables, and systems and that each category has its own drivers.

Although awareness is increasing among professionals and academics, supply-chain risk is still a nascent area of research and a research gap exists regarding how to mitigate and measure supply-chain risk (Ju"ttner, 2005). The accounting researchers emphasize on two types of risk that can result from differences in supply-chain partners' objectives and their proclivities to opportunistically behave and coordination failure: relational risk and performance risk (S. W. Anderson & Dekker, 2009a; Langfield-Smith, 2008). Relational risk "is unique to interfirm transactions and is closely related to the opportunistic behaviour" (Anderson and Dekker, 2009a:205), however, performance risk "is found in all decisions that put execution of the firm's strategy in jeopardy and are not unique to buyer/supplier transactions" (Anderson and Dekker, 2009a:206).

Researchers agree that management accounting practices can play a constitutional role in managing supply-chain risk (S. W. Anderson & Dekker, 2009a, 2009b; Langfield-Smith, 2008; Miller, Kurunmäki, & O'Leary, 2008). Langfield-Smith (2008) and S. W. Anderson and Dekker (2009b) argue that performance measurement and management controls are the mainstay for measuring and managing supply-chain risk. S. W. Anderson and Dekker (2009a) stress the importance of structural cost management in managing supply-chain risk. However, because supply-chain risk is a nascent field of research, there is no clear underlying fundamental structure for this topic. There is no clear statement about the mechanisms by which management accounting practices can help in mitigating and managing risk within supply-chain and, hence, no clear idea about the magnitude of the effects exerted by management accounting on supply-chain risk.

We argue for increasing attention to these mechanisms, as it is through them that uncertainty is actually managed rather than formally represented as manageable (Miller et al., 2008:963).

Reverse Logistics

The second emergent matter of concern is reverse logistics. Reverse logistics definition has been developed over time from a sense of wrong direction, going through exaggeration on environmental perspective, coming back to the original ideas embodied in the concept, and finally ending with a widening of its scope (Brito & Dekker, 2004). The Reverse Logistics Executive Council defines reverse logistics as "the process of planning, implementing, and controlling the efficient, cost effective flow of raw materials, in-process inventory, finished goods, and related information from the point of consumption to the point of origin for the purpose of recapturing value or of proper disposal" (Meade and Sarkis, 2002:283). Sometimes reverse logistics is referred to as logistics backward as it deals with the reverse flow of products and information from customers back to suppliers in order to collect used products, wastes, and packaging materials for the purposes of remanufacturing, recycling or disposing of safely (Steven, 2004).

More than ever before, nowadays a considerable attention has been given to reverse logistics because of 'liberalised returns policies' and the increasing focus on customer service and recycling products (Simatupang, Wright, & Sridharan, 2004). One of the big mysteries now is the cost of reverse logistics (Goldsby & Closs, 2000). Goldsby and Closs (2000), Ravi, Shankar, and Tiwari (2005), Bernon and Cullen (2007), Tsai and Hung (2009b), and Bernon, Rossi, and Cullen (2011) agree that management accounting and its techniques (e.g. activity-based costing) can help to unravel this mystery and support decision making. Cullen et al. (2013) point to the significant role of management accounting information in managing

reverse logistics processes. However, currently, there are no further evidences on the effectiveness of management accounting practices in reverse logistics. Research in his area is still in its infancy and thus undue optimism regarding the role of management accounting in reverse logistics must be avoided. No more than recommendations for further research can be offered at present.

Sustainability

Sustainability is the last emergent matters of concern. Sustainability represents an integral part in supply-chain management practices, as supply-chain has strong effect on the environment and the exploitation of different resources (Wolf, 2011). World Commission on Environment and Development's (Brundland-1987) defines sustainable development as the development that satisfy the present needs but not at the expense of future generations' ability to satisfy their own (van Marrewijk, 2003). Sustainable supply-chain management is the process of managing the flows of material, capital, information, and relationships between supply-chain partners, taking into consideration economic, social, and environmental factors (S. Seuring & Müller, 2008). Incorporating sustainability issues in supply-chain is a hefty challenge for both researchers and supply-chain managers.

The societal concern about sustainability has led to the introduction of new concepts in academia such as green supply-chain, sustainability accounting, and carbon accounting. Although there is far less research regarding the role of management accounting in sustainability at present, few researchers have begun to show an interest in these concepts and respond to them. Hervani, Helms, and Sarkis (2005), Tsai and Hung (2009a), and Shaw, Grant, and Mangan (2010) refer to that activity-based costing and balanced scorecard when incorporating environmental performance measures can opportunities for improving green supply-chain performance. Ratnatunga and Balachandran (2009) highlight the usefulness of the information derived from management accounting systems in the new economy "carbonomics":

[...the information from strategic cost management systems will be particularly useful in this new carbon economy, especially in evaluating the "whole-of-life" costs of products and services in terms of carbon emissions (Ratnatunga and Balachandran, 2009:333).]

