Managers' Use of Multiple Management Control Systems

The Role and Interplay of Management Control Systems and Company Performance

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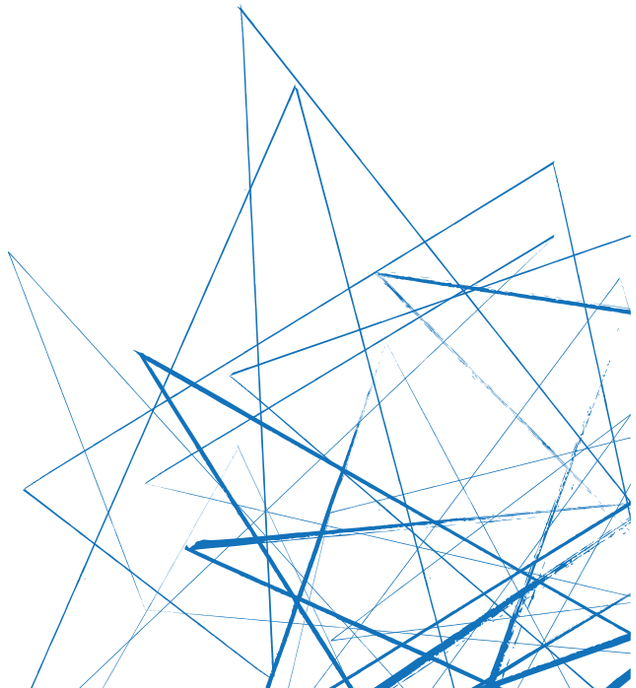

Jeanette Willert

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Doctoral School of Business and Management | **PhD Series 45.2016**

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HANDELSHØJSKOLEN

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Jeanette Willert

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Doctoral School of Business and Management is a cross disciplinary PhD School connected to research communities within the areas of Languages, Law, Informatics, Operations Management, Accounting, Communication and Cultural Studies.

English abstract

This dissertation addresses the topic Management Control Systems (MCS) as a Package. Many research studies investigate management and control systems individually, whereas fewer research studies take a holistic view and include a larger part of all the MCS managers use to guide and direct subordinates behaviour in the best interest of their companies. In the MCS literature, it is stressed that knowledge is particularly lacking about how managers design and use MCS as a package, and the effectiveness of using the MCS. This dissertation responds to this call by carrying out a large survey among executive managers in large companies, a survey that investigates the subject: Effective Management and Control Systems. The focus in the survey is to explore how executive management in large companies design and use their management control systems package. Further, this study is supplemented with archival data on the participating companies' performance.

The dissertation presents three papers, each of which introduces knowledge within studying managers' use of MCS as a package. The first paper presents executive managers' use of management control systems as a package in large companies. With basis in a conceptual MCS framework the paper explores executive managers' focus and emphasis on using the different parts of an MCS package to guide and direct their subordinates to ensure high organisational performance and further success for their companies. The second paper is a literature review including a comparative analysis of MCS frameworks. The paper discusses the fundamental purpose of MCS frameworks to clarify the usability of MCS frameworks in research and in practice. The paper draws attention to research gaps and missing variables within the frameworks, and provides a guideline of issues that researchers and practitioners may benefit from when using the frameworks. The third paper investigates relationships between executive managers' use of

some MCS and companies' financial performance. The MCS investigated are: strategy, evaluation of subordinates, rules and procedures and executive managers' focus on customer relations when guiding and directing their subordinates. The paper finds both some positive and some negative relations between the use of MCS and companies' development in financial performance. The findings in all three papers can be used by both researchers and practitioners who wish to expand and advance their existing knowledge about MCS' impact on company performance and success.

Danish abstract

Denne afhandling omhandler ledelses- og styringssystemer. Flere studier undersøger ledelses- og styringssystemer individuelt, mens færre studier vælger en holistisk tilgang, hvor der inkluderes en større del af alle de mange ledelses- og styringssystemer, som ledelser benytter, når de skal vejlede, styrer og kontrollerer underordnedes adfærd og arbejdsmønster for at opnå det bedste resultat for virksomheden. I litteraturen indenfor ledelses- og styringssystemer fremhæves det, at der især mangler viden om, hvordan ledere designer og bruger virksomhedens samlede pakke af ledelses- og styringssystemer, og hvor effektive disse systemer medvirker til øget indtjening. Denne afhandling responderer på litteraturen, ved at gennemføre en større spørgeskema- og interviewundersøgelse blandt top ledere i store virksomheder om dette emne: Effektive ledelses- og styringssystemer. Fokus i undersøgelsen er ud fra en holistisk tilgang, at kortligge de forskellige ledelses- og styringssystemer som direktionen i store virksomheder benytter til at lede deres organisationer med. For at kunne kvantificere effekten af ledelsernes afvendelse af styringssystemer, indeholder denne afhandling endvidere regnskabsdata fra de medvirkende virksomheder.

Afhandlingen består af tre artikler, som hver især præsenterer viden omkring toplederes brug af styrings- og ledelsessystemer som en samlet ledelsespakke. Den første artikel præsenterer resultaterne af interview- og spørgeskemaundersøgelsen. Med udgangspunkt i en konceptuel forskningsramme indenfor ledelses- og styringssystemer kortlægges toplederes fokus og prioriteringer mellem brugen af de forskellige dele af deres samlede pakke af ledelses- og styringssystemer, som de benytter til at sikre opnåelse af fastsatte mål for deres virksomheder. Anden artikel er en litteraturgennemgang, herunder en sammenlignende af anvendte konceptuelle forskningsrammer indenfor styrings- og ledelsessystemer. Artiklen diskuterer det grundlæggende formål med disse konceptuelle forskningsrammer

for at afklare anvendeligheden af disse i forskning og praksis. Artiklen fokuserer blandt andet på muligheder og mangler i forskningsrammerne og kortlægger information som forskere og praktikere kan have gavn af fremadrettet, ved anvendelse af de konceptuelle forskningsrammer. Den tredje artikel, undersøger relationer mellem lederes brug af ledelses- og styringssystemer, og virksomhedernes indtjeningsevne. Artiklen undersøger ledelses- og styringssystemer indenfor områderne strategi, præsentations evaluering, regler og procedurer samt leders fokus på kunderelationer, når de leder deres underordnede. Artiklen identificerer både positive og negative relationer mellem brugen af ledelses- og styringssystemerne, og udviklingen i virksomhedernes indtjeningsevne. Alle tre artikler præsentere resultater, som kan bruges af både forskere og praktikere, der ønsker at udvide og fremme deres viden om ledelses- og styringssystemers indvirkning på virksomheders økonomiske resultater.

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I wish also to extend my gratitude to Professor David Otley, whom I meet at The Management Control Research Conference in September 2013. Since then, David has become a co-author of one of my papers. David and I have met several times to discuss Management control systems in general and development of our paper, including a presentation and discussion of the paper at a workshop organised by The Management Control Association. David has taught me much about 'the World of Research' and has become a dear and true friend whom I highly value.

Executive managers from 120 of the largest companies in Denmark have provided data to this dissertation. I am very honoured and grateful that they were willing to spend some of their precious time to share their experience and knowledge on how they run organizations successfully. Thank you for taking time out of your busy schedules to explain how you design and use MCS as a package in your organizations.

Shifting from practice to research was not always an easy task for me. Thank you Jytte Larsen for forming a writing group with me and for persevering and motivating me when needed. Also thank you to Mark Simpson and Sara Haas for developing my academic writing skills, without your help the writing process

would have been even longer. I also wish to express my gratitude to all the members in the international research group 'Management Control Systems as a package', with whom I have had regular meetings discussing the topic, working with data and writing an article. Thank you for all you have taught me. I hope our research group will continue.

Thanks to Professor Rolf Brüel and Senior Researcher Julia Mundy, who were discussants at my pre-defence. I thank you for taking part in improving previous editions of my research - your comments were very useful in my work with completing this dissertation. And thank you to all my colleagues at the Department of Accounting and Auditing at CBS, especially Jytte, Caroline and Thomas who have spent time reading my work and giving me useful feedback to continue the writing of my Ph.D. dissertation.

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Finally, I wish to give special thanks to my family, my husband Kjeld and our three children Savannah, Maximilian and Athene, who have patiently followed my journey with my Ph.D. for the past four years.

Thank you!

Jeanette Willert

Abbreviations

English word	Danish word	Abbreviation
Balanced Scorecard	Balanced Scorecard	BSC
Copenhagen Business School	Copenhagen Business School	CBS
Management Control Systems	Ledelses-og styringssystemer	MCS
Return on assets	Aktivernes forrentning	ROA
Strategic Business Unit	Strategisk forretningsområde	SBU
The service profit chain	Salgsprofitkæde	SPC

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1 Introduction, motivation and objective

Management control systems (MCS) are a necessity for organizations, as MCS affect employee behaviour, secure and support goal fulfilment, set limitations, help to avoid or minimize risks, and give managers tools and systems to guide and direct their subordinates to the best interest of their companies (Berry et al, 2005; Merchant and Van der Stede, 2012; Simons 1995, 2005). Failures in managements' design and use of MCS may lead to financial losses and reputation damage (Merchant and Van der Stede, 2012), which it may take years to recover from, or in the worst case cause organizational failure. As such the importance of MCS is accepted in both practice and research.

The aim of MCS is twofold – activities for planning and controlling, and activities that encourage employees to be innovative by searching for opportunities and solving problems, including improving the existing business (Simons, 1995; Mundy, 2010). MCS consist of practices, controls and systems that management use to guide, direct and control their subordinates in the best interest of their organizations (Merchant and Otley, 2007; Malmi and Brown, 2008; Ferreira and Otley, 2009). Other important MCS elements include organizational structure and values, technology, culture, and other factors that may affect employee behaviour and subsequently organizational effectiveness, and hence performance (Otley 1980; Simons 1995). Previous research into MCS theory has had major focus on "how to design MCS in order to produce the desired outcome" (Malmi and Brown 2008, p.288). By including all controls of an MCS package within MCS studies, soled focusing on one or few accounting-based controls will be avoided, and the effects of informal and non-calculative controls such as organizational culture and administrative controls can be included (Malmi and Brown 2008), and hereby

recognize the informal control systems as MCS and not only as the context in which other controls operate. As organizations are unique and their environments are different, they need different MCS packages. As such, it is up to an organization's management to personalise their organization's MCS package to the best fit of their organization. In chapter three and in the three articles (chapter seven), MCS and the use of MCS will be described and discussed in detail.

An MCS Package is both cohesive and comprehensive, containing multiple controls that work simultaneously, some overlapping, depending on or influencing each other, and all with the same overall goal – to fulfil a company's objectives. However, the MCS are designed for different purposes, by different people, at different times, each with different life-cycles, and can be used in part of an organization or as an omnibus MCS for an entire organization. Consequently, an organization's MCS package cannot be seen as one holistic system, as some of the MCS would be able to function without the other controls, but rather as a package whose elements are related and independent (Malmi and Brown, 2008; Ferreira and Otley, 2009; Grabner and Moers, 2013, Strauss et al., 2013). Due to uncertainty and dynamics in the organization's environment, the construction of an MCS package has to be flexible in order to be able to change and capture the volatility of the external environment. However, even though high volatility in the environment demands a more loosely coupled MCS package (Orton and Weick, 1990; Chenhall, 2006) that is quicker at adjusting to the changes, the package has to be comprehensive, and the controls must be coupled as tightly as they can or needed to ensure a high probability of success, and to ensure with reasonable confidence that no major unpleasant surprises will occur (Merchant and Van der Stede 2012). Thus management have to balance the need for innovation, adaptability and boundaries within the design of their organization's MCS

package. Since many factors influence the controls and nothing is static, the perfect MCS may be difficult to maintain continuously, and consequently the fit of the multiple variables will likely be volatile over time (Melnyk et al., 2014).

Over the last 20 years, the general business environment has shown an increasing rate of change (Nixon and Burns 2005), opportunities and competition, both locally and globally, which has made a greater degree of uncertainty apparent. Increasing globalisation and economic fluctuations caused by the global financial crisis have resulted in dynamic and volatile markets, which demand organizations' executive management to continuously ensure that their organizations provide the demanded goods and services as effectively and efficiently as possible. Therefore managers today need to follow their organizations' development closely to ensure effectiveness and high levels of compliance, and to be able to react when their business environment changes. To do so, management need MCS.

This study addresses the topic 'Management Control Systems as a Package'. An organization's MCS package is like a puzzle. There are many different parts (systems and variables) that all have to be kept on track, and have to fit in with each other to achieve a perfect 'picture'. An organization's overall performance depends on how well management can foster collaboration and high performance at all levels, and on management's success in taking advantage of the opportunities that arise. However, it can be difficult to see the total picture or perhaps find some misfit between parts, if only a few of them are observed. Still, most studies focus on the effects of a single MCS in isolation (e.g. Chong and Mahama, 2014; Ho et al, 2014), which means that these studies often exclude the effects of organizational context or the impact of using more MCS simultaneously (Chenhall, 2003; Malmi and Brown, 2008). Thus it is difficult or impossible to distinguish the result of using one control from the results of other controls that

are used at the same time, or from the context of the organization or the external environment. By separating the controls in research, controls with high influence may be omitted, and other controls may therefore show a stronger effect on performance than they actually have. Chenhall (2003) even claims that some findings are spurious, ambiguous or potentially conflicting with other results, due to the exclusion of controls in some studies.

Due to scarce research on addressing the use of multiple MCS and their interrelations, we know little about to what extent and how managers design such systems as a package (Malmi and Sandelin, 2010), how managers prioritize MCS, and to what extent managers are conscious about the interrelationship between systems and the possible effects that may, intended or unintended, emerge from such interrelations. For example, managers may be aware that organizational culture and values, and indeed their own behaviour, are important for the organization's performance, but they may not recognize such more informal controls as controls that have a real impact as MCS themselves and as controls that may have a profound impact on the effectiveness of other MCS, as the administrative and more informal controls set 'the tone at the top level' and the pervasive tone for the organization's operations as such. Which MCS are recognized and which are not? How are interrelations between MCS factored in – if at all? And what are the perceived consequences?

This dissertation includes a large dataset of empirical data containing information on how executive managements in 120 out of Denmark's 318 largest organizations use MCS. The data will be used to explore the most common ways MCS are used in large Danish organizations today and to find general patterns that apply to a larger group of organizations than it would be able to verify in single case studies. The dataset is large in terms of both number of participants (120) and number of

questions asked (285). The study focuses on executive management's perception of the relative importance of each control mechanism and the balance of different controls to guide and direct subordinate behaviour to enlarge performance and obtain company objectives. The main purpose of this study is to provide an overview of the design and use of MCS in Denmark.

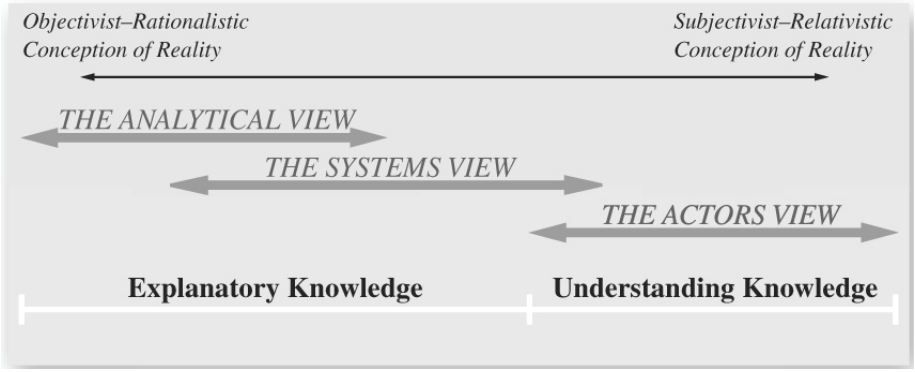
The structure of this dissertation is as follows: The following chapter (2) contains descriptions of the methodology, methods and data used in this research. Chapter three includes a detailed description of the terms MCS, MCS frameworks and contingency theory. In Chapter four the contribution of this dissertation is summarized. In Chapter five a number of ideas for future research within the topic MCS as a package are suggested. Finally in Chapter seven, three articles are included. The first article is an empirical study that explores how executive management in large Danish organizations today use MCS to lead and guide their subordinates in the best interest of their organizations. The second article is a literature review of the development of conceptualized frameworks for studying the design and use of MCS as a package. The last article is an analytical article that looks for links between the use of MCS and organizational performance.

2 Methodological position

Researchers need different understanding or explaining factors to develop knowledge of situation, problems or phenomena, hence they need a methodology position for their research. The methodology position of this dissertation stems from Arbnor and Bjerke's (2009) 'systems view'. With a foundation in a number of different methodological views on how to create knowledge (e.g. seeing,

thinking, perspectivisation, understanding and explaining factors), Arbnor and Bjerke (2009) frame three methodological views of how to create knowledge: the analytical view, the systems view and the actors view. By mapping basic concepts, relations to paradigms, tools, techniques, methods, goals and ambitions for creating knowledge, Arbnor and Bjerke describe these three different ways of observing the world within methodological thinking.

Figure 1: The Boundary between Explanatory and Understanding Knowledge



Source: Arbnor and Bjerke 2009, p 51.

"The analytical view presupposes that reality is filled with facts and independent of individual perceivers" (Arbnor and Bjerke, 2009, p 36). Researchers use the analytical view when they study data to find patterns which can help them explore general facts of situations, problems or phenomena. In 'the analytical view', data are observed separately, and impacts from other variables or the environment are not incorporated. When working with 'the analytical view', quantitative data is often used. Such data most often stem from sources such as public statistics or other information gathered by authorities or other independent partners. Hence

‘the analytical view’ is known as “dataism” and determinism. However, interviews of professionals or people that have observed the phenomena can also be used, though ‘the analytical view’ does not incorporate individual perceivers; consequently, the interviewer has to pay attention to the objectivity of the participants when interviewing. The idea of creating knowledge according to ‘the analytical view’ is to catch the truth, as seeing reality as being the truth, and thereby to explore reality as objectively and closely as possible (Arbnor and Bjerke, 2009).

The idea of ‘the systems view’ is a holistic view, where all relevant variables and aspects must be seen as a whole (one system), in which the components (or aspects) of a system combined can bring synergy effects, which makes it possible to create situations where the whole of a system is more than the sum of its parts. “The systems view looks at reality as consisting of fact-filled systems structures in the objective reality and of subjective opinions of such structures, which are treated as facts as well” (Arbnor and Bjerke 2009, p 39). In ‘the systems view’, the world is considered as linked systems where all elements are dependent on other elements. In ‘the systems view’, a company is seen not as a simple, isolated organization, but as a system consisting of many components (products, resources, accounts, culture, management tools and style etc.) that are interdependent, which are in turn all influenced by and connected with other systems (e.g. customers, competitors, environment etc.) or components in other systems. Consequently, the result of a whole system is not only a result of it is own components and aspects and the fit between them, but it also depends on other systems and the match to these systems and their components. Thus, companies can have very different patterns and are influenced by many different systems; the idea of ‘the systems view’ is to find these different patterns and wholes as objective structures, and to

find new systems (or wholes) that are better than the previous ones. 'The systems approach' is based on the functionalist paradigm. This means that the focus is on an explanatory approach that explains, describes and predicts. As 'the systems view' includes both objective data and subjective opinions, the data collection will often be more substantial, and the dataset will include deeper and more comprehensive data than is the case in the 'the analytical view' (Arbnor and Bjerke 2009).

'The systems view' acknowledges the dynamics found in organizations and their continuous interaction with the environment, as well as all the changes that constantly happen within and among such complex interdependent systems and their environments. As a response, 'the systems view' uses feedback as a stabilizing or reinforcing factor to continuously adapt or create new and better solutions for organizations. By focusing on processes and creating flexible systems that are open enough to react quickly to changes in order to ensure positive synergies, but are still tight enough to ensure goals fulfilment, as well as avoid or reduce risks, 'the systems view' seeks to catch and build better solutions for organizations. However, because system components, aspects, factors etc. change constantly, research within 'the systems view' will often be a snapshot of the research object.

Researchers using 'the actors view' have to take part in the situation, problem or phenomena that they wish to study in order to obtain an understanding of individuals and their activities. If the researchers fail to participate, they will be seen as strangers and miss opportunities to observe human micro-cosms[1]. The

[1] A miniature representation of something, for example a unit, group, or place regarded as a copy of a larger one. The concept of human microcosm means a small group of individuals whose behaviour is typical of a larger social body encompassing it.

actors view "assumes that reality, as it exists for us, is a social construction, filled by chaos and uniqueness [for example] in the case of entrepreneurship, but also relatively stable structures, mentally anchored with those actors, who maintain the structures. It is a world, which to the largest extent is dependent on us human beings, where the creator of knowledge also participates as one of its constructors" (Arbnor and Bjerke 2009, p 41). 'The actors view' uses three steps to process an interactive development of understanding: diagnostic pre-understanding, understanding and post-understanding. In the diagnostic pre-understanding process, the researcher works with background knowledge, and through dialogue and linguistic bridges he or she eliminates any differences in meanings that may exist between the researcher himself or herself and the individuals that participate in the study. The second step, 'understanding', uses the foundation created in the preunderstanding to achieve broader dialogue and action with the other actors in the study, as well as to analyse and find patterns in information. Step three, the post-understanding, is where the researcher has to conclude on the information from the study and existing theory. (Arbnor and Bjerke, 2009 pp 140-141). As 'the actors view' starts with subjective conceptualizations of individual actors, the results of these studies will also be subjective knowledge. Consequently, the results cannot be seen as general results and would have lesser value for common research on more complex problems. Finally, the results may be difficult to restore or verify.

2.1 Research methods and data

Methodology refers to the tools and techniques that can be used in the conduct of research. The focus in this dissertation is on 'exploring practical use of MCS'. By gathering a large sample of information from practitioners within a broad scope of

their design and use of MCS, this study explores and analyses how practitioners today use MCS to ensure attainment of objectives and highest possible performance of their organizations. To achieve an open-minded approach when collecting data on how practitioners use MCS, data collection was done before specific research questions were formulated. However, the questionnaire that was used for collecting the data was based on a conceptual MCS framework (Malmi and Brown, 2008), and before the questionnaire was developed, a research agenda for the project was set, including three broad research questions, each with three exploratory sub-questions (see more in the section below, 'Survey') (Malmi and Sandelin 2010).

2.1.1 Literature

The aim of this PhD dissertation is to examine MCS as a package. Hence, the main literature review focuses on literature that looks broadly at the term MCS, consisting of research literature that includes more than one MCS. To make a structured review of the literature on MCS as a package, the method proposed by Webster and Watson (2002) was used. The structured approach constructs a body of literature on development of MCS frameworks and empirical studies of simultaneous use of multiple MCS. The structured review presented in this PhD dissertation identifies articles and books in the selected database that were related to MCS and which contained the words 'management control' in combination with the words 'framework' or 'package'.

The steps were as follows:

1) Selection of a database (Database used: Business Source Complete)

2) Keyword search (Management + Control*+ Framework or Package And Performance + Management + Framework or Package) in,- and review of, relevant leading journals
3) Review of reference publications identified in step 2 (going backward)
4) Identification of publications citing key publications (going forward)

All abstracts in articles and books of the selected literature were read and studied in order to map research in MCS frameworks and identify the newest findings within the area of MCS as a package. All conceptual, empirical and analytical literature that was found relevant was included in the dissertation. The purpose of the first step was to identify the key literature for addressing MCS as a package. Following this, abstracts of literature from relevant references in the literature that was selected in the first step were read and studied to ensure better and more complete knowledge of the field. Finally, to ensure that all new research was covered, a 'going forward' process was done to ensure that literature on new MCS frameworks was found and included.

2.1.2 Survey

Survey methodology was selected for the empirical part of this dissertation. Survey methodology maximises and secures quality and generalizability in data, and seeks to explain why errors arise in surveys and afterwards in statistics. Hence the survey methodology seeks to minimise errors and ensure that the numbers and figures in the survey are as accurate as possible (Groves et al 2009).

"A "survey" is a systematic method for gathering information from (a sample of) entities for the purpose of constructing quantitative descriptors of the attributes of the larger population of which the entities are members" (Groves et al 2009, page 2).

The quantitative descriptors (statistics) are divided into two groups – descriptive statistics and analytic statistics. Descriptive statistics illustrate the size and distributions of various attributes in a population, e.g. as in article one where top managers' use of MCS is explored to describe characteristics of how top managers today lead and control their organizations. Analytic statistics are used when measuring how two or more variables are related, e.g. as in article three where the relationship between the use of various MCS and organization performance is tested for interdependency. As surveys are designed to measure changes in the phenomena they study, surveys are on-going in nature. However, each survey provides a snapshot of how a given phenomenon is at the time the survey data are collected. This study is the Danish part of a large international study, which is the first large-scale attempt at examining how top managers in large companies design and use MCS as a package.

In 2010, Malmi and Sandelin instigated the international research project "Management Control Systems as a Package" (Malmi and Sandelin 2010). The aim was threefold, 1) to investigate how top management in large companies design and use MCS as a package, 2) to examine whether the design and use of MCS could be integral to an organization's effectiveness and, 3) whether there is a correlation between what could look like independent parts of an MCS package. The purpose of Malmi and Sandelin's international research project is to examine MCS as a package, by mapping how top management in large companies exercise their management control of middle managers at the highest levels of the companies' hierarchies, and how effective these deployments are. With contributions from researchers from 20 universities in 11 different countries, the sample included 812 large companies, which were all investigated in relation to how they design, use and benefit from MCS.

2.1.3 Survey instrument design

The research project is designed as a quantitative survey. The tool used is a comprehensive standardised questionnaire[2] encompassing the areas: strategic planning, short-term planning, performance measurement and evaluation, rewards and compensation, organizational structure and management processes, organizational culture and values, and organization and environment. Malmi and Brown's (2008) conceptual MCS framework is used as basis for structuring the questionnaire, additionally, organizational design literature and strategic management literature on ambidextrous organizations contributes to the content and definition of the questions (Malmi and Sandelin 2010). Additionally to the MCS that are included in Malmi and Brown's framework, the questionnaire has been extended by a section that includes questions regarding organizational factors, use of MCS, and the organisations' environment. The questionnaire was provided in English by Malmi and Sandelin, following which each of the non-English-speaking participating countries translated the questionnaire into their native language, and re-translated back into English to ensure correct translations. A copy of the questionnaire is shown in appendix A. To ensure consistency and to achieve reliability of measurement instruments, a lexicon with comments and explanations to each question in the questionnaire was developed, as was as a sampling procedure to be used in the ORBIS database when selecting companies. Regular meetings were organised for project members to address research design and method. Coding procedures were applied uniformly, and finally a check of the data for consistency and missing values was conducted at the local level in each country.

[2] The first version of the questionnaire was developed by Mikko Sandelin (Alto University), subsequently all participants in the international research group collaborated to modify, streamline and improve the final version of the questionnaire.

To ensure data quality and make sure that respondents understood the questions correctly, responses were gathered through personal interviews with CEOs, CFOs or other directors of 120 SBUs or stand-alone companies. The interviews lasted between two to three hours and were conducted by two researchers to ensure uniformity and objectivity. Further, the interviews were recorded to safeguard the validity of responses. The purpose of the interviews was to collect detailed information regarding the design and use of MCS in large companies. The questionnaire was formed as a classic survey: large sample size, random sampling, and statistics analyses of the data. Most responses were given as Likert scales of importance or frequency (1-7), and the remaining responses were selected from closed lists of categories (e.g. ownership type). There were no right or wrong responses, and "not applicable" (N/A) was provided as an option for some of the questions. However, although we used the same questionnaire in all companies, the face-to-face interviews move the survey in the direction of a cross-section field study. The interview method, the complexity of the phenomena studied, and the sampling rationale are typical of a cross-section field study approach (Lillis and Mundy 2005; Merchant and Manzoni 1989). In the interviews, top managers explained the business ecosystem of their organizations and were allowed time to explain their responses to the questions, and we had the opportunity to ask supplementary and clarifying questions. Data on the interviewees' position, educational background and duration of employment in the companies they represented are shown in Appendix B.

2.1.4 Survey sample design

The ORBIS database was used in nine out of the eleven countries (including Denmark) to select the largest companies. The criterion used to define 'large

companies' was 'active private companies with 250 or more employees[3] in 2009 or 2010'. Large companies were chosen as "size is an important contingency variable [within MCS research] as it has influence on other aspect of context" (Chenhall, 2006 page 98). Large companies tend to be more complex, have greater quantities of data and information, and have a structure where authority is more decentralized than in small companies. Consequently, large companies need rules, polices, systems and other MCS supporting and ensuring integration and coordination, and to guide and direct employees to fulfil company strategies and objectives (Chenhall, 2006; Flamholtz 1996). The five criteria used in the ORBIS database when selecting the target population are shown in table 1. Criterion number five was added to collate group companies into one company (e.g. a holding company). However, this criterion does not work perfectly in ORBIS, consequently this had to be checked manually in each country. The lists of large companies were categorised by country and into three industry sectors: manufacturing, trade and service. In Denmark, the lists of companies were then checked manually for duplicates and companies that had been closed down or divided into smaller companies – all of which were deleted. Companies that had been incorrectly categorised according to industry in the database were manually re-categorised. From this quality-checked total list of 318 companies, a random sample design was selected for interviewing (Groves et al 2009). The basis of selection was 'every third firm' (Cochran 1977).

[3] The European Union defines large enterprises as independent firms that employ more than 250 employees. http://www.oecd.org/regional/leed/1918307.pdf.

Table 1: Criteria used in ORBIS

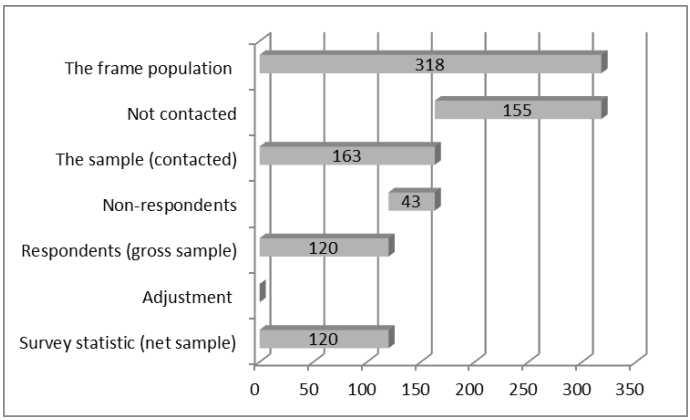
1.	Status: Active	61,781,023
2.	Public/Private/Branch: AG/SA/SPA/Public/NV/OYJ/ASA/KK etc.,	80,932,882
	GmbH/SARL/SRL/Private/BV/OY/AS/YK etc., Other legal forms,	
	US industrial companies, Non-European industrial companies,	
	European industrial companies, Banks, Insurance companies	
3.	World region/Country/Region in country: Austria, Belgium,	16,925,925
	Denmark, Finland, Germany, Italy, Netherlands, Norway, Sweden,	
	United Kingdom	
4.	Number of employees: 2010, 2009, min=250, for at least one of the selected periods	183,491
5.	Ultimate Owner: Def. of the UO: min. path of 50.01%, known or unknown shareh., closest quoted company in the path leading to the Ultimate Owner (if any); GUO and DUO	897,009

In Denmark, data were collected in the period October 2011 to March 2013. To increase the response rate, five response-enhancing techniques that have shown positive effect on the response rate in surveys were used (Anseel et al, 2010). The first technique used was contacting the respondents personally. The top managers were contacted by phone by one of the four researchers in the Danish team, and even though top managers are not easy to get hold of, we continued to call until we had spoken personally to the top manager him- or herself. The second technique was to highlight the sponsorship by the universities (CBS and Aalborg University) to indicate the potential benefits and experience the respondents might gain by participating in a university research project. Third, the topic for the research 'Management Control Systems as a package' is very relevant for the population in the survey, and potential benefits of participating were introduced to the respondents. Fourth, all respondents were promised anonymity, to help participants feel comfortable when giving data and information to the research study. And finally, the fifth response-enhancing technique was to use personal interviews carried out by two researchers visiting the participants at their companies (Anseel et al, 2010).

To obtain our target sample of 120 companies, we had to contact 163 companies. Personally, I called 74 companies, which resulted in a positive response rate of 85%, resulting in 63 interviews, which I organised and participated in. Seventy-two of the 120 companies had more than 1,000 employees, and 48 had less. In the data collection, the three industry sectors were represented by 56 manufacturing, 19 trade (retail and wholesale) and 45 service organizations. The percentage breakdown into the three sectors was the same percentage per sector in the data collection as in the quality-controlled total list of 318 companies. Below in figures

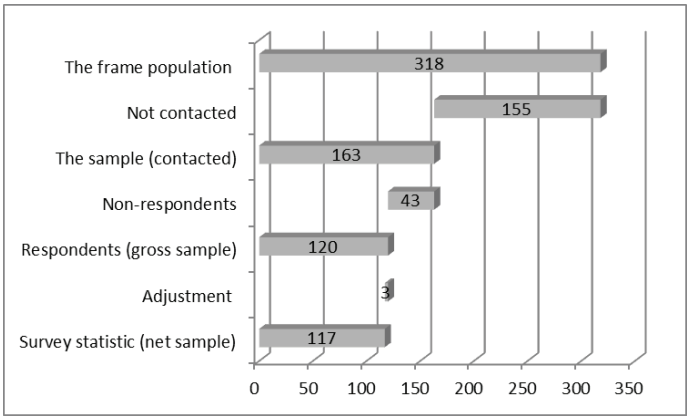
2 and 3 the process of selecting a sample of 120 companies from the frame population of 318 is shown.

Figure 2: Sample selection process for article #1



When adding a performance goal to the data sample, three of the companies became outliers. Two of the companies show extreme negative performance, and one positive. I have chosen to exclude these three observations in the third article, which is therefore based on 117 (97.5 %) out of the 120 companies in the sample.

Figure 3: Sample selection process for article #3



Despite all the precautions that may be taken when collecting such data, sample errors can occur. Respondents may have been too optimistic or pessimistic, or may not be sufficiently informed about their companies to be able to answer all the questions correctly. However, all the controls that are built into this research project – e.g. the standardised questionnaire, coding procedures, the participation of two researchers at the interviews, and the opportunity for respondents and interviewers to ask for further explanation when filling in the questionnaire – help to ensure a high quality in the sample.

This dissertation presents how the data collection was carried out in Denmark and the results of the Danish part of the international study. The researchers in the Danish part are: from CBS, Professor Carsten Rohde and PhD student Jeanette Willert, and from Aalborg University, Professor Poul Israelsen and PhD student Thomas Toldbod.

2.1.5 Archival accounting data

Due to the need for additional information in article 3, archival accounting data on the 120 companies who participated in the survey was collected for the years 2004 to 2013 from the ORBIS database to calculate 'return on assets' (ROA) per firm-year, in order to identify the development over time in each of the respondents' organizational performance. The firms for which the ORBIS database could not provide the data for all ten years were contacted and asked for copies of their audited annual reports. The companies responded positively and provided all the missing accounts by sending their audited annual reports. One of the 120 companies, however, was founded in 2005, consequently they had no financial data for the year 2004.To eliminate the differences among industries, company context, market conditions and level of financial gearing of the participating companies, this study focuses on the development in each of the companies' ROA (rather than the actual level of performance), to see if and how top managers' different choices of use of MCS affect their company's development in performance (article 3).

3 Theoretical position

The topic of this dissertation is MCS as a package with reference to theoretical and conceptual MCS frameworks which capture a holistic view of an organization's MCS Package. The theoretical frame is contingency-based research. This chapter contains a description and discussion of some conceptual MCS frameworks, the purpose of an MCS package and the different MCS elements, and addresses some results of former MCS research within contingency-based research. As this dissertation is an explorative study, it will not test theory;

rather, conceptual frameworks will be used to give a more in-depth descriptive understanding of the design and use of MCS in large companies. This is done in the hope that such an appreciation would lead to further research in the design of more meaningful and appropriate normative MCS methods and systems that would be adapted and used in practice (Laughlin 1995).

