

The state of management accounting symbolized by five clusters of companies

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Abstract

Modern management accounting practices are constantly changing, which establishes a need to update our collective understanding every now and then. A large survey across the industries with over 1500 respondents from small, medium-sized and large enterprises was conducted about the state of management accounting in Finland. Companies' development needs for new systems and services were also mapped in parallel. Based on the state of management accounting, Finnish companies can be divided to five distinct clusters that are known as (1) 'the cost-conscious', (2) 'the indecisive', (3) 'the developers', (4) 'the satisfied users' and (5) 'the pessimists'. On the other hand, the analysis of the development needs revealed that over a half of the companies belong to either of two groups; those that experience their systems as adequate, and those that are not aware of their system and/or service needs. The clustering is explained by these findings to some extent.

Keywords

management accounting; MA; management accounting systems; MAS; management accounting services; Finnish survey

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1. Introduction

In today's business environment, management accounting plays a growing role as an information provider in the organization's so-called information value chain, because it converts the increasing amount of raw data to information and useful knowledge for managerial decision-making and controlling (CIMA 2009; CIMA 2015; Cokins et al. 2015; IMA 2008; Zainuddin & Sulaiman 2015). An essential turning point in providing the information is the ongoing digitalization. Big data, data analytics and business analytics (Cokins 2013; Krishnan 2015; Schneider et al. 2015) combined with the intensely networked world are rapidly changing the business environment, business models as well as organizational structures that also affect the accounting practices.

Based on the recent literature, the future of accounting will include computerization (Arcega et al. 2015; Frey & Osborne 2013), cloud-based software, analytics and forward-looking accounting services (Drew 2015) as well as outsourced accounting services (Christ et al. 2015). Modern information technology might even lead to the convergence of financial accounting and management accounting (Taipaleenmäki & Ikäheimo 2013). If a user perspective is now adopted, are we able to map the state of management accounting? How satisfied are the users with the implemented systems and services? Are they aware of future needs in the dynamic environment?

The objective of the study is centered on understanding modern management accounting as a whole, and is twofold by its nature. On the one hand, we will focus on providing an update on the current state of management accounting from the perspective of Finnish companies in particular. The state is comprised of practices, systems as well as related services. On the other hand, companies' development needs for management accounting are also disentangled in the paper. The needs should explain and deepen the

findings of the current state to some extent. Based on these two above-mentioned aspects, the research questions can be phrased as follows:

RQ1: *What is the current state of management accounting in Finland?*

RQ2: *What are the development needs for management accounting in Finland?*

Aside from introducing a modern, comprehensive outlook to management accounting in the Finnish context, the paper makes other contributions as well. Topics in the literature often deal with only one or two aspects of what we call here 'the state of management accounting'. Instead of focusing solely on the characteristics of a given management accounting system, or discussing about a management accounting practice, such as activity-based costing, we are emphasizing the bigger picture. As the state is arguably interconnected with any potential aspirations for new management accounting systems and services, the development needs have also been mapped, and analyzed in the light of the first research question. The novel contribution is that, based on 'the state', i.e. practices, systems and services, companies can be divided to five distinct clusters.

2. Literature review

This section focusses on discussing about the previous literature on the topic. Our purpose is to scan the literature broadly in order to find out studies on the state of management accounting. The well-known starting point for great interest in management accounting was the classic book called *Relevance Lost: The Rise and Fall of Management Accounting* written by Johnson and Kaplan (1987). Almost three decades ago, the authors claimed that traditional management practices and systems are lagging far behind the radical changes in manufacturing and business needs. Modern information technology challenges the manufacturing and accounting to renew once again.

During the past decades, researchers have published lots of papers about management accounting change and trends, function and processes as well as practices, tools and techniques that are employed at the operational and strategic level in a variety of companies and public organizations. Many writers have reviewed a broad literature to understand the state of the science (Seal & Herbert 2011), but still the diversity of different concepts and approaches poses a challenge. In their reviews, Seal & Herbert (2011), Lopez and Hiebl (2015), Salterio (2015), Scapens and Bromwich (2010), and Shields (2015) prefer the term management accounting, whereas Nixon and Burns (2012) talk about strategic management accounting, and McNair (2007) emphasizes the view of cost management. The contents of the terms, and the tools included, are not unequivocal and thus academics and practitioners might understand them differently. Practitioners' view depends on the tools used in their organizations, which means that certain techniques can be unknown to them.

To clarify the present state of the science, the journals solely dedicated to management accounting research, like 'Management Accounting Research' (Scapens & Bromwich 2010) and 'The Journal of Management Accounting Research' (Krishnan 2015; Salterio 2015), have also started the discussion about what is and what is not management accounting. Other highlighted views from the perspective of our study are these quite recent questions; how management accounting research engages to practice? (Tucker & Schaltegger 2016) and is there a widening gap between the information provided and needed, or in other words, between the management accountants and decision-making managers? (Cokins et al. 2015) Taipaleenmäki and Ikäheimo (2013) have suggested that modern information technology will transfer some of accounting work from the accountants to the non-accountants, and they have recommended to look accounting "out of

the box". Taipaleenmäki and Ikäheimo (2013) have created a conceptual frame for analyzing the convergence between management accounting systems and financial accounting systems. They foresee that there will be fully (re-)integrated accounting systems in the future.

As mentioned earlier, we comprehend the state of management accounting very broadly. Therefore, the current state cannot be evaluated by assessing only the management accounting practices used by companies because the systems, services and development trends have an influence as well. Previous research papers that have studied the topic 'a tool at a time' have been left outside of our literature review as those that discuss management accounting from a wider perspective are more relevant for the article at hand. That being said, the previous literature is discussed here from three complementary directions, including (1) current management accounting practices, (2) management accounting systems and services, and (3) trends in management accounting. It should be noted that the literature review (see Table 1) is limited to management accounting surveys that have been published in established academic journals.