Sustainability accounting is a new concept which contributes in governing "social, economic and environmental issues related to suppliers" through accounting calculative practices such as balanced scorecard, cost-benefit analyses, etc. (Spence and Rinaldi:1). As the issue of sustainability is a relatively novel area of research, it is not yet possible to give a rigorous assessment of the role of management accounting in this issue. Therefore, further research is required in this regard.

In sum, although supply-chain researchers and practitioners have identified supply-chain risk, reverse logistics, and sustainability as significant matters of concern, they receive a little attention from management accounting researchers until now. These concerns require more discussions and further consideration from accounting research community.

5. Conclusions

This paper aims to raise an epistemological question about the fate of management accounting and the ways in which this fate can be known. The question was seen as a means to testing the relevance of management accounting in the context of emerging supply-chains. The test of relevance was seen from several angles which we call matters of concerns running from supply-chain relationships, performance measurement and management control, decision-making through trust, supply-chain risk, reverse logistics to sustainability. These concerns not only act as contestable terrains in the determination of what constitutes management accounting in post-bureaucratic settings but also point to the irrelevance of the conventional wisdom of management accounting.

The epistemological question about how we know the current fate of management accounting and how we see the ways in which the knowledge of management accounting is progressed was addressed by evaluating how researchers have responded to the changes occurring in the conventional organisational ontology when it is confronted with an emerging version manifested in supply-chains. The above concerns spreading over seven directions question the validity of conventional management accounting and plea for alternative methods and practices. Leaving the technical and technological compatibility issues aside, there is now a common concern working with heterogeneous parties towards achieving a collective goal. The questions of how relationships can be maintained, how performance can be measured, how subsequent decisions can be made, how parties can be trusted and made accountable, how risk can be ascertained and managed, how logistic flexibility can be accommodated and how networks and collaborations can be made sustainable are the ways of problematising the roles of conventional management accounting and means to exploring new matters of facts.

In the process of progressing management accounting knowledge from its state of "matters of concern" to a state of "matters of fact", as the literature review suggests, there are disputes, disagreements as well as judicial commentaries. What we see then is that the current state of management accounting in this area seems to be fragile and unstable. The fragility and instability represents not only the problem of management accounting but also a condition of possibility towards thinking about how these problems could be eliminated and how "matters of facts" could be derived. However, as we saw in the discussion, this is a process rather than an incident that could be seen as a panacea. The process is full of debates and commentaries published in journals and presented at conferences where epistemic communities gather and network for making a case towards matters of fact, or black-boxing a case for management accounting in supply-chains. Until this epistemic moment comes about, the fragility and instability will act as an impulsion rather than destruction in this knowledge production project.

Supply-chain relationships, performance measurement and management control, and decision making are clearly very much matters of concern for researchers and open for ongoing debates. Trust begins to be a matter of concern recently. On the other hand, although supply-chain risk, reverse logistics, and sustainability are significant matters of concern for societies, supply-chain researchers, and practitioners, they still are not grasped by accounting researchers as matters of concern. Thus, further consideration from accounting researchers is required.

Given the nature of commentaries and the resultant ambiguity of management accounting roles within such post-bureaucratic settings, there are two remaining issues that

dominate the above fragility and instability. One is on the ownership of management accounting. Second is on the meaning of management accounting. These issues tell us that matters of concern are not only operating in technical and technological issues but also in the areas of discursive formation and rhetorical engagements.

Conventionally, accounting researchers and journals have been the carriers of the duties entrusted to the development of management accounting. Given the change in the organizational form to a post-bureaucratic one, researchers from different disciplines have become interested in studying the impact of this social transition on areas such as decision-making, measuring performance and the like. This may lead to the loss of identity and coherence. The meaning of management accounting is also becoming blurred. Matters of concern in respect of conceiving the ownership and meaning of management accounting are thus entering these arenas as well.

Our research can inspire further work. One is an empirical extension to accommodate some relevant ethnographic accounts by conducting possible semi-structured interviews followed by email-conversations with the academic colleagues who are engaged in management accounting research within this emerging context. This would add more concrete evidence to our observations on the issue of fragility and instability in making a knowledge production in management accounting. The literature review and the questions being raised therein can be tested in such efforts and more valid conclusions can be made on the issue of matters of concern. While we hope to extend out research to these potential directions, similar efforts are welcomed.