3.1.1 Management control systems

Over the years, the scope of MCS has developed from simple and narrow definitions excluding strategy and operational controls (Anthony 1965), to today's broader and more complex definitions (Collier, 2005). Today's definitions of MCS include both periodical and rule-driven controls and more open and unstructured controls, as well as context variables that are not always fully controlled by the organization itself, but which rather originate from or are affected by the external environment in which the organization operates (Otley 1999; Chenhall 2003, 2006; Malmi and Brown 2008; Ferreira and Otley 2009; Merchant and Van der Stede 2012). Even though the scope of MCS has been broadened, the same three components presented by Anthony in 1965 still form the core of MCS: processes involving managers' interaction with subordinates, processes used for achieving the organization's goals, and processes that ensure effectiveness and efficiency (Anthony 1965, p.17). This focus on the original components of MCS in today's broadened scope can be seen as a natural result of the development that has taken place in methods, systems, technologies and knowledge supporting MCS, which makes it possible today to design and use more complex controls with less use of resources (see more on the development of the term MCS in article three). A more detailed description of MCS follows below.

3.1.2 Management control systems' frameworks

In 1965, Anthony (1965) introduced the term MCS and built an MCS framework that could be used when studying MCS. Since then, several researchers have developed new and more advanced MCS frameworks (Flamholtz et al, 1985; Flamholtz, 1996; Otley, 1980; Simons, 1995; Malmi and Brown, 2008; Ferreira and Otley 2009). The aim of the frameworks is to capture a holistic view of an organization's MCS package. The MCS frameworks convey an overview of the components regarded as parts of the whole MCS package (Anthony 1965; Otley 1980; Fisher 1995, 1998; Simons 1995; Malmi and Brown 2008; Ferreria and Otley 2009). These frameworks are intended to support researchers in their empirical studies of organizations' design and use of MCS as a package. The frameworks draw attention to the different controls used in an organization, including connections to contextual factors of the company, and stress the relationship and dependency in how the different controls are used in the different contextual settings. In addition, the frameworks encourage researchers to look at the effectiveness and efficiency of the MCS and the links between different designs and uses of MCS within an MCS package. The frameworks divide the controls into groups with different characteristics and uses (Simons 1995) or purposes (Otley, 1999; Malmi and Brown, 2008; Ferreira and Otley, 2009) in order to stress the importance of all the different areas of controls, both financial and non-financial. To capture all aspects at all levels of an organization, the frameworks must include both overall and broad MCS, such as mission and vision statements, and narrower controls such as personal reward systems.

Four of the most cited MCS frameworks are: Simons' 'Levers of control' from 1995, Otley's MCS framework composed of five key questions (1999), Malmi and Brown's conceptual MCS from 2008, and finally Ferreira and Otley's framework

from 2009 comprising twelve key questions. Below, the four frameworks are shown and followed by a description of the different MCS elements that are included in these frameworks. In addition, a discussion of the conditions and aims of these frameworks are included in paper 3. The four frameworks all have broad definitions of MCS, use contingency theory and incorporate the effect given by using MCS simultaneously.

Figure 3: Simons (1995): Levers of Control

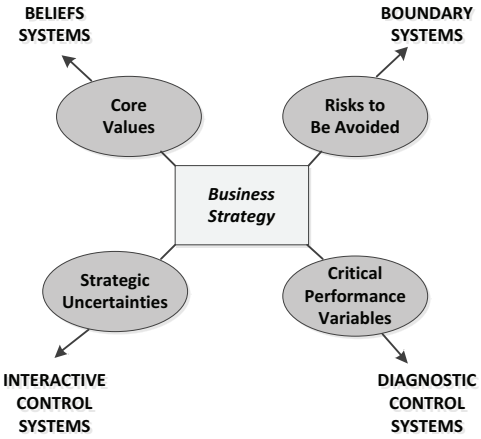


Figure 4: Otley (1999): The performance management framework

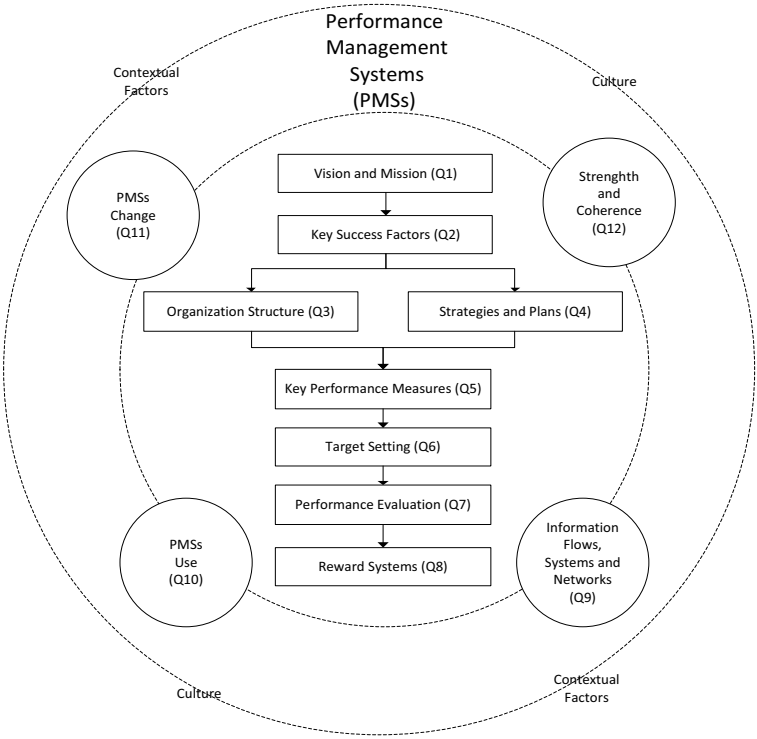
1. What are the key objectives that are central to the organization's overall future success, and how does it go about evaluating its achievement for each of these objectives?
2. What strategies and plans has the organization adopted and what are the processes and activities that it has decided will be required for it to successfully implement these? How does it assess and measure the performance of these activities?
3. What level of performance does the organization need to achieve in each of the areas defined in the above two questions, and how does it go about setting appropriate performance targets for them?
4. What rewards will managers (and other employees) gain by achieving these performance targets (or, conversely, what penalties will they suffer by failing to achieve them)?
5. What are the information flows (feedback and feed-forward loops) that are necessary to enable the organization to learn from its experience, and to adapt its current behaviour in the light of that experience?

Figure 5: Malmi and Brown (2008): Management control systems package

<table>
<tr><td colspan="7">Cultural Controls</td></tr>
<tr><td colspan="2">Clans</td><td colspan="2">Values</td><td colspan="3">Symbols</td></tr>
<tr><td colspan="2">Planning</td><td colspan="4">Cybernetic Controls</td><td rowspan="2">Reward and Compensation</td></tr>
<tr><td>Long-range planning</td><td>Action planning</td><td>Budgets</td><td>Financial Measurement Systems</td><td>Non-Financial Measurement Systems</td><td>Hybrid Measurement Systems</td></tr>
<tr><td colspan="7">Administrative Controls</td></tr>
<tr><td colspan="2">Governance Structure</td><td colspan="2">Organisation Structure</td><td colspan="3">Policies and Procedures</td></tr>
</table>

Figure 6: Ferreria and Otley (2009):

The performance management systems (PMSs) framework



In table 2 the four frameworks developed by Simons (1995), Otley (1999), Malmi and Brown (2008) and Ferreira and Otley (2009) are compared. In table 2, the parts in the MCS frameworks have been divided into five categories: cultural controls, planning, cybernetic controls, reward and compensations, and

administrative controls. These five categories contribute to the comparison of the MCS frameworks by providing a matrix that includes five categories of different types of controls that the different parts of the four MCS frameworks can be divided into. These categories fit two of the frameworks: Ferreira and Otley 2009 and Malmi and Brown 2008, which both use this categorization. To some extent, the categories also match some of the ideas of Balanced Scorecard (BSC), which also categorises performance measures according to specific uses (the four perspectives). Each of the five categories is defined below. While the purpose of Simons' framework is not identical to those of the other three frameworks, it is included in a modified version to make comparison possible in the comparative overview. Simons' original 'purpose of use' categories have been replaced by examples of controls taken from Simons' framework (Simons 1995, p. 177-181).

Table 2: Comparative overview of four MCS frameworks

Framework	Cultural Controls	Planning	Cybernetic Controls	Reward and Compensations	Administrative Controls
Simons 1995 Levers of Control (LOC) Appendix A, page 177-181	Mission and vision statements Credos Statement of purpose (Lever #1: Beliefs Systems)	Strategic planning systems (Levers #2: Boundary Systems) Set standards, E.g. Strategic planning systems (Levers #3: Diagnostic Control Systems) Profit planning-, project management-, brand revenue- and intelligence systems (Levers #4: Interactive Control Systems)	Set standards, Link incentives to goal achievement E.g. Profit plans and goals, brand revenue monitoring systems. (Levers #3: Diagnostic Control Systems)	Measure output E.g. Feedback systems, project monitoring systems, brand revenue monitoring systems. (Levers #3: Diagnostic Control Systems)	Codes of business conduct Asset acquisition systems Operational guidelines (Levers #2: Boundary Systems)

Otley 1999 A framework for management control systems research	1. Objectives	2. Strategies and plans	3. Targets 5. Feedback	4. Rewards	
Malmi and Brown 2008 A framework for management control systems research	Clans, Values, Symbols	Long range planning, Action planning	Budgets Financial, Measurement Systems, Non-Financial Measurement Systems, and Hybrid Measurement Systems	Reward and Compensations	Governance Structure Organization Structure Policies and procedures
Ferreira and Otley 2009[4] Performance Management Systems framework for analysis	Vision and mission (Q1) Third level: Contextual Factors Culture	Key success factors (Q2) Strategies and plans (Q4)	Key performance measures (Q5) Target setting (Q6) Performance evaluation (Q7)	Rewards systems (Q8)	Organization structure (Q3)

Cultural Controls

The cultural controls are the starting point in the frameworks. They consist of key objectives that are central to an organization's overall future goals, such as mission, vision, credos and other value systems – elements that form the basis of an organization's presence. A mission defines the purpose of an organization's existence. A written mission statement enables an organization to articulate its mission. Discussing the mission allows an organization to provide tools and training and promote behaviour that makes the mission a common concern of all the employees of an organization. A clear mission will make the organization's impact on the world uniform and will give it greater effect. A vision shapes the idea of what an organization wants to achieve in the long term. The complexity of vision statements varies between organizations, but the statement must concisely define a clear goal for the ideology of an organization and be easy to understand and remember for the employees. The mission and vision are MCS that have wide orientation and give overall direction to all employees in an organization (Ferreira and Otley 2009). In this first category of the comparative analysis (cultural controls), the three frameworks of Simons (1995), Otley (1999) and Ferreira and Otley (2009) are similar, but each framework labels the group differently: ´Beliefs systems', ´Objectives', and 'Vision and mission'.

Simons names cultural controls ´beliefs systems' and describes them as "the explicit set of organizational definitions that senior managers communicate formally and reinforce systematically to provide basic value, purpose, and direction for the organization" (Simons 1995, page 34). Otley (1999) takes a similar approach to Simons', including central statements of the overall goals for an organization presented by executive management. Executive management have to prepare well-written documents that give an essentially long-term future-view

of the organization's fundamental reasons for existence. These statements must state the key value of an organization, not only meeting financial goals, but satisfying all shareholders of an organization (Otley 1999). Ferreira and Otley's first question concerns 'mission and vision', but they leave out the external controls that organizations have less influence on in their framework, such as culture, external environment, technology, size and ownership. They see these elements more as contingency variables that influence the effectiveness of the MCS package, but not as characteristics of the MCS (Ferreira and Otley 2009).

In the group of cultural controls, the framework by Malmi and Brown (2008) includes more controls and contingency factors than do the other frameworks. Malmi and Brown (2008) also include controls that managers do not always have complete influence on, in acknowledgment of the fact that the controls may be used to regulate employee behaviour. Malmi and Brown (2008) see cultural control as three aspects: value-based controls (Simons 1995), symbol-based controls (Schein 2010), and clan controls (Ouchi 1979). Starting with Flamholtz's (1983) definition of organizational control "as a set of values, beliefs and social norms which tend to be shared by its members and, in turn, tend to influence their thoughts and actions" (page 158), Malmi and Brown extend the cultural controls into three subgroups: clans, values, and symbols. Ouchi (1979) defines organization culture as the overall values and normative patterns which guide employee behaviour. In 1979, Ouchi developed a concept of how subgroups (clans) can occur, formed by individuals exposed to a socialization process that provides them with a set of skills and values. This socialization process can be caused by different professions, skills or interests among the members of the clan. The clan develops their own values and beliefs. The subgroup ´values´ are similar to Simons' 'beliefs system' and broadly cover broadly what is covered by the

three other frameworks in their definitions of this first group. The subgroup 'symbols' refers to an organization's visible expressions, it can be an organization's building, dress code, designs or their ability to develop an individual type of culture (Schein, 2010).

Planning

The group 'planning' includes strategy and other ex-ante planning assignments. The assignments range from less-detailed descriptions to detailed action plans containing both financial goals and non-financial expectations to set up planning controls to affect employee behaviour. The main goal of planning is to ensure the best possible relation between an organization's objective, resources, technology, competitive position, knowledge and professional competences, as well as other external environment factors that may interfere with the opportunities and limitations of the organization (Mills 1970). Planning includes development of standards and procedures, setting goals and defining expected effort and behaviour of employees.

A strategy is a plan that describes how companies achieve their mission and vision through establishment of competitive advantage (Porter, 1996). Managers can use strategy as a primary key to discuss how to interact with a constantly changing external environment. Today, an organization's strategy is a natural and important part of its MCS package; however, "strategy was not used explicitly as a variable in MCS research until the 1980s" (Langfield-Smith 1997, p 207). Strategies and plans are ex-ante forms of controls (Flamholtz et. al 1985), through which objectives are set to direct and guide employee behaviour.

Plans also include key success factors to define and control the key objectives of an SBU or a company's business (Ferreira and Otley 2009). Key success factors represent important facts that are required in order to realise desirable business objectives, and have a direct impact on the effectiveness of achievement of objectives. The key success factors support and substantiate the vision and mission through a limited number of conditions or variables that have a direct impact on the viability, effectiveness and efficiency of an organization. Key success factors cover both identification of "the key factors that are believed to be central to the organization's overall future success" and how such key factors "are brought to attention of managers and employees" (Ferreira and Otley 2009, p. 267).

In all the frameworks, development and implementation of strategies have a high priority. The strategy is the joint objective, which is normally related to the cybernetic controls, reward and compensation controls, as well as the administrative controls (Henri, 2006a; Langfield-Smith, 2007). Therefore, it is important to design an MCS package that supports the employees in behaving in a manner that fulfils the strategy, in order to increase the success rate of achieving an organization's goals. Lack of focus and clarity in the strategy or plans is one of the key control problems observed in practice (Merchant and van der Stede, 2012). Failure in communication of the strategy or plans to organizational members may result in a lack of understanding of how individual actions contribute to the overall strategy. Simons (1995) uses 'interactive control systems' and 'boundary systems' to deal with planning. In addition to strategy and action planning, Simons includes operational guidelines. First Simons encourages using interactive control systems to focus organizational attention on strategic uncertainties and implementation of new strategies, and then boundary systems to state limits of freedom. In the other

three frameworks, the operational guidelines belong to the cybernetic and administrative controls.

Cybernetic controls

Fisher defines cybernetics as "a system in which standards of performance are determined, measuring systems gauge performance, comparisons are made between the standards and actual performance and feedback provides information on the variances" (Fisher, 1998 p 52). The cybernetic controls consist of budgets, key performance measures, target setting, performance evaluation and hybrid measures that contain both financial and non-financial measures (Malmi and Brown 2008). The four frameworks all include the cybernetic controls (Simons 1995, Otley 1999, Malmi and Brown 2008, Ferreira and Otley 2009).

Key performance measures are financial and non-financial objectives managers use to guide and direct subordinates to behaviour in the best interest of the organizations, and to monitoring the success of their organizations. (Ferreira and Otley, 2009). Key performance measures have to be customized according to the company's strategy and plans, and specified according to priorities and performance objectives (Chenhall 2005). By routinely monitoring the success of fulfilling company key performance measures, managers gain valuable insight into the performance of their business and, give themselves the opportunity to respond quickly if objectives are not obtained or subordinates' behaviour is not in line with the organization's objectives and policies. Pre-set targets are MCS values managers use to guide and motivate subordinates to perform in specific areas. Managers often use the targets when evaluating subordinates or groups of subordinates and may also use the targets as a basis for financial rewards

(Merchant and Van der Stede 2012). To be able to use the targets for performance evaluation of subordinates, the target benefits from being specific, clear, measureable, achievable, timely, and challenging. Target-setting for groups can be used as an effective tool to ensure that the group's members gain a common and clear awareness of the group's performance goal[s]. However, to ensure that each employee is aware of their participation in reaching the group target, managers have to make sure that each individual in the group knows, acknowledges and accepts their part in delivering the performance that will lead to the achievement of the overall group target. An additional purpose of targets is to guide and motivate employees by identifying quantifiable goals that allow them to measure their own performance.

Performance evaluation concentrates on what processes managers use when they evaluate subordinates. In the desire to be able to provide accountability and transparency, management set up MCS to guide and direct subordinates to act in their organizations' best interests and also to evaluate employee performance. The growing use of quantitative indicators changes the way accountability is measured and how the many different qualitative indicators are converted into auditable numbers (Espeland and Sanders 2007). By performing the evaluation and measurements through numbers that can be audited, it becomes easier to rank the results against each other. In MCS, ranking is normally used for internal purposes only, and only when management wishes to focus on effectiveness through learning and continuous improvement, or to direct subordinates' attention towards important issues. The numbers provided by the ranking may be available for some or all individuals in the organization and may lead to changes in behaviour (Espeland and Sauder 2007), perhaps not only among the individuals being

monitored, evaluated or measured, but also among individuals that have only been informed about such a ranking.

Reward and compensation

The purpose of rewards and compensation is to direct and motivate employee behaviour in directions aiming at fulfilling the organization's strategy. Organizations use rewards and compensation to guide and motivate groups and individuals to focus on individual and organizational goals, and thus increase organizational performance. The rewards and compensation can be financial (e.g. bonus, salary increases, share-based rewards, stock options) and non-financial (e. g. promotions, extra holidays, recognition, education), and though they can both be positive and negative (Ferreira and Otley 2009), they are normally used positively. In Otley's 1999 framework, the rewards were shown in a simpler form, only containing the positive financial rewards. Simons (1995) uses diagnostic control systems to define goals, provide motivation and prepare ex-post evaluation of the work performed by the employees. In Malmi and Brown's framework (2008), reward and compensation are used in the same way as in the framework of Ferreira and Otley (2009). Even though many of the reward and compensation systems are cybernetic controls, three of the frameworks choose to have these controls in a group by themselves (Otley 1999, Malmi and Brown 2008, Ferreira and Otley 2009). The reason for this is the complexity in the relationship between rewards, motivation and performance (Ferreira and Otley 2009).

Espeland and Sauder (2007) have investigated how evaluation and measurement influence and change individuals' behaviour. The measurement and controls used in reward systems are not 100-percent optimal, as they cannot cover everything

that the managers wish the subordinates to be accountable for. Furthermore, they can be controversial and have secondary effects (Espeland and Sauder 2007), which means that the controls and measurements may also have an unintended effect on individuals' behaviour. As Espeland and Sauder (2007) and Vollmer (2006) point out, focusing only on numbers simplifies several aspects of the interpretation between individuals, groups and activities, in the tasks of managing, evaluating and monitoring individuals and the company at large, and risks reducing the focus on a company's overall objectives. At the same time, Espeland and Sauder argue that management must not forget morals and ethics in their efforts to lead and guide subordinates (Espeland and Sauder 2007).

Administrative controls

Among administrative controls are organization structure, governance structure, and policies and procedures (Malmi and Brown 2008). The organization structure defines the responsibilities and accountabilities of an organization's participants, and consists of the design and structure of an organization. Governance is the structure and composition of a company's board, ownership, management teams and formal management procedures. The governance structure includes systems that inform and control an organization's formal rules of authority and accountability (Malmi and Brown 2008); policies that describe management procedure such as structure of meetings, the hierarchy and division of authority among the management group and similar systems, are all parts of the governance structure which influence the behaviour of management in an organization. Policies and procedures are used to guide and direct employee behaviour in certain directions or dictate how employees must fulfil their work. The policies and procedures can be loose or tight guidelines, procedures and rules for supervision

and feedback, workflow descriptions and other bureaucratic controls that set rules for employee behaviour.

Ferreira and Otley's (2009) framework combines organization structure, governance structure, and policies and procedures into one group of controls, named 'organization structure'. However, their framework consists of the same controls as Malmi and Brown's (2008) framework. Otley's (1999) framework does not include organizational structure controls at all. Simons' (1995) 'boundary systems' consist of guidelines, formally stated rules and codes of business conduct, which all have an impact on employee behaviour and set limits on employees' freedom to act.

Use of and coherence within an MCS package

Whereas Simons (1995), Otley (1999) and Malmi and Brown (2008) end their development of the frameworks with the above five categories, Ferreira and Otley (2009) continue by extending their framework with an extra circle around the core of the MCS. This circle contains four elements: information flows - systems and networks (Q9), PMSs use (Q10), PMSs change (Q11) and strength and coherence (Q12) (see figure 6). These elements focus on the availability, use, usability, and the ongoing needs for further development and customization of an organization's MCS package.

The purpose of the information flows, systems and networks (Q9) is to link all agencies together into one package within the organization (Ferreira and Otley 2009). The access to and work with data and information must be effective, efficient, confidential, compliant and reliable. The quality of the shared information is very important and the data have to be readily, available and

reliable. The information flow includes both feedback and feed-forward information. The systems include information systems (e.g. enterprise resource systems, customer-relationship systems, logistics systems, production systems, quality control systems), and an information technology infrastructure that stores and organises the organization's accounting and control data. Some of the systems also provide programmes for the design, implementation and use of MCS. The network is a company's information systems and information technology infrastructure, which support and define roles for the information flows and systems and thus both protect the data and allow employees to easily access and share relevant information. Well-run information flows, systems and networks can provide an advantage which is essential to obtaining a high efficiency of the MCS Package (Otley 1999).

The use (Q10) of each MCS and information that the whole MCS package provides is crucial for organizational performance (Ferreira and Otley, 2009). An MCS package needs to be balanced between controls that support planning and controlling, and controls that encourage employees to be creative and innovative. The enabling part of the use of MCS supports learning, knowledge and competitive advantage (March 1991), which are all important areas for an organization's performance. An organization stores knowledge and learns from the employees who are socialised and willing to share their knowledge in the organization's best interest. Formalising of knowledge by procedures, norms, rules, forms and other MCS transforms the knowledge into collective knowledge for the benefit of all the employees in the organization; however, there may still be a dilemma between the individual's interests and the collective learning and knowledge of the organization (March, 1991; Merchant, 1982). For example, an employee may choose not to share information that would benefit the whole

company if he or she feels that information would damage his or her own personal interests (March, 1991).

As the business environment that the organizations work in changes, there will be need for changes to the MCS package (Q11), to make sure that the organizations' MCS package constantly fits and supports demands coming from business environments. An organization can be forced from the outside to change priorities, or it can choose to change of its own accord (Chenhall 2006, Tessier and Otley, 2012). To be able to act on these dynamics in the environment, the MCS package needs to be flexible, which can be achieved by loosely linking controls that can be readily linked into new combinations and to new controls. However, an MCS package has to be linked tightly enough to ensure that the package covers all areas and important processes in the organization.

The last question in Ferreira and Otley's framework (2009) is 'Strength and coherence' (Q12) in the MCS package. "Like any other system, [an MCS] is greater than the sum of its parts and there is a need for alignment and coordination between the different components for the whole to deliver efficient and effective outcomes. Although the individual components of the [MCS] may be apparently well-designed, evidence suggests that when they do not fit well together (either in design or use) control failures can occur" (Ferreira and Otley 2009, p. 275). Ferreira and Otley's framework (2009) and the questionnaire by Malmi and Sandelin (2010) clearly emphasise the importance of studying the whole MCS package, and of including analysis of the balance, harmony, consistency, strength and coherence in the package. This last question in Ferreira and Otley's framework (2009) does not focus on each separate control in the MCS package but rather on the links, dependency and influence between the components in the MCS package that combine all the MCS into one package.

Ferreira and Otley do not include contextual factors in their MCS framework. They see contextual factors "more as contingent variables that might explain why certain patterns of control are more or less effective, rather than characteristics of the control system that need to be incorporated into a description" (Ferreira and Otley, 2009, p. 267). They regard these contextual factors as part of a third level of MCS package, because contextual factors are largely controlled from outside organizations (Ferreira and Otley, 2009). However, how well the core components fit together in the MCS package and how well the MCS match the organizations' context influence organizational performance (Chenhall, 2006). Findings from contingency studies of MCS, including variables such as environmental uncertainty, strategy, organizational structure, culture, technology, and size, indicate that some MCS fit better in some contexts than others (Chenhall 2006, 2007; Otley and Berry, 1994).

Organizational culture is one of the contingency variables that Ferreira and Otley place in the third level of their framework. However, organizational culture is omnipresent in an organization and affects many aspects of organizational interaction (Henri 2006b). Organizational culture includes; material artefacts, patterns of norms for behaviour and activities, and fundamental assumptions, which Simons (1995) and Malmi and Brown (2008) include in their frameworks, as they find these elements to be very effective MCS. Organizational culture is not as easy to change as more central MCS (questions one to eight in Ferreira and Otley's framework), and implementing a new culture needs time before the new culture becomes a natural part of an organization. Still, managers can influence and alter organizational culture, e.g. by adjusting symbols, language, rituals, mechanisms of decision-making, coordination and communication.

Even though MCS seem to include everything and to be difficult to gain an overview of, a lot of theories and practical tools make the different parts of the MCS tangible and transparent. For example, organizations use calculative practices that can simplify and operationalize large chunks of information into a useful tool for management to guide the employees in their organizations in a specific direction or outline the roles within which the employees are allowed to work (e.g. Simons 1995, Miller 2001, Merchant and Van der Stede 2012). The budget is a common tool used for governing and controlling organizations or parts of organizations. By allocating budgets to each part of an organization (e.g. department, cost centre, business unit), groups, or individuals (agents), the employees gain the opportunity to have an influence on the way they choose to pursue their job, and at the same time they are held responsible for the outcome. The freedom the budget gives the individuals to act within encourages individuals to become self-regulating calculative agents (Miller 2001), who act accountably in the organization's best interest and still work innovatively – because of this freedom. Previous research has shown a varying, unclear picture of the influence budgets have on the behaviour of an organization (Horngren 1972). These different research results on the influence of budgeting may be caused by inter-relationships between organizational and behavioural factors, as the design of MCS and the design of an organizational structure are really inseparable and interdependent (Horngren 1972).

The growing use of quantitative indicators changes the way accountability is measured and how the many different aspects are incorporated into numbers that are auditable (Espeland and Sauder 2007). By observing, evaluating and measuring numbers that are auditable, it becomes easy to rank the results against each other. Miller (2001) argued that calculative practices matter, while numbers

often simplify more complex situations or results. By reducing complex processes and translating diverse information into "a single financial figure", information is made feasible and operational. Even though Miller (2001) concludes that organizations may benefit from being operated through calculative practices, he points out that calculative practice is one of many "languages" that should be used in governing organizations. When designing MCS as a package, calculative practices form an important part of the design, but calculative practices cannot replace social and organizational practices and tools used by management to affect their subordinates' behaviour (Vollmer 2007). Vollmer argues that managers should look into the social situations that are the foundation for calculative practice by paying attention to problems in the interaction behaviour between the agents.

By taking 'a systems view', this dissertation uses MCS frameworks as a 'skeleton' to guide a study of MCS as a package in large companies. This research study is broad and includes all groups of controls (see sections 3.1.1 and 3.2.2), as each MCS is not seen as an isolated standalone system, but rather as a part of an MCS package that affects and creates an organizational control environment where each system contributes both individually and as part of the organization's total MCS package (Malmi and Brown, 2008). Large companies use a significant number of MCS to ensure coordination and integration, as well as to create overall common company standards. Most of the MCS are interdependent, which means that changing one MCS may affect others (Toumela, 2005). The controls may also be part of several processes, where each control system depends on the result and quality of other controls, e.g. missing information, targets or limitations in a budget may weaken the following performance evaluation.

3.1.3 Contingency theory

Contingency theory is frequently used in studies of MCS frameworks to analyse complex multiple contingent and control system factors simultaneously. These studies draw parallels from contingency theory studies of organizational structure that were used in the 1950s and 1960s to analyse the radical challenge to universalistic orthodoxy. To understand the bounding between an organization and its environment, contingency and functional theorists argue that an organization should adapt to the environment, applying what might be seen as a Darwinian logic (Berry et al 2005). Contingent variables are factors that affect the effectiveness and performance of organizations but are controlled outside the organizations, although the organizations may try to influence the variables presented by the external environment (Otley 1980). While a single organization often has minor influence on the development of its external environment, the management need to navigate and choose between all the opportunities and threats presented by their environment in order to obtain the best possible position for their organization. According to contingency theory, the relevance of using controls depends on the context of the organization in which the controls are used (Otley 1999, Berry et al. 2005, Chenhall 2003, 2006). Hence, the effect and result of using controls are contingent on the circumstances encountered by the organization (Otley 1980, Berry et al. 2005). Likewise, there is no control that applies the same result in all settings (Emmanuel et al., 2004; Gerdin, 2005).

For performance purposes, contingent variables are as important as controls for managing organizations; consequently the design of these variables must co-vary with or be properly matched for the organization to be effective (Chenhall, 2003; Fly and Smith, 1987). Thus, managers have to be aware of the effect caused by the contingent variables and the use of MCS when navigating between the

opportunities and threats presented by their environment, and when designing and using MCS as a package in their organizations (Berry et al. 2005). However, dynamics and constant changes in the environment and the evolution of technology constantly provide new opportunities for organizations and may thus require changes in the design and use of MCS to ensure the best fit among all the contingent variables and all the management controls in the MCS packages (Fly and Smith, 1987). Consequently, organizations have to constantly move towards new, better and probably more profitable positions. It can be very expensive to develop or buy new technology, develop new products, or catch up with changes in a dynamic environment, but it may result in a more substantial loss if an organization does not keep up and consequently loses its competitiveness.

In contingency theory, fit is essential (Drazin and Van de Ven, 1985; Fly and Smith, 1987; Gani and Jermias, 2012; Gresov, 1989; Nicolaou, 2000); however, fit is applied in different forms in MCS studies, all depending on the research approach (Drazin and Van de Ven, 1985; Gerdin and Greve, 2004). The form of fit used in MCS research ranges widely (Fly and Smith, 1987; Gerdin and Greve, 2004), from congruence studies of moderating or mediating effects of the relation between one contextual factor and use of one MCS, to studies with a holistic view including many contextual factors and MCS (Gerdin and Greve, 2004). In the studies with few variables, an MCS is often used as the dependent variable with the purpose of finding patterns between an organization's contextual factors and its use of one MCS. There, as in the more holistic studies, the results either focus on clustering organizations into groups according to the characteristics of their MCS packages, or on using performance as the dependent variable and searching for effects caused by organizational contextual factors and use of a number of MCS simultaneously on an organization's profitability. This is done to find an

optimal match or fit between the contingent variables and the design and use of MCS that enhance organizational performance (Fisher 1998). Accordingly, Fisher (1995) states: “The ultimate goal of contingent control research should be to develop and test a comprehensive model that includes multiple control systems, multiple contingent variables, and multiple outcome variables” (Fisher 1995, page 24).

Even though contingency theory requires coherence between controls and the setting of an organization, it is used to create generalised models where MCS are divided into major groups within different business settings (Fisher 1998). Fisher (1995, 1998) divides the contingent variables that influence MCS into five groups: uncertainty (external environment), technology and interdependence, industry - firm and unit variables, competitive strategy and mission, and finally observability factors. This division allows us to group organizations relative to their context, to identify organizations that are similar and test MCS for their effectiveness within special settings. Fisher’s approach includes many but not all contingent variables, and the interrelationship among the contingent variables is not included in his approach (Fisher 1995). However, modification of the theory affects the research result, because more than one contingency factor interferes with the effectiveness of the MCS.

Similar to the debate on the definition of MCS, there is a debate about which contingent variables should be included in MCS research and how to frame these variables. In 1980, Otley stated that “contingent variables are considered to be outside of the control of the organization, although it is recognised that organizations may try to influence some such supposedly exogenous variables (e.g. governmental regulations). Those variables believed to be controllable by the organization are not considered to be contingent variables, but rather part of the

package of organizational controls selected for use." Otley continues, "[O]ne exception is the use of organizational objectives as a contingent variable, because of their special nature as a criterion by which organizational effectiveness will be assessed" (Otley 1980, p 422). However, the context of contingent variables is different, thus their effectiveness of organizational performance, and the degrees of influence by organizations on the contingent variables differ. Managers have power to change and choose between some contingent variables, but still within the limitations of and affected by the external environment (internal context factors), while other contingent variables are fully controlled outside the organizations, but are still unavoidable for the organizations (external environment) (Demartini, 2014). The internal contextual factors are e.g. organizational objectives, strategy, size, technology, and organizational culture. The external contextual factors are e.g. competition, globalisation, national culture, laws and regulations, and other external environment factors.

Over time, the contingency theories in MCS research have been used in a more complex form including more variables, e.g. strategy, organizational structure, size, culture, technology and external environment (e.g. Chandler 1962, Waterhouse and Tiessen 1978, Dent 1990, Chenhall 2003, 2006). One of the most cited papers in the area is a critical review of findings from 20 years of contingency-based studies, written by Chenhall in 2003. This paper focuses on how strategy, organizational structure, size, technology, national culture and external environment affect the design, use and performance of MCS. Chenhall (2003, 2006) describes the different contingent variables' characteristics and influence on MCS. For the variables 'external environment' and 'technology', level of complexity, interdependence and task uncertainty are the main issues when designing an organization's MCS package (Fisher 1995, Chenhall 2003).

For the variable ‘size’, Chenhall explains how the size of an organization interacts with other aspects of the context, giving a positive effect when ‘size’ matches well with the other contingent variables (Chenhall 2003). Another review is that of Langfield-Smith from 1997, which uses an organizational model to show the importance of the links between strategy, environment, technology, organizational structure and MCS in reaching an organization’s objectives (Langfield-Smith 1997).

Strategy is different from other contingent variables, as strategy is not a context of an organization but rather an overall plan of measures that top management develop to meet organizational objectives (Chenhall 2003). The base of an organization’s strategy depends both on external macro-factors and internal factors such as politics, the organization’s competitive position and the organization’s resources. Thus, while top management have influence on the plans of measures they develop, they have to make sure that the strategy is regarded as appropriate, feasible and desirable by the organization’s stakeholders. However, Chenhall (2003, p 150) explains that even though research has “assume[d] that an organization’s MCS is determined by context and that managers are captured by their operating situation”, more recently “MCS research has recognized that managers have ‘strategic choice’ whereby they can position their organizations in particular environments”. Other contingency research on strategy and MCS has also shown that a good fit between an organization’s MCS and its strategy enhances organizational performance (e.g. Fisher and Govindarajan, 1993; Langfield-Smith 1997, 2007).

Organizational structure is the frame an organization establishes to ensure that activities are carried out in the best interest of the organization. The organizational structure arrangements include, among other factors, organization design, formal

rules and procedures for the organization's members, which affect the efficiency of the MCS, work and information flows, and employee motivation, and which may enhance the performance and future opportunities of an organization (Chenhall, 2007)[5]. As organizational size and diversity increase, social controls, communication and coordination become less effective (Merchant, 1981), and in acknowledgement of the risk that organizational growth and increased complexity bring greater danger of control loss, large organizations increase their use of output measures in order to compensate for the loss of control that the growth may cause (Ouchi 1977). In general, "large organizations are associated with more diversified operations, formalization of procedures and specialization of functions" (Chenhall, page 149, 2003; Chenhall, page 183, 2007).