Surveys are an appropriate research method when researchers seek opinions, preferences and beliefs (Smith 2015). They have been conducted over the years in management accounting research, but the popularity of surveys as a research method has varied. For example in the 1990's, there have been a lot of surveys (Scapens & Bromwich 2010; Van der Stede et al. 2005). Van der Stede (2005) has studied the quality of altogether 130 conducted mail surveys about management accounting, which have been published in eight journals during the years 1982-2001. Lopez and Hiebl (2015) have conducted a comprehensive literature review of 73 articles, including also 41 surveys, published in 1985-2012. Their review shows that small and

Table 1. The literature review: surveys in the area of management accounting.

| REFERENCE | YEAR | CURRENT MA PRACTICES | MA SYSTEMS AND SERVICES | TRENDS IN MA |
|----------------------------|------|----------------------|-------------------------|--------------|
| Joseph et al. | 1996 | | x | |
| Lukka & Granlund | 1996 | x | | x |
| Ghosh & Chan | 1997 | x | | |
| Chenhall & Langfield-Smith | 1998 | x | | x |
| Hussain et al. | 1998 | x | x | |
| Malmi | 1999 | x | | x |
| Wijewardena & De Zoysa | 1999 | x | | |
| Innes et al. | 2000 | x | | |
| Haldma & Lääts | 2001 | x | | |
| Joshi | 2001 | x | | |
| Lokman & Patiar | 2001 | | x | |
| Rigby | 2001 | x | | |
| Hyvönen, T. | 2003 | x | x | |
| Pierce & O'Dea | 2003 | x | | |
| Hyvönen, J. | 2005 | x | | x |
| Abdel-Kader & Luther | 2006 | x | | x |
| Drury & Al-Omiri | 2007 | x | x | |
| Abdel-Kader & Luther | 2008 | x | | |
| Stratton et al. | 2009 | | x | |
| Angelakis et al. | 2010 | x | | x |
| Hiebl et al. | 2012 | x | | |
| Weissenberger et al. | 2012 | | x | |
| Broccardo | 2014 | x | | |
| Laitinen | 2014 | | x | |
| Cinquini et al. | 2015 | x | | |
| Cleary | 2015 | x | x | |
| Pavlatos & Kostakis | 2015 | x | | x |
| Xu | 2015 | | x | |

medium-sized enterprises use management accounting less and very differently in comparison to large companies. Lopez and Hiebl (2015) also studied factors affecting the use of management accounting systems in SMEs and pointed out the need for further research. Next we will discuss the collected surveys in detail.

2.1 Current management accounting practices

As the table above shows, the management accounting practices, and especially what kinds of practices are used and to what extent, are broadly studied in the literature (Abdel-Kader & Luther 2006; Angelakis et al. 2010; Cinquini et al. 2015; Hiebl et al. 2012; Hyvönen, J. 2005; Rigby 2001). The focus has often been on what management accounting practices, techniques and/or tools are used by companies, and thus the evaluation of change in management accounting is typically based on these results. Surveys have covered the areas of costing systems, budgeting, performance evaluation, decision support, and strategic analysis etc. These kind of surveys are conducted in many countries from different continents, including Europe (Abdel-Kader & Luther 2006; Angelakis et al. 2010; Haldma & Lääts 2002; Hussain et al. 1998; Innes et al. 2000; Lukka & Granlund 1996; Malmi 1999), Asia (Ghosh & Chan 1997; Wijewardena & De Zoysa 1999), and Australia (Chenhall & Langfield-Smith 1998; Wijewardena & De Zoysa 1999).

2.2 Management accounting systems and services

Management accounting systems (MAS) can be part of a larger system (Cooper & Kaplan 1999), such as Enterprise Resource Planning (ERP), or they can be standalone systems specialized to certain management accounting techniques (Hyvönen, T. 2003). A few surveys have been found on MAS, but they have not really been the main research method in the

field. It should be noticed that our keywords did not include management control systems (MCS) or accounting information systems (AIS). Found surveys are about the interaction between internal accounting and external financial accounting (Joseph et al. 1996), the perception gap between managers and controllers in designing integrated MAS in large companies (Weissenberger 2012) and the potential factors affecting data quality in accounting information systems (Xu 2015). Cost accounting system is one of the main parts of MAS, and Laitinen (2014) has studied the relationship between financial performance, cost accounting change and pricing system change. The usage, characteristics, and benefits of MAS have been studied by Lokman and Patiarb (2001) as well as Stratton et al. (2009).

2.3 Trends in management accounting

The overview to the management accounting practices revealed that many studies consider also current and future trends in the management accounting context. These trends direct companies' future practices and possibly the willingness to acquire new systems and/or related services. It has been said that the management accounting practices that will be adopted increasingly in the future are related to reporting of the cost of quality, non-financial measures related to employees and customer satisfaction, analysis of competitor strengths and weaknesses (Abdel-Kader & Luther 2006), and performance evaluation techniques (Angleakis et al. 2010). Dying trends, on the other hand, are overhead rates and the separation between fixed and variable costs (Abdel-Kader & Luther 2006). The changing trends can be a consequence of increased competitive and regulatory pressures (Abdel-Kader & Luther 2006) or an economic crisis (Pavlatos & Kostakis 2015), where the latter has increased the importance of long-term planning in particular.

2.4 The research gap

As the conclusion of our literature review, all of the surveys that are related to the state of management accounting are presented chronologically in Table 1. It contains the reference and the contents of each study, or in other words, whether it concerns (1) current management accounting practices, (2) management accounting systems and services, or alternatively (3) trends in management accounting. The majority of the surveys focus on the practices that have been a hot topic in the academic research over the years. It can be also noticed that the literature is lacking surveys, which somehow combine all three aspects of the state of management accounting.