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Appendix 1

Table 3 Papers selected for the pilot review

Authors	Year	Journal
Anderson and Dekker (a)	2009	Accounting Horizons
Anderson and Dekker (b)	2009	Accounting Horizons
Aramyan et al.	2007	Supply-chain Management: An International
-		Journal
Askarany et al.	2010	International journal of production economics
Banomyong and Supatn	2011	Supply-chain Management: An International Journal
Barber	2008	International Journal of Physical Distribution
barber	2008	and Logistics Management
		and Logistics Management
Caglio and Ditillo	2008	Accounting, Organizations and Society
Chae	2009	Supply-chain Management: An International
		Journal
Chan and Qi	2003	Supply-chain Management: An International
		Journal
Chua and Mahama	2007	Contemporary Accounting Research
Comelli et al.	2008	International journal of production economics
Cooper and Yoshikawa	1994	International Journal of Production Economics
Cousins and Menguc	2006	Journal of Operations Management
Dekker	2003	Management Accounting Research
Fayard et al.	2012	Accounting. Organizations and Society
Free	2008	Accounting, Organizations and Society
Free	2007	Contemporary Accounting Research
Garcia et al.	2012	International journal of production economics
Georgiadis et al.	2006	Production and Operations Management
Gietzmann	1996	Accounting, Organizations and Society
Goldsby and Closs	2000	International Journal of Physical Distribution
		and Logistics Management
Gunasekaran et al.	2001	International Journal of Operations and
		Production Management
Harland	1996	British Journal of Management
Hergert and Morris	1989	Strategic Management Journal
Kaihara	2001	International journal of production economics
Kajüter and Kulmala	2005	Management Accounting Research
Kaynak and Hartley	2008	Journal of Operations Management
Kirche et al.	2005	International Journal of Production Research
Kulmala et al.	2002	International journal of production economics
Matos and Hall	2007	Journal of Operations Management
Melnyk et al.	2004	Journal of Operations Management
Mouritsen and Thrane	2006	Accounting, Organizations and Society
Mouritsen et al.	2001	Management Accounting Research
Nicolini et al.	2000	British Journal of Management
Rahman	2002	International Journal of Physical Distribution

		and Logistics Management
Ramos	2004	Supply-chain Management: An International
		Journal
Schulze et al.	2012	International journal of production economics
Seal et al.	2004	Accounting, Organizations and Society
Seal et al.	1999	Management Accounting Research
Simatupang et al.	2004	Supply-chain Management: An International
		Journal
Smith et al.	2005	The British Accounting Review
Stuart	1997	British Journal of Management
Thrane and Hald	2006	Management Accounting Research
Tomkins	2001	Accounting, Organizations and Society
Trkman and McCormack	2009	International journal of production economics
Tummala et al.	2006	Supply-chain Management: An International
		Journal
Van Der Meer-Kooistra	2000	Accounting, Organizations and Society
and Vosselman		
Van Hoek	1998	Supply-chain Management: An International
		Journal
Windolph and Moeller	2012	Management Accounting Research
Wolf	2011	Journal of Business Ethics

Table 4 Papers selected for the main review

Authors	Year	Journal
Agbejule and Burrowes	2007	Managerial Auditing Journal
Agndal and Nilsson	2008	International Journal of Production Economics
Agndal and Nilsson	2009	Management Accounting Research
Agndal and Nilsson	2010	Management Accounting Research
Anderson and Dekker (a)	2009	Accounting Horizons
Anderson and Dekker (b)	2009	Accounting Horizons
Anderson et al.	2000	Accounting, Organizations and Society
Aramyan et al.	2007	Supply-chain Management: An International
		Journal
Askarany et al.	2010	International Journal of Production Economics
Axelsson et al.	2002	European Journal of Purchasing and Supply
		Management
Baiman and Rajan	2002	Accounting, Organizations and Society
Bastl et al.	2010	The International Journal of Logistics
		Management
Beamon	1999	International Journal of Operations and
		Production Management
Bernon and Cullen	2007	International Journal of Logistics: Research
	2011	and Applications
Bernon et al.	2011	International Journal of Physical Distribution
D1 (1.01	2007	and Logistics Management
Bhagwat and Sharma	2007	Computers and Industrial Engineering
Bhutta and Huq	2002	Supply-chain Management: An International Journal
Brewer and Speh	2000	Journal of Business Logistics
Bryceson and Slaughter	2010	International Journal of Productivity and
		Performance Management
Bullinger et al.	2002	International Journal of Production Research
Caglio and Ditillo	2008	Accounting, Organizations and Society
Caglio and Ditillo	2012	Management Accounting Research
Cagnazzo et al.	2010	International Journal of Productivity and
Cäker	2008	Performance Management Management Aggounting Research
Caplice and Sheffi	1994	Management Accounting Research The International Journal of Logistics
Capitee and Sherri	1994	Management Logistics
Caplice and Sheffi	1995	The International Journal of Logistics
Capitee and Sherri	1773	Management
Carpinetti et al.	2008	International Journal of Productivity and
ompliford of all	2300	Performance Management
Carr and Ng	1995	Management Accounting Research
Cavinato	1992	Journal of Business Logistics
Chen and Yang	2003	Total Quality Management and Business
6		Excellence
Chia et al.	2009	Benchmarking: An International Journal
Chow et al.	1994	International Journal of Physical Distribution