"Technology refers to how the organization's work processes operate and includes hardware, materials, people, software and knowledge" (Chenhall, 2007, page 174). Use of technology makes work processes more efficient and can reduce risk and include controls that optimize business processes and thereby enhance organizational performance. The MCS, organizational structure and technology are closely linked and often depend on each other (Ouchi, 1977). Technology is used as platforms or supporting tools for organizations' structures and when operating MCS. Hence, management should link the design and use of the MCS, technology and structure to obtain the best match with the most effective working processes. The most effective fit between the technology, structure and MCS for an organization will obviously be designed according to the needs for fulfilling the organization's objectives.

[5] In the MCS frameworks, the organizational structure controls are handled differently. Malmi and Browns' (2008) have chosen to call it 'Administrative controls' and divide it into three subgroups: Governance structure, organization structure, and policies and procedures. Ferreira and Otley (2009) have chosen to unite organizational structure in one question. However the two frameworks include the same organizational structure controls.

Culture can be studied at different levels: organizational, national or even at a global level. The term 'organizational culture' is a broad concept including; "shared beliefs, values, assumptions and significant meanings are commonly associated with culture" (Henri 2006b, p. 79). Managers have little or no influence on national and global culture, however managers can proactively adopt cultures they find have a positive effect on their organizations and work against adoption of cultures they do not find suitable. As organizations grow and get a more international focus, it is expected that national culture will be taken over by organizational culture or global cultures within the sector.

"External environment is a powerful contextual variable that is at the foundation of contingency-based research" (Chenhall, 2003, page 137). The different parts of an organization's external environment have various variables which the organization needs to adopt and associate or interact with to be effective and improve its performance. Thus, management have to ensure congruence between the environment and their design and use of MCS both across and within organizational levels (Fly and Smith, 1987 page 120). Further, the dynamics and uncertainty in the external environment do not make it easy for managers to develop and plan the future of their organizations. The uncertainty generated by the external environment is probably one of the most unpredictable variables that management have to include when they design their MCS package.

Contingency research in the use of MCS and organizations' performance is inexorable, as organizations and their external environment change over time. There are many variables, and more variables and systems will probably appear within an organization, while at the same time some variables will constantly change due to the new and better solutions that arise or opportunities that are missed. These changes can be driven by both internal and external demands, and

when one variable or system changes, more systems have to be changed to maintain the best fit, and thus, the most effective MCS package (Toumela, 2005; Tessier and Otley, 2012). Management teams have to follow this development and find the best way for their organizations, which will result in organizations that are constantly moving towards new, better and probably more profitable positions (Otley, 1999). In turn, researchers have the opportunity to perform empirical studies to find new setups of MCS packages and observe and learn from them.

In addition to contingency theory, researchers have used other theories when studying MCS. Some of the theories and approaches used, among many, include: cybernetics and systemic approach, agency, sociological and psychological theories, risk management and internal control (Merchant and Otley, 2007; Gong and Tse, 2009). However, this dissertation will not discuss these theories. As this dissertation defines MCS as a broad term including all MCS in a company contingency theory is found to be the best suitable theory to use.

4 Contribution to knowledge

The methodological and theoretical base of the three articles is wide-ranging. However, the subject of the PhD dissertation is studying MCS in a broad scope, examining similar uses of MCS. The first article is an explorative study that shows a map of how top managers today manage, control and guide their subordinates in relation to ensuring goal fulfilment and the best performance in large Danish companies, the second article is a literature review on MCS frameworks, and finally the third article studies relationships and boundaries between the use of MCS and performance.

Article 1: Top managers' use of management control systems in large companies in Denmark

Paper one explores how the data collection was carried out in Denmark and presents the results of the Danish part of the international study. By using the structure and questions in Ferreira and Otley's framework (2009), the paper tells the story of how top management in the largest companies in Denmark today use a broad range of MCS to guide and direct their subordinates to ensure high organisational performance and further success for their companies. In addition to exploring practitioners' use of MCS, the paper relates different researchers' perceptions of the purpose of using MCS to practitioners' ideas of the purpose of using MCS. Finally, the paper discusses the usability of Ferreira and Otley's framework for exploring empirical survey data. The intended audience of this paper is both practitioners and researchers, which means that the aim is to submit the paper to a journal that caters to both types of readers.

The purpose of the paper is to bring academics closer to practice. Without a pre-academic assumption, the paper tells the story of practices' focus on MCS, by exploring practitioners' view on how to design and use MCS as a package. The top managers who have participated in this survey have both quantitatively weighted the importance of different parts of an MCS package on a Likert scale, and given statements about and arguments for their choices. By comparing the answers given by the top managers with academic statements on the purpose and importance of using MCS, it is demonstrated that the purpose of using MCS has changed over time, and that not all academics and practitioners share the same opinion about the purpose of using MCS. To be able to produce useful research

and new theory that practitioners will adopt, researchers have to be aware of the practitioners' needs and wishes in relation to MCS (Laughlin, 1995; Merchant, 2012).

Article 2: Management Control Systems and Performance Management Systems - A Comparative Analysis of Frameworks

This paper reviews and discusses the historical origin of researchers' development of the term MCS and the MCS frameworks. The paper traces the frameworks' historical origins and how the frameworks have been developed by researchers in the literature. The paper discusses the fundamental purpose of MCS frameworks to clarify the usability of MCS frameworks in research and in practice. With basis in Simons' (1995), Otley's (1999), Malmi and Brown's (2008), and Ferreira and Otley's (2009) MCS frameworks, the paper discusses similarities and differences, and opportunities and weaknesses among the MCS frameworks. The MCS frameworks are cohesive and comprehensive, and they all highlight the importance of using a comprehensive MCS package containing a wide range of controls which gives employees opportunities to be innovative within the limits of the MCS. However, none of the frameworks include a guideline to how to balance the use of the different parts of the MCS package or how to ensure high effectiveness of each MCS and of a whole MCS package. The paper brings attention to research gaps and missing variables within the frameworks, and provides a guideline of issues that researchers and practitioners may benefit from when using the frameworks. Finally, the paper concludes with an outline specification for a categorisation of control components that are objectively observable for research purposes.

Article 3: The Use of Management Control Systems: impact on companies' performance

The purpose of the paper is to investigate the relationship between executive management's use of management control systems (MCS) and companies' performance. Using quantitative data on executive managers' use of MCS in large companies, the paper relates the use of MCS to developments in company performance. The paper finds both some positive and some negative relations between the use of MCS and companies' development in financial performance. The MCS investigated are: strategy, evaluation of subordinates, rules and procedures and executive managers' focus on customer relations when guiding and directing their subordinates. The paper adds to the literature in MCS which focuses on the effectiveness and efficiency of using MCS. The findings can be used by both researchers and practitioners who wish to expand and advance their existing knowledge about MCS' impact on company performance.

5 Limitations and future research

Just like people, companies are unique, socially founded, affected by many variables in their environment, and constantly 'on their way' towards new, better and hopefully more profitable positions. Hence it can be difficult to study cause and effect in companies. So, is it possible to predict the overall efficiency of an MCS package with multiple factors that continually change and are influenced by an external environment that is also constantly changing? And how do we develop theoretical frameworks that cope with these changes? In his paper from 2012,

Kenneth A. Merchant asks: “What changes are needed to make our research more useful?” (Merchant 2012, p. 336). To be able to produce theory and useful findings, researchers must work with practice to understand the complexity of the environment within which practitioners must work and navigate. Researchers seek to generalize and find significant results, sometimes reducing the enclosure dimensions in their studies until the data are so simplistic that they fit into a theory or a paradigm (Merchant 2012). Because organizations are unique, results from case studies in MCS and contingency factors cannot always be transferred to other organizations. Therefore, to build up a database with empirical data for further research use, researchers need to build their own database from larger surveys and cross-sectional field studies (Lillis and Mundy 2005), relying on the organizations’ willingness to share information about their use and design of MCS and effects of the contingency factors.

This thesis includes a large survey that gives a picture of how top managers in large Danish companies design and use MCS. The survey data provide a good basis for further research and have more results to share. For example, research could be carried out on the influence of differences in national cultures between the countries that have participated in the international survey, or research could focus on minor parts of the dataset (as in article three), or focus on extending the data by case studies in some of the companies and thereby achieving a more nuanced picture, or further research could develop a new MCS framework and clarify the purpose of the MCS frameworks. Further, research could be carried out into measuring how effective and efficient less measurable controls are in guiding and directing subordinates, and into the positive or negative effects such controls may have on the effectiveness of more accountable controls and on the companies’ performance, or further research could investigate how technology and IT drives

practitioners' design and use of MCS (Chapman and Chua, 2000; Chenhall, 2003). Yet survey studies have limitations, as using a questionnaire survey supplemented by interviews does not yield information that is as sophisticated as the information that can be obtained in case studies. Case studies may help elucidate the cause and relation between the use of MCS and performance.

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7 Articles

7.1 Top managers' use of management control systems in large companies in Denmark

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Abstract

The use of management control systems (MCS) in Danish companies has not been studied much, and only few studies have incorporated a broad scope that includes all controls in a company when examining managers' use of MCS. This paper is the first paper that attempts, with data from a comprehensive survey study, to explore the most common ways in which large Danish companies today use a broad range of MCS. Based on survey data on 120 strategic business units (SBU) from some of the largest companies in Denmark, data is analysed to identify the reasons for company success and how top management today guide and control their subordinates to meet the companies' objectives. The presentation and

discussion of the results, including citations from executive managers, are carried out using Ferreira and Otley's (2009) performance management systems framework, supplemented by elements of contextual factors and organisational culture. In addition, different researchers' perceptions of the purpose of using MCS are related to practitioners' ideas of the purpose of using MCS. Finally, the paper discusses the usability of Ferreira and Otley's framework for exploring empirical survey data.

Keywords: Management control systems, performance management, large companies.

Introduction

Many empirical research projects have investigated one or two control systems (e.g. Chong and Mahama, 2014; Ho et al, 2014), but surprisingly few have looked empirically at a broad scope of MCS in companies (Malmi and Sandelin, 2010; Strauss et al., 2013). Previous research in MCS has focused on "how to design MCS in order to produce the desired outcome" (Malmi and Brown, 2008 p.288). By expanding MCS studies to include all the controls within a company, it is possible to avoid solely focusing on accounting-based controls and include the effects of informal and non-calculative controls such as value statements and administrative controls. The same trend is seen in research literature in the area of design and use of MCS in Danish companies (e.g. Israelsen et al, 1996; Jensen et al, 2011; Lennon 2012; Madsen 2012); in fact, no previous research studies of MCS grounded in a large data sample include all controls in Danish companies. In addition, not much empirical evidence exists about which MCS elements are seen

as important in managing Danish companies, and which factors top management see as the key to company success.

The purpose of this paper is to provide a snapshot of how top management in large companies in Denmark use MCS to affect subordinate behaviour in ensuring the most effective and efficient way to fulfil organisational objectives and strategies. Based on data from a comprehensive survey of 120 out of Denmark's 318 largest companies, this paper explores top management's perception of the relative importance of each control mechanism as well as the weight and ranking of different groups of controls to direct and manage subordinate behaviour in the best interest of the company. The paper uses an MCS framework to organise the empirical study of practices as a means of describing and interpreting the results of a large sample of survey data. Additionally, the paper compares researchers' ideas of the purpose of an MCS package[6] with practitioners' ideas of the purpose of an MCS package. Finally, it is discussed how useful the MCS framework is when analysing survey data.

The paper is structured as follows: In sections two and three, the concept of MCS is discussed, and the framework used to analysing the data is selected. In section four, the methods used to develop the empirical study and the data collection are described. In section five, the results of the data are explored by using descriptive statistics as well as quotes from the participants. In section six, the paper lists and

[6] The general conception of the term 'management control systems (MCS) as a package' is a collection of all control devices and systems within an organisation that managers use to ensure that subordinates' behaviours are consistent with their organisations' objectives. The controls can be multiform, from traditional accounting controls such as budgets and performance evaluation to broader and more social controls such as administrative and culture controls. The numbers and types of controls are not the same in all organisations. It is a management responsibility to develop an optimal MCS package that will guide and direct subordinates to act in the most efficient and effective way in order to secure organisational objectives (Abernethy and Chau, 1996; Alvesson and Karreman, 2004; Flamholtz et al., 1985; Otley, 1980; Simons, 1995; Malmi and Brown, 2008; Grabner and Moers, 2013; Strauss et al., 2013).

discusses key findings of top managers' use of MCS, and discusses researchers' and practitioners' opinions of the purpose of an MCS package. Further, the usability of using Ferreira and Otley's (2009) framework when exploring survey data is discussed. Finally, the conclusion is drawn, recognising some of the limitations of the study, and outlining some avenues for future research.

Management Control Systems

The aim of MCS is to support a company in achieving its objectives (Flamholtz, 1996; Merchant and Otley, 2007; Merchant and Van der Stede, 2012, Strauss et al., 2013). MCS have two functions: planning and controlling activities, and encouraging employees to be creative and search for opportunities and problem solutions (Simons, 1995; Mundy, 2010). MCS consist of control devices and systems that managers use to direct employee behaviour, such as strategic, tactical and operational plans, instructions and values (Merchant and Otley, 2007; Malmi and Brown, 2008; Ferreira and Otley, 2009). MCS include both cybernetic and rule-driven controls, for example planning, measurement and reward systems (Flamholtz, 1996), as well as more complex and value-based controls such as culture and administrative controls. In reality, many companies operate many systems with similar or near-similar functionality. According to Malmi and Brown (2008, pp. 287-288), MCS should be studied as one package. Looking at MCS as a package implies that the package contains multiple controls working simultaneously, some overlapping, some depending on or influencing each other, but all with the same overall goal, namely to guide and direct the employees to achieve a company's objectives. Despite the fact that not all controls are aligned and that they may be both loosely and tightly connected, together they form a

package of controls that serves a company's overall goals – hence the term 'Management Control Systems as a package' (Malmi and Brown, 2008; Ferreira and Otley, 2009; Grabner and Moers, 2013; Strauss et al., 2013).

A good MCS package has more than one purpose. It must be comprehensive enough to ensure that "management can be reasonably confident that no major unpleasant surprises will occur" (Merchant and Van der Stede, 2012 p. 12), that "resources are obtained and used effectively and efficiently in the accomplishment of the organization's objectives" (Anthony, 1965 p. 17). Some controls are included to encourage employees to be innovative (Simons, 1995) and must "include all the devices and systems managers use to ensure that the behaviours and decisions of their employees are consistent with the organisation's objectives and strategies" (Malmi and Brown, 2008 p. 290). Thus, a company's top management group has to design a comprehensive MCS package that both includes controls which encourage the company to innovate and create, and at the same time ensures that the company has diagnostic[7] controls that help the company perform optimally (Simons, 1995; Mundy, 2010). In recognition of this, managers may combine controlling and enabling uses of MCS to create dynamic tensions that produce unique organisational capabilities and competitive advantages (March, 1991; Simons, 1995; Ahrens and Chapman, 2004; Henri, 2006a; Widener, 2007; Mundy, 2010).

[7] Diagnostic controls are critical performance variables that can be "used to motivate, monitor, and reward achievement of specified goals" (Simons, 1995 p. 7).

Choice of framework

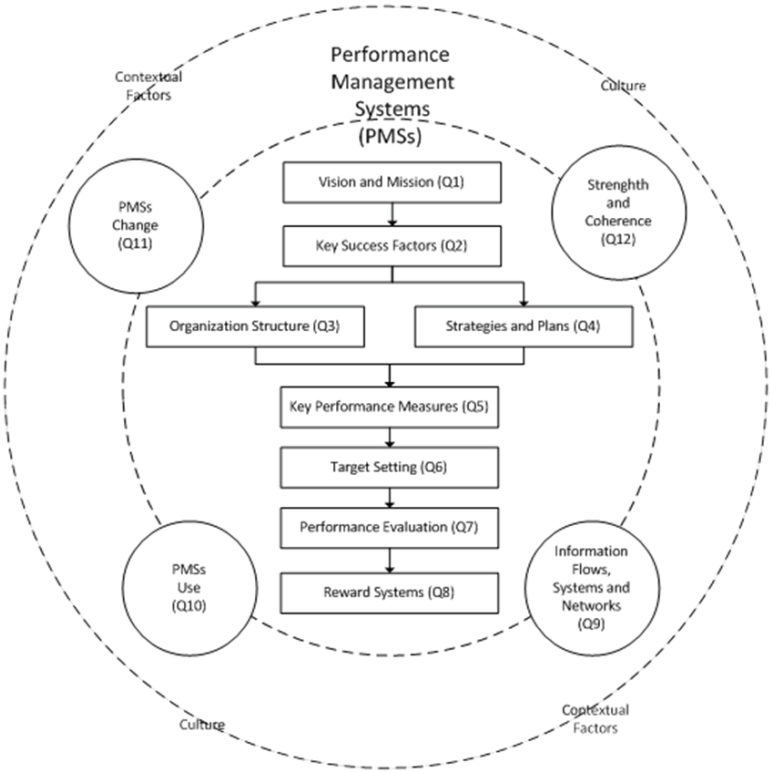
Researchers have developed frameworks to be used for studying a company's MCS as a package (e.g. Anthony, 1965; Flanholtz, 1985; Otley, 1980, 1999; Fisher, 1995; Simon, 1995; Malmi and Brown, 2008; Ferreira and Otley 2009). These MCS frameworks identify various types of controls and variables in the MCS package and highlight the importance of different controls used in a company as well as of matching the use of controls with the organisational context in order to obtain better performance. The aim of these frameworks is to support researchers in their empirical studies of companies' design and use of MCS. In addition, the frameworks encourage empirical researchers to include all MCS within a company and take a holistic look at the MCS and the links between different designs and uses of MCS within an MCS package. However, not all previously published MCS frameworks have been used on empirical survey data, and therefore their usability for research has not been tested.

The Ferreira and Otley (2009) framework (figure 1) is chosen as the basis for the descriptive analysis of this empirical study. This framework is chosen from among recent and comprehensive MCS frameworks (e.g. Ferreira and Otley, 2009; Malmi and Brown, 2008; Simons, 1995). It is organised according to the order in which managers are expected to develop and use management control processes. The framework is constructed very specifically by twelve questions thus ensuring a concise way of studying an organisation's use of MCS. Ferreira and Otley (2009) aimed to build a framework that gives a comprehensive view of controls used for managing organisational performance and provides "a managerial emphasis, by integrating various dimensions of managerial activity with the control system" (Ferreira and Otley, 2009 p. 266). The framework is organised into three levels. The first level covers eight questions that focus on MCS elements. The second

level consists of four questions regarding the use, interrelationship, coherence and flexibility between all the MCS used in companies. This second level of questions regarding the use of and coherence in the use of MCS is an extension to almost all other MCS frameworks (e.g. Otley, 1999, Malmi and Brown, 2008). Finally, Ferreira and Otley add a third level which includes culture and contextual factors to the model of their framework. However, Ferreira and Otley do not consider this third level a part of their framework, as they see culture and contextual factors as controls which organisations do not have power to change (Ferreira and Otley, 2009). The framework can be used by practitioners and researchers when identifying a company's design and use of MCS.

The questionnaire used (see section 4 4) in the empirical study contained more subjects than covered by Ferreira and Otley's 12 questions. It also addressed the two areas organisational culture and external environment factors, which Ferreira and Otley (2009) explicitly exclude from their framework. Ferreira and Otley (2009) regard contextual factors and organisational culture "more as contingent variables that might explain why certain patterns of control are more or less effective, rather than characteristics of the control system that need to be incorporated into a description" (Ferreira and Otley, 2009, p. 267). In addition to answering Ferreira and Otley's twelve questions, the analytical part of this paper will discuss top managers' approach to using culture and contextual factors as active MCS, and how these controls work compared to other more tangible and internally controlled MCS. Additionally, the paper discusses the usability of Ferreira and Otley's Framework (2009) in identifying, describing and exploring survey data.

Figure 1: The performance management[8] systems (PMSs) framework by Ferreira and Otley, 2009.



[8] Ferreira and Otley use the term 'performance management' rather than 'management control', as they find that MCS "has become a more restrictive term than was the original intention" (Ferreira and Otley, 2009, p. 264). Despite Ferreira and Otley's concerns about the restrictiveness of the term MCS, the literature on MCS shows that the broad definitions of MCS are comprehensive in a similar manner to the various definitions of PMS and include all aspects of management and organisational controls at all levels in a company (e.g. Berry et al., 2005; Malmi and Brown, 2008, Ferreira and Otley, 2009).

Method and data collection

In 2010, Malmi and Sandelin developed the international research project "Management Control Systems as a Package" (Malmi and Sandelin, 2010). The purpose of this research project is to map how top management in large companies apply their management control to middle managers. The research project is designed as a quantitative survey, and the tool used is a comprehensive standardised questionnaire. The questionnaire is structured on the basis of Malmi and Brown's (2008) MCS framework and extended by questions regarding organisational factors, use of MCS and the organisations' environment, whereas the content and definition of the questions are inspired by organisation design literature and strategic management literature on ambidextrous organisations (Malmi and Sandelin, 2010). This paper describes how the data collection was carried out in Denmark and presents the results of the Danish part of the study.

The ORBIS database was used to select the largest companies in Denmark. The criterion used to define 'large companies' was 'active private companies with 250 or more employees[9] in 2009 or 2010'. Large companies were chosen, as large companies are expected to have more sophisticated needs for MCS (Malmi and Sandelin, 2010). Large companies "tend to have more power in controlling their operating environment" (Chenhall, 2006 p. 98). They have a large number of processes, use standard techniques and customised controls, which lowers task uncertainty. Yet, large companies may also have a higher complexity and need to handle larger quantities of data and information. The larger number of employees, processes and objectives demands a need for decentralisation of authority (Chenhall, 2006). Consequently, the use of MCS would increase, and MCS that

[9] In the European Union large companies are defined as non-subsidiary independent companies which employ more than 250 employees (OECD June 2000).

helps achieve integration and which uniform the companies have to be implemented. The lists from ORBIS were checked manually for duplicates and companies that had been closed or sold – all of which were deleted. From this quality-checked total list of 318 companies, a random sample was selected for interviewing. The basis for selection was 'every third company' (Cochran, 1977). In order to ensure a high response rate, five response-enhancing techniques were used (Anseel et al, 2010): 1.) the researchers contacted potential respondents personally by phone, 2.) sponsorship by the university of Aalborg and Copenhagen Business School was highlighted, 3.) the research topic's (MCS) relevance for the respondents was highlighted, 4.) the participants were promised anonymity, and 5.) the questionnaires were filled out at an interview conducted by two researchers. The interviews typically lasted between two to three hours and were conducted by two researchers to ensure uniformity and objectivity of the questions. In addition, the interviews were recorded to safeguard response validity. In one sense, this was a classic survey; the sample size was large, the sampling was random, and statistics were used to analyse the data. However, although we used the same questionnaire in all companies, the face-to-face interviews moved the survey in the direction of a cross-section field study (Merchant and Manzoni, 1989; Lillis and Mundy, 2005). In addition, the interviews allowed us to collect statements from respondents that supplement the survey data.

Data were collected in the period October 2011 to March 2013, and with a positive response rate of 74%, 163 companies were contacted in order to obtain the target sample of 120 companies. Seventy-two of the companies had more than 1,000 employees, and 48 had less. In the data collection, the three industry sectors were represented by 56 manufacturing, 19 trade (retail and wholesale) and 45 service companies. Data on the interviewees' position, educational background and

duration of employment in the companies they represented are shown in Appendix A. Most questionnaire responses were given as Likert scales of importance or frequency from 1 to 7[10], and the remaining responses were selected from closed lists of categories (e.g. ownership type). There were no right or wrong responses, and "not applicable" (N/A) was provided as an option for some of the questions. In this paper, descriptive statistics is used for analysing for similarity, difference and patterns.

Use of Management Control Systems in large Danish companies

Results – presentation and interpretation of the how the survey data related to Ferreira and Otley's questions.

Question 1 - Vision and mission

In the survey, respondents were asked to indicate to what extent 'their vision statement was so concise that the subordinates remember it'. On the Likert scale, 75% of the responses were 4 or above. It is not only the answers in table 1A which show that top managers prioritise employee knowledge of the company's vision and mission. In fact, some companies made their mission and vision statements visible by writing them on Christmas decorations, posters, brochures and mouse pads. However, when asked 'if the vision will guide their subordinates to say 'no' to some business opportunities', only 59% rated this 4 or above on the scale. Yet,

[10] The Likert scale in the survey is organised as follows: 1: Not at all, 2: To a very low extent, 3: To a lower than medium extent, 4: Medium extent, 5: More than medium extent 6: To a high extent, and 7: To a very high extent. If not otherwise mentioned in this paper, this will be the scale used when referring to survey responses.

the distribution for the two questions is different. The responses to the first question centred around 4 to 6 on the scale, while responses to the second question were distributed almost equally along the scale, with 10 to 17% for each point (SD 1.95). So even if the mission and vision seem to be important for top managers, at least some claim that it is not concise enough to guide subordinate behaviour.

Table 1A: Use of vision, mission and other value statements as MCS

Please indicate to what extent: (1: Not at all, 7: Very high extent)	N	MIN	MAX	MEAN	SD
1Aa. do you count on value and mission statements guiding actions of your subordinates?	120	1	7	4.69	1.61
1Ab is the vision statement so concise that your subordinates remember it at all times?	120	1	7	4.56	1.64
1Ac. do you count on the vision statement to guide the actions of your subordinates?	120	1	7	4.44	1.61
1Ad. is the vision statement so specific that it guides your subordinates to say 'no' to some business opportunities?	120	1	7	3.97	1.95

Question 2 - Key success factors

Question 2 identifies "key factors that are believed to be central to the organisation's overall future success" and how such factors "are brought to the attention of managers and employees" (Ferreira and Otley 2009, p. 267).

To identify the key success criteria, respondents were asked to indicate the extent to which they agreed with each of a series of statements regarding ways of gaining success and competing. The statement 'our success is driven by thorough customer and industry understanding' obtained the highest score with a mean of

6.2 and an SD of 0.9. In relation to the high score, respondents added “customer and industry understanding is critical” (Company C)[11], “the company's success definitely depends on customer and industry understanding” (Company K) and “to provide ’state of the art’ we need to know what drives our customers” (Company G). Table 2A shows that retention and satisfying customer needs were the companies’ highest priority. It may be somewhat surprising that in general neither sales price nor product novelty seems to be regarded as the most important factors for company success.

In relation to how the KSF are brought to the employee’s attention, the survey asked ‘if values, purpose and direction are codified in formal documents’ (Table 2B). On the Likert scale, 66.7 % answered 6 or 7 to the extent that values and purpose were codified in formal documents (M = 5.5, SD 1.7), and 62% answered 6 or 7 to the extent that direction was codified (M 5.4, SD 1.6). These results show that most large companies codify vision, mission and KSF in formal documents. As for the mission and vision, KSFs were also visually highlighted on different platforms. One of the respondents had hung posters with pictures of customers and statements of KSFs to roll out a new strategy called ‘customers’ preferred choice’. This respondent said,

“Our goal was to put the customer, not our product at the centre, to ensure that all our employees understood the change that had taken place in the market. The trend in the world has changed to 'good enough', so the Chinese are competing more and more fiercely here. People will not pay extra because you put a 'shiny bell’ or something similar on your product. 'Good enough' is the starting point, and then you must try to differentiate from there” (Company B).

[11] Appendix B shows a list of the respondents that are quoted in this paper. To ensure the participants’ anonymity, the companies are listed by a letter rather than by their names.

Table 2A: Reasons for company success

Please indicate to what extent you agree with the following: (1: Not at all, 7: Very high extent)	N	MIN	MAX	MEAN	SD
2Aa. Our success is driven by thorough customer and industry understanding	120	2	7	6.23	0.92
2Ab. Our SBU succeeds because we deepen and create long-lasting customer relationships	120	3	7	6.03	1.08
2Ac. Our SBU succeeds because we find creative solutions to satisfy our customers' needs	120	2	7	5.65	0.95
2Ad. We compete by offering solutions that lower customers' costs	120	1	7	5.32	1.51
2Ae. Our SBU succeeds because we fine-tune our offerings in order to keep our current customers satisfied	120	2	7	5.18	1.26
2Af. Our SBU succeeds because we are able to create innovative products/services	120	1	7	4.88	1.65
2Ag. Our SBU succeeds because we increase the level of automation in our operations	120	1	7	4.83	1.58
2Ah. Our success depends on market share of our product/service	120	1	7	4.63	1.84
2Ai. Our success depends on customer share (share of customer wallet)	120	1	7	4.60	1.86
2Aj. Our success is driven by product innovation	120	1	7	4.60	1.88
2Ak. Our SBU succeeds because we find new customer segments and needs	120	1	7	4.44	1.42
2Al. We compete on rapid product/service introductions	120	1	7	4.28	1.81
2Am. Our success is driven by open collaboration with various organisations	120	1	7	3.93	1.85
2An. Our SBU succeeds because we are able to explore and develop new technologies	120	1	7	3.76	1.94
2Ao. Our success depends on the number of complementary product/service providers	120	1	7	3.58	1.88
2Ap. We compete on lowest price	120	1	7	3.44	1.86
2Aq. Our success depends on product/ service novelty	120	1	7	3.41	1.76

Table 2B: Documentation of value statements

Please indicate to what extent: (1: Not at all, 7: Very high extent)	N	MIN	MAX	MEAN	SD
2Ba. the values and purpose of the SBU are codified in formal documents? (e.g. value statements, credos, statements of purpose)	120	1	7	5.51	1.68
2Bb. the direction of the SBU is codified in formal documents? (e.g. vision statement, statement of strategic intent)	120	1	7	5.38	1.58
2Bc. formal statements of values are used to motivate subordinates in sharing responsibility?	120	1	7	4.80	1.81
2Bd. formal statements of values are used to commit subordinates to the long-term objectives of SBU?	120	1	7	4.15	1.87

Question 3 - Organisation structure / Administrative controls

Organisational structure, governance structure, and policies and procedures are bundled into one group of controls, named 'organisation structure' in Ferreira and Otley's (2009) framework. These administrative controls define the responsibility and accountability of a company's employees. This group of administrative controls guide and direct employee behaviour in relation to roles, policies and structures in an organisation (Malmi and Brown 2008).

Top mnagers were asked to what extent they use policies and other guidelines to guide and direct subordinates. The results (3Ab, Table 3A) show that 75% of the respondents answered at least 4 or more, which shows that policies and procedures are important MCS in large companies. While several of the companies participating in this survey are listed and/or subject to strict national and international regulations, part of their policies and rules are required by outside stakeholders. Some of the companies even have a mandatory e-learning

programme for their procedures that all staff must follow for their respective fields (e.g. company A and L). One manager made it very clear that "if employees violate [company rules], this will have consequences for them. They will get a written warning" (Company A). Only two measures were used to a lesser extent 'written guide that stipulates specific areas for, or limits to, opportunity search and experimentation' and 'communicate in writing the risks and activities to be avoided by subordinates'. Only high-technology companies, companies working with high-risk markets, and a few others found these very important.

Table 3A: Policies and guidelines on subordinate behaviour

In guiding and directing subordinate behaviour, to what extent does SBU top management: (1: Not at all, 7: Very high extent)	N	MIN	MAX	MEAN	SD
3Aa. make the sanctions of unethical business conduct known to subordinates (e.g. by written statements)?	120	1	7	5.17	1.83
3Ab. employ written authorisation levels and decision rules?	120	1	7	4.98	1.76
3Ac. specify minimum requirements (e.g. ROI, implementation times) for business opportunities?	120	1	7	4.88	1.72
3Ac. apply sanctions to subordinates who engage in risks outside organisational policy, irrespective of the outcome?	120	1	7	4.87	2.10
3Ad. review plans before action?	120	1	7	4.78	1.33
3Ae. use company-wide codes of conduct or similar statements?	120	1	7	4.78	1.90
3Af. actively communicate in writing the risks and activities to be avoided by subordinates?	120	1	7	4.37	1.86
3Ag. employ written guidelines that stipulate specific areas for, or limits to, opportunity search and experimentation?	120	1	7	3.73	2.20

Question 4 - Strategies and plans

According to Porter (1996), the purpose of a strategy is to describe how to achieve the mission and vision through establishing competitive advantage. An effective strategy allows managers to use their company's capabilities and resources to exploit opportunities and limit threats from the external environment (Simons 1995). Strategies and plans are ex-ante forms of controls (Flamholtz et. al 1985), where objectives are set to direct and guide employee behaviour. Planning provides standards, sets goals and defines a clear level of expected effort and behaviour. Finally, planning aids consistency by aligning goals across the functional areas of a company, by controlling the activities of groups and individuals (Malmi and Brown 2008).

Figure 2 shows that 107 of the 120 companies in the survey work with a three- to five-year strategic planning period. Looking into the data, the few companies that have a shorter strategic planning period are companies that were strongly affected by the financial crisis that emerged in late 2008. The four companies that have the longest strategic planning period are those that are very dependent on research to ensure future income.

Creating valuable strategies has a high priority in large Danish companies (Table 4A). This is underpinned by the statement of one CFO, who added "Definitely, specifying objectives, that is the purpose of strategy", and "ways of creating competitive advantage are the reason for developing a strategy" and "programmes and resources are absolutely high too, that is what we need to achieve our objectives. We actually spend much time on strategic planning" (Company G).

Figure 2: Strategic planning period

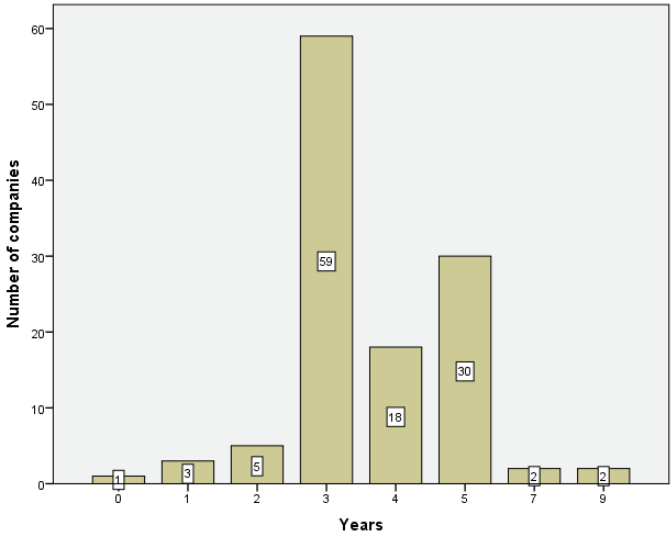


Table 4A: Strategic planning

Please indicate how much weight your SBU's strategic planning puts on specifying… (1: Not at all, 7: Very significantly)	N	MIN	MAX	MEAN	SD
4Aa. Objectives	120	1	7	5.59	1.35
4Ab. ways of creating competitive advantage	120	1	7	5.18	1.28
4Ac. programs and resources	120	1	7	4.59	1.49

The formation of strategic ends (goals) and means is mainly done by top management (ends = 60%, means = 50.8%), or just by including one level of managers below top management (ends = 28,4%, means = 35.8%). Translation of strategy into short-term action plans also appears to be a predominantly top-down-driven process, as only 10% of top managers responded that the process was done

by applying the bottom-up method (Table 4B). Some of the top managers argued that the need for top-down strategic planning was a result of the increasing amount of uncontrollable factors occurring in the external environment since the start of the global financial crisis in late 2008. For example, a CEO explained "Our remaining challenge is the low margin we have, and the changing market, so we need to be very quick to make changes - resource adjustments, structural adjustment, especially when the market declines. The market fell by 20% from 2008 to 2010. It was close monitoring that ensured that we got through the crisis. It has been a tough process, and we have made many cuts, including in the central staff, where one third are left. We have also achieved some synergies, we have implemented some systems. So, we have made savings, by improved processes and decrease in volume" (Company E). Hence, these changes call for continuous top-management attention to ensure that the companies are flexible enough to follow market changes over time. Consequently, MCS strategic planning elements seem to be top-down-driven today.