3. Research design

This study is based on an extensive survey that was carried out late 2014 in Finland. In the

course of roughly two months (September and November), altogether 1507 responses were received from organizations ranging from small and medium-sized to large multinationals. The initial population of companies that were contacted was around 3500, which yields a rather tolerable response rate (approx. 43 %). The population was engineered to include companies from all industries relative to their reciprocal sizes. Size-wise, medium-sized and large enterprises were slightly favored to obtain more relevant findings. In practice, the data gathering was executed in such a way that the interviewers conducted structured interviews over the phone with the respondents, who were mainly either CEOs (1103 resp.) or CFOs (403 resp.). The call sequence was random by nature so that any particular company size or industry would not be excessively highlighted in comparison.

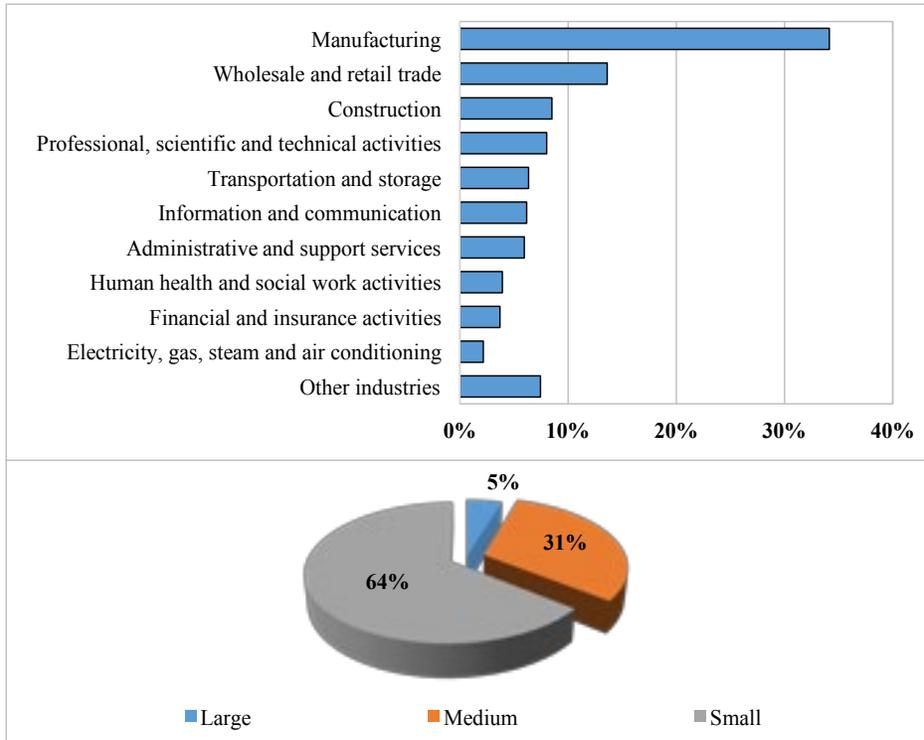


Figure 1. Characteristics of the respondents: the industries and company sizes.

The main characteristics of the surveyed organizations, i.e. the industries as well as the sizes, are illustrated in Figure 1. The size categories employed come from the European Union standard (2016), whereas the industries are based on the Finnish national TOL classification (2016). Separate industries that encompassed only under two percent of the participating companies have been combined as ‘other industries’. It has to be also mentioned that micro enterprises (i.e. companies with under 10 employees) were deliberately excluded from the survey before the data gathering was even initiated. As can be noticed, the majority of the companies are small enterprises (approx. 64 %) and, by far, the largest industry in the sample is manufacturing (approx. 34 %).

The questionnaire comprise 27 questions, of which 24 are multiple choice questions on the Likert scale (1-5) complemented with three open questions. The full list can be found from Appendix 1. The multiple choice questions are based on three distinct themes; (1) business details and management accounting know-how (Q1-Q10), (2) management accounting systems and services (Q11-Q18), and (3) network relationships and information transparency (Q19-Q24). From the above-mentioned open questions, emphasis will be put here especially on Q25: ‘With what kinds of information systems and/or services could you improve your cost and profitability management?’ The results of Q26 and Q27 will be published in forthcoming journal articles as they are a bit outside of both the scope and the theme of the paper at hand.

Because of the nature of the questionnaire, both quantitative and qualitative methods are used to analyze the data. The purpose of the subsequent qualitative part is to explain and deepen the results of the antecedent quantitative part. The quantitative analysis was started by observing correlations between the survey questions and background variables, such as industry and company size. However, it be-

came clear quickly that the correlations are too weak in order to establish a working regression analysis, which directed the analysis methodologically towards factoring and clustering. Factor analysis is a method that labels questions into categories that each highlight certain response behavior. In other words, it is possible to get a small set of (preferably uncorrelated) variables, i.e. factors, from a large set of (likely correlated) variables, i.e. questions.

Factors as the key segmentation criteria, k-means clustering was used to find the specific groups of companies, i.e. clusters. It is a method that partitions a dataset into ‘k’ number of clusters by iteratively assigning each observation to its closest cluster center. The right value for ‘k’ is determined through experimentation; when the addition of ‘k+1’ ends in two almost identical clusters, there are evidently too many of them. The qualitative analysis will contribute especially on understanding the clusters better. The responses of Q25 have been grouped to categories that should clarify the needs of managers in the Finnish management accounting context.