Authors	Year	Journal
		and Logistics Management
Christopher and Holweg	2011	International Journal of Physical Distribution
		and Logistics Management
Chua and Mahama	2007	Contemporary Accounting Research
Coad and Cullen	2006	Management Accounting Research
Coletti et al.	2005	The Accounting Review
Comelli et al.	2008	International Journal of Production Economics
Cooper and Slagmulder	2004	Accounting, Organizations and Society
Cooper and Yoshikawa	1994	International Journal of Production Economics
Cousins and Menguc	2006	Journal of Operations Management
Cuganesan	2006	Accounting, Auditing and Accountability Journal
Cuganesan	2007	Journal of Accounting and Organizational Change
Cuganesan and Lee	2006	Management Accounting Research
Cullen et al.	2013	Management Accounting Research
Cuthbertson and	2008	International Journal of Productivity and
Piotrowicz		Performance Management
Cuthbertson and	2011	International Journal of Productivity and
Piotrowicz		Performance Management
Degraeve et al.	2005	Accounting and Business Research
Degraeve and Roodhooft	1999	Journal of Supply-chain Management
Dekker	2003	Management Accounting Research
Dekker	2004	Accounting, Organizations and Society
Dekker	2008	Accounting, Organizations and Society
Dekker and Van Goor	2000	International Journal of Logistics: Research and Applications
Donada and	2006	Management Accounting Research
Nogatchewsky		
Drake and Haka	2008	The Accounting Review
Ellram (a)	1993	Journal of Supply-chain Management
Ellram (b)	1993	The International Journal of Logistics
		Management
Ellram	1994	Journal of Business Logistics
Ellram	1995	International Journal of Physical Distribution
		and Logistics Management
Ellram	1996	Journal of Supply-chain Management
Ellram	2002	European Journal of Purchasing and Supply Management
Ellram and Maltz	1995	The International Journal of Logistics Management
Ellram and Siferd	1993	Journal of Business Logistics
Ellram and Siferd	1998	Journal of Business Logistics
Estampe et al.	2013	International Journal of Production Economics
Everaert et al.	2008	International Journal of Physical Distribution

Authors	Year	Journal
		and Logistics Management
Fayard et al.	2012	Accounting, Organizations and Society
Fernie et al.	2001	International Journal of Logistics: Research
		and Applications
Frances and Garnsey	1996	Accounting, Organizations and Society
Free	2007	Contemporary Accounting Research
Free	2008	Accounting, Organizations and Society
Giannakis	2007	Supply-chain Management: An International Journal
Gietzmann	1996	Accounting, Organizations and Society
Goldsby and Closs	2000	International Journal of Physical Distribution and Logistics Management
Gopal and Thakkar	2012	International Journal of Productivity and Performance Management
Gunasekaran and Kobu	2007	International Journal of Production Research
Gunasekaran et al.	2004	International Journal of Production Economics
Gunasekaran et al.	2001	International Journal of Operations and Production Management
Håkansson and Lind	2004	Accounting, Organizations and Society
Hald and Ellegaard	2011	International Journal of Operations and
		Production Management
Hervani et al.	2005	Benchmarking: An International Journal
Hoek	2001	International Journal of Operations and Production Management
Hofmann and Kotzab	2010	Journal of Business Logistics
Hung	2011	International Journal of Production Research
Hurkens et al.	2006	Journal of Supply-chain Management
Ittner et al.	1999	Journal of Accounting and Public Policy
Joyce	2006	Supply-chain Management: An International Journal
Kajüter and Kulmala	2005	Management Accounting Research
Khataie et al.	2010	International Journal of Production Research
Kirche et al.	2005	International Journal of Production Research
Kulmala	2004	Journal of Purchasing and Supply Management
Kulmala et al.	2002	International Journal of Production Economics
Kulp	2002	The Accounting Review
Labro	2006	Supply-chain Management: An International Journal
Lalonde and Pohlen	1996	The International Journal of Logistics Management
Lambert and Burduroglu	2000	The International Journal of Logistics Management
Lambert and Pohlen	2001	The International Journal of Logistics Management
Langfield-Smith	2008	Management Accounting Research
Langfield-Smith and	2003	Management Accounting Research