Short-term planning includes budgets and performance measurement systems. The two systems often operate together and are applied to the same large extent. Data show that budgets and performance measurement systems are primarily used more for diagnostic purposes than for interactive[12] purposes (Table 4C). This is a change compared to results found in a former survey study by Nilsson and Kald (2002), who find that managers in large Danish companies use MCS as much interactively as diagnostically. Budgeting has a long history in Denmark both in academia and in practice (Israelsen et al, 1996; Näsi and Rohde, 2007) and is still very popular. In relation to budgeting, interview respondents stated "The budget is the nerve of

[12] Interactive controls are controls that can be "used to stimulate organisational learning and the emergence of new ideas and strategies" (Simons, 1995 p. 7).

our company" (Company I), "The management team use the budgets to ensure that we are going in the right direction, and we will immediately adjust if something indicates that we are moving in the wrong direction"(Company D). Another CFO added, "Budgeting and performance measurement are high-level, we are very good at operational control and at getting things done" (Company F).

Table 4B: How strategic ends and means are translated into short-term action plans

Please indicate how strategic ends and means are translated into **short-term action plans** in your SBU.	Number of companies	Percentage	Cumulative Percentage
1. Action plans are decided at the top and given to lower level to be implemented	23	19.2	19.2
2. Important areas of action are defined at the top and subordinates are required to develop specific action plans	56	46.7	65.8
3. Action plans arise in intensive negotiations within planning guidelines given from the top	29	24.2	90
4. Action plans are based on subordinates' interpretations of how to effect upper level strategic objectives	4	3.3	93.3
5. Subordinates autonomously determine actions within strategic themes across the business	8	6.7	100
Total	120	100	

Table 4C: Diagnostic and interactive use of budgets and performance measurement systems

Use of budgetary systems (1: Not at all, 7: Very large extent)	N	MIN	MAX	MEAN	SD
4Ca. Diagnostic	120	1	7	5.58	1.38
4Cb. Interactive	120	1	7	4.58	1.40
Use of Performance measurement systems (1: Not at all, 7: Very large extent)	**N**	**MIN**	**MAX**	**MEAN**	**SD**
4Cc. Diagnostic	120	1	7	5.45	1.48
4Cd. Interactive	120	1	7	4.46	1.44

Question 5 - Key performance measures

Key performance measures (KPMs) are quantifiable financial and non-financial values that companies use to account for and compare performance success in terms of meeting objectives, key success factors, strategy and plans (Ferreira and Otley, 2009). KPMs have to be company specific or even department specific, depending on priorities and performance objectives. By aligning the KPMs with the strategic performance goals, a very important link between the operations and strategy and goals is established (Chenhall, 2003, 2005). By routinely monitoring their KPMs, companies gain valuable insight into the performance of their business and, even more importantly, gain the strategic awareness required to make the right decision at the right time.

In the survey, respondents were asked 'to indicate to what extent they base subordinates' performance evaluation on different performance measures' (Table 5A). The results show that companies focus more on shareholder value than on employee value, use more financial than non-financial key performance measures, and value individual actions and activities. The performance measures are often aggregated and summarised (e.g. EBIT, profit, revenue, market share, etc.), and less detailed (e.g. budget line, volume, time, quality, etc.).

The survey also included questions concerning the extent to which top management account for and compare subordinate performance through 'internal' or 'external' benchmarks, 'past performance' or 'absolute pre-set numbers' (Table 5B). Ninety-two out of the 120 respondents answered with a score of 6 or 7 in relation to using 'absolute pre-set numbers'. In comparison, they reported using 'internal' and 'external' benchmarks to a much lower extent (internal M= 3.8, external M=3.1). However, 'external' benchmarks are used less because detailed

information from competitors is often difficult to access, and companies have sufficient easily accessible, high-quality internal information to be able to perform internal benchmarking (e.g. company B and J). In relation to the question of 'to what extent the top managers evaluate subordinates' performance in relation to an external benchmark', only 12 out of 120 weighted this at 6 or 7. When it comes to 'past performance' dynamics in the market in which each company operates, this has a strong influence on the relevance of looking at previous results. However, in all the companies, knowledge about 'past performance' is relevant information that is used in planning and evaluating subordinates' performance.

Table 5A: Top management bases subordinates' performance evaluation on

Please indicate to what extent SBU top management bases subordinates' performance evaluation on: (1: Not at all, 7: Very high extent)	N	MIN	MAX	MEAN	SD
5Aa. Financial measures	120	2	7	5.89	1.21
5Ab. Non-financial measures	120	2	7	5.14	1.23
5Ac. Aggregate, summarized measures (e.g. EBIT, Profit, ROI, ROCE, market share, brand value, brand image, total customer satisfaction, etc.)	120	1	7	5.14	1.66
5Ad. Individual effort	120	1	7	5.09	1.32
5Ae. Actions and activities undertaken	120	1	7	5.08	1.27
5Af. Detailed measures (e.g. budget line, input volume, time, quality etc.)	120	1	7	5.08	1.46
5Ag. Achievements in leadership behaviour	120	1	7	4.54	1.64

Table 5B: Top management evaluates subordinates' performance in relation to

Please indicate to what extent SBU top management evaluates subordinates' performance in relation to: (1: Not at all, 7: Very high extent)	N	MIN	MAX	MEAN	SD
5Ba. Absolute, pre-set numbers	120	1	7	5.89	1.36
5Bb. Past performance	120	1	7	4.56	1.65
5Bc. Internal benchmarks	120	1	7	3.84	2.01
5Bd. External benchmarks	120	1	7	3.12	1.73

Question 6 – Target setting

Pre-set targets are MCS figures that motivate employees to perform in specific areas by setting clear goals that indicate performance targets for individual or group success. To encourage employees to perform their best in the interest of the company, targets must be specific, clear, measureable, achievable, timely and challenging while still being realistic. The targets are linked to evaluation of subordinates and often also to financial rewards (Merchant and Van der Stede 2012).

All companies in the survey use target-setting in guiding and directing subordinate behaviour. As in the case of planning, target-setting is mainly a top-management-driven process, where the 'top management sets targets and passes them on to subordinates' or 'top management sets targets, but revises them in negotiation with subordinates' (Table 6A). The targets, action plans and resource commitments were closely followed and regularly updated (Table 6B). Thirty-nine per cent of the companies answered that they update their targets annually. These

companies are characterised by working in less dynamic markets or having a longer processing time and/or product life cycles (e.g. construction and pharmaceutical companies). Another 41% of the companies update their targets monthly or quarterly. These companies work in more dynamic external environments and have the ability to make rapid changes, which may give them opportunities to gain some competitive advantage, e.g. by being first-movers in products or markets. All the companies update their action plans and resource commitments more often or with the same frequency as they update their targets, as these are variables which it is possible to adjust in relation to demand from and needs of the external environment in which the companies operate (Table 6B).

Table 6A: How short-term targets are set

Please indicate how short-term targets are set in your SBU	Number of companies ENDS	Percent ENDS	Number of companies MEANS	Percent MEANS
0. N/A	0	0	1	0.8
1. Top management sets targets and passes them on to subordinates	27	22.5	14	11.7
2. Top management sets targets, but revises them in negotiation with subordinates	69	57.5	57	47.5
3. Target-setting is a quite long, iterative negotiation process between organisational levels	12	10.0	27	22.5
4. Subordinates set targets autonomously, but they are subject to top-management acceptance	11	9.2	20	16.7
5. Subordinates set targets autonomously with little, if any, management involvement	1	0.8	1	0.8
Total	120	100.0	120	100

Table 6B: How often targets, action plans and resource are updated

Please indicate how often targets, action plans and resource commitments are updated in your SBU	Number of companies TARGETS	Number of companies ACTION PLANS	Number of companies RESOURCE
0. N/A	0	1	1
1. Almost continuously (i.e. on a weekly basis)	6	8	29
2. Monthly	14	34	35
3. Bimonthly	0	1	1
4. Quarterly	35	44	38
5. Three times a year	4	8	9
6. Biannually	14	12	4
7. Annually	47	12	3
Total	120	120	120

Question 7 - Performance evaluation

In this question, Ferreira and Otley (2009) concentrate on what processes managers use to evaluate subordinates. Over the last two decades, focus on measuring the performance of individuals and companies has increased (Espeland and Sauder, 2007). The purpose of using performance evaluation has focused strongly on 'providing feedback for learning and continuous improvement' (M=5.6, SD=1.0) and 'directing subordinates' attention towards important issues' (M=5.6, SD=1.1), and to a lesser extent on 'determining subordinate compensation' (M=4.4, SD=1.8). The evaluation of business performance is more intensive than is the evaluation of leadership performance (Table 5A). The same pattern appears in the frequency of formalised performance evaluation, where 48.3% evaluated business monthly, and 58.3% evaluated leadership performance once a year.

Table 7A: Purposes of using performance evaluation

Please indicate how important the following purposes of performance evaluation are in your SBU: (1: Not at all, 7: Very high extent)	N	MIN	MAX	MEAN	SD
7Aa. Provide feedback for learning and continuous improvement	120	2	7	5.63	1.02
7Ab. Direct subordinates' attention to important issues	120	1	7	5.56	1.08
7Ac. Determine subordinate compensation	120	1	7	4.37	1.78

Table 7B: How often formalised performance evaluations are conducted

Please indicate how often formalised performance evaluations are conducted in your SBU	Number of companies LEADERSHIP	Per cent LEADERSHIP	Number of companies BUSINESS	Per cent BUSINESS
0. Not applicable (N/A)	2	1.7	0	0
1. Monthly	9	7.5	58	48.3
2. Quarterly	8	6.7	21	17.5
3. Three times a year	1	0.8	5	4.2
4. Twice a year	27	22.5	9	7.5
5. Once a year	70	58.3	27	22.5
6. Less frequently than once a year	3	2.5	0	0
Total	120	100	120	100

Question 8 - Reward systems

Reward systems include both financial (e.g. bonus, salary increases, share-based rewards, stock options) and non-financial (promotions, extra holidays, recognition, education) rewards. There is apparently a link between rewards, employee behaviour and organisational performance, but the complexity of cause-and-effect linkages is very high (Hopwood, 1972; Ferreira and Otley, 2009).

All the companies use non-financial rewards to motivate and guide their subordinates to reach company, department and individual goals. Ninety-five of the companies pay bonuses to their subordinates at level 3 in their organisational hierarchy. In addition to a bonus, a small number of the companies also award share-based rewards and stock options. The majority of the 95 companies evaluate performance 'on the basis of quantitative metrics' (M=5.8, SD=1.5) and 'use predetermined criteria in evaluation and rewards' (M=6.1, SD=1.5). However, the pre-set goals for bonus payment can be changed based on actual circumstances, but mainly in cases of uncontrollable factors where subordinates cannot be held accountable for changes (e.g. major changes in legislation or plans in regards to market changes or natural disasters) (e.g. Companies B and O). Bonus contracts are based on the companies' or SBU's goals and are broken down into group or individual goals. Profit-sharing is not very common in Danish companies, and the few companies that use it do so for groups where cooperation is seen as key to achieving a performance goal (e.g. company D). The majority of 25 companies that do not award bonuses are represented by approximately a third of the responding companies in each of the three groups of ownership: members of cooperative society, families and funds.

The managers see financial rewards as being a more effective MCS tool than non-financial rewards (Table 8C). One explanation is that some benefits that were previously regarded as non-financial rewards (e.g. education and training) are by many companies no longer seen as rewards, but rather as a hygiene factor. Consequently, the use and effect of non-financial rewards have decreased.

Table 8A: Ways of evaluating and compensating subordinates

Please indicate to what extent the following statements describe the way of evaluating and compensating subordinates' performance in your SBU (1: Not at all, 7: Very high extent)	N	MIN	MAX	MEAN	SD
8Aa. We use predetermined criteria in evaluation and rewarding	95	1	7	6.11	1.54
8Ab. We evaluate performance on the basis of quantitative metrics	95	1	7	5.84	1.52
8Ac. We adjust the amount of bonus based on actual circumstances	95	1	7	3.44	2.17
8Ad. We determine performance measure weights as the evaluation takes place	95	1	7	1.61	1.54

Table 8B: Reward systems

Please indicate to what extent… (1: Not at all, 7: Very high extent)	N	MIN	MAX	MEAN	SD
8Ba. Rewards are financial (bonuses, share-based rewards)	95	1	7	6.66	0.93
8Bb. Financial rewards increase as subordinate's performance exceeds targets	95	1	7	5.14	1. 98
8Bc.Performance-pay contracts are customised for each subordinate	95	1	7	4.05	2.37
8Bd. Rewards are non-financial (e.g. recognition, promotion, training)	120	1	7	3.01	1.89
8Be. Financial rewards are shared evenly between subordinates (e.g. profit-sharing)	95	1	7	2.07	1.91

Table 8C: Purposes of reward systems

8C. How important are the following purposes of financial and non-financial rewards in your SBU (1: Not at all, 7: Very high extent)	N	MIN	MAX	MEAN	SD
8Ca. Motivating subordinates (financial)	95	1	7	5.67	1.45
8Cb. Directing subordinates' attention (financial)	95	1	7	5.46	1.37
8Cc. Committing subordinates (financial)	95	1	7	4.12	2.03
8Cd. Motivating subordinates (non-financial)	120	1	7	4.05	2,39
8Ce. Directing subordinates' attention (non-financial)	120	1	7	3.54	2,21
8Cf. Committing subordinates (non-financial)	120	1	7	2.87	1.98

Question 9 - Information flows, systems and networks

The quality of shared information in the MCS package is very important. Access to information should be effective and efficient and should comply with legislation and the companies' rules, values and procedures that ensure data and information confidentiality and integrity. Data and information must also be readily available and reliable. The purpose of the information flows, systems and networks in a company is to link all agencies together into one package (Ferreira and Otley 2009). Feedback information is used for corrections, learning and adapting, while feed-forward information is used for learning, generating new ideas and constructing new strategies and plans. Well-run information flows, systems and networks can give an advantage, which is essential to obtain high efficiency in the MCS Package (Otley 1999).

Table 9A: Access to relevant information

Please indicate to what extent subordinates… (1: Not at all, 7: Very high extent)	N	MIN	MAX	MEAN	SD
9Aa. receive relevant information through management information systems	120	2	7	5.58	1.07
9Ab. receive relevant information through informal discussions	120	2	7	5.18	1.22
9Ac. have free access to broad-scope information regarding the performance of business units and whole company	120	1	7	4.78	1.73

The results indicate that on higher management levels, information is to a large extent shared via management information systems (M=5.6, SD=1.1) as well as through informal discussions (M=5.2, SD= 1.2). A substantial number of the companies appear to have 'free access to broad-scope information regarding the performance of business units', but not always to information about the company at large. An example of this is given in the following quotation from company A: "at this [management] level there is free access with respect to our sales reports and results, which are freely available, but they do not have free access to all information regarding our product development". This restriction in information-sharing is often used to protect strategic company information or to avoid insider trading on stock markets. Hence, information that is needed to achieve higher employee performance is available. The top managers stressed that the benefits of using information systems included: quick and easy accessibility, only one entry of each data point, the same information for all, saving time, and relevance of the data served in an effective way, e.g. by means of data mining. In addition to the formal management information systems, informal discussions among management groups and specialists provide forums where knowledge and information can be shared.

Question 10 - Performance management systems use

The use of the controls and information that the MCS package provides is crucial for organisational performance (Ferreira and Otley 2009). By balancing the components of an MCS package based on the company's needs, a company can both achieve control and higher effectiveness, and encourage the creation of new ideas and opportunities for the future. A study based on data from more than one hundred companies (Simons 1995) shows that "the most innovative companies used their profit planning and control systems more intensively than did their less innovative counterparts" (Simons 1995, p ix). To make sure that all employees are aware of what the company's best interest is, the management needs to present clear MCS to guide and direct subordinates to strive for the goals set (Malmi and Brown 2008, Malmi and Sandelin 2010, Merchant and Van der Stede 2012). By creating procedures, norms, rules and forms, organisations can store and share knowledge from and between individuals and the organisation (March 1991). The formalisation of knowledge transforms it into collective knowledge for the benefit of all employees in the organisation (March 1991).

The top managers were also asked to what extent the entire MCS package helps them guide and direct subordinates. The respondents used particularly facts, analyses, goals and information (10Aa, 10Ab and 10Ac) in guiding and directing subordinates (M=5.6 – 5.7). On the Likert scale, 112 out of the 120 respondents weighted their use of the MCS package 'to hold subordinates accountable for their performance' (10Ad) at 4 or above. However, when they were asked to what extent the MCS package was used to 'reward or punish subordinates based on rigorous measurement of business performance', only 96 respondents of the 120 weighted their use of the MCS package at 4 or above (Table 10A). The data also show that the respondents weighted their use of MCS packages for both

controlling and enabling (Simons 1995, Mundy 2010) at above average on the Likert scale. However, they used the entire MCS package less to 'encourage subordinates to be creative' than to control them (Table 4C).

Table 10A: Uses of MCS package

Please indicate to what extent you agree with the statement. The entire package of management control systems helps SBU top management to:. (1: Not at all, 7: Very high extent)	N	MIN	MAX	MEAN	SD
10Aa. make subordinates base their decisions on facts and analysis, not politics	120	1	7	5.67	1.16
10Ab. set challenging/aggressive goals for subordinates	120	1	7	5.57	1.03
10Ac. give subordinates ready access to information that they need	120	2	7	5.57	1.18
10Ad. hold subordinates accountable for their performance	120	2	7	5.49	1.12
10Ae. give subordinates sufficient autonomy to do their jobs well	120	2	7	5.45	0.96
10Af. push decisions down to the lowest appropriate level	120	1	7	5.08	1.37
10Ag. reward or punish subordinates based on rigorous measurement of business performance	120	1	7	4.85	1.66
10Ah. issue creative challenges to subordinates rather than define narrow tasks	120	1	7	4.81	1.23

Question 11 - Performance management systems change

The need for changes to the MCS package may originate from different stakeholders, e.g. authorities, customers, competitors, employees, the board of directors and owners. A company can be forced to change its priorities from the outside, or it can choose to make changes of its own accord (Tessier and Otley, 2012). When the external environment in which a company operates changes, the company often has to adapt to maintain its position in the market. The same goes for its MCS package, which has to keep up with the changes to ensure the package provides the best support for the company in reaching its goals (Chenhall 2006).

The questionnaire responses show that the participating companies have incorporated a degree of flexibility into their MCS packages that 'allows them to respond quickly to changes in their markets' (M=5.5, SD= 1.1). Changes to the MCS package forced by market changes or shifts in business priorities evolve more rapidly than any minor internal shifts required to 'challenge outmoded traditions/practices/sacred cows'. This is exemplified by a CFO response, "I would have answered differently if we hadn't been through 2008 [the financial crisis]. We are very quick to respond to the outside world. 2008 was not so bad. What we went through in Q4 2008 and 2009 has contributed to, in fact it is theoretically interesting also, stress-testing in reality. It was damned healthy when you look back. Every idiot can sail downwind, but now that you had both a little tailwind, a little headwind and a little crosswind etc., you really came out to see how you and your organisation reacted and how the systems worked, it was a stress test on all of that. It is not surprising that there was a high turnover in management afterwards, and now the time for board members has arrived (11Aa and 11Ab)" (CFO company B).

Table 11A: MCS changes and adaptability

Please indicate to what extent you agree with the following statements. The SBU's entire package of management control systems... (1: Not at all, 7: Very high extent)	N	MIN	MAX	MEAN	SD
11Aa is flexible enough to allow us to respond quickly to changes in our markets	120	2	7	5.53	1.06
11Ab. evolves rapidly in response to shifts in our business priorities	120	1	7	4.91	1.37
11Ac. encourages people to challenge outdated traditions/practices/sacred cows	120	1	7	4.51	1.52

To test how much and how often the companies actually change their MSC package, the companies were asked if their MCS package 'has gone through minor, major or no changes over the past three years'. Only eight companies had had no changes. Fifty-two of the 120 companies have had 'minor changes in their MCS package over the past three years'. Some of these latter companies had a very high flexibility in their MCS package, which allowed them to make small adjustments on an ongoing basis. Others operated in more stable markets with products that were less affected by the financial crisis (e.g. the medical sector) and/or had products with a very high complexity and/or longer product life cycles, which made it more difficult for customers to switch suppliers.

Half of the respondents have made major changes to their MCS package. Out of these 60 companies, 42 had made changes to their 'reporting relationships and management teams'. The respondents explained that the financial crisis which started in late 2008 had caused instability in their external environment, due not only to drops in revenue, but also to pressure from the financial markets, governments, competitors, and market newcomers that expanded their product

portfolio to increase their revenue. This instability called for continuous attention from top management and willingness to act quickly in order to avoid unnecessary losses and take advantage of the opportunities created by the instability.

Table 11B: Changes in MCS over the past three years

Has the management control system in your SBU gone through minor, major or no changes over the past three years?	No changes	Minor	Major	N
Number of companies	8	52	60	120

If your SBU has had major changes, please specify in which area(s) of the management control system	Not changed or minor changes	Change	N
11Ba Strategic planning	26	34	60
11Bb Short-term planning	42	38	60
11Bc Performance measurement	23	37	60
11Bd Performance evaluation	34	26	60
11Be Rewards and incentive systems	29	31	60
11Bf Rules, procedures and policies	37	23	60
11Bg Reporting relationships and management teams	18	42	60
11Bh Cultural control (values, vision, personal goals)	41	19	60

Question 12 - Strength and coherence

The last question in Ferreira and Otley's (2009) framework focuses on the links, dependency and influence between the MCS package components that combine all the MCS into one package. "Like any other system, [an MCS] is greater than the sum of its parts and there is a need for alignment and coordination between the

different components for the whole to deliver efficient and effective outcomes. Although the individual components of the [MCS] may be apparently well-designed, evidence suggests that when they do not fit well together (either in design or use) control failures can occur" (Ferreira and Otley 2009, p. 275).

Table 12A: Coherence and strength in the MCS package

Please indicate to what extent you agree with the following statements. The SBU's entire package of management control systems... (1: Not at all, 7: Very high extent)	N	MIN	MAX	MEAN	SD
12Aa. works coherently to support the overall objectives of this organisation	120	1	7	5.63	1.07
12Ab. causes us to waste resources on unproductive activities	120	1	6	2.56	1.20
12Ac. gives people conflicting objectives so they end up working at cross-purposes	120	1	6	2.08	1.06

Eighty-eight per cent of the respondents gave a score of 5 or above to the statement 'the entire package of MCS works coherently to support the overall objectives of this organisation' (M=5.6, SD= 1.1). Strength and coherence are also supported by the low score given to the question about the extent to which the MCS package 'causes waste of resources on unproductive activities' (M=2.6, SD=1.2). Yet one CEO added, "the minus of having the high transparency in our figures - it may be that you spend time looking at figures, just because it's so exciting, so it's kind of a sport, but you do not act on it - you cannot do anything about it every day, so you are really just wasting time staring at it, but beyond that I would not say that there is anything that inhibits us" (Company N). Additionally, 94 responded 1 or 2 (M=2.1, SD=1.1) to the question about whether their MCS

package ‘gives employees conflicting objectives so they end up working at cross-purposes’ (Table 12A). The responses shown above in ‘question 10’ ‘Performance management systems – use’ also confirm and support the fact that the companies have designed strong and coherent MCS packages, e.g. by using the MCS package to share with subordinates the facts, information and goals that they need to fulfil their job, and directly link this to employee performance (Table 10A). Another example from ‘question 4’ is the balance between diagnostic and interactive use of the MCS in the package (Table 4C). Balancing the design and use of MCS contributes to a stronger and more coherent MCS package, which according to Simons (1995) will lead to higher organisational performance.

13. Contextual factors

Contextual factors are not included in Ferreira and Otley’s MCS framework. However, a study of connections between the core MCS package components (level one in Ferreira and Otley’s framework) and contextual factors identifies combinations that enhance organisational performance (Chenhall 2006). However, the complexity of multiple variables of context and MCS makes it very difficult to predict an ideal MCS package that would lead to an optimal fit to all companies or even just company groups. Nevertheless, existing findings from contingency studies, including variables such as environmental uncertainty, strategy, technology, organisational structure and size, indicate that some MCS fit better in some contexts than others (Chenhall 2003, 2006). Therefore, when studying the design and use of MCS as a package, we must identify which contextual factors the respondents find important in their selection of MCS components, as controls

cannot be fully understood in isolation from the context in which they evolve (Otley and Berry 1994).

To identify the degree of influence exerted by the companies' external environment on the design and use of MCS, respondents were asked to what extent different stakeholders interfere with their companies' business (Tables 13A and 13B). Competition is the factor that most strongly affected the companies. The answers varied for different markets. However, globalisation has raised the degree of competition in almost all markets, "due to imitation and substitution of products" (Company A); consequently the response to the question 'how intense is the competition against your main products/services?' was weighted as high (M= 5.7, SD= 1.3). When examining the number of changes and the degree of predictability of the changes in the companies' operating environment and competitiveness, most were caused by the companies' customers. However, the respondents weighted the degree of predictability of the changes caused by customers at just above average (M=4.4). The number of changes in 'competitors' was weighted by respondents to be below average (M3.3, SD=1.6). This result was affected by company size, where many companies only considered a few other large companies as their real competitors. And as they followed these companies closely, the changes were not that unpredictable (M=4.4, SD=1.6). In areas such as suppliers and technology, where the companies have some influence, the respondents reported less changes and higher degree of predictability.

Table 13A: Complexity and hostility of the external environment

The following questions relate to the complexity and hostility of your external environment 13Aa (1: Not intense at all, 7: Very high intensity) 13Ab – 13Ac (1: Very similar, 7: Very diverse) 13Ad (1: Not difficult at all, 7: Very high difficulty)	N	MIN	MAX	MEAN	SD
13Aa. How intense is the competition against your main products/services?	120	2	7	5.72	1.26
13Ab. How diverse are the product/service requirements of your customers?	120	1	7	3.63	1.88
13Ac. How diverse are the strategies and tactics of your key competitors?	120	0	6	3.48	1.47
13Ad. How difficult is it to obtain the necessary inputs for your business?	120	1	7	3.02	1.38

Table 13B: Competitive and operational changes

This question is about the competitive and operating environment of your SBU. Over the past three years: (1: Very few changes, 7: Very many changes) (1: Very unpredictable, 7: Very predictable)	N	MIN	MAX	MEAN Number of changes	SD	MEAN Predictability	SD
13Ba. *Customers* (e.g. levels of demand, customer requirements)	120	1	7	4.13	1.72	4.41	1.73
13Bb. *Economic* (e.g. interest and exchange rates)	120	1	7	3.96	1.93	3.48	1.77
13Bc. *Regulatory* (e.g. new initiatives for laws, regulations)	120	0	7	3.81	1.80	4.31	1.65
13Bd. *Competitors* (e.g. competitors entering, leaving, tactics/strategies)	120	1	7	3.33	1.59	4.43	1.54
13Be. *Technological* (e.g. R&D advances, process innovations)	120	0	7	3.00	1.69	4.77	1.72
13Bf. *Suppliers* (e.g. markets for key inputs, quality of resources)	120	1	7	2.97	1.41	5.12	1.43

14. Organisational culture

As is the case with other contextual factors, organisational culture is not included in Ferreira and Otley's framework. However, organisational culture is an omnipresent control that affects nearly all aspects of organisational interaction (Henri 2006b). It is therefore an important contingency factor when studying the MCS package from a holistic perspective. The term 'organisational culture' is a broad concept, covering "shared beliefs, values, assumptions and significant meanings [which] are commonly associated with culture" (Henri 2006b, p. 79). Organisational culture includes elements such as material artefacts, patterns of norms for behaviour and activities, and fundamental assumptions which are not always directly known by the employees.

In the survey, one group of questions focused on norms for human resource activities, e.g. whether 'promotions are made from within the organisation' and how 'skills and technical competence' were weighted in relation to 'leadership-based performance' (Table 14A). The answers show that 'skills and technical competence' were the most important factors when new managers were recruited (M=5.5, SD=1.1). However, 'psychological tests and values' were used to a high extent when recruiting for managerial positions, in order to ensure that new managers matched the organisation's values and culture (M=5.2, SD=1.6). A majority of the companies even chose 'promotions made from within the organisation' if this was an option (M=5.1, SD=1.2). In addition to using organisational culture and values when recruiting new managers, the companies used social events, functions, training and programmes to introduce, develop and maintain acceptable behaviours, routines, norms and commitment to the company at a medium to moderate extent. As in the case of results for question 7,

'performance evaluation', leadership-based performance regarding norms and values did not have the highest priority in companies (M=3.7, SD=1.7).

Table 14A: MCS used for adopting norms and values

Please indicate to what extent… (1: Not at all, 7: Very high extent)	N	MIN	MAX	MEAN	SD
14Aa. skills and technical competence are important when recruiting for managerial positions?	120	2	7	5.49	1.08
14Ab. psychological tests and values are important when recruiting for managerial positions?	120	1	7	5.19	1.56
14Ac. promotions are made from within the organisation?	120	1	7	5.13	1.22
14Ad. social events and functions are used to develop and maintain commitment to the SBU?	120	1	7	4.79	1.25
14Ae. training and development processes are used to reinforce SBU objectives, expectations and norms?	120	1	7	4.68	1.39
14Af. mentoring, orientation and induction programmes are used to acclimatise new managers to acceptable behaviours, routines and norms?	120	1	7	4.35	1.67
14Ag. subordinate rotation between various positions is seen as an important precondition for promotion?	120	1	7	3.88	1.52
14Ah. leadership-based performance is connected to significant rewards (e.g. promotions, equity-based rewards)?	120	1	7	3.73	1.70

The survey did not include a sufficient number of questions on 'organisational culture' to give broad and deep knowledge of the respondents' organisational culture; consequently we are only able to consider the above aspect of culture. However, the results for question 1 of the framework showed how much top managers actually use values and purposes (e.g. values statements, credos, statements of purpose) to establish a value base in their companies, and how important they found 'values and organisational culture to be in guiding and

directing subordinates' behaviour' (M=5.7, SD=1.2) (Table 15B). Additionally, at the interviews, the respondents confirmed the high impact of organisational culture and values, e.g. "we talk about a ['company D'] spirit. Those of us who have been here for many years know what we're talking about in this regard. And new staff often refer to this at their first annual employee performance review (Table 15B, question 15Bb)" (Company D). Another respondent said "actually we just made an entire ['Company G'] roll-out of our values. We have come up with our own values, and all the staff in the group were obligated to participate in a value workshop, where two or three hours were spent discussing differences, dilemmas, etc. (Company G).

15. Top managements' ranking of the different elements in the MCS package

Top managers were asked to 'indicate how important different performance areas are to their SBU right now'. The results listed in Table 15A indicate that the companies weighted financial results as very important (M= 6.5, SD=0.7), and that they supported this by focusing on 'customer relations' (M= 6.2; SD =0.9), 'quality' (M= 6; SD=0.9) and 'operational performance' (M=5.8; SD=1). The last four areas in table 15A focus on the external environment: environment performance, community, alliances and lobbying. These four areas are seen as controls that are affected by and more dependent on external stakeholders, and not within the full control of the top managers, hence not a part of the core MCS. However, the results in Table 9A show that the top managers see these MCS as part of their MCS package as well, despite the managers' lower influence on this group of MCS.

Table 15A: Importance of different MCS

Please indicate how important the following performance areas are to your SBU right now: (1: Not at all, 7: Very important)	N	MIN	MAX	MEAN	SD
15Aa. Financial results (e.g. annual earnings, return on assets, cost reduction)	120	4	7	6.508	0.7333
15Ab. Customer relations (e.g. market share, customer satisfaction, customer retention)	120	2	7	6.200	0.8560
15Ac. Quality (e.g. defect rates, quality awards)	120	3	7	6.008	0.8840
15Ad. Operational performance (e.g. productivity, safety, cycle-time)	120	1	7	5.750	1.0146
15Ae. Employee relations (e.g. employee satisfaction, turnover, workforce capabilities)	120	1	7	5.525	1.1224
15Af. Innovation (new product/ service development success, process innovation, business concept innovation)	120	1	7	5.075	1.6201
15Ag. Supplier relations (e.g. on-time delivery, input into product/service design, supplier assistance)	120	1	7	4.942	1.5190
15Ah. Environmental performance (e.g. government citations, environmental compliance or certification)	120	1	7	4.600	1.8805
15Ai. Community (e.g. public image, community involvement)	120	1	7	4.483	1.6035
15Aj. Alliances (e.g. joint marketing or product design, joint ventures, open technology platforms)	120	1	7	3.533	1.8147
15Ak. Lobbying (e.g. local, national, EU authorities)	120	1	7	3.125	1.6631

In each of the questionnaire sections, the respondents were asked how important they found the different MCS components to be in guiding and directing subordinate behaviour in the best interest of the company. Results show that the strongest emphasis was placed on ‘short-term planning’, ‘values and organisational culture’, and ‘performance measurement and evaluation’. Contrary to this, the lowest emphasis was placed on ‘rewards and compensation’ (Table 15B). This indicates that managers are aware of the influence they have on

subordinates' behaviour not only through core financial controls, but also through broader and less measurable controls such as organisational culture. When comparing the data collected in Denmark with survey data collected in Germany (Hanzlick and Brühl 2013), German top managers ranked some factors differently to Danish top managers. While 'short-term planning' was also number one in Germany, 'values and organisational culture' were ranked fourth, and 'strategic planning' least important in guiding and directing subordinates. Looking at the data collected in Norway, the ranking is different compared to the Danish and German data. Norwegian top managers rank 'values and organizational culture' as number one and 'organisational design' as number two, however, like the top managers in Denmark, the Norwegian top managers rank 'rules and procedures' as number seven and 'rewards and compensation' as number eight (Johanson and Madsen, 2013).

Table 15B: Ranking of importance of the use of different MCS

How important is 'X' in guiding and directing subordinate behaviour (1: Not at all, 7: Very high extent)	N	MIN	MAX	MEAN	SD
15Ba. short-term planning	120	3	7	5.87	1.00
15Bb. values and organisational culture	120	2	7	5.72	1.15
15Bc. performance measurement and evaluation	120	2	7	5.63	1.18
15Bd. strategic planning	120	1	7	5.46	1.53
15Be. management processes	120	1	7	5.16	1.36
15Bf. organisation design	120	2	7	5.08	1.22
15Bg. rules and procedures	120	1	7	4.92	1.48
15Bh. rewards and compensation	120	1	7	4.42	2.02

Discussion

To give a picture of how top management in large Danish companies use MCS to guide and control subordinates, a list of the key findings from the responses to Ferreira and Otley's questions is provided below. These findings highlight the most common characteristics in the design and use of MCS in large Danish companies today.

Key findings:

- Success is driven by thorough customer and industry understanding (Question 2).
- Customer relations are the most important success factor (Question 2).
- Values, purpose and direction are to a large extent codified in formal documents (Question 2).
- Strategic periods are normally 3-5 years (Question 4).
- Translation of strategy into short-term action plans (Question 4) and target-setting (Question 6) are mostly top-down driven processes.
- Budget systems and performance measurement systems are closely connected and are used to the same extent (Question 4).
- Financial measures are used to a larger extent than are non-financial measures (Question 5).
- Performance evaluation's most important purpose is to provide feedback for learning and continuous improvement (Question 7).
- Non-financial rewards are not seen as being very effective (Question 8).
- Relevant information is disseminated through formal management information systems (Question 9).

- Danish companies' MCS packages consist of a broad range of MCS. The MCS packages are designed to be strong and coherent, and with a flexibility that allows companies to react rapidly to changes (Question 10, Question 11, Question 12).
- MCS that ensure financial results are weighted as most important.
- The strongest emphasis is placed on short-term planning, and values and organisational culture.