4. Findings and discussion

4.1 The state of management accounting: current practices, systems and services

Before discussing about the outcome of the factor and cluster analyses, a few general observations and trends from the individual survey questions should be highlighted briefly. The complete list of questions can be found from Appendix 1, whereas the descriptive statistics are presented in Appendix 2. Finnish companies seem to believe in general that their management accounting systems are both up-to-date and capable of providing adequate cost information for managerial decision-making (see Q3, Q5, Q6 and Q8). As an accounting principle, activity-based costing has been adopted moderately (see Q7). Op-

Table 2. Factor analysis: the factors, questions included and the means in the sample.

| | FACTOR 2: | FACTOR 3: | FACTOR 4: |
|-----------|------------------------|---------------------------|-------------------------|
| Name | 'current MA practices' | 'interest to acquire S&S' | 'S&S recently acquired' |
| Questions | Q5; Q6; Q7; Q8 | Q10; Q12; Q14; Q16; Q18 | Q13; Q15; Q17 |
| The mean | 3.56 | 2.39 | 2.97 |

erational cost-effectiveness is an important business goal for many (see Q9), which might explain the experienced feasibility of the current systems. Companies have paid attention towards MA and also MAS as a consequence.

As far as future development of management accounting is concerned, Finnish companies are not very interested to acquire new management accounting systems or related services, especially the former (see Q14 and Q16). Even though companies are obviously more than satisfied with the current MAS, such a strong resistance to change in system development seems still peculiar as the majority of the current MAS have been implemented over five years ago (see Q13). A lack of suitable options does not fully explain the reluctance to develop MA (see Q12). There is, however, a moderate need for comprehensive solutions that would include both systems and services (see Q17). Because most of the surveyed companies are fairly small in size, spreadsheets (e.g. Microsoft Excel) are yet a relatively common practice in day-to-day management (see Q11).

The factor analysis resulted in five factors that cover different aspects of MA. In a broad sense, the factors symbolize: (1) management accounting on the network-level, (2) the level of current cost information and MA practices, (3) interest to acquire MAS and related services, (4) recent acquisition of MAS and related services, and (5) the appreciation of transparency in cost structures and pricing. Of these five factors, the second, the third and the fourth were chosen as the basis of the cluster analysis as they are the most suitable ones for

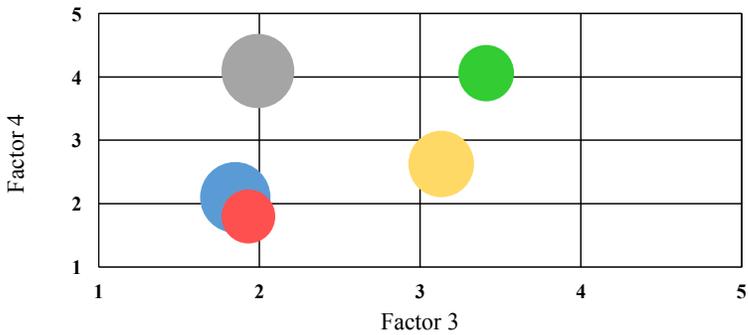
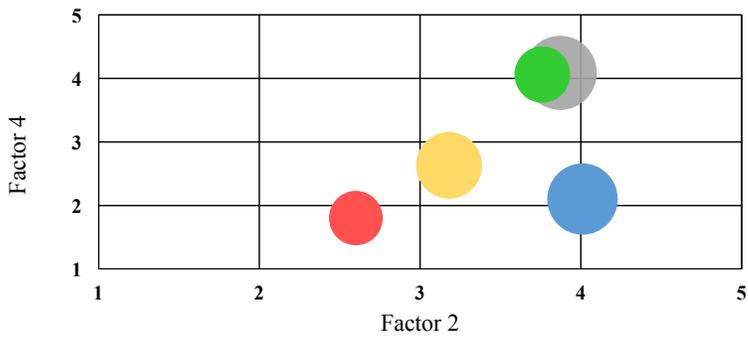
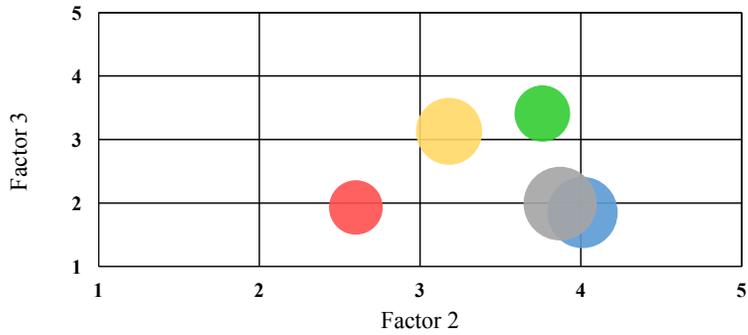
mapping the state of management accounting systems at the moment in Finland. The factors are presented in table 2. According to the characteristics of included questions, they have been named as follows; Factor 2: 'current MA practices', Factor 3: 'interest to acquire S&S' and Factor 4: 'S&S recently acquired'. The abbreviation 'S&S' stands for 'systems and services' in the MA context.

Factor 2 measures companies' present management accounting practices by incorporating MA skills/techniques/systems and the level of cost-consciousness. The mean of the factor is quite high, which denotes that an average Finnish company is familiar with its costs and their allocation. Factor 3 is concerned with the interest to invest in new S&S. Motivation for such acquisitions is low in average, a fact that might stem from the current satisfaction of course. Interestingly Q12 is also included in the factor, which means that there is a correlation between an existing S&S interest and a lack of suitable options on the market. Factor 4 shows the overall trend in S&S investments from the past five years. Given the evidently strong MA practices in Finland, one could have assumed that the mean would be even higher. The above-mentioned lack of options might partly explain why companies have not recently acquired that many S&S. Although those who have, have not only purchased a MAS, but also related services on the side (implied by Q17).