Authors	Year	Journal
Smith		
Lere and Saraph	1995	Journal of Supply-chain Management
Lin et al.	2001	International Journal of Physical Distribution
		and Logistics Management
Mahama	2006	Management Accounting Research
Maltz and Ellram	1997	Journal of Business Logistics
Manunen	2000	International Journal of Logistics: Research
	• • • • • • • • • • • • • • • • • • • •	and Applications
Martin and Patterson	2009	International Journal of Production Research
Masschelein et al.	2012	The Accounting Review
Mcivor	2001	Journal of Purchasing and Supply Management
Miller et al.	2008	Accounting, Organizations and Society
Möller et al.	2011	Journal of Purchasing and Supply Management
Morgan	2004	Business Process Management Journal
Morgan	2007	The International Journal of Logistics
Manuitana at al	2001	Management
Mouritsen et al.	2001	Management Accounting Research
Mouritsen and Thrane	2006	Accounting, Organizations and Society
Munday	1992	Management Accounting Research
Narayanan	2003	Journal of Accounting Research
Newman and Mckeller	1995	Journal of Supply-chain Management
Nicolaou	2008	International Journal of Accounting
Norek and Pohlen	2001	Information Systems The Intermedianal Journal of Logistics
Notek and Politeii	2001	The International Journal of Logistics Management
Phua et al.	2011	The Accounting Review
Rahman	2002	International Journal of Physical Distribution
Kamman	2002	and Logistics Management
Ramanathan et al.	2011	Benchmarking: An International Journal
Ramos	2004	Supply-chain Management: An International
Kamos	2004	Journal
Ratnatunga and	2009	Journal of Accounting, Auditing and Finance
Balachandran		,
Ravi et al.	2005	Computers and Industrial Engineering
Sartorius and Kirsten	2005	Management Accounting Research
Schloetzer	2012	The Accounting Review
Schmitz and Platts	2004	International Journal of Production Economics
Schulze et al.	2012	International Journal of Production Economics
Seal	2001	Management Accounting Research
Seal et al.	2004	Accounting, Organizations and Society
Seal et al.	1999	Management Accounting Research
Seuring	2006	Supply-chain Management: An International
		Journal
Shaw et al.	2010	Benchmarking: An International Journal
Smith et al.	2005	The British Accounting Review
Song and Wang	2009	Benchmarking: An International Journal
<u> </u>	<u> </u>	

Authors	Year	Journal
Spence and Rinaldi	2013	Accounting, Organizations and Society
Stainer	1997	Supply-chain Management: An International Journal
Stapleton et al.	2004	Business Process Management Journal
Thakkar et al.	2009	Benchmarking: An International Journal
Thrane	2007	Management Accounting Research
Thrane and Hald	2006	Management Accounting Research
Tomkins	2001	Accounting, Organizations and Society
Tsai and Hung (a)	2009	International Journal of Production Research
Tsai and Hung (b)	2009	International Journal of Production Research
Van Den Abbeele et al.	2009	Accounting, Organizations and Society
Van Der Meer-Kooistra and Scapens	2008	Management Accounting Research
Van Der Meer-Kooistra and Vosselman	2000	Accounting, Organizations and Society
Van Hoek	1998	Supply-chain Management: An International Journal
Veen-Dirks and Verdaasdonk	2009	Supply-chain Management: An International Journal
Vélez et al.	2008	Accounting, Organizations and Society
Vosselman and Van Der Meer-Kooistra	2006	Journal of Accounting and Organizational Change
Vosselman and Van Der Meer-Kooistra	2009	Accounting, Organizations and Society
Weber et al.	2010	Journal of Purchasing and Supply Management
Whicker et al.	2009	International Journal of Production Economics
Windolph and Moeller	2012	Management Accounting Research
Wouters et al.	2005	Accounting, Organizations and Society
Wouters et al.	2007	Journal of Purchasing and Supply Management
Zimmermann and Seuring	2009	International Journal of Logistics: Research and Applications
Zsidisn et al.	2003	Journal of Business Logistics