Today top managers in large Danish companies find customer and industry understanding as the most important factors of success. Meeting customers' requirements and needs are more important than the sales price or the novelty of the products. The growing globalisation and the subsequent financial crises have changed the market situation, and large Danish companies have chosen a strategy where customers' needs are in focus in order to keep up with the volatility and decrease in sales in their markets. This is a change compared to a survey study of large companies in the Nordic countries (Sweden, Denmark, Norway and Finland) conducted by Kald and Nilsson in 2000, where the results showed that performance measures that reflect cost effectiveness were the most important. Another change compared to Kald and Nilsson's study (2000) is that they find that "measures, which reflect value for shareholders, [were] among those least interesting to monitor". In comparison, our survey shows that MCS that ensure financial results are weighted as being most important in large Danish companies today.

In a study by Nilsson and Kald in 2002, they found that development of strategies and objectives involves both top management and other employees. Particularly

managers in large Danish companies use controls for more interactive than diagnostic purposes, as they find interactive use of management controls to be useful to identify needs for strategic change. Our study shows that the formation of the SBUs' strategic ends and means are developed by top management of the SBUs together with corporate management, and that translation of strategy into short-term action plans and target-setting is mainly a top-down driven process performed by top managers. Additionally, our results show that top managers use MCS more diagnostically that interactively, and that financial measures are used to a larger extent than are non-financial measures.

In large Danish companies, the most important purpose of performance evaluation is to provide feedback for learning and continuous improvement. This is also in contradiction compared to Kald and Nilsson's studies from 2000 and 2002. Kald and Nilsson find that large Nordic companies decentralise decision-making, and that "learning at lower levels of an organization is process-oriented and thus based on direct observation" (Kald and Nilsson, 2000 p. 115). Our study shows that managers use organisational culture and values to a large extent to guide and direct subordinate behaviour. The values, purpose and direction are very often codified in formal documents, and some even provide workshops on company values and polices for their employees. Some of the participants explicitly said that company values and polices have become embedded in the organisational culture and that the employees have adopted the values in their daily work.

The two additional questions on 'organisational culture' and 'contextual factors' gave two different results in terms of how they affected top management's design and use of MCS. While organisational culture and values were seen as highly valuable MCS that top management could form and use to guide and direct subordinates' behaviour, top management regarded external contextual factors as

mandatory variables given by the markets in which the organisations operate (Table 15B). The respondents did not find external environment (environment performance, community, alliances and lobbying) as important as other MCS (Table 15A). The respondents indicated that the low degree of influence they have on some of these variables meant that those variables had less importance. Also, the amount of resources they spent on e.g. 'lobbying' did not generate corresponding benefits. Management's low influence on these external factors forces top managers to ensure that their organisations adopt these factors, and forces them to design their MCS to fit into these external factors to ensure effectiveness. As regards the internal part of the contextual factors over which the top managers have more control, e.g. organisational structure, top management see these controls as systems that they are able to design and use in the best interest of their companies.

In correspondence with the purposes found in the literature on MCS as a package, the top managers' responses show that large Danish companies today use comprehensive MCS packages that include controls for enabling creativity as well as diagnostic controls for ensuring high effectiveness (Simons 1995, Mundy 2010). Even though financial results were weighted the highest, the survey data also show the strong focus that the respondents give MCS that support customer relations and industry understanding to create competitive advantages (Table 2A, 4A and 15A). These results indicate that the respondents are very much aware of the dynamics that a balanced and customised MCS package can give (March 1991; Henri 2006a; Widener 2007; Mundy 2010). However, a deeper discussion of how they foster a dynamic relation between the controls or how each of the companies ensures that its own MCS package is comprehensive and tight enough to allow them to be "reasonably confident that no major unpleasant surprises will

occur" (Merchant and Van der Stede 2012, p. 12) are not included in the survey data. These questions may be easier to study in case studies, or perhaps in longitudinal field studies observing the effectiveness of each of the elements within a company's control package.

Regarding the purpose of MCS as a package given by Anthony, "resources are obtained and used effectively and efficiently in the accomplishment of the organization's objectives" (1965, p. 17) – the results show that top managements have attention on quality and operations, by setting standards and targets, and focusing on increasing the level of automation in operations. However, this has a lower priority than MCS targeting financial results and the companies' relations to customers (e.g. Table 2A and 15A). This finding is supported by previous studies which find that mature companies usually have an extensive amount of formal MCS already in place, and consequently the management is less concerned about running 'out of control' (Sandino 2007). Nevertheless, due to the financial crisis starting in 2008 and the resulting volatile markets, top managers today use a top-down driven process when translating their strategy into short-term plans and when targets are set. However, when it comes to working process arrangements in the business units, more influence is given to subordinates. Top managers see these top-down driven processes and strict performance evaluations as a result of the market situation and top management taking responsibility for ensuring their companies' continued success and avoidance of unnecessary losses.

Malmi and Brown stated that MCS packages "include all the devices and systems managers use to ensure that the behaviours and decisions of their employees are consistent with the organisation's objectives and strategies" (2008, p. 290). The results of this survey show that large Danish companies use comprehensive MCS packages, including practices, controls and systems, which are introduced both

directly and indirectly to the subordinates, and often in formal documents, all with the purpose of affecting subordinates' behaviour and activities in the best interest of their companies. However, this paper concentrates on the use of MCS and does not include a discussion of the coherence, interrelationship among and use of the controls in each of the respondents' MCS packages. While this is the first empirical survey study of large companies in Denmark that includes the use of a larger number of different MCS, the findings must be compared with previous empirical studies of the use of single or a small number of MCS. Some of the findings confirm previous research results, e.g. the dominant use of results control at higher management levels (Merchant 1982), and the finding that top management in mature companies are less concerned about running 'out of control' in the area of internal processes (Sandino 2007). Others areas still need to be studied, such as the effectiveness of non-financial rewards on the Danish labour market, or how the interaction between budgets and performance measurement systems works in large companies in Denmark.

Ferreira and Otley's (2009) framework is used as a fundamental structure for presenting and describing the survey data and the interviews in this paper. The framework is coherent and gives a guideline for a 'natural way' of presenting the MCS. However, in practice, interaction between the MCS both goes forwards and backwards, in any order. In addition, the frameworks do not explain how the controls should be weighted, or what context and variables each control requires in order to achieve higher performance. Neither does the framework explain how to rank or weight the links between the different MCS, although questions nine to twelve in Ferreira and Otley's framework deal with the systems, network, use, change and coherence within an MCS package, which all are questions that have not been seen before in MCS frameworks (e.g. Otley 1999, Malmi and Brown

2008). This emphasises the need for investigating and interpreting the interrelationships within an MCS package. This need is supported by the survey answers to questions nine to twelve, which show that top managements in large Danish companies are very much aware of the strength of having an optimal fit between the different controls and contextual factors in their MCS package.

Ferreira and Otley's framework is usable for describing results of survey data, but not for analysing survey data with respect to getting explanations for the effectiveness and efficiency of the use of an MCS package. However, as this survey used personal interviews, the stories behind the answers given by the respondents provided insight into the reasoning and deeper explanations behind the statistically based survey data. Consequently, this paper shows how an MCS package is conceptually constituted in large Danish companies; "what is included, what is left out, and why?" (Malmi and Brown, 2008 p. 288). To gain a deeper understanding of the mechanics of the controls and the interrelationship between all the variables within an MCS package, using Ferreira and Otley's framework in a case study may be a better solution.

Conclusion, limitations and implication for future research

Which MCS companies use is a central theme in MCS research. In spite of this, many researchers have chosen solely to study companies' use of few selected MCS. This is the first study that, without a previous selection, has explored what controls are used in practice in large Danish companies. The study is based on survey data that include information on a broad range of MCS. This paper shows patterns in how large Danish companies use parts of their MCS, and the most common way top managers in large Danish companies construct an MCS package.

The responses to the questions of Ferreira and Otley's framework (2009) show that there is great similarity in how top managers in large Danish companies use MCS today. Our results show that in addition to the traditional, formal MCS, e.g. budgets, top managers today find informal controls such as value and purpose statements to be very important MCS in guiding and directing subordinates' behaviour. These statements are codified and shared through formal documents, which in effect turns them into more tangible MCS. Yet, the study has limitations, as using a questionnaire survey supplemented by interviews does not provide information that is as sophisticated as it is possible in case studies. As such, the broad and explorative approach used in our study will provide useful insight and information that may underpin further in-depth studies into certain areas of MCS.

The paper includes many tables, each containing several questions. However, due to the length of the paper all of the questions are not directly commented on, although we have chosen to keep the questions in the paper to give a complete picture of the use of MCS in large Danish companies. As such we are convinced that the broad and explorative approach used in our study will provide useful insight and information that may underpin further in-depth studies into certain areas of MCS. It is our hope that this paper has provided a picture of the use of MCS in large Danish companies and how important top managers rate the influence that the systems have on guiding and directing subordinates to behave in the companies' best interest.

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Appendix A – Respondents' background information

Position (title)

CEO	22
CFO	93
Other top management	4
	120

Highest degree

High school	4
Bachelor	25
Master's	89
PhD	2
	120

Field of study

Business/Management/Economics	108
Law	1
Engineering	4
Humanities	1
Natural sciences	2
Others	4
	120

Tenure (in years)

MIN	0
MAX	36
MEAN	10
SD	9

Industry categories

Manufacturing	56
Services	45
Wholesale and trade	19
	120

Most significant owner of the companies

Members of cooperative society	12
Large institutional investors	28
Small individual investors	5
Venture capitalist(s)	15
Families	40
Government	1
Partners	2
Funds	14
Others	3
	120

Appendix B: Companies characteristics of the respondents quoted in the article

Quotes	Industry category	Title	Employees < or > 1.000
Company A	Manufacturing	CFO	> 1.000
Company B	Manufacturing	CFO	> 1.000
Company C	Service	CFO	> 1.000
Company D	Service	CFO	< 1.000
Company E	Manufacturing	CFO	> 1.000
Company F	Manufacturing	CFO	> 1.000
Company G	Manufacturing	CFO	> 1.000
Company H	Service	CFO	> 1.000
Company I	Service	CEO	> 1.000
Company J	Service	CFO	< 1.000
Company K	Trade	CFO	< 1.000
Company L	Manufacturing	COO	> 1.000
Company M	Manufacturing	CEO	> 1.000
Company N	Trade	CEO	> 1.000
Company O	Service	CFO	< 1.000

7.2 Management Control Systems and Performance Management Systems - A Comparative Analysis of Frameworks

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Abstract

This paper reviews the genesis and development of Management Control Systems (MCS) and Performance Management Systems (PMS) frameworks since 1965. The paper traces the historical origins of the frameworks and how they have been developed by researchers in the literature. It builds bridges between each of the frameworks by comparing how different authors present the design and possible use of their frameworks. Furthermore, the fundamental purpose of MCS frameworks is discussed to clarify the usability of MCS frameworks in research and in practice. The frameworks move from the relatively simple frameworks with few components that each include more than one control type, to frameworks with

more components with fewer control types in each component. All the frameworks are cohesive and comprehensive; they highlight the importance of giving employees opportunities to be innovative within the limits of the MCS and PMS. The paper brings attention to research gaps and missing variables within the framework and gives a guideline of issues that researchers and practitioners may benefit from when using the frameworks. The paper concludes with an outline specification for a categorization of control components that are objectively observable for research purposes.

Keywords: Management Control Systems, Performance Management systems, package, framework.

1. Introduction

Organizations today rely extensively on Management Control Systems (MCS) and Performance Management Systems (PMS) to achieve their goals and objectives (e.g. Berry et al., 2005; Fisher, 1998). Executive managers design and use MCS and PMS to guide employees to behave in a manner that fulfils an organization's objectives. At the highest level, MCS and PMS consist of practices, controls and systems, each supporting parts of the business, and together they form an MCS package that combines an organization's control activities into a more coherent system. Key elements in MCS and PMS also involve organizational structure, processes, culture and values to influence employee behaviour, and consequently the organization's effectiveness (Chenhall, 2003; Otley, 1980; Simons, 1995b; Strauss et al. 2013). However, definitions of MCS and PMS may also encompass plans, strategies, tactical actions and instructions (Ferreira and Otley, 2009; Malmi and Brown, 2008; Merchant and Otley, 2007). As such, an organization can customize its package of MCS and PMS, including the granuality of each control system. In practice, many organizations operate multiple systems with overlapping functionality. This makes it difficult to measure the effect of one MCS in an organization without considering the effect of other systems.

Though MCS have been studied extensively, little attention has been given to the importance of the interrelationships between the control sub-systems (Fisher, 1995; Kober et al, 2007; Malmi and Sandelin, 2010; Sandelin, 2008). The majority of the literature leaves matters at an acknowledgement of the complexity of practice, and in response, some authors during the last 50 years have developed MCS and PMS frameworks to capture some of this complexity (e.g. Anthony,

1965; Ferreira and Otley, 2009; Fisher, 1995; Malmi and Brown, 2008; Otley, 1980, 1999; Simons, 1995b). Most studies of the interrelationship between multiple MCS have been guided by contingency theory for understanding the effect that simultaneous use of multiple MCS has on the activities in an organization (Chenhall, 2003; Dent, 1990; Otley, 1980, 2016). The authors who have developed MCS and PMS frameworks have identified the importance of the fit between controls and contingent variables in the design and use of control systems to determine how effective the controls are in organizations. These frameworks propose solutions to the perennial challenge facing both researchers and practitioners, focusing on offering methods for performing empirical studies and enhancing our understanding of all the controls that an organization works with and within.

This paper contributes to the body of research that explores the concepts of MCS and PMS and investigates the development, purpose and use of MCS frameworks. The study's aim is fivefold: First, the paper addresses the development of the concepts of MCS and PMS. Second, it traces MCS frameworks' historical origin and how the frameworks have been developed by researchers. Third, the paper discusses the objectives and usability of the MCS frameworks in research and practice, including a discussion of the concept of a holistic control package that might be tightly or loosely coupled and which operates in an environment of change and uncertainty. Further, it discusses the advantages of designing a customized MCS package with a good fit between organizational demands and objectives, MCS and contingent variables, which have to be flexible enough to cope with changes in the organizations' environments. Finally, it explores how the characterization of MCS and PMS might be developed to advance research progress. As such, this paper presents an approach that is topical and important in

the development of research on MCS elements working together as a package (Malmi, 2013).

2. Management control systems and performance management systems

Researchers have taken different approaches to defining MCS and PMS and have presented a variety of ideas about how controls can be categorized and framed for management purposes (Otley, 1999; Tessier and Otley, 2012a). Researchers have included almost every managerial activity when they conceptualize the overall package of MCS (Merchant and Otley, 2007, p. 785). However, the definitions usually reflect the author's research questions, by grouping the controls according to actions or purposes, and are consequently difficult to compare across studies. In some studies, actions are grouped as planning and control (e.g. Anthony 1965), and in others as results, action, personnel, and cultural controls (e.g. Merchant and Van der Stede, 2012). Controls can be grouped by purposes such as market, bureaucracy and clan controls (Ouchi, 1979), bureaucratic and organic controls (Chenhall, 2003), and beliefs, boundary, diagnostic and interactive systems (Simons, 1995b). Yet, the grouping of controls according to purposes may lead to mechanisms being excluded, if the grouping is not clearly defined, e.g. in Simons' Levers of Controls (1995a) (Tessier and Otley, 2012a).The definitions overlap, and the classifications are not independent (Bisbe et al., 2007; Malmi and Brown, 2008; Tessier and Otley 2012a). While the narrower definitions often stay within the scope of management accounting, the broader definitions take an organizational-level perspective and include strategic planning, informal controls and the effect of contextual and contingent variables as part of an organization's overall MCS package.

In 1965, Anthony separated the function of management control (MC) from the functions of strategic planning and operational control, arguing that MC consists of the internally oriented processes that top management use to guide and control mid-level managers (Anthony, 1965; Fisher, 1995, 1998). The aim of management control, he says, is to "assure that resources are obtained and used efficiently and effectively in the accomplishment of the organization's objectives" (Anthony, 1965, p. 27) within the framework of the current facilities, organization and financial factors, which Anthony takes as given in the MC process. According to this, the process has three key components: processes that involve managers, processes related to objectives stated by the established strategy, and processes for setting targets for effectiveness and efficiency. However, Anthony's definition of MC, and its division into strategic, management and operational control, also reflects how organizations worked in the 1960s. Often organizations had a strategy department, and operational transactions were controlled by a variety of technical methods that varied from industry to industry. Anthony simplified his approach by studying only management controls that were universal and thus found that management accounting controls dominated practice. Over time, MC and its technologies became more advanced, making it easier to include more complex issues in the business models (Nixon and Burns, 2005; Otley, 1999). Furthermore, hierarchies within organizations have become flatter, employee behaviour has changed, and strategies nowadays are often developed independently by business units. These changes over time have brought the three separate parts of control (management controls, strategic planning and operational controls) closer, as one integrated unit of controls (Otley, 1994).

Later definitions of MCS become broader, and by including strategic planning, implementation and change within the MCS definition (e.g. Simons, 1995b), MCS

have become seen as more complex, consisting of both rhythmic, rule-driven controls and more open and unstructured controls. Simons' work with "levers of controls" (LOC) in the beginning of the 1990s (Simons, 1990, 1991, 1994, 1995a, 1995b) focused on strategic renewal and how MC can be used for containing and conveying the organizational need for innovation and at the same time the need for achieving the short-term objectives of an organization. By using the controls interactively, Simons claims that innovation and creativity at all levels in an organization will be encouraged. Thus, MCS play two complementary and interdependent roles in organizations: fulfilling organizational goals and encouraging employees to search for opportunities and solve problems (Simons, 1995b).

To reflect this more holistic approach, Ferreira and Otley (2009) chose to use the term PMS instead of MCS in their framework, as they found the concept of MCS to be a more restrictive term than PMS. A well-designed PMS should direct and motivate employees to concentrate their energies on value-added performance to achieve an organization's goals and develop new and better opportunities for their organization (Malmi and Brown, 2008; Otley, 1999). The various definitions of PMS are comprehensive in a similar manner to the more inclusive definitions of MCS and include all aspects of management and organizational controls at all levels in an organization (Berry et al., 2005; Ferreira and Otley, 2009). Performance management is more than performance measurement; PMS goes beyond only including measurement to also contain management and control of the performance. PMS sharpens focus on effectiveness and efficiency (Emmanuel et al., 2004), and as with the more inclusive definitions of MCS, PMS include informal controls and contextual factors, e.g. values and organizational structure.

In the literature on MCS and PMS, the definitions of the two terms are connected and overlapping (Ferreira and Otley, 2009). Researchers' choices on which terms to use may have been influenced by the fact that PMS relates to the performance measurement literature and MCS to the management and control literature. In 2005, in an introduction of a special issue on MC in MAR, Nixon and Burns highlighted "that there is now enormous scope for a much closer link between the management control literature and the substantive body of literature on performance management and measurement that has burgeoned in the last decade" (Nixon and Burns, 2005, p. 262). For clarity, in the rest of this paper, MCS will be the term used, but should be seen as including PMS.

Whether all of an organization's MCS should be regarded as "a system", "a package" or "a collection of control mechanisms" has also been discussed in research (Grabner and Moers, 2013). This paper adopts the view that MCS should be regarded as a package. MCS consist of multiple controls working simultaneously, some with overlap, dependency or influence on each other, but they do not all need to have the same purpose. They may also have been designed by different people at different times, and therefore cannot necessarily be seen as one holistic system that works in a coherent manner (Ferreira and Otley, 2009; Malmi and Brown, 2008). The MCS package comprises both traditional formal controls that often consist of written reports that are typically installed top-down (Langfield-Smith, 2007), e.g. budgets, performance and rewards systems, but also comprises informal controls that consist of unwritten and more social controls that may have been developed bottom-up and might derive from organizational culture (Das and Teng, 1998). Even though all the controls are not aligned and can be seen as being loosely or tightly coupled (Orton and Weick, 1990), together they form a package of controls that serves an organization's overall goals – hence the

concept of 'Management Control Systems as a package' (Ferreira and Otley, 2009; Grabner and Moers, 2013; Malmi and Brown, 2008; Strauss et al. 2013).

For the remainder of this paper we will use the term MCS to cover both 'systems' and 'packages'; that is, we make no assumption about the internal coherence of a set of control sub-systems. We will use the term MCS as a general view of the overall set of practices, techniques and (sub-) systems that an organization uses in pursuit of overall control. In addition, although we regard most observed MCSs as packages (i.e. they comprise a set of sub-systems that are not perfectly co-ordinated), we will use MCS to cover the whole field, while observing that many MSCs show the characteristics of a package rather than being an integrated system. We will use the term control 'mechanism' to refer to specific practices within organizations that are used in an overall management control package (e.g. budgeting, costing, performance appraisal, performance targets, bonus schemes etc.), and which might even represent a sub-system in their own right (e.g. remuneration mechanisms). We will use the term 'management control sub-systems' to describe mechanisms that act as a system in their own right, but form only part of an overall MCS package (e.g. HRM personnel selection systems, compensation systems, stock control systems etc.).

Table 1 lists various authors' definitions of MCS. While these definitions are different, they all have some relationship to the three key components of Anthony's (1965) definition. In the first component (manager involvement), the difference is whether only top management or managers at all levels in the organization are involved. For the second component (processes related to objectives and goals), some authors include more controls than others. This second component is where the definitions differ most. In the final component (effectiveness and efficiency), there is consensus on the need for effectiveness and

efficiency, although the MCS literature does not always clearly define how to measure these. MCS are seen as effective when they are relevant for the management process and are being carried out in a timely, correct and usable manner that leads to objectives being attained. The effectiveness in an organization can thus be measured by measuring the goals achieved in a given period. Efficiency within MCS concerns the optimal and productive use of an organization's resources and can be measured as a relationship between input and output (Anthony, 1965; Berry et al., 2005).

Table 1. Definitions of Management Control Systems

Author / article	Definitions of Management Control Systems
Anthony 1965, page 17	"Management control is the process by which managers assure that resources are obtained and used efficiently and effectively in the accomplishment of the organisation's objectives."
Fisher 1995, page 25	"Management control is defined as the control managers exercise over other managers. It is the process by which corporate-level managers ensure that midlevel managers carry out organizational objectives and strategies."
Simons 1995b, page 5	"Management control systems are the formal, information-based routines and procedures managers use to maintain or alter patterns in organizational activities."
Otley 1999, page 364	"Management control systems provide information that is intended to be useful to managers in performing their jobs and to assist

	organizations in developing and maintaining viable patterns of behaviour. Any assessment of the role of such information therefore requires consideration of how managers make use of the information being provided to them."
Bisbe and Otley 2004, page 709	"The term Management Control Systems (MCS) refers to the set of procedures and processes that managers and other organizational participants use in order to help ensure the achievement of their goals and the goals of their organizations (Otley & Berry, 1994), and it encompasses formal control systems as well as informal personal and social controls (Chiapello, 1996; Otley, 1980; Ouchi, 1977). Formal MCS consist of purposefully designed, information based and explicit sets of structures, routines, procedures and processes (Maciarello & Kirby, 1994) that help managers ensure that their organization's strategies and plans are carried out or, if conditions warrant, that they are modified (Merchant, 1998; Simons, 1995a)."
Merchant and Otley 2007 page 785	"In broad terms, a management control system is designed to help an organization adapt to the environment in which it is set and to deliver the key results desired by stakeholder groups, most frequently concentrating upon shareholders in commercial enterprises. Managers implement controls, or sets of controls, to help attain these results and to protect against the threats to the achievement of good performance. An organization that is ''in control'' is likely to achieve good performance against its objectives, regardless of whether these objectives are to maximize shareholder returns, heal the sick, or educate the young."
Malmi and Brown 2008,	"Our suggestion to clarify these issues is to start with the managerial problem of directing employee behaviour. Those systems, rules,

page 290	practices, values and other activities management put in place in order to direct employee behaviour should be called management controls. If these are complete systems, as opposed to a simple rule (for example not to travel in business class), then they should be called MCSs. Accounting systems that are designed to support decision-making at any organisational level, but leave the use of those systems unmonitored, should not be called MCSs and instead termed management accounting systems. As such, management controls include all the devices and systems managers use to ensure that the behaviours and decisions of their employees are consistent with the organisation's objectives and strategies, but exclude pure decision-support systems."
Ferreira and Otley 2009, page 264	"Much of the early literature on this topic has been categorized under the heading of management control systems, following the seminal work of Robert Anthony (1965). However, in our view, this has become a more restrictive term than was the original intention and we prefer to use the more general descriptor of performance management systems (PMSs) to capture an holistic approach to the management and control of organizational performance. We see this term as including all aspects of organizational control, including those included under the heading of management control systems." "We acknowledge that the concept of PMSs is a difficult one to establish. However, we view PMSs as the evolving formal and informal mechanisms, processes, systems, and networks used by organizations for conveying the key objectives and goals elicited by management, for assisting the strategic process and ongoing management through analysis, planning, measurement, control, rewarding, and broadly

	managing performance, and for supporting and facilitating organizational learning and change. Hence we use the term performance management system to encapsulate these more general processes, and our working definition of a PMS includes both the formal mechanisms, processes, systems, and networks used by organizations, and also the more subtle, yet important, informal controls that are used (Chenhall, 2003; Malmi and Brown, 2008)."
Merchant and Van der Stede 2012 page 6	"The term management control appears in the third column of Table 1.1., which separates the management functions along a process involving objective setting, strategy formulation, and management. Control, then is the back end of the management process. The way we use the term management control in this book has the same meaning as the terms execution and strategy implementation."

The definitions in Table 1 reflect a development in the use of the term MCS, from narrow definitions that exclude parts of controls, to the definitions in the last decade that are broader and more inclusive (Collier, 2005). Anthony (1965) only included processes, Fisher (1995) only included controls "managers exercise over other managers" and not controls managers exercise over subordinates, Simons (1995b) included only "the formal, information-based routines and procedures" and thereby excluded the informal controls, and finally Otley (1999) defines that "[MCS] provide information that is intended to be useful to managers in performing their job", and based on Anthony's definition he extended the definition to include informal controls and strategy planning. In 2004, Bisbe and Otley presented a broad and more inclusive definition. This definition is concise and states a clear purpose of MCS. The later definitions presented by Merchant

and Otley (2007), Malmi and Brown (2008) and Ferreira and Otley (2009) are all similar to Bisbe and Otley's definition from 2004. Merchant and Otley (2007) highlight the need of an organization to adapt to its environment, Malmi and Brown (2008) emphasize MCS's direct relation to employee behaviour and explicitly "exclude pure decision-support systems", and Ferreira and Otley (2009) enhanced the definition by adding a second level of MCS including information flows, systems, networks and the use and change of MCS. Finally, in 2012, Merchant and Van der Stede presented a definition that in some points refers back to Anthony's (1965) definition by separating MCS from objective setting and strategy formulation. However, their definition of management control is still broad and includes all controls used to implement and execute an organization's strategy.

Today's definitions of MCS are broad and include all controls that help managers to ensure high performance and creativity in the best interest of their organizations' further development (Bisbe and Otley, 2004; Merchant and Otley, 2007). Growing globalisation requires an increasing need for cooperation both inside organizations and with external business partners. Hence, organizations today work in more dynamic and complex environments where managers have to design a customized MCS package to guide their subordinates to act in the best interest of their organizations. As the environment and context of organizations have become more complex, the range of MCS has extended, and consequently the definitions have become more inclusive. As such, the development of the term MCS can be seen as a result of evolution in practice and in research, which has brought new and advanced technology and more advanced knowledge to the field and thereby changed the assumptions and options for how to control and manage an organization. We choose to define the term MCS as a general view of the

overall set of practices, techniques and (sub-) systems that an organization uses in pursuit of overall control.

However, results of MCS research suffer from lack of precision, inconsistencies and differences in the control practices included in the various definitions of management control (Bisbe et al., 2007; Chenhall, 2003; Malmi and Brown, 2008; Tessier and Otley, 2012a). The variety of approaches and lacking precision in defining MCS may weaken research results. The controls and contingent variables that are included are prone to being regarded as having too much influence on the result, while controls and contingent variables that are left out may be the real reason for the result achieved by an organization (Chenhall, 2003; Fisher, 1998). MCS frameworks split the control systems into smaller parts where each part has its own description of what is included. This strengthens the precision, but the definitions remain incommensurate because of the diversity of controls the different authors include in their MCS frameworks.

3. Theory – Contingency theory and management control

The concept of contingency theory within MCS is that the result of using controls is contingent on the context of the organization in which the controls are used (Berry et al., 2005; Chenhall, 2006, 2007; Otley, 1999, 2016). Consequently, there is no control that leads to the same result in all settings (Emmanuel et al., 2004). In 1980, Otley stated that "contingent variables are considered to be outside of the control of the organization, although it is recognized that organizations may try to influence some such supposedly exogenous variables (e.g. governmental regulations). Those variables believed to be controllable by the organization are not considered to be contingent variables, but rather part of the package of

organizational controls selected for use" (Otley, 1980 p. 422). However, contingent variables have different effects on the effectiveness of organizational performance, and the degree of influence of organizations on the contingent variables differs. Organizations have power to change and choose between some of the contingent variables within the limitation of and affected by the external environment (internal contextual factors). Other contingent variables are fully determined outside organizations but are still unavoidable for the organizations (external contextual factors). The internal contextual factors include organizational objectives, strategy, size, technology and organizational culture. The external contextual factors include competition, globalisation, national culture, laws and regulations, and other external environment factors such as general economic conditions (Demartini, 2014).

Some of the contingent variables are closely linked, e.g. 'strategy' must correspond with the opportunities and demand stemming from the 'external environment' (Chenhall, 2003; Flamholtz, 1983). Some contingent variables reduce in impact as they are taken over by others, e.g. the effect of 'national culture' decreases when 'globalization' expands. And some contingent variables are so dynamic and have such a high level of uncertainty that the design of the MCS package has to be loosely coupled to cope with the changes in dynamism and uncertainty demand of the MCS package. While controls "do not work in isolation" (Malmi and Brown, 2008 p. 287), it is not possible to fully predict the outcome of using a control without including the context in which the control operates (Otley and Berry, 1994). The many variables and the constant change affecting organizations' efficiency make it difficult for researchers to present universally applicable contexts and expected results for each MCS. The fit of the contingent variables and MCS changes continuously, due to changes in the

business settings for organizations. Therefore, the MCS package has to be flexible enough to allow organizations to respond quickly to changes in their markets or business priorities (Chenhall, 2003; Ferreira and Otley, 2009). The needs for flexibility and options for changing have to be built into the MCS framework, to make the frameworks feasible for managers in practice and researchers in their studies of empirical data. To emphasize use, flexibility and the strength and coherence within MCS as a package, Ferreira and Otley (2009) enlarged their framework with a second level of controls around the core MCS. This second level includes four questions that all relate to the potential and usefulness of all MCS within an organization's package of MCS.

4. A review of management control systems frameworks

Looking at numbers of citations (Google Scholar) in the literature of MCS frameworks, six frameworks have received high interest from the audience. The six most cited MCS frameworks are:

Anthony (1965) with 3953 citations
Simons (1995b) with 2800 citations
Otley (1980) with 1267 citations
Otley (1999) with 1621 citations
Malmi and Brown (2008) with 626 citations
Ferreira and Otley (2009) with 553 citations

Anthony (1965) is often naturally cited, as he originally defined the term MCS. The 2800 citations to Simons (1995b) are to Simons' book 'Levers of Control'. However, Simons also wrote articles in which he presented his framework in the early 1990's (1990, 1991, 1994, 1995a), which if added would increase this count.

Interestingly, although his work is specifically situated at the CEO level, this restriction is rarely pointed out by those who use his categories. Many citations to Otley (1980) refer to contingency theory of management accounting and control, as this article represents the movement from Anthony's implicitly universal framework to a more contingent point of view. Otley's article from 1999 presents a basic MCS framework – a tool that can be used both by researchers and practitioners. Otley's (1999) article continues to be cited even after the development of the Ferreira and Otley (2009) extension of the framework. Malmi and Brown (2008) and Ferreira and Otley (2009) represent the new generation of MCS frameworks, which are more comprehensive than earlier MCS frameworks. The number of citations to these two articles is comparatively high in relation to the recent publication dates.

Anthony (1965) was the first to address the need for a framework to help define and study control systems, and he used a systems approach to guide a series of agenda-setting empirical studies. He invented the term 'Management Control Systems', and by distinguishing management control from strategic planning and operational controls, he defined MCS. Subsequent research (e.g. Mills, 1970; Nelson and Machin, 1976) aimed to develop frameworks that could be adopted by practitioners and researchers who needed a tool that could capture the multiple variables they faced, and at the same time would be flexible enough to respond to increasingly changing conditions. By the 1970s and 1980s, a number of disciplines were being drawn upon for concepts such as integration, valuable understanding, and organization (Flamholtz et al., 1985; Govindarajan and Gupta, 1985; Nelson and Machin, 1976; Waterhouse and Tiessen, 1978). This bundling of different research areas with control theories and system theories demanded more of the researchers, who now had to juggle multiple perspectives on subject domains that

had not previously been thought of as connected. There was now a need to bridge the gap between the behavioural sciences and more quantitative research approaches.

In 1980, Otley built the framework 'Organizational control package', by connecting contingency formulations from organization theory literature with management accounting and control models and practices. He constructed a framework that connects contingent variables to the organizational control package, and by integrating intervening variables and inputs from other factors was able to analyse the preconditions for organizational effectiveness (Otley, 1980). Even though he had just developed the framework, he concluded that "No doubt this framework is still over-simple. Part of an organization's control strategy may well be to influence its environment; little consideration has been given to the pattern of dependence of an organization on important external resources and its interdependence upon other organizations" (Otley, 1980 p. 422). This was supported by Ahrens and Chapman (2004), who stated that contingency literature still had not found a clear way to address the issue of analysing more processual uses of MCS in a comprehensive typology (Ahrens and Chapman, 2004). Anthony's (1965) and Otley's (1980) frameworks gave us a good starting point by developing more comprehensive MCS frameworks that include the effect from the interrelationship between the different elements in the MCS package. However, both frameworks require further development.

During the early 1990s, Simons used case study evidence to develop his thoughts on how management controls can be used for strategy development and deployment (Simons, 1990, 1991, 1994, 1995a). He extended his ideas in the book ´Levers of Control´ (Simons 1995b), where he brings in results from his empirical studies. Simons' purpose with his framework ´Levers of Control´ (LOC) was to

create an analytical tool for practitioners to use for implementation and control of strategy and for researchers working with empirical data within the area of management control and strategy. Simons divides controls into four groups (levers of control, as he terms them), based on the purposes each group serves: beliefs, boundary, diagnostic control systems and interactive control. He focuses on the balancing of use of the four levers between the organizational need for innovation and the organizational need for the achievement of pre-established objectives (Simons 1995b). The split is related to the use of the controls, whereby it becomes possible for a given control (e.g. budgets) to be relevant to more than one of the four levers in LOC. Simon's focus on balancing the design and use of MCS is important for securing the future success of an organization. Many research results show a positive effect of combining the use of management controls that both enable and control (e.g. Ahrens and Chapman, 2004; Mundy, 2010; Widener, 2007).

LOC is discussed in several subsequent papers (e.g. Abernethy and Brownell, 1997; Tessier and Otley, 2012a; Widener, 2007). The criticism levelled at LOC includes that by Bisbe et al. (2007), who claim that there is a lack of theoretical clarity in Simons' development of LOC, because it fails to link LOC to related theory. They claim that Simons' concept of interactive control contains no less than five distinct elements which need not necessarily be combined into a single 'lever'. Furthermore, LOC is criticised for having a vague definition and lacking an overview or guideline for how to balance the controls relative to business settings in a specific organization. Moreover, LOC has been criticised for being difficult to operationalize and to connect to specific controls or their uses (Ahrens and Chapman 2004), a matter that Tessier and Otley (2012a) addressed in their revised version of LOC. This on-going debate displays an ambiguity and

vagueness in the definition of LOC and shows that LOC is geared more towards practice than research. Despite criticism, LOC is cited and used in many research studies within MCS, and has given researchers an idea of how and why MCS in organizations should be studied as one package.