By utilizing the three factors as the starting point for clustering, the surveyed companies were eventually placed under five groups, i.e. clusters, which are very distinct from each

Table 3. Cluster analysis: the clusters and their characteristics based on the factors.

| CLUSTER | FACTOR 2: | FACTOR 3: | FACTOR 4: | COMPANIES |
|---------------------------|-----------|-----------|-----------|-----------|
| (1) 'the cost-conscious' | 4.01 (H) | 1.85 (L) | 2.10 (L) | 24 % |
| (2) 'the indecisive' | 3.18 (M) | 3.13 (M) | 2.63 (M) | 21 % |
| (3) 'the developers' | 3.76 (H) | 3.41 (M) | 4.06 (H) | 15 % |
| (4) 'the satisfied users' | 3.87 (H) | 1.99 (L) | 4.09 (H) | 26 % |
| (5) 'the pessimists' | 2.60 (M) | 1.93 (L) | 1.80 (L) | 14 % |
| Mean/Total | 3.56 (H) | 2.39 (L) | 2.97 (M) | 100 % |



other. They are illustrated in Table 3. Based on their factor-specific characteristics, the clusters are called; (1) ‘the cost-conscious’, (2) ‘the indecisive’, (3) ‘the developers’, (4) ‘the satisfied users’, and (5) ‘the pessimists’. The largest cluster (i.e. ‘the satisfied users’) comprises 26 percent of the companies, whereas the smallest one (i.e. ‘the pessimists’) has 14 percent respectively. The importance of a specific factor for a specific cluster is emphasized with a symbol after the means. (H) stands for ‘high’ ($X \geq 3.5$), (M) symbolizes ‘medium’ ($2.5 < X < 3.5$), and (L) represents ‘low’ ($X \leq 2.5$).

The name of the first cluster, (1) ‘the cost-conscious’, comes from the fact that these companies are extremely aware of costs and their allocation to different accounting items, although their recent S&S purchases are almost non-existent. In addition, ‘the cost-conscious’ are a lot less interested to acquire new S&S in comparison to an average Finnish company. The distribution of industries in the cluster is mainly equivalent to the survey sample. However, there are certain differences in company sizes. The proportion of large enterprises is especially diminished in ‘the cost-conscious’. This negative change is roughly 70 percent relative to the survey sample.

The companies in the second cluster, (2) ‘the indecisive’, do not take a clear stand regarding any of the three factors, which is behind the naming as well. Despite of this, their behavior is logical. When you do not have particularly good MA practices and some time has passed since the last MAS update, you should have an interest that is above average to acquire new S&S. Regarding the distribution of industries, there are two striking observations. Firstly, the proportion of manufacturing companies is clearly elevated (approx. +24 %). Secondly, the proportion of information and communication companies is significantly smaller (approx. -58 %). Size-wise, particularly large enterprises have an increased share, which is around 31 percent.

The third cluster is called (3) ‘the developers’, which is related to their high motivation towards continuous S&S acquisitions. These companies have not only recently purchased S&S, but are interested to develop management accounting more in the near future. Probably as a consequence, ‘the developers’ have high cost-consciousness as well. Manufacturing companies stand out from the distribution of industries. Their share in this specific cluster is around 27 percent smaller in comparison to the survey sample. Large enterprises are highlighted again (approx. +42 %).

Pronounced contentment towards current S&S is especially characteristic for the fourth cluster; (4) ‘the satisfied users’. They have recently acquired S&S, which has resulted in solid MA practices among the companies. Probably because of that, their interest to purchase anything new in the near future is unsubstantial. Similarly to the first cluster, the distribution of industries in ‘the satisfied users’ complies with the survey sample. There are not any eye-catching differences in the company sizes either, thus satisfaction does not seem to depend on these background variables.

The fifth and the last cluster is known as (5) ‘the pessimists’ because these companies have very negative attitudes towards their own competencies as well as potential changes in MA. Even though ‘the pessimists’ have explicitly the poorest MA practices, they still have not invested in new S&S in the past or plan to do so in the future. The cluster has most variation in the distribution of industries. There is a larger proportion of wholesale and retail trade companies (approx. +25 %), a smaller proportion of construction companies (approx. -35 %) and also a notably larger proportion of information and communication companies (approx. +78 %). Regarding the company sizes, medium-sized enterprises are less represented in ‘the pessimists’.

Overall, it appears that large enterprises are the most interested to acquire new S&S

as their proportion is emphasized in both (2) ‘the indecisive’ and (3) ‘the developers’. The difference between the two clusters are the recent S&S investments. There is also less large enterprises in (1) ‘the cost-conscious’, which means that these companies do not want to take MA practices for granted. The largest reluctance towards purchasing new S&S among the industries can be found from information and communication. As it was mentioned above, their proportion in (2) ‘the indecisive’ is blatantly diminished. Parallel, but smaller, decrease can be found from (3) ‘the developers’ as well. As a consequence, information and communication companies shine through from (5) ‘the pessimists’. As far as manufacturing is concerned, it is somewhat surprising that they stand out from (2) ‘the indecisive’ rather than (3) ‘the developers’. They seem to suffer from high uncertainty regarding MA that is holding back most of the S&S investments.

4.2 The development needs for management accounting: systems and services

Analysis above has showed that Finnish companies can be divided to certain distinct clusters depending on the state of their management accounting that is basically comprised of three components, also known as factors. In addition to mapping the current state, the potential development needs for MA were also inquired from the surveyed companies particularly in the open question Q25. The categorization of the responses is presented in Table 4. There are also a few archetypical citations from each response category included in the table.

As can be seen, there are eight categories that are (1) ‘systems are adequate, no need for acquisitions or improvements’, (2) ‘no knowledge of system and/or service needs’, (3) ‘system integration: emphasis on enterprise resource planning’, (4) ‘improvement of current systems and increase of their usage’,

(5) ‘acquisition or utilization of an industry-specific system’, (6) ‘improvement of management accounting techniques/practices’, (7) ‘fully tailored systems are the only suitable ones’, and (8) ‘faith in management accounting systems has been lost’. These categories account for around 85 percent of the total responses, whereas the remaining 15 percent is comprised of actual blanks and ‘no comments’-type of answers.

It seems that the majority of companies do either think that their MA systems are adequate or they are a bit uncertain about the actual development needs. Each of these categories, i.e. (1) and (2), comprise roughly 28 percent of the companies. If we compare these findings to the prior analyses, the high overall mean in Factor 2, which measures the level of MA practices, can be questioned to some extent. There is naturally a large number of companies that are extremely cost-driven and cost-aware, but some others might live in an illusion where the conception of the current state as well as the development needs is blurred. From the perspective of the clusters, definitely (3) ‘the developers’ and probably most of (4) ‘the satisfied users’ belong to the former, whereas (1) ‘the cost-conscious’ are more likely to be a bit delusional about their MA practices. It is alarming that those companies have not recently acquired any S&S, and are not even interested to do so.

The categories (1) and (2) might also partly explain why the mean of Factor 3, which measures the interest to acquire S&S, is low in average. On the one hand, there are companies that have adequate systems and thus do not actively seek to improve MA, i.e. (4) ‘the satisfied users’. On the other hand, there are companies that are somewhat uncertain about the current pitfalls. They, especially (5) ‘the pessimists’ but probably (2) ‘the indecisive’ as well, have difficulties in identifying what are the development needs. As can be seen from category (8), there is also a small group of companies, whose despair is at a

Table 4. Categorization of the responses to the open question Q25.

| Q25: “WITH WHAT KINDS OF INFORMATION SYSTEMS AND/OR SERVICES COULD YOU IMPROVE YOUR COST, AND PROFITABILITY, MANAGEMENT?” | | |
|---|---------|--------|
| RESPONSE CATEGORY | RESP. | PCT. |
| (1) Systems are adequate, no need for acquisitions or improvements | 416 pcs | 27.7 % |
| “Hard to say, our systems are highly conclusive. Simpler are always better.” | | |
| “We are using our own system, which is pretty perfect.” | | |
| “We are using general MA and ERP -systems and extremely satisfied.” | | |
| “We have an integrated ERP and MAS -system and satisfied.” | | |
| (2) No knowledge of system and/or service needs | 400 pcs | 27.6 % |
| “Can’t figure out anything specific. Systems are being built.” | | |
| “No need in our industry, so can’t really say anything on the subject.” | | |
| “Nothing to say here. Management accounting is not among our priorities.” | | |
| “Can’t really say because the situation changes daily.” | | |
| (3) System integration: emphasis on enterprise resource planning | 165 pcs | 10.9 % |
| “ERP-system integrated to other systems.” | | |
| “A comprehensive system and ERP that would suit our needs.” | | |
| “We are using an ERP-system. Its integration to other systems would be great.” | | |
| “We are using ERP and SAP, which is great.” | | |
| (4) Improvement of current systems and increase of their usage | 79 pcs | 5.3 % |
| “By improving the efficiency of the current management accounting system.” | | |
| “By modernizing our enterprise’s activity-based costing system.” | | |
| “Improving the usage and utilization of current systems are things that could be done.” | | |
| “Systems are adequate. What needs to be improved is usage of the information provided.” | | |
| (5) Acquisition or utilization of an industry-specific system | 78 pcs | 5.2 % |
| “We are in the process of acquiring SAP, which we will use to increase controllability.” | | |
| “There are no good systems available for the service business (e.g. CRM-systems).” | | |
| “We are using our concern’s own system, which is good.” | | |
| “By acquiring the Tocosoft-system (an industry-specific ERP).” | | |
| (6) Improvement of management accounting techniques/practices | 51 pcs | 3.4 % |
| “We are using a system for finding out our direct costs. It should still be improved.” | | |
| “Our production is challenging and thus it is difficult to get the numbers correct.” | | |
| “There is always something to upgrade in the product costing.” | | |
| “Labor costs are well known, but indirect are not. We have to allocate them manually.” | | |
| (7) Fully tailored systems are the only suitable ones | 50 pcs | 3.3 % |
| “The system should be tailored specific to our needs and be easy and simple to use.” | | |
| “We are using our own tailored systems that work great. We fix something every year.” | | |
| “A system should be easy to use and be tailored for us.” | | |
| “Tailored time-management systems should be developed.” | | |
| (8) Faith in management accounting systems has been lost | 25 pcs | 1.7 % |
| “Systems can’t help us anymore.” | | |
| “No such system has been created that would better our situation.” | | |
| “The improvement would be to not use these systems that do not suit our needs.” | | |
| “We are not a manufacturer, rather a service provider. We do not need accounting.” | | |

stage where fate in MAS has been completely lost. Some respondents also claimed that MA is irrelevant on their industry, which is hard to believe.

Based on the responses to Q25, it is occasionally difficult to judge whether companies have described their S&S aspirations, recent purchases or a little bit of both. Categories (3), (5) and (7) consists of such ambiguous responses. That being said, the integration of different information systems, such as MAS and ERP, seems to be moderately topical as around 11 percent of the companies have emphasized it. As can be seen, industry-specificity of a system is related closely to system integration, whereas tailoring is more concerned with standalone MAS. Of course, the terms 'system integration', 'industry-specific' and 'tailoring' have lots of overlap in practice. Even though MA services are seldom mentioned separately in the responses, integration of detached systems and particularly tailoring both require typically consultation from external experts.

The two remaining categories, i.e. (4) and (6), are not only linked to the system themselves, but also to the human resources. In the former category, MAS are adequate but the companies are not able to take advantage of system' full capabilities for a reason or another. Among other things, these issues lie in the quality of cost data and proper use of cost information in the managerial decision-making. Some companies struggle also with the actual MA techniques/practices, which might stem from a lack of management accounting competencies within the personnel. Direct costs are often well known, whereas the correct allocation of indirect costs would require extra work in many cases. However, it has to be said that the proportion of companies that belong to the categories (4) and (6) is small and the majority of needs are mainly focused elsewhere.