In 1999, Otley developed a new MCS framework. He aimed to build a simple framework that could be used in research analysing the operation of MCS, by focusing on the operation of overall control systems. In constructing the framework, Otley took an inductive approach drawing upon previous experience in organizational control systems research to identify some key issues that seem to be relevant to many different organizations. Otley built the framework upon five key issues that relate to: objectives, strategies and plans, target-setting, incentive and reward structures, and information feedback loops (Otley, 1999). As in LOC, strategy is a central issue in Otley's framework. The five key issues were presented in five 'what' questions to management. The managers' answers relate to a snapshot of an organization's business settings, therefore the questions have to be repeated when the settings change in order to ensure effectiveness of their MCS over time (Otley, 1999). This was one of the first acknowledgments that MCS design and use are not static, but rather dynamic and continually subject to change and evolution. Otley's (1999) framework is more operational and complete than earlier frameworks, and it presents an important step towards developing research of MCS in a holistic manner, where the result of using an MCS package as a whole is more than the sum of its parts.

In 2008, Malmi and Brown presented a conceptual framework 'Management Control Systems as a Package'. Their framework includes interdependence between controls and impact from both well-researched accounting-based controls and other organizational controls, such as administrative structure and culture,

which influence the behaviour of the individuals within the organization (Otley, 1999). They sharpen the definition of the parameters of MCS and split the controls into five types: cultural controls, planning, cybernetic, reward and compensation, and administrative controls. In cultural controls, they include more controls and contingent variables than earlier MCS frameworks. In addition to the key objectives central to an organization's overall future goals, such as mission, vision, credos and other value-systems, they also include some informal controls that managers do not always have full influence over, in acknowledgment of the fact that these controls can be used to regulate employee behaviour. Inspired by Flamholtz, who defined organizational culture "as a set of values, beliefs and social norms which tend to be shared by its members and, in turn, tend to influence their thoughts and actions" (Flamholtz, 1983, p. 158), Malmi and Brown extend cultural controls into three subgroups: value-based controls (Simons, 1995b), symbol-based controls (Schein, 2010), and clan controls (Ouchi, 1979).

Malmi and Brown (2008) state that controls do not operate in isolation, and consequently relationships and correlations between controls within the MCS package affect the overall effectiveness of the performance in organizations (Malmi and Brown, 2008). They state that their "analytical conception of MCS as a package provides a sufficiently broad, yet parsimonious, approach for studying the phenomenon empirically. Its aim is to facilitate and stimulate discussion and research in this area, rather than suggesting a final solution to all related conceptual problems" (p. 291). Malmi and Brown's MCS framework is broader and more comprehensive than earlier MCS frameworks. It displays the interdependency and influence between different controls operating simultaneously in an organization (Abernethy and Brownell, 1997; Widener, 2007), and how this affects overall organizational performance. However, they do

not pay much attention to how to handle the interrelationships and secure a good fit among the control systems and contingent variables within the MCS package. By contrast, they appear to assume that the different control elements within a package are well-articulated and designed as a coherent structure.

A more comprehensive MCS framework was presented by Ferreira and Otley in 2009. This framework was based on relevant literature, LOC (Simons, 1995b), Otley's earlier framework from 1999, and knowledge that Ferreira and Otley had gained through observations and experience. They extended Otley's five 'what' questions(1999) to ten 'what' and two 'how' questions, and thus presented a comprehensive approach to the study of MCS. The seven new questions cover: vision and mission, organizational structure, key performance measures, performance evaluation, information flow - systems and networks, PMS changes, and strength and coherence. The aim was to extend the role of control in managing organizational performance, by giving a managerial emphasis integrated with dimensions of managerial activity within the control system. As with Malmi and Brown's framework (2008), this new framework includes the interdependency among the controls, and presents a new research tool for key aspects of MCS, which allows researchers to obtain a holistic overview in an efficient way. It gives a brief case study of an organization that gave seemingly good answers to eleven of the twelve questions, but fails to achieve coherence between the somewhat independent sub-systems used.

Whereas Simons (1995), Otley (1999) and Malmi and Brown (2008) end their development of the frameworks after including core MCS systems, Ferreira and Otley (2009) continue by extending their framework by a second level, visualized by a circle around the core of the MCS. This circle contains four elements. The first three elements focus on the availability, use, usability, and ongoing needs for

further development and customization of an organization's MCS package. The last element refers to the success of completing the three first elements; if an organization has a well-fitted MCS package, with good information flows, well-connected systems and networks and high usability, and continuously changes and customizes its MCS package, the organization will have strength and coherence in its MCS package. In ensuring this, an organization can achieve a high probability of success in obtaining their goals and ensure with reasonable confidence that no undesirable surprises will occur (Ferreira and Otley, 2009). Nevertheless, a good MCS will tolerate some probability of failure, because a perfect MCS does not exist (Merchant and Van der Stede, 2012). Even if a perfect MCS package did exist, many factors influence the controls, and their context is constantly changing (Otley, 1999); therefore a perfect MCS may be difficult to maintain continuously, and consequently the fit of the multiple variables will be likely to be volatile over time (Melnyk et al., 2014).

The three frameworks (Otley's (1999), Malmi and Brown's (2008), and Ferreira and Otley's (2009)) aim to create conceptual frameworks which could be used in empirical research studies investigating the effectiveness of an MCS package. Each of the frameworks was published in a single article, and together with Simons' book (1995b) they are some of the most cited works within the area of MCS. The four frameworks have broad definitions of MCS (see table 1), are related to contingency theory, and have incorporated the effect on the effectiveness of the MCS caused by the interrelationship among the elements in an MCS package. Table 2 compares the four frameworks by presenting the intended purpose of each of the authors' frameworks as well as the condition and modifications the authors have chosen for their MCS frameworks.

Table 2: Purpose, conditions and modification of the four frameworks

Study	Purpose of the framework	Conditions and modifications for the framework
Simons 1995 Levers of Control (LOC)	Simons (1995) proposed the levers of control (LOC) framework as a tool for the implementation and control of business strategies. "A new theory of control that recognizes the need to balance competing demands is required. Inherent tensions must be controlled, tensions between freedom and constraint, between empowerment and accountability, between top-down direction and bottom-up creativity, between experimentation and efficiency. These tensions are not managed by choosing, for example, empowerment over accountability – increasingly, managers must have both in their organizations."	Four key concepts are attached to Simons' LOC: core values, risks to be avoided, critical performance variables, and strategic uncertainties. Each of these is directly controlled by a particular system (Levers of Control). "Core values are controlled by the beliefs system." "Risks to be avoided are controlled by the boundary system." "Critical performance variables are controlled by the diagnostic control system." "Strategic uncertainties are controlled by the interactive control system." "The power of the control levers does not lie in how each is used alone, but rather in how they complement each other when used together. The interplay of positive and negative forces generated by these systems creates a dynamic tension between the opportunistic innovation and predictable goal achievement that is necessary for profitable growth."

Otley 1999 A framework for management control systems research	"This paper proposes a framework for analysing the operation of management control systems structured around five central issues. These issues relate to objectives, strategies and plans for their attainment, target-setting, incentive and reward structures and information feedback loops." "The intention of this paper is to provide a perspective more focused on the operation of overall control systems, and to do so by looking beyond the measurement of performance to the management of performance."	"Central focus is on the management of organizational performance." "The framework is not intended to provide a normative or prescriptive framework, but rather to provide a more comprehensive descriptive framework within which the features of an overall control system can be assessed and evaluated." "Ideally, the framework should now be applied in practice to examine the overall control systems of an organization, and it is the author's hope that other researchers will find it a useful tool along the lines pioneered by Fitzgerald and Moon (1996)." ".. makes it clear that management accounting and other performance measurement practices need to be evaluated not just from an economic perspective, but from a social, behavioural and managerial perspective, within an overall organizational context. It is these social, cross-national and cultural aspects that make the study of control systems such a fascinating topic for academic research and such a challenge to the practitioner."
Malmi and Brown 2008	"This analytical conception of MCS as a package provides a sufficiently broad, yet	"While there are good reasons to study MCS as a package there are a range of challenges in doing so; three of which will be explained in this editorial. The first involves the difficulty of

Management Control Systems as a package	parsimonious, approach for studying the phenomenon empirically. Its aim is to facilitate and simulate discussion and research in this area, rather than suggesting a final solution to all related conceptual problems." "The purpose of this editorial is to enlighten the above mentioned issues and lay a foundation to enable researchers to continue developing research on MCS."	clearly defining the concept of MCS."." the second issue arises of what conceptually constitutes an MCS package; what is included, what is left out, and why?" "Thirdly, there are challenges in empirically studying an MCS package as they are often very large and complex systems. This creates difficulties in how field and/or case study researchers gather and make sense of the complexity that exists in each of the elements of the MCS package and then report their findings in journal articles at a sufficient level of abstraction to make the reading comprehensible. Furthermore, there are problems with how survey researchers test the form of these large and complex packages across organisations so that systematic relationships can be established. This includes the difficulty of developing survey instruments to capture the underlying phenomena in a meaningful way as well as gathering adequately large samples."
Ferreira and Otley 2009 Performance Management Systems	"this paper puts forward the performance management systems framework as a research tool for describing the structure and operation of performance management systems (PMSs) in a more holistic manner." "Anecdotal evidence suggests that	"We believe the role of the framework is to help a 'snapshot' to be taken of the package of practices that are in operation at a particular point in time, and to gain some sense of how these practices have evolved into their current form. As such, we believe that it can serve as a useful research tool to enable such practices to be documented and correlated with other variables, such as in traditional contingency studies." "The extended framework, which we name performance

	the extended framework provides a useful research tool for those wishing to study the design and operation of performance management systems by providing a template to help describe the key aspects of such systems. It allows a holistic overview to be taken while making this a feasible task." "The extended framework aims to provide a broad view of the key aspects of PMSs and to form the basis upon which further investigations can be developed."	management systems framework, represents a progression from Otley's 5 'what' questions to 10 'what' and 2 'how' questions. The naming of the framework as 'performance management systems' aims to reflect a shift from the traditional compartmentalised approaches to control in organizations—such as Anthony's (1965)—to a broader perspective of the role of control in the managing organizational performance. It also aims to give a managerial emphasis, by integrating various dimensions of managerial activity with the control system."

LOC is not constructed as a tool or guide for researchers investigating an MCS package, instead it proposes the idea of building an analytical tool that focuses on the levers that can be used to manage tensions, and which balances the need for both innovation and control within organizations (Table 2). Therefore, LOC is a useful analytical guide in exploring the dynamic tension and balance between the controls in an organization, and focuses on the purpose and use of the controls rather than their type. In 2007, Widener used LOC to investigate MCS by focusing on strategic uncertainty and risk. With survey data from 122 chief financial officers, Widener found evidence of five important results: first, controls are interdependent, and it seems that they are complementary; second, "strategy not only drives the importance of controls, but also the role of controls"; third, "the interactive use of the PM [performance measurement] system is not associated with organizational learning" – "Rather, the interactive system affects learning through the diagnostic system"; fourth, "there is cost of controls, overall", but "the net effect of the four controls on attention is positive"; and five, "emphasis on control systems influences performance through their effect on learning and management attention" (Widener, 2007, p. 782-783). MCS research needs more studies to verify Widener's findings and to further develop MCS frameworks to incorporate the results from this and other empirical studies.

In the MCS frameworks, the four authors (table 2) draw upon contingency approaches relating controls to elements of context they consider important, although they do not all include the same variables. Such an open system approach seeks to explain the effectiveness of an MCS package by studying the interrelationships of the parts rather than the nature of those parts. This holistic approach stresses the importance of emergent properties (Berry et al., 2005), and therefore it is relevant for higher-level studies of diversity and complexity in

organizations. Malmi and Brown's (2008) framework is the only one of the four frameworks that incorporates both contingent variables that are under full control of management, and more external contingent variables, such as symbols and clans controls, which managers have less or no impact on. The authors of the three other frameworks recognize the influence and importance of the match between controls and contingent variables, especially Ferreira and Otley (2009), but they see externally determined contingent variables as an explanation for the effectiveness of controls in different contexts rather than characteristics of the MCS. Therefore, they only include in their frameworks those contingent variables that are manageable by the management of the organizations, although it should be noted that they do not intend to design contingency studies, but rather to describe a single element within such studies, namely the MCS structure.

The frameworks developed by Otley (1999), Malmi and Brown (2008) and Ferreira and Otley (2009) use structured approaches, where the controls and systems are divided into categories and organised by the order in which such controls can be logically considered as tools to implement an overall strategy. Even though the two frameworks by Malmi and Brown (2008) and Ferreira and Otley (2009) are comprehensive in this respect, the many variables, the uniqueness of each organization and the constant change in business settings affecting organizations' efficiency make it difficult for researchers to identify the endogenous context of an organization and consequently to build a framework that can cope with many different research questions within the area of MCS. However, Ferreira and Otley (2009) cover this complex situation in the second level of their framework. The frameworks of Malmi and Brown (2008) and Ferreira and Otley (2009) are the most deployable and well-defined of the four frameworks. However, until the present study, the two frameworks have not been

used on larger data samples and have therefore not had their viability tested within a larger scope.

5. MCS frameworks – opportunities and weaknesses

Previous research results show that in a dynamic environment with high levels of uncertainty, organizations need a more loosely coupled and flexible MCS package to obtain high efficiency (Chenhall, 2006; Orton and Weick, 1990; Simons, 1995b; Weick, 1976). This flexibility recognizes the need for organizations to eliminate, change or include components of the MCS package to preserve the effectiveness of the overall package. Previous research has also shown a positive effect of using tightly coupled MCS on the performance in organizations working in environments with low levels of uncertainty (Chenhall, 2006; Simons, 1995). Although an organization's MCS package must be tight and comprehensive enough to ensure that "management can be reasonably confident that no major unpleasant surprises will occur" (Merchant and Van der Stede, 2012, p. 12), the controls must not slow the organization down and hinder creativity, which may result in lower performance (Henri, 2006). There is no doubt that the uncertainty and dynamics within an organization's environment affect which MCS is most effective. Organizations will gain by continuously adapting to the changes in their environment to ensure high performance, even in a very dynamic environment where changes can be difficult to keep up with.

The need for changes to an organization's package of MCS mainly arises for three principal reasons – the need for new or more effective controls, changes in external requirements, or because controls have become redundant (Tessier and Otley, 2012b). However "because controls are inert objects that do not have an

internal program to ensure change, individuals need to act on the control for change to happen" (Tessier and Otley, 2012b p. 794). Consequently, managers have to act upon missing, ineffective or redundant controls. However, knowing when changes in the controls are needed, or at least when it is an advantage to change a control, requires knowledge of an organization's package of MCS and the organization's context. In addition to their knowledge of the organization and its MCS, managers also have to be able to identify the controls that need to be changed, understand how to improve the controls, and finally get all the involved employees to acknowledge the need for changes and subsequently adopt the new controls. Tessier and Otley's (2012b) case studies show that changes that are externally required often cause the most problems because the organization does not always have time to implement the changes to the controls, and not all employees acknowledge the need for change because they lack information about the reasons for the changes or the purpose of the new controls.

Case studies also show that organizational demands and how the manager uses the MCS also affect the effectiveness and efficiency of the different parts of an MCS package (Abernethy et al., 2010; Collier, 2005; Sandelin, 2008). In 2005, Collier presented a ten-year longitudinal field study that shows how a powerful owner with a clear mission focussed on increasing market shares had success by using a loose organizational structure dominated by himself, unwritten controls of values, key success factors, strategy and plans. Collier's study shows that a powerful manager who focuses on developing revenue and less on cost control in a medium-size organization may have success with fewer written and formal controls. The manager's focus on revenue and R&D makes Simons' LOC (2005b) more useful than Ferreira and Otley's (2009) framework, as the manager did not find all of the twelve questions of the framework relevant for managing and

developing his organization. Similarly, Sandelin (2008) found organizational demands and goals to be important (e.g. efficiency, customer satisfaction, quality improvement, development of products) when an organization designs its MCS package. These studies show that by designing a customized MSC package with a base in organizational goals, organizations can obtain better fit between the components and thereby improve their success in fulfilling their objectives (Flamholtz 1983, Collier 2005, Sandelin 2008). Finally, the studies show that to enhance new ways of creating value, MCS are likely to have a more external focus.

Different levels or departments of an organization may use different controls or use the same controls differently. Malmi and Brown (2008) include this hierarchical difference within the groups of controls 'governance structure' by choosing Van der Meer-Kooistra and Scapen's (2008) idea of lateral relations between and within organizations. They see this issue more as a cooperation and coordination issue than a hierarchical approach, and focus on the "need to balance the flexibility needed to deal with environmental uncertainty with firmness needed to ensure the efficiency and standardization of operations" (Malmi and Brown, 2008, p. 296). Ferreira and Otley (2009) draw attention to the different needs for controls at different hierarchical levels and call for future case studies that include participation from various hierarchical levels, in order to investigate the effectiveness of the MCS package at all levels of an organization. Jermais and Setiawan's (2008) study found an interactive effect on performance between hierarchical levels, MCS and budgetary participation. Their study shows that budgetary participation at the high levels of a hierarchy has a positive relationship with performance, and has the opposite effect at the lower levels. However, this may also reflect the power that higher-level employees have compared to

employees at lower levels in the hierarchy. Future studies could investigate if the issues of 'organizational hierarchies' can be included in MCS frameworks such as Malmi and Brown's MCS framework.

Critical to the design of an effective MCS package are also the structures which link the sub-systems together and the manner in which these sub-systems fit in an organization's context (Flamholtz, 1983; Giovannoni and Maraghini, 2013). The design of the structures, and the interfaces and fit between the sub-systems, should be included when studying MCS. When studying the effectiveness of a management control sub-system, researchers separate an organization's MCS package into a number of subsystems and may then focus on only one or a few sub-systems. To do so, there is a need for knowledge of the requirements of each sub-system, the organization's context and objectives and management practices, as well as the requirement for the linking and fitting of these various sub-systems to other sub-systems or to the overall package. To obtain competitive advantage knowledge of an organization and its environment is an important parameter (Prahalad and Hamel, 1990); the same knowledge is important when designing, using and studying MCS (Ditillo, 2004). Hence, future studies of MCS may be improved by including a description of the case organizations' context and their environment. This would give us basic knowledge of the environment and the conditions in which the management control sub-systems are used, and might give researchers better opportunities to compare similar studies.

None of the frameworks includes how to handle or account for the influences coming from environment uncertainty and dynamics, or the demands this brings to the need for changes, flexibility, interrelationships and tightness (loose or tightly coupled sub-systems) of the parts in the total MCS package. Nor do the frameworks explicitly explain how the practical use of the controls matters,

controls which we may assume have a large influence on the effectiveness of the MCS. Ferreira and Otley (2009) expand their framework with a second level, where they emphasize the importance of some of these issues. However, they do not give a guideline on how to link organizational demands with managers' use of the controls, hierarchical levels and fit among the control mechanisms, sub-systems and contingency variables. The four frameworks (table 2) concentrate mostly on the objectives of the control systems and the purposes or functions that they serve, and less on the actual practical use of the controls.

Surprisingly, the issue of 'time' is not discussed in any of the frameworks. Some controls may need a longer implementation period or a longer period before they affect organizational performance, e.g. changes in the organizational structures. Testing the effects of controls that need a longer incorporation period can be difficult, because it is not possible to isolate the effect of one control from the context of the organization and the other controls in the MCS package (Malmi and Brown 2008), especially if there have been changes in the variables and control systems during the period of testing. To obtain evidence of the dynamic behaviour of MCS, longitudinal field studies can be used. In 2005, Toumela made a four-year longitudinal case study of a performance measurement system, and used Simons' LOC and Otley's framework from 1999 to categorize the findings. Toumela's results showed that introduction and use of new performance measurement systems indirectly led to significant costs in terms of additional workload, disruption of power structures, resistance to change and adoption of the system, and also showed that the adoption of the new system required changes in other controls e.g. reporting procedures (Toumela, 2005). The main objective for the new system was profitable growth and promoting customer focus. The new performance measurement system included controls for the two objectives, but

even though the systems had operated for two years after completion of the implementation, the author did not test if the systems had achieved these two goals. The lack of information on these important parameters leaves us with the unanswered questions of whether or not the adoption of the system achieved the main goals and whether or not the new system had a positive fit to the MCS package of the case organization.

Further, time, cost and quality are a common mantra as success criteria in 'Project Management Research' (Atkinson, 1999; Ballantine et al., 1996; de Wit, 1988; Rwelamila and Hall 1995; Wateridge 1998), and are called 'The Iron Triangle'. These three parameters are also needed in research on MCS to ensure high effectiveness and efficiency of the MCS package. Some controls work rhythmically and are rule-driven (e.g. budgets and standard costs), which makes them easier to calculate in 'time, cost and quality' terms, but for more open, complex and unstructured controls, management have to set clear targets for time, cost and quality for both implementation and use, to be able to assess the actual success of using these controls. These three parameters make it possible to quantify some expectations of each control, a group of controls or the whole MCS package without knowing the precise interrelationships and effects that the different controls in the whole MCS package have on each other. Cost is included in the four frameworks (Table 2) and to some extent quality as well, but time is not explicitly included in any of the four frameworks. Without including these variables, the frameworks under-specify the importance of effectiveness and efficiency of each of the controls in the MCS package.

In project management research, Atkinson (1999) extended 'The Iron Triangle' with the three parameters information systems, organizational benefits and stakeholder community benefits. The information systems and benefits (use,

changes, strength and coherence) in the MCS package are included in Ferreira and Otley's (2009) framework. However, it would be an improvement of the framework if it included 'time, cost and quality' more fully and combined this with the information systems, organizational benefits and stakeholder community benefits of using MCS. All four MCS frameworks (table 2) express effectiveness and efficiency as important; however, only Ferreira and Otley (2009) emphasize this. To get a full overview and understanding of an MCS as a package in an organization, an explicit consideration of 'time' and the second level in Ferreira and Otley's framework need to be included.

Development of MCS frameworks may also find inspiration from development of frameworks in related research fields. Kaplan and Norton's Balanced Scorecard framework (BSC) started as "a simple performance measurement tool" (Coe and Letza, 2014, p. 63), and throughout the 1990s they developed (and amended) BSC to become "an effective management tool that directs strategy throughout many organizations globally" (ibid.). As for MCS as a package, BSC aims to develop a practical framework that captures a holistic approach for managers and at the same time gives each employee clear goals for their part of an organization's vision and strategy (Kaplan and Norton, 2000; Lawrie and Cobbold, 2004). As in MCS research, Kaplan and Norton (1993) see each organization's needs as unique, and consequently recommend that each organization should build its own customized BSC. Even though the BSC does not include all controls in an organization, as it focuses on performance measurement, it still deals with some of the same issues as the research on MCS as a package. The ideas behind the BSC aimed to bring focus on the value created from an organization's intangible assets and to stress the impact that measurement can have on strategy and on meeting an organization's objectives. As no single measure could provide a sufficient

performance target, the BSC includes more measures to present a balanced view of major control issues, using financial and non-financial measures (Kaplan and Norton, 1992).

6. Discussion

The purpose of Simons' framework (1995) is different from that of the other three frameworks, as shown in the comparative analysis. This difference gives various opportunities to use the frameworks in different circumstances. Whereas Simons' framework (LOC) focuses on strategy renewal, the other three frameworks focus on a holistic view of the nature of an MCS package (Ferreira and Otley, 2009; Malmi and Brown, 2008; Otley, 1999). Just as definitions of MCS have become broader over time, the theoretical MCS frameworks have become more comprehensive. Besides core MCS topics, the frameworks have started to emphasize usability, the interrelationship between the controls, and factors that interfere with the effectiveness and efficiency of using the controls. Technological development is probably the main issue that has made it possible to expand our knowledge from data and information, thereby making it possible to incorporate high levels of complexity into business models. Practice and research working with MCS as a package need comprehensive MCS frameworks to obtain a full overview and understanding of all the variables that affect an organization's performance. Yet it "may be important not to assume automatically that there is a one-to-one relationship between context and MCS" (Gerdin, 2005, p. 119). With a foundation in Malmi and Brown's (2008) and Ferreira and Otley's (2009) frameworks, and results from empirical studies, more comprehensive frameworks can be developed. Practitioners and researchers would both benefit from an MCS

framework that could be used as a tool (like BSC) when evaluating or creating an organization's package of controls.

The MCS frameworks are intended for researching an MCS package as a complete system. Although the discussions in the MCS framework field draw attention to the interrelation between the controls in the package, none of the frameworks describes how researchers can study the relationships between the components of the MCS package, or when and to what extent each control system should be used and how the multiple use of all the factors involved affects their total effectiveness. The design of an MCS package may be the first step, but as Simons (1995, p. 5) stated, the effectiveness of an MCS framework does not derive from the design of each system in the package, but derives from these systems overall and how managers use them. However, how can we propose the best fit in such a package if we cannot calculate the influence of and the interrelationships between each system in the package? How can we find out if the controls are complements or supplements? And, how can we find out if some of the controls can replace others in some contexts? A study from 2005 shows that "different control mechanisms available in the control package may well combine in different ways in a particular context" and "different components of MCS may complement as well as replace each other" (Gerdin, 2005, p. 119). We may find answers to these questions in empirical field studies, but the MCS frameworks do not give a guideline on how to incorporate these factors in research projects, and consequently more studies on the configuration of MCS are needed (Bedford and Malmi, 2015; Gond et al., 2012). A first step in this direction is indicated in our proposal in the next section.

The authors of the MCS frameworks stress the importance of looking holistically at the MCS package but do not examine how to balance the control systems or

how to optimise the fit between an organization's context and the design of its MCS package (Bedford and Malmi, 2015, Gond et al, 2012). The MCS frameworks clearly distinguish between the different parts of an MCS package and give a simplified overview of its purposes; however, managers work in a much more complex, dynamic and changing environment under conditions of uncertainty, and often with a constant focus on improving performance and fulfilling goals. To cope with this gap between the conceptualised MCS frameworks and practitioners' reality, researchers have to observe practice and learn from earlier empirical studies; however, empirical studies tend to be carried out on a piecemeal basis, and hence lack cogent, theoretically based categorization of MCS as a package. Future research together with more empirical studies could form the basis of new and extended MCS frameworks that could encompass the design of an MCS package, including contextual factors, uncertainty, and a complex and dynamic environment.

The MCS frameworks present the purposes to be served by an MCS package, not a guideline for the perfect configuration, use, balancing and matching of the controls and contextual factors of an organization, nor for how to study the interrelationship between the controls working within the MCS package. However, the frameworks give researchers and practitioners a conceptual framework, providing an analytical toolbox of questions or categories that guide researchers and practitioners in how to look at an MCS package as one. However, in future, information is needed on each group of controls within the frameworks, which could be provided by results of conceptual studies or case studies of MCS as a package. Such information should help identify the effectiveness and efficiency of using each type of control in combination with other controls and contingent variables. This might provide a better understanding of how to design a

better fit between the MCS in an MCS package. This knowledge may also indicate if or when controls need to be changed, and which controls need to be changed.

7. A proposal

The main frameworks outlined above all have strengths in identifying aspects of MCS that are relevant to the design of an overall MCS package. However, they are also difficult to use in a research setting because they make little reference to easily observable MCS features. This is most evident in Simons' framework, where he explicitly states that both the diagnostic and interactive uses of a control system make use of the same underlying information. That is, we can only identify the distinction by observing how particular information is used by different managers. Similarly, the Ferreira and Otley (2009) framework is a logical structure that directs the researcher to discover how specific objectives of a control system (e.g. connection with strategy, use of targets, consequences of performance evaluation etc.) are achieved in the organization being considered. Malmi and Brown (2008) perhaps get nearest to observable features by their categorization of control types, but even here they intertwine existence and use. What seems to be missing is a categorization of observable control (sub-)systems that separates practices from purposes, which can then be further studied to observe how they are used and what purposes they serve. This would provide a missing step between MCS and their effects, which are affected by external contingencies and mediated by managerial use. We therefore consider only the existence and structure of formal control (sub-)systems given the relative neglect of this topic. We do not address either the use made of these systems or the role of informal 'systems' of

control, not because these issues are unimportant, but rather because they have already received some attention in the literature.

In this section, we present an outline sketch of the form such a categorization might take. This makes no pretence at being exhaustive, but provides a starting point for future work to build upon and develop. The focus is on identifying control sub-systems (rather than isolated performance measures) where an important feature of such a sub-system is that it serves a confined purpose, but not that of achieving overall organizational control. For the sake of using an unambiguous terminology, we will describe such limited control activities as 'sub-systems' and reserve the use of the term MCS for the total package of such sub-systems that seeks to achieve overall organizational control.

We begin with the traditional focus on financial controls, which appear to be ubiquitous in their presence and application, mainly because of the ever present necessity to balance monetary inflows and outflows in all organizations. Thus we observe the widespread use of accounting and budgetary systems. This provides a starting point for an important category of controls, namely financial. These may be split into information systems which report on actual financial outcomes (such as costs and revenues), and which are reported on a variety of time scales (e.g. daily revenues in retail stores; weekly and monthly cost variance reports; quarterly and annual overall financial reports), and planning systems which produce forecasts of future outcomes (e.g. monthly and annual budgets). These (sub)-systems have provided the foundation for many management control studies in the early literature, which were then largely unproblematic because these sub-systems were often the dominant means of effecting overall management control (as defined by Anthony (1965)). It should be noted that financial controls often serve

a wider function than the management of monetary flows, in that they act as surrogates for various aspects of organizational viability.

More recently, there has been a greater emphasis on the use of non-financial performance measures, although it should be noted that these were always evident at lower organizational levels, but were consigned by Anthony into the category of operational control. This illustrates the need to document the different varieties of control techniques in use at different hierarchical levels. Each performance measure requires a data collection and reporting system to operate, and these may be purposely designed for a specific performance measure (e.g. on-time running of railway trains) or be part of a wider, often generic, control system (e.g. ERP or TQM). Our focus here is on a control sub-system rather than just a specific performance measure at this level of analysis.

Our view of such non-financial systems can perhaps be extended using the broader heading of 'balanced scorecards'. Our use of this term does not require the formal use of the Harvard BSC developed by Kaplan and Norton (1992), but the term is used here as a generic category designed to capture the overall approach used in the BSC, and may appear under many different labels (e.g. tableau de bord in many French organizations). Using such a model draws attention to the different stakeholder needs to which attention needs to be paid. Admittedly, the Harvard model explicitly identifies only two of these (providers of finance and customers), but a more general approach could identify a more complete range of stakeholders (including e.g. employees, suppliers, governments, regulators etc.). Systems designed to monitor and control aspects of organizational performance of particular significance to each stakeholder provides a useful categorization.

Two of these categories provide important examples, although we suggest that a full range of stakeholders should be considered. First, employees are subject to a variety of controls and performance measures, of which incentive payment systems are a major category. Payment systems differ markedly by hierarchical level in many organizations (e.g. from piecework at operational levels through to share option schemes at higher levels). More fundamentally, there are employee recruitment, selection, training and development schemes that aim to obtain and develop employees to exhibit traits which are regarded as desirable for good organizational performance. Thus HR systems are perhaps one major category of control sub-system that should be recognized. The second category is that of external regulators whose requirements have to be met if significant potential sanctions are to be avoided. These may range from activities such as ensuring adequate capital reserves in the banking industry through to matters of health and safety in most organizations. This approach therefore suggests that we should attempt to identify the particular sub-systems that have been designed to manage the requirements of different stakeholder groups.

Within organizations, the second category above has often been incorporated into formal risk management systems designed to help ensure that the successful pursuit of short-term objectives is not negated by events that were unanticipated but which can cause significant loss of resources. The identification of such possible risks will be followed by measures taken to avoid them (e.g. not accepting financially suspect customers), to mitigate their consequences (e.g. insurance), or to have in place contingency plans to moderate their effects if and when they occur (e.g. computer backup plans).

How organizations use the different control (sub)-systems also affects the effectiveness of using the control systems. Technological support of a (sub)-

system, managers' different uses of a (sub)-system (Abernethy et al, 2010), and how different subordinates act differently on a (sub)-system will affect the value of using the (sub)-system. By measuring time, cost and quality of the (sub)-systems an organization uses, managers may be able to measure the benefit of using these control systems. Further, variables such as culture (Chenhall 2003), cooperation (Chenhall et al 2011), participation and hierarchical level (Jermais and Setianwan, 2008), and power within an organization have impact on the effectiveness and efficiency of each part of an MCS package. Organizations have different types of tasks and different ways of controlling and solving the tasks; consequently, a better fit between an organization's internal environment, the use and design of each (sub)-system, and their total MCS package would improve the benefit of using the MCS. It is therefore very important to include organizations' internal environment and managerial use of MCS when studying MCS, to able to investigate if it is the system or the use of the system that causes the effect of using a control (sub)-system in an organization.

Another important issue of using MCS is the effect of contingent variables (Chenhall, 2007; Gerdin, 2005). The present MCS frameworks do not explain how to include organizational dependence on external resources and interdependence upon other organizations. Yet, former studies show that contingent variables do affect the use of MCS, for example competition (Bruggeman and Van der Stede, 1993; Lee and Yang, 2011), strategy (Chenhall, 2003; Langfield-Smith, 1997, 2007), national culture (Tallaki and Bracci, 2015), government and external environment (Agyemang and Broadbent, 2015), and size (Chenhall, 2007). By identifying the contingent variables that affect an organization, control (sub)-systems should be chosen and an MCS package should be built that support each organization's situation. Previous research studies have investigated

configurations of MCS packages, e.g. Bedford and Malmi (2015), who using data from 400 companies find five different configurations. However, we still do not know which of the configurations is most effective in a given organization or situation.

The fit, interrelationship and balance between all parts of an MCS are also vital factors when designing and studying MCS (Giovannoni and Maraghini, 2013). The balancing of the controls upon the need of different demands (Strauss et al, 2013), and the designing of the interfaces between the (sub)-systems, the usability and customization of the MCS will reflect in effectiveness and efficiency of the different parts of an MCS package. But how do we define if a (sub)-system or an MCS package is less or more effective than others in an organization? None of the MCS frameworks gives guidelines for how to measure if a (sub)-system or an MCS package is more or less effective. Organizations may have many similarities, however they are all unique, and many variables will differ between organizations. Yet, it may be possible to find some relations between organizations' contingent variables, configuration of MCS packages and development in organizations' performance. Also, MCS research could investigate the effect of control sub-systems on each other. Do some (sub)-systems fit better than others? And are some (sub)-systems more effective in certain settings than others?

As many, if not all, of the variables that affect the MCS change over time, the conditions for using the MCS continuously change. To be able to keep up with these changes, management have to adapt their MCS to them (Otley, 1999). Consequently, keeping up with changes and customizing an MCS package is an on-going process (Otley, 1999; Tessier and Otley, 2012b). MCS frameworks may be seen as BSC (a practical management tool) that management have to work with

on a daily basis, whereby they effectively gain a holistic overview of the management controls within their organizations and at the same time help achieve organizational objectives and ensure correct and effective control (sub)-systems.

Finally, the MCS framework would benefit from including as much from practice as from theory. But how do we categorize or divide this in the MCS frameworks? Today, in practice technological development helps management practices to cope with big data. Managers that have the right knowledge and data as well as a good overview of their organization and its environment will be able to build a customized MCS package. Maybe when developing MCS frameworks and conducting research this opportunity should be included.

The above framework is only a sketch of what seems to be required, and it will require considerable development, perhaps first focussing on the types of sub-system regularly observed in practice. However, the categories of financial and non-financial, the different stakeholder groups, incentive schemes, and issues of risk and regulation cover a broad range of such systems. They can also be categorized into forward-looking anticipatory controls (e.g. planning, including strategic planning systems) and historic after-the-event controls (e.g. financial reporting), and it is to be expected that the deployment and use of such sub-systems will be markedly different in different organizations and at different hierarchical levels. A description based on such categories will provide a broad overview of the components of a MCS package that exist in an organization, and can provide a more complete basis for then examining the use made of these controls and their effects. The extent to which they represent a tightly coupled system of coherently coordinated controls rather than a more loosely coupled package of sometime conflicting controls can also be assessed.

It is suggested that the further development of such a framework will provide a greater degree of coherence in future studies by providing a means of locating different studies of a descriptive framework that will allow the impact of different contingencies and contexts to be considered at a subsequent stage. The overall position taken is that an overall MCS (perhaps better described as a management control package) comprises a set of sub-systems which need to be identified and described as part of the overall context of control, even where they do not all serve as the main object of study in a specific research project.

8. Conclusion

A comprehensive MCS framework has still to be developed. There is still an open research question on how to incorporate variables such as time, quality, hierarchical levels, globalisation, environment dynamics and uncertainty. While the core MCS systems are included and specified in all four MCS frameworks presented here, none of the frameworks completely include factors such as flexibility, usability, information flows (forward and backward), technology, and strength and coherence within MCS as a package – only Ferreira and Otley (2009) partially include some of these factors. This is the case, despite the findings of Simons (1995b), who highlighted that the effectiveness of an MCS package is a result of how managers use all the MCS in the complete package. The variables time, cost and quality need to be addressed both for each control and in the complete MCS package. Furthermore, interdependency and flexibility between controls and fit to an organization's contingent variables need more attention in the frameworks. These variables must be added to enable calculation of the effectiveness and efficiency of using the controls.

We have made a limited proposal to address one topic that has been surprisingly neglected, namely the identification and categorization of the components of an overall management control package. Even where several of these component sub-systems may not be directly relevant to a specific research study, it is still important to be aware of what they are, in order to fully understand the contribution that the sub-system(s) under study make in this context. Further, as any real management control package will inevitably be imperfectly coupled, this context is vital to understanding its overall contribution. We hope that this proposal makes a useful contribution to the on-going task of developing a fuller understanding of the operation of management control packages in a variety of contexts, and also that the refinement of frameworks to conceptualize this continues with some urgency.

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7.3 The Use of Management Control Systems: impact on companies' performance

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Abstract

This paper investigates the relationship between the use of management control systems (MCS) and companies' performance. The paper focuses on how executive managers' use of MCS relates to developments in company performance. The MCS investigated are: strategy, evaluation of subordinates, rules and procedures, and executive managers' focus on customer relations when guiding and directing their subordinates. A path model is developed which proposes that a larger extent of using the above MCS as well as the frequency of business and leadership evaluation are associated with development in financial performance. Using survey data on executive managers' use of MCS in large companies, the paper shows patterns in the extent to which managers in large companies use the MCS and how this affects company performance. The results confirm that there are some positive and some negative connections between the use of the MCS and company performance.

Keywords: Management control systems, performance, large companies, strategy, evaluation, customer orientation, rules, procedures.

Introduction

Boards and executive management set objectives for their companies, and managers design, introduce, and use many different MCS to support their organizations in achieving these objectives (Fisher, 1998, Merchant & Van der Stede, 2012, Ferreira and Otley, 2009). For most companies, some of these objectives are financial performance goals that include demands for earnings to shareholders (Simons, 1995, 2005, Malmi and Brown, 2008). Managers must guide their subordinates in the most effective and efficient way to fulfil company objectives. To do so, they must design and use their MCS in the most effective way, which includes identifying how the design and use of the MCS affect their organizations' success in fulfilling objectives and improving financial performance (Merchant & Otley, 2007). Despite this, in her article from 2007, Stinger states that "[o]ur current understanding of performance management practices and the consequences of different performance management and control system designs in real organizations is limited." (p. 92).

Previous quantitative research studies have explored companies' configuration of MCS by examining to what extent groups of companies use different types of MCS (e.g. Bedford and Malmi, 2015; Gond et al., 2012), whereas focus on how managers' actual use of these MCS impacts the companies' financial performance

has been less explored. There is a cost of using MCS, and even though previous research by Widener (2007) shows that the net effect of using MCS is positive, we still need more studies that verify Widener's findings and particularize the relationships between 'how the MCS are used' and 'how this affects the development of companies' performance'. Previous research shows that there is a link between the use of MCS and performance (e. g. Gani and Jermias, 2012; Jermias and Satiawan, 2008; Lee and Yang, 2011; Sandino, 2007), however the impact of using the MCS and development in company performance has not been studied much. More studies are needed to extend our knowledge of how this relation between the use of MCS and performance can be used to enhance performance. Case studies have looked at managers' use of MCS and companies' performance (e.g. Marginson, 2002; Sandelin, 2008), yet we need large samples of data from more companies to identify patterns between the use of MCS and company performance, if we wish to attempt to analyze these patterns and draw generally applicable conclusions on the nature of the relationship between the use of MCS and company performance.

This study contributes to the body of research that investigates the relationship between the use of MCS and development in company performance. Managers use multiple MCS, which can be connected, overlapped or even dependent on each other. Studying the impact of one MCS in isolation may seem relatively inconsequential and artificial, however, to include them all would be impossible. The MCS that have been chosen for this paper are MCS which in previous research studies have been shown to have an association with performance (e.g. Baiman and Demski, 1980; Ittner et al., 2003), and which some of the executive managers who have participated in the survey included in this study found very important when working with improvement of financial performance. Finally, the

aim is to identify characteristics of MCS that executive managers are able to change with less effort, to show how small changes in management control practice matter in regards of improving performance. The aim is to make five interrelated contributions to the literature. First, the study investigates if different characteristics in managers' design and use of strategy make their companies perform better. Second, the study investigates if the extent of customer orientation impacts positively on the development in company performance. Third and fourth, the study investigates if the use of benchmarking when evaluating subordinates and the frequency of evaluation of subordinates relate positively to development in company performance. Finally, the study investigates the extent to which managers' use of company rules and procedures impacts positively on company performance. As control variables, the study includes company size and industry. Industry is divided into three groups: manufacturing, service, and trade (retail and wholesale).

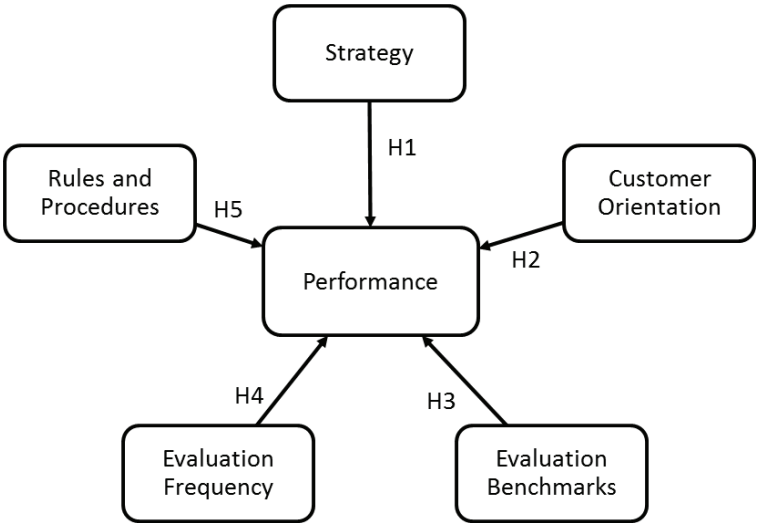
This study uses a path analysis model with latent variables (Grefen et al., 2000; Haenlein and Kaplan, 2004) to test the proposed relationships. The model is shown in Figure 1 and illustrates the proposed relationship between development in performance to strategy, executive managers' customer orientation, use of objective performance measures and benchmarking when evaluating subordinates' performance, frequency of formalized business and leadership performance, and the extent of using rules and procedures. Analyzing the association between the use of these five MCS and development in company performance may provide us with a better understanding of these MCS' influence on company performance. A path model is developed on the basis of academic literature on MCS and performance, and statements from some of the executive managers that participated in the survey. Based on the path model, five hypotheses on the

association between managers' use of the MCS to the development in companies' performance are tested.

The paper is organized as follows: The next section develops a theoretical framework and presents five hypotheses. Following this, a section on research design and methods, sample, data collection and measures is presented. Then the results and discussion are presented, followed by a section containing conclusions and limitations.

Figure 1

Hypothesized Path Model



Theoretical Framework

The theoretical framework developed associates five different MCS' approaches to development in company performance.

- Strategy: The length of strategy period and the weight given to specific strategy objectives, programs and resources.
- Customer orientation: Executive managers' focus on customer relationships.
- Performance measures used for evaluation: The extent to which objective performance measures and benchmarks are used when evaluating subordinates.
- Frequency of formalized business and leadership performance evaluations.
- Rules and procedures. The extent to which managers use rules and procedures.

Relationship between Strategy and Development in Company Performance

Many studies have looked at the impact of strategy within companies (e.g. Bedford et al., 2016; Chenhall, 2003; Dent, 1990; Govindarajan and Gupta, 1985; Henri, 2006; Ittner and Larcker, 1997; Langfield-Smith, 1997, 2007; Mahama, 2006; Melnyk et al., 2014; Pondeville et al., 2013; Simons 1987, 1990), and researchers have developed theories of strategic archetypes to frame different focuses in the work with strategy: Mintzberg (1973) entrepreneurial, adaptive, and planning mode; Utterback and Abernathy (1975) performance-maximizing, sales-maximizing, and cost-minimizing; Miles and Snow (1978) defender, prospector, analyzer and reactor; Porter (1980, 1985) overall cost leadership, differentiation, and focus of a niche. However, this study will not focus on the archetype of

strategy, but rather on executive managers' work with strategy, by analyzing their willingness to set more concrete strategic performance goals and to plan for a longer strategy period. This inward focus on executive managers' strategic work rather than on the archetype of strategy will lead to more omnibus findings that can be used by all managers, regardless of which strategic archetype they choose. These arguments lead to the basis for the following hypothesis.

H1: A longer strategy period and a higher weighting of setting strategy goals for objects, programs and resources positively influence the development in company performance.

Relationship between Customer Orientation and Development in Company Performance

Management control and performance measures that address the relationship between customer orientation and company performance have not been studied much in accounting research (Guilding and McManus, 2002), whereas marketing research has studied the relationship more (Chenhall and Langfield-Smith, 2007). However, both within marketing and accounting literature researchers have found relations between customer orientation and company performance (ibid). In the early 1990s, Kaplan and Norton (1992, 1993, 1996a, 1996b, 2000) developed the 'Balanced Scorecard' (BSC), which combines customer value position, organizational learning, internal business processes, and financial perspectives. The BSC is an effective MCS that translates organizations' visions and strategies into measures and goals that managers can use to guide and direct their subordinates to fulfil strategies, including an increase in customer value and profitability (Chenhall and Langfield-Smith, 1998; Davis and Albright, 2004). In

2014, Simons used the BSC in his book - Performance measurement and control systems for implementing strategy. He emphasized the importance of measuring core output on customer satisfaction, customer retention, acquisition of new customers, and customers' profitability, and stated that "studies have shown that business with satisfied, loyal customers becomes significantly more profitable over time" (Simons, 2014 page 208). However, to be able to understand and map customer satisfaction, organizations need to have knowledge of customers' expectations, perceptions, and customer value (Chenhall and Langfield-Smith, 2007).

In 1994, Heskett et al. developed 'The service profit chain (SPC)'. The SPC is based on information provided by executive managers from large American companies as well as previous research results. As with the BSC, the SPC focuses on drivers and cause-and-effect links. The SPC proposes direct relationships from internal service quality and employee satisfaction to external service quality and value to customers, which in turn link to customers' satisfaction and loyalty, which lead to revenue growth and profitability (Heskett et al., 1994). Heskett et al.'s study (1994) finds that customer satisfaction and loyalty are more important than market share when companies wish to increase customer profitability and their study shows how executive managers' focus on customer orientation drives growth in revenue and higher performance. Subsequent research studies which have used the SPC show correlations between the links within the SPC (see more in Yee et al., 2009).

Some of the studies within the accounting literature that address customers' position and roles in companies, and how to calculate and measure the financial values of customers, are Vaivio (1999) and Boyce (2000). They identify important customer-based accounting measures, and highlight the importance of including

customers' requirements and values in the companies' MCS to direct employee behavior towards customer satisfaction. Additionally, Boyce (2000) finds that customer valuation increases shareholder value and wealth. The findings are supported by three other studies of customer orientation within accounting literature (Banker et al., 2000; Guilding and McManus, 2002; Ittner and Larcker, 1998), which have all found a positive relationship between customer satisfaction and company performance.

The above arguments lead to the basis for the following hypothesis.

H2: Higher customer orientation positively influences the development in company performance.

Relationships between Using Objective Performance Measures and Benchmarking when Evaluating Subordinates and Development in Company Performance

Based on their strategic goals, companies formulate performance measures and pre-set targets that should be linked to definitions of clear goals and benchmarks to be used when evaluating subordinates' performance (Merchant and Van der Stede, 2012; Otley, 1999; Speckbacher and Wentges, 2012). The purpose of setting targets and evaluating subordinates' performance is to direct and motivate employee behavior in the direction of fulfilling companies' goals (Burney et al., 2009, Lillis et al., 2015). To encourage employees to perform at their best, the targets must be specific, clear, measureable, achievable, timely, and challenging while still being realistic. In addition to providing individual feedback, the targets may also be used to determine financial and non-financial rewards (Merchant and Van der Stede, 2012). There is a link between performance evaluation, rewards,

employee behavior and organizational performance, however the complexity of cause-and-effect linkages seems to be very high (Ferreira and Otley, 2009; Lillis et al., 2015).

This study focuses on financial performance effects of executive managers' use of benchmarking and objective performance measures (Lillis et al. 2015) when evaluating subordinates. Based on the extent to which managers use calculative numbers, internal and external league tables, and trend-based evaluation, it will be tested if the use of these factors positively affects companies' financial performance. This leads to the basis for the following hypothesis.

H3: Using benchmarking to a large extent when evaluating subordinates' performance positively influences the development in company performance.

Relationship between the Frequency of Business and Leadership Evaluations and Development in Company Performance

In addition to testing the effect between the use of objective performance measures when evaluating subordinates and development in company financial performance, this study also examines the cause and effect of the frequency of conducting evaluations of business and leadership performance. Simons (1995) suggests the use of diagnostic control systems to define goals, provide motivation, and prepare ex-post evaluation of the work performed by employees to ensure fulfilment of strategic performance goals. Yet, not much literature has tested the direct link between the frequency of conducting performance evaluations and companies' financial performance. Previous studies have found that "timeliness [provision of information on request and the frequency of reporting systematically collected information] of [management accounting systems] is likely to positively

affect managerial performance" (Tsui, 2001 p. 129) and that "increase in the frequency of feedback will in general increase managerial performance" (Gordon and Miller, 1976 p. 60). Furthermore, a high frequency of management reports and rapid feedback in generally relate to managers' ability to respond quickly to changing events (Chenhall and Morris, 1986), and given the dynamics in and uncertainty of the business environment, timely management information may support managers in making more informed decisions. This leads to the basis for the following hypothesis.

H4: A lower frequency between formalized business and leadership performance evaluations (for determining compensation or providing individual feedback) negatively influences the development in company performance.

Relationship between Rules and Procedures and Development in Company Performance

Large companies tend to have many MCS, including an array of rules and procedures (Chenhall, 2006; Flamholtz, 1996). To ensure uniformity, organizational contexts and co-operation between departments and processes, large companies develop a lot of rules and procedures. Yet, not many of the rules and procedures work interactively and call for creativity among employee behavior. Instead rules and procedures create boundaries within which employees must behave (Merchant and Van der Stede, 2012; Simons, 1995). Rules and procedures are necessary in large companies to support and ensure companies' policies and goals, however, is it possible that too many or too strict rules and procedures decrease the employees' opportunities or willingness to be innovative and creative and test new business opportunities? This may then result in

companies losing business opportunities and may lead to a decrease in performance. According to Simons (1995), managers need to use MCS both diagnostically and interactively to balance competing demands. Simon states that "Inherent tensions must be controlled, tensions between freedom and constraint, between empowerment and accountability, between top-down direction and bottom-up creativity, between experimentation and efficiency" (Simon, 1995 p. 4).

The present study tests if large companies may have too strict rules and procedures that can cause lower performance. These arguments lead to the basis for the following hypothesis.

H5: A large extent of managers' use of rules and procedures when guiding and directing subordinates' behavior negatively influences the development in company performance.

Research Design

Sample and Data Collection

The paper is based on quantitative data collected through interviews with executive managers in 120 of the 318 largest companies in Denmark. The target was 120 large companies with 250 or more employees[13], and the ORBIS database was used for selection of the companies. The ORBIS database gave a list of 419 large companies. After checking the list for companies that have closed or been sold, and duplicate data points (e.g. a holding company and the operating company), which were all deleted, the quality-checked total list comprised 318

[13] The European Union defines large enterprises as independent firms that employ more than 250 employees. http://www.oecd.org/regional/leed/1918307.pdf

companies. Large companies were chosen as they often have greater quantities of information, are more complex, and have longer chains of command, which give them a structure where authority is more decentralized than in small companies (Chenhall, 2003, 2007; Flamholtz, 1996). Large companies tend to operate on larger scales and use more specialized and sophisticated mass production techniques to lower task uncertainty (Chenhall, 2006; Hoque and James, 2000; Merchant, 1981). Due to the higher numbers of employees, large companies have the capability to "improve efficiency [and] provide opportunities for specialization and division of labour" (Chenhall, 2003 page 148). Increasing company size and diversity may challenge social controls and coordination (Merchant, 1981). Consequently, to ensure that employees act uniformly and with a high level of cooperation and integration, large companies need MCS such as rules, procedures and standards to guide and direct employees to fulfill company strategies and objectives (Chenhall, 2006; Flamholtz, 1996).

A random sample design was selected for interviewing (Groves et al., 2009) with a selection basis of 'every third firm' per industry group – manufacturing, service and trade (Cochran, 1977). Five response-enhancing techniques that have shown a positive effect on survey response rates were used to increase the positive response rate (contacting the respondents personally, highlighting the sponsorships of two universities, informing about the topic of research, promising respondent anonymity, and using personal interviews) (Anseel et al., 2010, p. 337). With a positive response rate of 74%, 163 companies were contacted to reach the target sample of 120 companies. A standardized questionnaire was used to guide and streamline the interviews, as well as to ensure that the data were comparable. To ensure that respondents understood the questions correctly and to ensure data quality, responses were gathered through personal interviews with CEOs, CFOs or

other members of executive management in the 120 companies. The interviews typically lasted between two to three hours, and in order to ensure uniformity and objectivity of the questions the interviews were conducted by two researchers. In addition, the interviews were recorded to safeguard the validity of responses. The purpose of the interviews was to ensure higher quality in the survey data and completeness in answering all questions in the questionnaire, as well as to collect additional qualitative information from the executive managers regarding their design and use of MCS in the large companies.

Measures

This study is based on a classic survey with a large sample size, random sampling selection, and use of statistics to analyze data. Most responses to the questions in the questionnaire are given on a seven-point Likert-scale ranking of importance or frequency, and the remaining responses are selected from closed lists of categories (e.g. Industries). There are no right or wrong responses, and "not applicable" (N/A) is provided as an option for some of the questions. However, the interviews with the executive managers added qualitative information regarding the managers' use of MCS and company context that they find important when guiding and directing their subordinates. This additional information moves the classic survey in the direction of a cross-section field study, where quantitative answers are supplemented by qualitative statements from the participants (Lillis and Mundy, 2005; Merchant and Manzoni, 1989).

The questions used in this paper are part of the extended questionnaire. The selected questions relate to areas that many of the CEOs and CFOs who participated in the survey find to be some of the most important when focusing on increasing financial performance. Within the areas of interest, questions were

selected that investigate characteristics of use of MCS that executive managers are able to change with less effort. Previous research has also confirmed relationships between the chosen areas of MCS and company performance (Arachchilage and Smith, 2013; Burney et al., 2009). The questions used are presented in Appendix A, and descriptive statistics on each item are reported in Table 1 below.

The first latent variable, 'Design and Use of Strategy' is constructed by three underpinning questions that relate to the extent to which executive management in the large companies are willing to set concrete strategic targets and to work with a longer strategic period. The questionnaire also contains a question regarding the extent to which executive managers specify concrete ways of creating competitive advantage. However, this item has a low loading and was therefore discarded. The second latent variable, 'Customer Orientation' is measured by four items that concern the level of focus that the companies put on collaboration with customers and fulfilment of needs and wishes coming from existing and prospective customers. As with the first latent variable, one item in the second latent variable was discarded due to a low loading. The discarded question regards 'our SBU succeeds because we fine-tune our offerings in order to keep our current customers satisfied'. The third latent variable, 'Use of Benchmarking when Evaluating Subordinates' reports the extent to which the executive managers focus on absolute numbers, internal and external benchmarks, and trend-based evaluation when they evaluate their subordinates' performance. The fourth latent variable, 'The Frequency of Formalized Evaluation of Subordinates' measures how often the companies conduct formalized performance evaluations of leadership and business performance for determining compensation or providing individual feedback to subordinates. The fifth latent variable, 'Use of Rules and Procedures' is measured in three very distinct boundary control systems (Simons, 1995). It

reports the extent to which the companies use codes of conduct (or similar statements), have specified minimum requirements of profitability for business opportunities, and demand review of plans before action. As in the first and second latent variable, an item was discarded in this fifth latent variable due to low loading. The discarded question was 'to what extent do your SBU employ written authorization levels and decision rules?'.

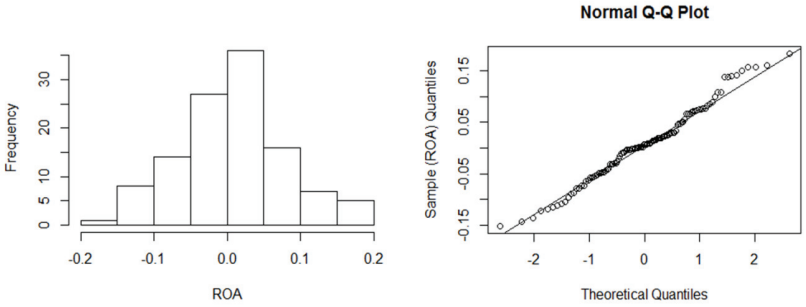
In addition to the survey data, archival data on the participating companies' earnings are used to measure the companies' financial performance. The companies' earnings are calculated in the form of ROA (return on assets). To avoid noise from financial gearing, ROA is calculated as net income before interest and tax divided by total assets. ROA represents company earnings generated from invested capital, and gives an indication of how effectively management convert invested capital into net income. As the size of invested capital may vary substantially and be highly dependent on industry, this paper uses each company's development in ROA from 2010 t0 2013 as an indicator for each company's development in performance. The development in ROA is calculated as the absolute decrease or increase in ROA for each company. This means that effects from industry are excluded, and the calculated number accounts for the companies' development in earnings in the period during which the survey is conducted. Three companies became outliers, two of the companies showed an extremely negative development in ROA, and one showed an extremely positive development in ROA. These three companies were excluded from the analyses, and the analyses are therefore based on 117 out of the 120 observations. Figure 2 shows the distribution of development in ROA in the 117 companies.

Table 1: Descriptive Statistics

Variable	N	Mean	Standard Deviation	Actual Range		Theoretical Range	
				Minimum	Maximum	Minimum	Maximum
Design and Use of Strategy							
1.1) Length of strategic period	117	3.71	1.339	0	9	0	9
1.2) Extent of specifying objectives	117	5.62	1.325	1	7	1	7
1.3) Extent of specifying programs and resources	117	4.63	1.466	1	7	1	7
Extent of Customer Orientation							
2.1) Our SBU succeeds because we find creative solutions to satisfy our customers' needs	117	5.66	0.939	2	7	1	7
2.2) Our SBU succeeds because we find new customer segments and needs	117	4.44	1.435	1	7	1	7
2.3) Our SBU succeeds because we deepen and create long-lasting customer relationships	117	6.02	1.083	3	7	1	7
2.4) Our SBU succeeds because we collaborate extensively with different organizations	117	3.75	1.814	1	7	1	7
Extent of Using Benchmarking when Evaluating Subordinates' Performance in Relation to							
3.1) Absolute, preset numbers (euros, time, %)	117	5.94	1.302	1	7	1	7
3.2) Internal benchmarks (league table position)	117	3.85	2.011	1	7	1	7
3.3) External benchmarks (league table position)	117	3.14	1.737	1	7	1	7
3.4) Past performance (trend-based evaluation)	117	4.61	1.645	1	7	1	7
Frequency of Formalized Business and Leadership Performance Evaluation							
4.1) Leadership performance	117	4.32	1.311	1	7	1	7
4.2) Business performance	117	2.35	1.647	1	5	1	7
Extent of Using Rules and Procedures							
5.1) Use company-wide codes of conduct or similar statements	117	4.77	1.923	1	7	1	7
5.2) Review plans before action?	117	4.81	1.306	1	7	1	7
5.3) Specify minimum requirements (e.g. ROI, implementation times) for business opportunities?	117	4.90	1.729	1	7	1	7

Figure 2

Distribution of Development in ROA



Partial Least Squares Regressions

Partial Least Squares (PLS) is used in this paper to test the path model (Figure 1). PLS is a component-based analysis model that makes it possible to analyze relations between more exogenous and endogenous variables through construction of latent variables. Each latent variable is constructed of two or more items, for example questions as in this paper (Appendix A), which improves the reliability and validity of the study (Gefen et al, 2000; Sanchez, 2013). A PLS model estimates parameters both for the relations between the latent variables and the items (e.g. loadings per item), and for the relations between the latent variables (e.g. path coefficients) (Hulland, 1999). The latent variables scores are calculated as a weighted sum of the additional items according to highest explanation of the variance, hereby the PLS model obtains a maximum power of explanation (Chin, 1998a). By nature, PLS is distribution-free and robust to multicollinearity, misspecification and data noise, which makes the PLS a powerful method to

predict phenomena, as PLS typically is used to explain variance (Chin, 1998a; Gefen et al., 2000; Goodhue et al., 2007; Haenlain and Kaplan, 2004; Sanchez, 2013). PLS makes no distributional assumptions and thus does not perform inferential statistical tests for overall goodness of fit (Chin 1998a). Alternatively, fit in the model is evaluated by R^2, which indicates the extent of variance in the endogenous variable (in this paper ROA) that is explained by the exogenous latent variables. PLS regression is particularly suited to cases of regression where there is more than one explanatory item per exogenous variable, and where there is multi-collinearity among the observed explanatory items.

Before presenting the results of the PLS, the model needs to be quality checked. To this end, three steps are recommended (Sanchez, 2013); first, checking the uni-dimensionality of the latent variables; second, checking the items are well explained by the latent variables; and third, assessing the degree to which one latent variable is different from another latent variable.

To check for uni-dimensionality, Dillon-Goldsteins rho, and first and second eigenvalue are used. The Dillon-Goldsteins rho indicates the composite reliability per constructed latent variable, as it focuses on the variance of the sum of the items within each latent variable. A rule of thumb is that Dillon-Goldsteins rho should be above 0.7 (Vinzi et al., 2010). The composite reliabilities are reported in table 2, and with a level between 0.7 and 0.8 for all the latent variables, the model indicates a high internal reliability (Sanchez, 2013). The eigenvalue is a correlation matrix of each of the latent variables. If the latent variable is uni-dimensional, the first eigenvalue should be above 1, and the second lower than 1 (Sanchez, 2013; Vinzi et al., 2010). The numbers of eigenvalues of the five latent variables are all validated in regards to the required levels (Table 2).

Table 2

Checking for Uni-Dimensionality and AVEs for the Latent Variables

Latent Variable	DG.rho	eig.1st	eig.2nd	AVE	Root AVE
Strategy	0.7984	1.7083	0.7092	0.5131	0.7163
Customer Orientation	0.7800	1.9087	0.8777	0.4081	0.6388
Evaluation Benchmarks	0.7408	1.6951	0.8935	0.4056	0.6369
Frequency of Evaluation	0.7744	1.2637	0.7363	0.6314	0.7946
Rules and Procedure	0.7246	1.4020	0.8110	0.4548	0.6744

The reliability of the items is calculated as a loading per item. The loadings are reported in table 3. The level of the loadings per item is between 0.45 and 0.95. In the literature on PLS, there is some variation in the acceptance level of loadings. In general, loadings of 0.7 or more are acceptable[14] (e.g. Götz et al., 2010; Sanchez, 2013), however, Hulland (1999, p. 198) states that "in general, items with loadings of less than 0.4 […] should be dropped", and Chin (1998a, p. 325) states that "loadings of 0.5 and 0.6 may still be acceptable if there exist additional indicators in the block for comparison basis." For all five latent variables, some items in the group have a loading above 0.8. By following Chin (1998a, 1998b) and Hulland (1999), and with reference to previous literature on MCS using PLS (Burney et al., 2009; Chenhall et al, 2011), all the items are accepted.

Following the reliability check, the model is checked for discriminant validity of measurement by testing the extent to which latent variables share more variance with own items than with the other latent variables (Fornell and Larcker, 1981). For this test, the square roots of the average variance extracted (AVE) per latent

[14] A loading of 0.7 indicates that more than 50 percent of the variance in the observed item is due to the latent variable.

variable are calculated. A rule of thumb is that AVE should be greater than 0.5 to represent satisfactory discriminant validity, which means that a minimum of 50 percent of the items' variance is accounted for within the latent variables in relation to the amount of variance due to measurement error (Chin, 1998a; Fornell and Larcker, 1981; Sanchez, 2013). AVE per latent variable is reported in table 2. The root AVE values reported are all larger than the path coefficients they estimate. Thus, it can be concluded that discriminant validity is adequate (Hulland, 1999).

Results

This section describes the PLS regression method used to test our theoretical path model, and reports the empirical results.

The results of the PLS regression model are shown in Tables 3 and 4, and the proposed relationships, including the level of significance given by the developed path analysis model (Figure 1), are illustrated in Figure 3. There are significant paths between use of the five MCS dimensions and development in company performance: 'Design and Use of strategy' (0.1728, p = 0.0645; H1), 'degree of customer orientation' (0.1901, p= 0.0452; H2), 'use of benchmark when evaluating subordinates' (0.1744, P = 0.0624; H3), 'frequency of performance evaluation' (-0.2273, p= 0.0100; H4) and 'use of roles and procedures' (-0.2559, p=0.0077; H5). However, some of the paths (H1 and H3) show weak levels of statistical significance (p-values < 0.05- 0.10). Hence, it can be argued that these results only should be acknowledged as 'of interest'. However, in management account literature, it is common to find papers in top journals that report findings with p-value < 0.5 – 0.10 (e.g. Bedford et al., 2016; Burney et al., 2009; Chenhall,

2005; Chenhall et al., 2011; Ittner and Larcker, 1997; Ittner and Larcker, 2003; Ittner et al., 2003; Pondeville et al., 2013).

Table 3

PLS Weights and Loadings for Strategy, Customer Orientation, use of Benchmark when evaluating Subordinates, Frequency of Formalized Performance Evaluation, and Rules and Procedures.

	Weight	Loadings
Strategy		
1.1	0.2856	0.6444
1.2	0.0857	0.4540
1.3	0.8110	0.9581
Customer Orientation		
2.1	0.1466	0.4743
2.2	0.6354	0.8073
2.3	0.0920	0.5240
2.4	0.5324	0.6936
Evaluation Benchmarks		
3.1	0.2403	0.4924
3.2	0.6443	0.8394
3.3	0.2991	0.4813
3.4	0.2957	0.6661
Frequency of Evaluation		
4.1	0.6625	0.8192
4.2	0.5945	0.7692
Rules and Procedures		
5.1	0.6525	0.8099
5.2	0.2471	0.4759
5.3	0.5098	0.6942

There are many potentially additional variables that might be included as control variables in studies of companies' use of MCS (Chenhall et al, 2011). This study includes size and industry. Size is measured by the number of employees in the strategic business unit (SBU) of the executive manager who has participated in the survey. However, most large Danish companies only have one SBU, or one very large SBU and one or a few small SBUs. In the present study, in 113 out of the 117 cases, the interviewee and questionnaire respondent was the CEO or the CFO of the entire company or of the largest SBU of the company. The remaining four respondents were other executive managers, such as the COO of the entire company or of the largest SBU of the company. Table 4 shows that size has near to a 10% significance path on ROA (-0.1429, p=0.108), which indicates that small SBUs / companies, within the category of large companies, may have a more positively development in ROA than in larger ones. Industry is categorized into three groups: Manufacturing (N = 54 (46%)), service (N = 44 (38%)), and trade (N = 19 (16%)) (wholesale and retail). The percentage distribution between the three groups is the same as in the quality-checked total list of 318 large companies. The control variable 'industry' shows no significant paths of using the MCS to development in company performance (Table 4). Finally, the Goodness of fit of the model is calculated by R^2. The result of R^2 is 0.2163, which compared to other studies within the MCS literature (e.g. Chenhall et al, 2011) is acceptable.

Table 4

Results of PS Regressions

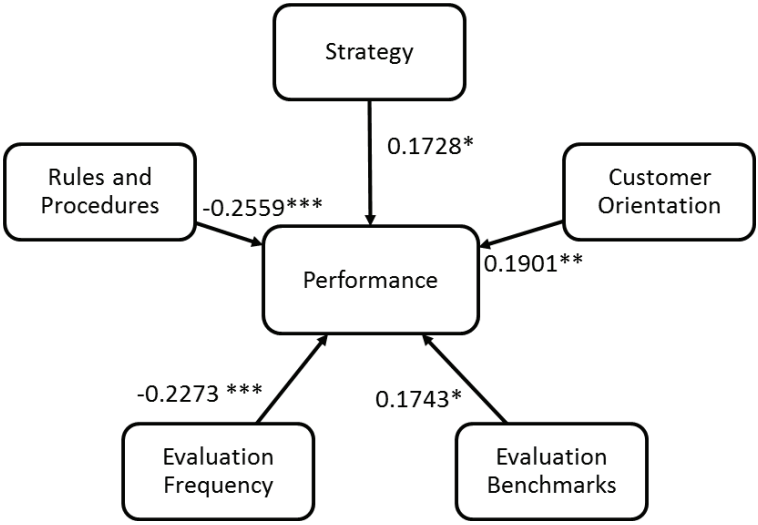
(path coefficients and P-values, R^2 for inner-model)

Paths from	Estimates for ROA	Std. error	P-values
Strategy	0.1728	0.0925	0.0645
Customer Orientation	0.1901	0.0939	0.0452
Evaluation Benchmarks	0.1746	0.0926	0.0625
Frequency of Evaluation	-0.2273	0.0868	0.0100
Rules and Procedures	-0.2559	0.0943	0.0077
Size (log10)	-0.1429	0.0882	0.1081
Industry	-0.0867	0.0905	0.3402
Multiple R^2	0.2163		

***, **, * Indicate significant at < 1 percent, 5 percent and 10 percent, respectively

Figure 3

Results of Estimating PLS Regressions
(after including controls of size and industry)



***, **, * Indicate significant at < 1 percent, 5 percent and 10 percent, respectively.

Discussion

The aim of this paper is through the use of a path analysis model to explore the relationships between executive managers' use of some MCS and development in company performance. Audited archival data and survey data on how executive managers in large companies use MCS are used to examine the relationships. The

purpose is to explore how the extent and the frequency of using certain MCS affect companies' financial performance, by identifying some general characteristics in executive managers' use of MCS and testing for correlations with the companies' development in ROA, and thereby identifying how the effectiveness of using the MCS can be increased. The results of the correlated path model indicate relationships between the selected characteristics of managers' use MCS and companies' development in financial performance. The results of the correlations are presented in Figure 3 and Table 4. All of these are significant, which indicates that characteristics in the design and use of MCS have effects on companies' development in financial performance and thus shareholder value.

The focus of interest is how to improve companies' financial performance by use of MCS, through identifying characteristics of how managers' use of the MCS affects employees' behavior towards effectiveness and improvement of company performance.