5. Conclusions and discussion

The findings of our quantitative, cluster analysis suggest that around 65 percent of the companies are, to some extent, aware of the current state of their management accounting. These companies belong to the following three clusters; (3) 'the developers', (4) 'the satisfied users', and (1) 'the cost-conscious', which position among the two can be, however, slightly questioned as discussed earlier. On the other hand, the lack of clear overall picture and even occasional loss of faith are somewhat symbolic for the remaining 35 percent that consist of companies from (2) 'the indecisive' and (5) 'the pessimists'. The discovery of the five clusters is the answer to our RQ1: *What is the current state of management accounting in Finland?* The qualitative inquiry of companies' development needs for MA explained, and also strengthened, the results of the clustering. The majority of companies do either regard their MAS as adequate or alternatively they are a bit uncertain about the actual needs. The integration of information systems, MAS and ERP systems among others, seems to be currently topical as well. These three observations answer mostly to our RQ2: *What are the development needs for management accounting in Finland?*

In this paper, we have argued that the state of management accounting is comprised of three factors (Factor 2: 'current MA practices', Factor 3: 'interest to acquire S&S', and Factor 4: 'S&S recently acquired') that can be employed as the 'ultimate criteria' to cluster companies. As a result, five distinct clusters were eventually found that each rank differently in relation to the factors on a tripartite scale, where (H) stands for 'high' ($X \geq 3.5$), (M) for 'medium' ($2.5 < X < 3.5$), and (L) for 'low' ($X \leq 2.5$) in proportion. If this idea of somehow ranking the clusters is taken one step further, it is possible to form an indicator that basically measures the current overall performance of management accounting of a given cluster and thus a given company be-

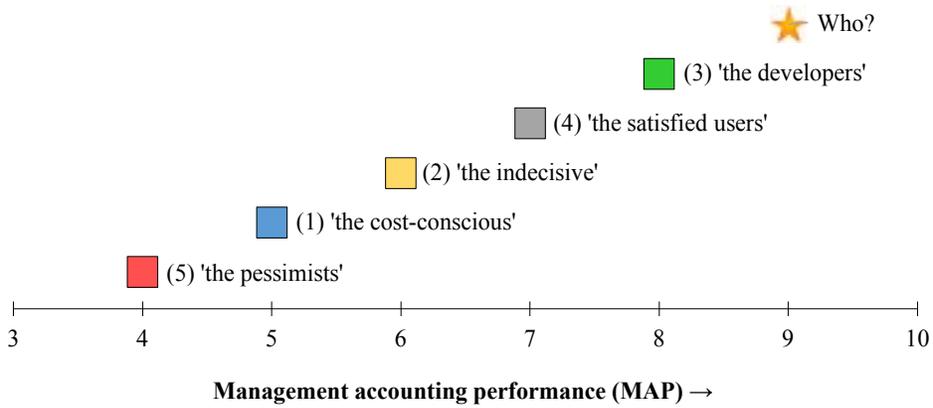


Figure 2. The five clusters from the perspective of management accounting performance.

longing to that specific cluster. By summing the ranks in a way that the condition ‘high’ grants 3 points, ‘medium’ grants 2 points, and ‘low’ grants 1 point, we are able to determine management accounting performance (MAP) for each of the five clusters. Another purpose of MAP that is illustrated in Figure 2 is to provide a quick and explanatory outlook to the state of management accounting.

Let’s take (3) ‘the developers’ as a clarifying example. Cluster’s ranks in Factor 2 and Factor 4 are both (H), i.e. ‘high’, which grants them 3 points for each. As can be seen, MAP of the cluster is 8 points in total, and thus the remaining two must come from Factor 3, where they are ranked as (M), i.e. ‘medium’. Clusters that have a high MAP value, such as (3) ‘the developers’ and (4) ‘the satisfied users’, are performing above average, which means that their current management accounting practices as well as supporting MAS and related services are modern and suitable for the context. These companies are also interested to constantly develop MA by investing in systems and services. At the other end of the spectrum are (5) ‘the pessimists’ and also (1) ‘the cost-conscious’, which have lower than average MAP. The fact that the latter are

situated even below (2) ‘the indecisive’ highlights the importance of comprehensiveness. Even though (1) ‘cost-conscious’ have, or claim to have at least, adequate management accounting practices, their lack of interest towards purchasing management accounting systems and services in the past as well as in the present results in evidently poor overall performance on the MAP scale.

The discussed aspects might provoke questions, such as “Why do we need five clusters of companies that symbolize the state of management accounting?” and “How an indicator that is employed to measure management accounting performance is even useful?” That being said, this paper has several relevant implications from both scientific and managerial perspectives. As far as the former are concerned, the five clusters offer a ‘vehicle’ for general classification of scientific understanding. Together with the MAP, the clustering stands also for MA sophistication/maturity, a topic that has been repeatedly studied in both management accounting (see e.g. Laureano et al. 2016; Phan et al. 2014; Kallunki & Silvola 2008; Tillema 2005) and performance measurement contexts (see e.g. Bititci et al. 2015; Jääskeläinen & Roitto 2015; Van Aken et

al. 2005). In particular, Laureano et al. (2016) have recently conducted a study, where they redesigned the four maturity stages of Kaplan (1990) based on data from Portuguese SMEs. Despite a narrower scope that focuses on companies' current product valuation techniques and certain advanced accounting methods (cf. our Factor 2), and a significantly smaller dataset (58 responses vs. 1507 responses), the equivalent research method (i.e. cluster analysis) leaves room for comparison.