The first MCS investigated is executive managers' design and use of strategy. With a significant p-value of 0.06, the model finds a link between design and use of strategy and company performance. This result indicates that companies where executive managers place greater weight on specifying strategic objectives, programs and resources, and plan for a longer strategic period, tend to achieve a higher financial performance than companies that do not. The findings of this study not only stress the importance of managers choosing the theory of strategic archetypes that fits and supports their company best, they also need to emphasize the importance of the length of the strategic period and the extent to which managers set targets for strategic objectives, programs and resources when designing strategy.

The second MCS investigated is customer orientation. The results show a positive relationship ($p < 0.05$) between high focus on customer orientation and higher financial performance. Looking at table 1, the descriptive statistics show that the larger companies in general have focused on creating long-lasting customer relationships and satisfying customers' needs. Large companies have more resources, tend to work globally, often employ specialists and work closely with suppliers and customers (Chenhall, 2003). These competences and close associations may give large companies a business advantage, and if they are able to use this to get higher customer satisfaction, this will probably lead to higher profitability. The results show a significant positive correlation, which indicates that stronger customer orientation leads to higher financial performance. These findings confirm previous research within the field (Guilding an McManus, 2002; Ittner and Larcker, 1998; Banker et al. 2000). Additionally, statements given by the executive managers who have participated in the survey also direct focus to the use of customer orientation to enlarge revenue growth, customer profitability, and consequently company financial performance. The financial crisis that started in late 2008 resulted in large decreases in revenue for most of the companies, and to recover this, some of the executive managers point out how they have turned focus in their organizations toward customer needs, customer satisfaction, and new customer and market opportunities.

Third, use of preset numbers, benchmarks, and trend-based evaluation also show a positive influence on the companies' financial performance. And together with the finding that the frequency of formalized business and leadership performance evaluations for determining compensation or providing individual feedback benefits from being higher, the result provides evidence that both managers and their subordinates perform better if they are more continuously updated with

objective performance measurements. The findings do not deny the impact of using less objective performance measures when evaluating subordinates, but they indicate that subordinate performance evaluations will have a positive impact on financial performance if objective performance measures and benchmarks are used to a larger extent. Former research confirms that providing more frequent information is positively related to higher performance (Chenhall and Morris, 1986). However, the managers who participated in the survey do not all agree in the statement that a higher frequency of performance evaluations increases financial performance; in fact, in two of the companies they never perform evaluation of leadership.

The fifth and last MCS investigated in this paper is the extent to which managers' use of rules and procedures when guiding and directing subordinates affects company financial performance. The results show with a significance level below 0.01 a negative relation between highly strict rules and procedures and financial performance. This indicates that MCS can be too strict, which may cause a drop in performance. According to Simons (2005) and Mundy (2010), managers need a span of control, with a balanced use of different MCS to be able to create dynamic tensions that can enhance performance.

Conclusion and Limitations

This study builds a path model that predicts relationships between managers' use of five MCS and company performance. The results show that 'the extent' and 'the frequency' of using the MCS have effects on the companies' development in financial performance. While there are many studies of MCS, fewer studies estimate the effectiveness of the uses of the MCS or quantify the effectiveness of

using MCS in terms of financial performance. This paper presents results which clearly signal how managers can increase the effectiveness of using MCS, and hence financial performance, by following some very specific characteristics in the design and use of the MCS.

The purpose of this paper is to contribute to the body of knowledge concerning practitioners' use of MCS, and how this, combined with MCS theory, can enhance company financial performance. The paper examines how managers' use of MCS affects companies' financial performance, in order to find more evidence on how MCS can be used more effectively to increase fulfillment of company objectives. A PLS path model is used to provide a basis of testing hypotheses. The hypotheses are used to isolate the selected MCS, and latent variables are constructed of items (questions) that measure characteristics of executive managers' use of these MCS. The latent variables and the underpinning items all demonstrated accepted levels of construct validity and internal reliability. The measures were all found useful in the research.

The results contribute to the MCS literature in several ways. Overall, this study shows that the effectiveness of using the MCS on the development in a company's financial performance is determined not only by the type of theory such as strategy archetypes, cost systems or performance models (e.g. BSC) that practitioners choose to use when guide and direct their subordinates to meet company objectives, but also by 'how' the managers use the chosen theory.

The first area of MCS that is investigated is the relationship between design and use of strategy and development in financial performance. The result shows relations, however the results is not highly significant. This finding may benefit of being tested in other research studies. Next, managers' extent of focus on

customer orientation is related to financial performance. The presented results, gives both an indication on large companies in general are highly focused on costumer relations (see table 1) and that there is a significant relations between customer orientation and companies' financial performance. The third and fourth MCS concern evaluation of subordinates. The results indicate that use of objective performance goals and benchmarking when evaluating subordinates, and more frequent conducting of evaluations of subordinates, are related to higher company performance. More frequent performance evaluations will give managers and subordinates ongoing opportunities to adjust, correct or act upon incidents that are not in line with business plans. Finally, the relations between extent of using rules and procedures, and development in financial performance, are tested. With a significant level below 0.01, the result shows that use of rules and procedures to a higher extent may have a negative influence on companies' financial performance.

No study is without limitations. This study focuses on some characteristics of managers' use of five MCS, and the findings will benefit from further studies that can confirm them and perhaps include more theories within the five MCS areas. For example, by including the archetype of strategy used by the companies, both the theoretical strategic method and the characteristics within the executive managers' design of strategy may be compared to the development in financial performance to examine if some theoretical archetypes of strategy would be more beneficial than others of different characteristics in the use of strategy. Another limitation is that size and industry categories are the only control variables included. Moderating effects of other organizational or environmental variables such as competition, culture, technology or organizational structure could have been included. Further, survey data do not provide as detailed information as it is possible in case studies, even though the data were gathered through personal

interviews. However, the survey method was used to gather a large sample (120 of 318), while the purpose of the paper was to find more general characteristics of use of MCS that affect company' financial performance in broader terms.

Despite these limitations, this study provides evidence of the extent to which MCS variables related to strategy, customer orientation, evaluation of subordinates, and rules and procedure in combination lead to effects in financial performance. In addition, this paper demonstrates how a system approach, using a PLS path model may be applied to MCS research.

Appendix A

Constructs and Underlying Questions

1. **Design and Use of Strategy**
   - 1.1. Please indicate how many years is the strategic planning period in your SBU
   - 1.2. Please indicate how much weight your SBU's strategic planning puts on specifying objectives
   - 1.3. Please indicate how much weight your SBU's strategic planning puts on specifying programs and resources

2. **Customer Orientation** / Please indicate to what extent you agree with the following statements
   - 2.1. Our SBU succeeds because we find creative solutions to satisfy our customers' needs
   - 2.2. Our SBU succeeds because we find new customer segments and needs
   - 2.3. Our SBU succeeds because we deepen and create long-lasting customer relationships
   - 2.4. Our SBU succeeds because we collaborate extensively with different organizations

3. **Use of Benchmarking when Evaluating Subordinates** / Please indicate to what extent SBU top management evaluates subordinates' performance in relation to…

3.1. Absolute, preset numbers (euros, time, %)
3.2. Internal benchmarks (league table position)
3.3. External benchmarks (league table position)
3.4. Past performance (trend-based evaluation)

4. **Frequency of Formalized Business and Leadership Performance Evaluation** / Please indicate how often formalized performance evaluations (for determining compensation or providing individual feedback) are conducted in your SBU.
   4.1. Leadership performance
   4.2. Business performance

      1. Monthly
      2. Quarterly
      3. Three times a year
      4. Twice a year
      5. Once a year
      6. Less frequently than once a year
      7. Never

5. **Extent of Using Rules and Procedures** / In guiding and directing subordinates' behavior, to what extent does the SBU top management…
   5.1. use company-wide codes of conduct or similar statements?
   5.2. review plans before action?
   5.3. specify minimum requirements (e.g. ROI, implementation times) for business opportunities?

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8 Appendices

8.1 Appendix A: Questionnaire

EFFECTIVE

MANAGEMENT AND CONTROL SYSTEMS

Confidential International Survey Research

2010-2011

AALBORG UNIVERSITET

Copenhagen Business School
HANDELSHØJSKOLEN

PURPOSE OF THE RESEARCH

This interview contributes to an international research project that seeks to understand what kind of management control arrangements exist, what arrangements are effective and in what kind of settings. This holistic approach to management control is addressed in this questionnaire. The questionnaire is structured as follows:

Section A:	Strategic planning
Section B:	Short-term planning
Section C:	Performance measurement and evaluation
Section D:	Rewards and compensation
Section E:	Organizational structure and management processes
Section F:	Organization culture and values
Section G:	Organization and environment

KEY TERMS

- ➔ **SBU** refers to the strategic business unit or autonomous/standalone firm which you are part of.
- ➔ **SBU top management** refers to the top two levels in the SBU as a whole (e.g. CEO, CFO, COO and other personnel on the executive management team).
- ➔ **Subordinates** refer to the direct reports of the top management team that typically are responsible for a business unit, department, profit center, or cost center performance.

ANSWERING PERSPECTIVE

The questions are to be answered from the perspective of the ***top management team*** of a strategic business unit (SBU) or autonomous/standalone firm, but **not**

from the perspective of management of a head/corporate office of a group of firms.

Questions mainly focus on SBU top management – subordinate relationships. It is acceptable to focus on those managers who run the major business functions and have large number of subordinates of their own. This means that support and administrative managers can be excluded if necessary.

ANSWERING TECHNIQUE

→ Most questions are asked in the form of scales (e.g. 1-7). For these questions, please circle the single number that reflects your SBU practice.

→ Some questions are asked in the form of alternatives followed by boxes. For these questions, please check the box next to the relevant alternative. If there are more than one column of boxes, please check one alternative in each column.

There are no right or wrong responses. Not applicable (N/A) is always an option as well.

Please start here:

1. How many years have you worked for your current SBU? _____
2. What is title of your position? _____
3. What is your highest degree? _____
4. What was your field of study? _____

Section A. Strategic Planning Content and Process

A1. Please indicate how many years is the strategic planning period in your SBU.

1 2 3 4 5 6 7 8 9≤ years

A2. Please indicate how much weight your SBU's strategic planning puts on specifying…

	Not at all						Very significantly
a. objectives	1	2	3	4	5	6	7
b. ways of creating competitive advantage	1	2	3	4	5	6	7
c. programs and resources	1	2	3	4	5	6	7

d. Please indicate what comes first, second, third and fourth in your strategic planning process. Please number 1.-4. or mark N/A, if an alternative does not fall in the domain of your strategic planning.

_____ strategies _____ resources _____ core competencies _____ objectives

A3. Please indicate to what extent your SBU's strategic planning produces ends and means that are:

	ENDS							**MEANS**						
	Not at all						Very high extent	Not at all						Very high extent
a. Qualitative (e.g., vision, strategic intent, new markets, new technologies)	1	2	3	4	5	6	7							
b. Quantitative (e.g. EVA, ROCE, Turnover, market share, brand value)	1	2	3	4	5	6	7							
c. Detailed (e.g. it is clearly outlined what to aim at or how to proceed)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
d. Accurate (e.g. achievement / implementation can be determined with confidence)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
e. Documented (i.e. written down)	1	2	3	4	5	6	7	1	2	3	4	5	6	7

A4. Please indicate how often your SBU's strategic ends and means are reviewed and revised. (Please check one box in each column)

	ENDS		**MEANS**	
	Review	Revise	Review	Revise
a. Monthly				
b. Quarterly				
c. Three times a year				
d. Twice a year				
e. Once a year				
f. Every second year				
g. Every third year or less frequently				

A5. Please indicate who participates in the **formation** of your SBU's strategic ends and means (Please check one box in each column)

	ENDS	MEANS
a. Top management of SBU with corporate management		
b. Only top management of the SBU		
c. Only SBU management, including one level of managers below SBU top mgt		
d. Only SBU management, including two levels of managers below SBU top mgt		
e. More than two levels of managers below SBU top mgt		
f. Please also check here if support functions are participating		

A6. How important is strategic planning in guiding and directing subordinate behaviour?

Not at all 1 2 3 4 5 6 7 Very important

Section B. Short-term Planning Content and Process

B1. Please indicate how strategic ends and means are translated into **short-term action plans** in your SBU. (Please check one box)

a. Action plans are decided at the top and given to lower level to be implemented	
b. Important areas of action are defined at the top and subordinates are required to develop specific action plans	
c. Action plans arise in intensive negotiations within planning guidelines given from the top	
d. Action plans are based on subordinates' interpretations of how to affect upper level strategic objectives	
e. Subordinates autonomously determine actions within strategic themes along the business	

B2. Please indicate how short-term targets are set in your SBU (Please check one box in each column)

	ENDS	MEANS
a. Top management sets targets and passes them to subordinates		
b. Top management sets targets, but revises them in negotiations with subordinates		
c. Targets setting is quite long, iterative negotiation process between organizational levels		
d. Subordinates set autonomously targets, but they are subject to top management acceptance		
e. Subordinates set targets autonomously with little, if any, management involvement		

B3. Please indicate how often targets, action plans and resource commitments are updated in your SBU

	TARGETED PERFORMANCE	ACTION PLANS	RESOURCE COMMITMENTS
a. Almost continuously (i.e. weekly basis)			
b. Monthly			
c. Bimonthly			
d. Quarterly			
e. Three times a year			
f. Biannually			
g. Annually			

B4. Please indicate how important it is that subordinates' short-term plans contain information about…

	Not at all						Very important
a. progress schedule of activities, projects, programs	1	2	3	4	5	6	7
b. coordinating activities within and/or across the units	1	2	3	4	5	6	7
c. forming cross-functional projects and project teams	1	2	3	4	5	6	7
d. financial resource requirements	1	2	3	4	5	6	7
e. human resource requirements	1	2	3	4	5	6	7
f. skills and competency requirements	1	2	3	4	5	6	7
g. IT-resource requirements	1	2	3	4	5	6	7

B5. How important is short-term planning in guiding and directing subordinate behaviour?

Not at all						Very important
1	2	3	4	5	6	7

Section C. Performance Measurement and Evaluation

C1. Please indicate how SBU top management seeks to control OPEX and CAPEX of the units managed by subordinates.

Expenses are…	OPEX	CAPEX
a. set fixed (e.g. fixed annual budget)		
b. set relatively fixed (e.g. additional budgets are rare but possible)		
c. set relatively flexible (e.g. additional budgets are common)		
d. flexible, they scale down / up with output volume (e.g. unit costs are monitored, €/unit)		
e. flexible, they scale down / up with sales revenue (costs are % of sales, ROI, ROCE)		
f. determined case by case		

C2. Does SBU top management use budgetary systems to guide and control subordinate behaviour (e.g. budgets, forecasts and variance analysis)?

____ Yes ___ No

Does SBU top management use performance measurement systems to guide and control subordinate behaviour (e.g. financial and non-financial measures)?

____ Yes ___ No

Please answer only to columns to which you answered **Yes** above. To what extent SBU top management use budgets **and/or** performance measurement systems for the following:

	Budgetary Systems							**Perf. Measurement Systems**						
	Not at all						Very high extent	Not at all						Very high extent
a. Identify critical performance variables (i.e. factors indicating progress towards strategic objectives)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
b. Set targets for critical performance variables	1	2	3	4	5	6	7	1	2	3	4	5	6	7
c. Monitor progress towards and to correct deviations from preset performance targets	1	2	3	4	5	6	7	1	2	3	4	5	6	7
d. Provide a recurring and frequent agenda for top management activities	1	2	3	4	5	6	7	1	2	3	4	5	6	7
e. Provide a recurring and frequent agenda for subordinate activities	1	2	3	4	5	6	7	1	2	3	4	5	6	7
f. Enable continual challenge of underlying data, assumptions and action plans with subordinates	1	2	3	4	5	6	7	1	2	3	4	5	6	7
g. Focus attention on strategic uncertainties (i.e. threats and opportunities)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
h. Encourage and facilitate dialogue and information sharing with subordinates	1	2	3	4	5	6	7	1	2	3	4	5	6	7

C3. Please indicate to what extent SBU top management bases subordinates' performance evaluation on:

		Not at all						Very high extent
a.	Financial measures	1	2	3	4	5	6	7
b.	Non-financial measures	1	2	3	4	5	6	7
c.	Detailed measures (e.g. budget line item, input volume, time, quality etc.)	1	2	3	4	5	6	7
d.	Aggregate, summary measures (e.g. EBIT, Profit, ROI, ROCE, market share, brand value, brand image, total customer satisfaction, etc.)	1	2	3	4	5	6	7
e.	Achievements in leadership behaviour	1	2	3	4	5	6	7
f.	Actions and activities taken	1	2	3	4	5	6	7
g.	Individual effort	1	2	3	4	5	6	7

h. For how many performance measures does SBU top management hold subordinates accountable?

_____

C4. Please indicate to what extent SBU top management evaluates subordinates' performance in relation to…

		Not at all						Very high extent
a.	Absolute, preset numbers (euros, time, %)	1	2	3	4	5	6	7
b.	Internal benchmarks (league table position)	1	2	3	4	5	6	7
c.	External benchmarks (league table position)	1	2	3	4	5	6	7
d.	Past performance (trend-based evaluation)	1	2	3	4	5	6	7

C5. Please indicate how important the following purposes of performance evaluation are in your SBU:

		Not at all						Very important
a.	Provide feedback for learning and continuous improvement	1	2	3	4	5	6	7
b.	Determine subordinate compensation	1	2	3	4	5	6	7
c.	Direct subordinates' attention to important issues	1	2	3	4	5	6	7

C6. Please indicate how often **formalized** performance evaluations (for determining compensation or providing individual feedback) are conducted in your SBU. (Please check one box in each column)

	LEADERSHIP PERFORMANCE	BUSINESS PERFORMANCE
a. Monthly		
b. Quarterly		
c. Three times a year		
d. Twice a year		
e. Once a year		
f. Less frequently than once a year		
g. Not applicable (N/A)		

C7. How important is performance measurement and evaluation in guiding and directing subordinate behaviour?

Not at all Very important

1 2 3 4 5 6 7

Section D. Rewards and Compensation

D1. **a)** Please name the most important performance measures for determining subordinates' financial rewards

b) Please indicate weight (%) of each measure in rewarding formula

c) Please indicate the level at which performance measure is calculated

C= Corporate

S = SBU

B = BU

P = Personal (leadership)

Measure 1:_____ _____ _____

Measure 2: _____ _____ _____

Measure 3: _____ _____ _____

Measure 4: _____ _____ _____

Measure 5: _____ _____ _____

D2. Please indicate to what extent the following statements describe the way of evaluating and compensating subordinates' performance in your SBU

	Not at all						Very high extent
a. We determine weights of performance measures as the evaluation takes place	1	2	3	4	5	6	7
b. We evaluate performance on the basis of quantitative metrics	1	2	3	4	5	6	7
c. We adjust the amount of bonus based on actual circumstances	1	2	3	4	5	6	7
d. We use predetermined criteria in evaluation and rewarding	1	2	3	4	5	6	7

D3. Please indicate to what extent…

	Not at all						Very high extent
a. Performance-pay contracts are customized for each subordinate	1	2	3	4	5	6	7
b. Financial rewards are shared evenly to subordinates (e.g. profit sharing)	1	2	3	4	5	6	7
c. Financial rewards increase as subordinate's performance exceeds targets	1	2	3	4	5	6	7
d. Rewarding is financial (bonuses, share-based rewards)	1	2	3	4	5	6	7
e. Rewarding is non-financial (e.g. recognition, promotion, training)	1	2	3	4	5	6	7

D4. How important are the following purposes of financial and non-financial rewarding in your SBU:

	Financial							**Non-financial**						
	Not at all						Very important	Not at all						Very important
a. Committing subordinates	1	2	3	4	5	6	7	1	2	3	4	5	6	7
b. Motivating subordinates	1	2	3	4	5	6	7	1	2	3	4	5	6	7
c. Directing subordinates' attention	1	2	3	4	5	6	7	1	2	3	4	5	6	7

D5. Significance of rewarding

	Percent (%) of annual salary
a. How many percent of their total annual income can subordinates receive as performance-based bonuses in your SBU?	_____

	Not at all						Very important
b. How important are rewards and compensation in guiding and directing subordinate behaviour?	1	2	3	4	5	6	7

Section E. Organisational Structure and Management Processes

E1. Please indicate how often different types of management groups convene (Please check one box in each column)

	Mgt groups within the SBU and BUs	Mgt groups across SBU and BU boundaries
a. Weekly		
b. Fortnightly		
c. Monthly		
d. Bimonthly		
e. Quarterly		
	Dynamic Stable	Dynamic Stable
f. To what extent are management group structures stable? (i.e. the same people form always the mgt group = stable)	1 2 3 4 5 6 7	1 2 3 4 5 6 7
	Narrow Broad	Narrow Broad
g. How broadly based are management groups? (besides business unit managers, operative middle-level managers and/or experts participate = broad)	1 2 3 4 5 6 7	1 2 3 4 5 6 7

E2. Please indicate to what extent subordinates…

	Not at all Very high extent
a. have multiple reporting lines	1 2 3 4 5 6 7
b. assume roles besides managing a unit (e.g. heading quality development)	1 2 3 4 5 6 7
c. receive relevant information through informal discussions	1 2 3 4 5 6 7
d. receive relevant information through management information system	1 2 3 4 5 6 7
e. have free access to broad-scope information regarding the performance of business units and whole company	1 2 3 4 5 6 7

E3. Compare the **degree of influence** that SBU top management has to that of subordinates on the following decisions.

		SBU mgt has all influence			equal			Subordinates have all influence
a. Establishment of new businesses	n/a	1	2	3	4	5	6	7
b. Development of new products/ services	n/a	1	2	3	4	5	6	7
c. Extension/ enlargement investments	n/a	1	2	3	4	5	6	7
d. Replacement investments	n/a	1	2	3	4	5	6	7
e. Project/program financing	n/a	1	2	3	4	5	6	7
f. Product/ service pricing	n/a	1	2	3	4	5	6	7
g. Distribution channel choice	n/a	1	2	3	4	5	6	7
h. Choosing and contracting customers	n/a	1	2	3	4	5	6	7
i. Choosing and contracting suppliers	n/a	1	2	3	4	5	6	7
j. Prioritizing activities	n/a	1	2	3	4	5	6	7
k. Compensation policy and rewards within the BU	n/a	1	2	3	4	5	6	7
l. Hiring and firing employees within the BU	n/a	1	2	3	4	5	6	7
m. Work process arrangements within the BU	n/a	1	2	3	4	5	6	7

E4. In guiding and directing subordinates' behaviour, to what extent does SBU top management…

	Not at all						Very high extent
a. use company wide codes of conduct or similar statements?	1	2	3	4	5	6	7
b. review plans before action?	1	2	3	4	5	6	7
c. employ written authorization levels and decision rules?	1	2	3	4	5	6	7
d. make the sanctions of unethical business conduct known for subordinates (e.g. by written statements)?	1	2	3	4	5	6	7
e. employ written guidelines that stipulate specific areas for, or limits on, opportunity search and experimentation?	1	2	3	4	5	6	7
f. actively communicate in writing the risks and activities to be avoided by subordinates?	1	2	3	4	5	6	7
g. apply sanctions to subordinates who engage in risks outside organisational policy, irrespective of the outcome?	1	2	3	4	5	6	7
h. specify minimum requirements (e.g. ROI, implementation times) for business opportunities?	1	2	3	4	5	6	7

E5. How important are the following in guiding and directing subordinate behaviour?

	Not at all						Very important
a. management processes	1	2	3	4	5	6	7
b. organization design	1	2	3	4	5	6	7
c. rules and procedures	1	2	3	4	5	6	7

Section F. Organization Culture and Values

F1. Please indicate to what extent…

		Not at all						Very high extent
a.	are promotions made from within the organization?	1	2	3	4	5	6	7
b.	is subordinate rotation between various positions seen as an important precondition for promotion?	1	2	3	4	5	6	7
c.	are skills and technical competence of importance when recruiting for managerial positions?	1	2	3	4	5	6	7
d.	are psychological tests and values of importance when recruiting for managerial positions?	1	2	3	4	5	6	7
e.	is leadership-based performance connected to significant rewards (e.g. promotions, equity-based rewards)?	1	2	3	4	5	6	7
f.	are training and development processes used to reinforce SBU objectives, expectations and norms?	1	2	3	4	5	6	7
g.	are social events and functions used to develop and maintain commitment to the SBU?	1	2	3	4	5	6	7
h.	are mentoring, orientation and induction programs used to acclimatise new managers to acceptable behaviours, routines and norms?	1	2	3	4	5	6	7

F2. Please indicate to what extent…

		Not at all						Very high extent
a.	are the values and purpose of the SBU codified in formal documents? (e.g. value statements, credos, statements of purpose)	1	2	3	4	5	6	7
b.	are formal statements of values used to **commit** subordinates to the long-term objectives of SBU?	1	2	3	4	5	6	7
c.	are formal statements of values used to **motivate** subordinates in sharing responsibility?	1	2	3	4	5	6	7
d.	do you count on value and mission statements guiding actions of your subordinates?	1	2	3	4	5	6	7
e.	is the direction of the SBU codified in formal documents? (e.g. vision statement, statement of strategic intent)	1	2	3	4	5	6	7
f.	is the vision statement so concise that your subordinates can remember it all the time?	1	2	3	4	5	6	7
g.	is the vision statement so specific that it guides your subordinates to say 'no' for some business opportunities?	1	2	3	4	5	6	7
h.	do you count on the vision statement guiding actions of your subordinates?	1	2	3	4	5	6	7

		Not at all						Very important
F3.	How important are values and organization culture in guiding and directing subordinate behaviour?	1	2	3	4	5	6	7

Section G. Organization and Environment

G1. Please indicate to what extent you agree with the following:

		Not at all						Very high extent
a.	We compete by the lowest price	1	2	3	4	5	6	7
b.	We compete by rapid product/service introductions	1	2	3	4	5	6	7
c.	We compete by offering solutions that lower customers' costs	1	2	3	4	5	6	7
d.	We compete by providing superior use experience, because many products and services complement our offerings	1	2	3	4	5	6	7
e.	Our success depends on market share of our product/service	1	2	3	4	5	6	7
f.	Our success depends on customer share (share of customer wallet)	1	2	3	4	5	6	7
g.	Our success depends on product/ service novelty	1	2	3	4	5	6	7
h.	Our success depends on the number of complementary product/service providers	1	2	3	4	5	6	7
i.	Our success is driven by process innovations	1	2	3	4	5	6	7
j.	Our success is driven by product innovations	1	2	3	4	5	6	7
k.	Our success is driven by thorough customer and industry understanding	1	2	3	4	5	6	7
l.	Our success is driven by open collaboration with various organizations	1	2	3	4	5	6	7

G2. Please indicate how important the following performance areas are for your SBU right now:

		Not at all						Very important
a.	Financial results (e.g. annual earnings, return on assets, cost reduction)	1	2	3	4	5	6	7
b.	Customer relations (e.g. market share, customer satisfaction, customer retention)	1	2	3	4	5	6	7
c.	Employee relations (e.g. employee satisfaction, turnover, workforce capabilities)	1	2	3	4	5	6	7
d.	Operational performance (e.g. productivity, safety, cycle-time)	1	2	3	4	5	6	7
e.	Quality (e.g. defect rates, quality awards)	1	2	3	4	5	6	7
f.	Alliances (e.g. joint marketing or product design, joint ventures, open technology platforms)	1	2	3	4	5	6	7

g.	Supplier relations (e.g. on-time delivery, input into product/service design, supplier assistance)	1	2	3	4	5	6	7
h.	Environmental performance (e.g. government citations, environmental compliance or certification)	1	2	3	4	5	6	7
i.	Innovation (new product/ service development success, process innovation, business concept innovation)	1	2	3	4	5	6	7
j.	Community (e.g. public image, community involvement)	1	2	3	4	5	6	7
k.	Lobbying (e.g. local, national, EU authorities)	1	2	3	4	5	6	7

G3. Please indicate to what extent you agree with the statement.

The entire package of management control systems helps SBU top management to...

		Not at all						Very high extent
a.	set challenging/aggressive goals to subordinates	1	2	3	4	5	6	7
b.	issue creative challenges to subordinates instead of narrowly defining tasks	1	2	3	4	5	6	7
c.	reward or punish subordinates based on rigorous measurement of business performance	1	2	3	4	5	6	7
d.	hold subordinates accountable for their performance	1	2	3	4	5	6	7
e.	give subordinates sufficient autonomy to do their jobs well	1	2	3	4	5	6	7
f.	push decisions down to the lowest appropriate level	1	2	3	4	5	6	7
g.	give subordinates ready access to information that they need	1	2	3	4	5	6	7
h.	make subordinates to base their decisions on facts and analysis, not politics	1	2	3	4	5	6	7

G4. Please indicate to what extent you agree with the following statements.

The SBU's entire package of management control systems...

		Not at all						Very high extent
a.	works coherently to support the overall objectives of this organisation	1	2	3	4	5	6	7
b.	causes us to waste resources on unproductive activities	1	2	3	4	5	6	7
c.	gives people conflicting objectives so that they end up working at cross-purposes	1	2	3	4	5	6	7
d.	encourages people to challenge outmoded traditions/practices/sacred cows	1	2	3	4	5	6	7
e.	is flexible enough to allow us to respond quickly to changes in our markets	1	2	3	4	5	6	7
f.	evolves rapidly in response to shifts in our business priorities	1	2	3	4	5	6	7

G5. Please indicate to what extent you agree with the following statements.

Our SBU succeeds because we…

	Not at all						Very high extent
a. are able to explore and develop new technologies	1	2	3	4	5	6	7
b. are able to create innovative products/services	1	2	3	4	5	6	7
c. find creative solutions to satisfy our customers' needs	1	2	3	4	5	6	7
d. find new customer segments and needs	1	2	3	4	5	6	7
e. increase the level of automation in our operations	1	2	3	4	5	6	7
f. fine-tune our offerings in order to keep our current customers satisfied	1	2	3	4	5	6	7
g. deepen and create long-lasting customer relationships	1	2	3	4	5	6	7
h. collaborate extensively with different organizations	1	2	3	4	5	6	7

G6. Please fill in the following financial and non-financial information

Annual sales	2010	_____ M€	2009 _____ M€
Total assets	2010	_____ M€	2009 _____ M€
Operating profit (EBIT)	2010	_____ M€	2009 _____ M€

	Well Below			Industry average			Well Above
How does your organization perform in relation to industry average? (ROI in relation to industry average)	1	2	3	4	5	6	7

G7. This question is about competitive and operating environment of your SBU. Over the past three years:

i) How many changes have occurred that have had a **material impact** on the nature of your business?
ii) How predictable or unpredictable have changes in the external environment been?

	i) Number of changes	ii) Predictability
	Very few changes 1 2 3 4 5 6 7 Very many changes	Very unpredictable 1 2 3 4 5 6 7 Very predictable
a. *Customers* (e.g. levels of demand, customer requirements)	1 2 3 4 5 6 7	1 2 3 4 5 6 7
b. *Suppliers* (e.g. markets for key inputs, quality of resources)	1 2 3 4 5 6 7	1 2 3 4 5 6 7
c. *Competitors* (e.g. competitors entering, leaving, tactics/strategies)	1 2 3 4 5 6 7	1 2 3 4 5 6 7
d. *Technological* (e.g. R&D advances, process innovations)	1 2 3 4 5 6 7	1 2 3 4 5 6 7
e. *Regulatory* (e.g. new initiatives for laws, regulations)	1 2 3 4 5 6 7	1 2 3 4 5 6 7
f. *Economic* (e.g. interest and exchange rates)	1 2 3 4 5 6 7	1 2 3 4 5 6 7

G8. The following questions relate to the **complexity** and **hostility** of your external environment

	Very similar 1 2 3 4 5 6 7 Very diverse
a. How diverse are the product/service requirements of your customers to each other?	1 2 3 4 5 6 7
b. How diverse are the strategies and tactics of your key competitors to each other?	1 2 3 4 5 6 7
	Not intense at all 1 2 3 4 5 6 7 Very high intensity
c. How intense is the competition for your main products/services?	1 2 3 4 5 6 7
	Not difficult at all 1 2 3 4 5 6 7 Very high difficulty
d. How difficult is it to obtain the necessary inputs for your business?	1 2 3 4 5 6 7

Section H. Performance

H1. For each of the following factors, please specify how your SBU has performed relative to your competitors over the last three years.

		Non-satisfactory						Excellent
a.	Return of assets (Return on Investment, ROI / EVA)	1	2	3	4	5	6	7
b.	Profit	1	2	3	4	5	6	7
c.	Cash flow from operations	1	2	3	4	5	6	7
d.	Cost control	1	2	3	4	5	6	7
e.	Development of new products	1	2	3	4	5	6	7
f.	Sales volume	1	2	3	4	5	6	7
g.	Marked share	1	2	3	4	5	6	7
h.	Marked development	1	2	3	4	5	6	7
i.	Employee development	1	2	3	4	5	6	7
j.	Political and public affairs	1	2	3	4	5	6	7

H2. For each of the same factors, please indicate the level of importance your SBU has conferred to the factor in the last three years

		Not at all						Very high extent
a.	Return of assets (Return on Investment, ROI / EVA)	1	2	3	4	5	6	7
b.	Profit	1	2	3	4	5	6	7
c.	Cash flow from operations	1	2	3	4	5	6	7
d.	Cost control	1	2	3	4	5	6	7
e.	Development of new products	1	2	3	4	5	6	7
f.	Sales volume	1	2	3	4	5	6	7
g.	Marked share	1	2	3	4	5	6	7
h.	Marked development	1	2	3	4	5	6	7
i.	Employee development	1	2	3	4	5	6	7
j.	Political and public affairs	1	2	3	4	5	6	7

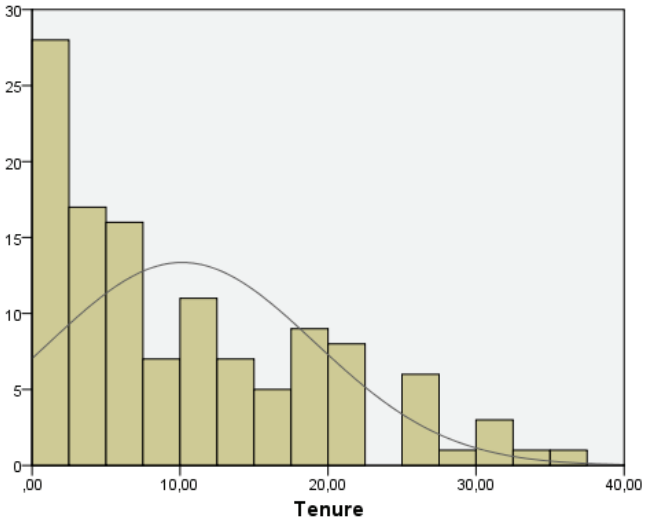
8.2 Appendix B: Respondents' background information

Position (title)	
CEO	22
CFO	93
Other top management	4
	120

Highest degree	
High school	4
Bachelor	25
Master's	89
PhD	2
	120

Field of study	
Business/Management/Economics	108
Law	1
Engineering	4
Humanities	1
Natural sciences	2
Others	4
	120

Tenure (in years)	
MIN	0
MAX	36
MEAN	10
MEDIAN	7
PERCENTILES 25	3
PERCENTILES 57	17
SD	9



8.3 Appendix C: Firm information on respondents' companies

Industry categories	
Manufacturing	56
Services	45
Wholesale and trade	19
	120

Most significant owner of the companies	
Members of cooperative society	12
Large institutional investors	29
Small individual investors	5
Venture capitalist(s)	15
Families	40
Government	1
Partners	2
Funds	14
Others	2
	120

Number of employees at the participating SBUs	
0 - 999	72
1.000 – 1.999	19
2.000 – 2.999	7
3.000 – 3.999	6
4.000 – 4.999	4
5.000 – 5.999	6
6.000 – 6.999	2
10.000 – 30.000	4
	120

Country there the participating SBUs' parent company is registered	
Denmark	98
Finland	3
France	2
Germany	2
Great Britain	1
Japan	1
Netherlands	1
Norway	2
Sweden	6
Switzerland	2
USA	2
	120

Number of SBUs that are a part of a publicly quoted company	
Yes	47
No	73
	120

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