In the study of Laureano et al. (2016), the majority of companies (52 %) are situated on the second maturity stage, which denotes that they carry out product valuation with indirect costs but know very little about advanced accounting methods that are ABC and BSC in their context. We did not find direct support for this observation as (1) Finnish companies seem to be familiar with costs and their allocation based on Factor 2, and (2) over half of them (62 %) perform either average or above on the MAP scale. Their fourth maturity stage, where MA is supposedly most developed, has also a great deal of companies (24 %). These organizations are rather comparable with (3) 'the developers' and/or (4) 'the satisfied users' depending on the assessment criteria. It thus seems that the state of MA is less polarized in Finland relative to Portugal as companies are more evenly distributed among the clusters and corresponding stages. All things consid-

ered, our main contribution definitely lies in the scope that is a lot broader in comparison not only to Laureano et al. (2016), but the others as well. For example, by investigating how ABC practices differ throughout the organizational life-cycle stages, Phan et al. (2014) as well as Kallunki and Silvola (2008) have taken a more specific and limited approach to the question of MA maturity.

Companies' responses to the open question Q25 emphasize certain MA trends that can facilitate the discovery of previously untapped research topics, which is another scientific contribution. The perceived importance of ERP systems for improving MA practices in the future was especially surprising. As this aspect was not recognized as a topical trend in any of the articles of our literature review, there is a need for further research. Even though ERPs and MA are not an unorthodox combination by any means (see e.g. Rom & Rohde 2007 for a literature review), something unforeseen in current business environment might explain why also SMEs (95 % of our sample) are now driven to implement and adapt ERPs to accounting purposes. When it comes down to managerial contributions, positioning and benchmarking are enabled by the clusters and MAP. Management towards goals is much easier if senior management is able to check the status of company's MA practices against others including the prime competitors.

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Appendix 1. Full list of survey questions.

Questionnaire

- Q1. Our products and/or services are mostly standardized products and/or services.
- Q2. We have imaged our business processes in the last five years.
- Q3. Our information systems offer good support for the business processes.
- Q4. We enter the working hours systematically into an electronic system.
- Q5. We know the direct or variable costs of each individual product/service.
- Q6. We know the indirect or fixed costs of each individual product/service.
- Q7. We are using activity-based costing principles in our company.
- Q8. We can determine the costs of different cost objects on an adequate level (e.g. profits centers, product lines, customer...)
- Q9. The pursuit for cost effectiveness is the most important objective in our business.
- Q10. With better cost information we could develop our operations significantly.
- Q11. A spreadsheet program (e.g. Microsoft Excel) is enough for management accounting.
- Q12. In our opinion, the market lacks a suitable software for cost, and profitability, management.
- Q13. We have purchased a management accounting system in the last five years.
- Q14. We are considering the purchase of a management accounting system in the near future.
- Q15. We have acquired management accounting related services, e.g. education and consulting, in the last five years.
- Q16. We are considering the purchase of management accounting related services, e.g. education and consulting.
- Q17. We would want a comprehensive system for cost, and profitability, management that would include the system, training and consulting rather than a management accounting system.
- Q18. We are interested in an investigation done by external professionals about the state of, and possibilities in, our cost, and profitability, management.
- Q19. We systematically build long lasting partnerships in our business.
- Q20. Our customers especially appreciate the transparency of our cost structure and pricing.
- Q21. We especially appreciate the transparency of our suppliers' cost structure and pricing.
- Q22. With joint management accounting, we could improve the efficiency and competitiveness of our supply/value chain.
- Q23. We are ready to deepen the cooperation of our supply/value chain by sharing information about our cost structure mutually with others.
- Q24. We think that the sharing of cost structures and information is realistic in our supply/

value chain now or in the near future.

- Q25.** With what kinds of information systems and/or services could you improve your cost, and profitability, management?
- Q26.** What are the greatest challenges and/or obstacles in the acquisition, building and maintaining of an effective management accounting system?
- Q27.** Does your company have in use some kinds of network wide collaborative management accounting tools, methods or even systems? If yes, which ones or what kind?

Appendix 2. Descriptive statistics.

| QUESTION | N | MEAN | MEDIAN | STD. DEV. | VARIANCE |
|----------|------|-------|--------|-----------|----------|
| Q1 | 1507 | 3,416 | 4 | 1,402 | 1,964 |
| Q2 | 1507 | 3,544 | 4 | 1,350 | 1,823 |
| Q3 | 1507 | 3,741 | 4 | 0,960 | 0,921 |
| Q4 | 1507 | 3,345 | 4 | 1,545 | 2,386 |
| Q5 | 1507 | 3,767 | 4 | 1,047 | 1,096 |
| Q6 | 1507 | 3,451 | 4 | 1,112 | 1,236 |
| Q7 | 1507 | 3,068 | 3 | 1,291 | 1,668 |
| Q8 | 1507 | 3,962 | 4 | 0,832 | 0,692 |
| Q9 | 1507 | 3,782 | 4 | 0,980 | 0,960 |
| Q10 | 1507 | 3,279 | 3 | 1,145 | 1,310 |
| Q11 | 1507 | 2,745 | 3 | 1,334 | 1,779 |
| Q12 | 1507 | 2,413 | 2 | 1,205 | 1,452 |
| Q13 | 1507 | 2,486 | 1 | 1,737 | 3,016 |
| Q14 | 1507 | 1,851 | 1 | 1,227 | 1,506 |
| Q15 | 1507 | 3,024 | 3 | 1,621 | 2,629 |
| Q16 | 1507 | 2,324 | 2 | 1,328 | 1,764 |
| Q17 | 1507 | 3,409 | 4 | 1,290 | 1,663 |
| Q18 | 1507 | 2,090 | 2 | 1,126 | 1,267 |
| Q19 | 1507 | 4,480 | 5 | 0,763 | 0,582 |
| Q20 | 1507 | 3,336 | 3 | 1,114 | 1,242 |
| Q21 | 1507 | 3,575 | 4 | 1,049 | 1,100 |
| Q22 | 1507 | 3,036 | 3 | 1,161 | 1,349 |
| Q23 | 1507 | 2,713 | 3 | 1,159 | 1,343 |
| Q24 | 1507 | 2,694 | 3 | 1,120 | 1,254 |