The use of management accounting in the social interplay between management accountants and operations managers in mining production environments

A thesis proposal

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1 Introduction

This first chapter aims to highlight the problematic issue of the limited research of management accounting at operational levels, and the contradictory findings from the two perspectives of management accounting research and operations management research.

1.1 Different notions of management accounting at operational level

For a long time it has been discussed whether management accounting is useful in operations and can be used to respond to the global and dynamic environments facing organizations. Already Jönsson and Grönlund (1988) noticed that operational level technology is becoming more sophisticated and by that follows new ways of thinking of management accounting for it to be useful.

In particular, researchers in the field of operations management have been questioning whether management accounting is excessive in operations management since the former does not respond well to the operational level issues due to new organizational demands and technologies (Hansen & Mouritsen, 2006; Hansen & Mouritsen, 2007). Operations management researchers and practitioners often consider management accounting as ambiguous with a lack of useful instructions of how to execute (Bhimani, 1994; Hansen & Mouritsen, 2007). Further, researchers put forward that management accounting is considered by both operations management researchers and practitioners to create bureaucracy as well as hamper improvements by delaying information and establishing dysfunctional incentives in production environments (ibid). This suggests that management accounting may not only be useless but also harmful to operational activities due to factors such as aggregated and delayed information (c.f. Maskell & Kennedy, 2007; Preston, 1986). Related, Jönsson (1998) stresses that for management accounting to be useful it needs to be related to actual practices that take place in the organization.

Management accounting is, in the field of management accounting, considered useful from more aspects than financial accounting and performance measurements. It has long been suggested that accounting information is used in a wider aspect than for merely decision-making (Hall, 2010). Rather, it is supposed to guide decision-making, control and manage the organizational means
and ends (Broadbent & Laughlin, 2009). This illustrates the contrast to the previous section where the view of management accounting was presented as narrow. It is suggested by Chapman (1998) that management accounting is an on-going process and that the members involved should shape this process, and thus, develop it.

In defining management accounting, Malmi and Brown (2008) spins on the demarcation between on the one hand control systems and on the other hand decision-support systems. This demarcation brings the definition of management accounting as providing information as a basis for decision-making, and management control as a control system. Hopper and Powell (1985) stress that management accounting is often used to legitimize decisions after they already have been taken rather than as input to the decision-making process, which makes them questioning the rationality that underpin accounting. However, the important aspect is not management accounting or management control as their choice of label. Instead, it is interesting how the concept management accounting is conceptualized. As argued in previous section, if management accounting exists as an on-going process (Chapman, 1998), then it would suggest that the definition would be broader than management accounting as a tool or technique. If management accounting includes the aspects of defining, controlling and managing both the achievement of outcomes as well as the means to achieve the objectives (Broadbent & Laughlin, 2009), it would per definition be considered a control system as well as a decision-support system (c.f. Malmi & Brown, 2008), which draws upon dimensions of signification, legitimation and domination.

Macintosh and Quattrone (2010 pp. 74-76) distinguish between three different areas of management accounting use, defensive use, offensive use and symbolic use. The defensive use can be paralleled to the dimension of legitimation (c.f. Giddens, 1984), since managers building a defense with information (c.f. Preston, 1986). The dimension of domination (c.f. Giddens, 1984), can be related to the offensive use, where managers can exert power over others and can use it as an instrument of persuasion and as an advantage over others (c.f. Preston, 1986). To use management accounting for symbolic use can be associated to the dimension of signification (c.f. Giddens, 1984), since in this aspect management accounting can be used to symbolize a core value, and hence provide meaning of the situation (c.f. Preston, 1986) as well as the instrumental use for decision making. Thus, management accounting is also related to power and its use and
usefulness may not be as simple and instrumental as suggested by operations management literature. As an example, Preston (1986) noticed that management accounting increased the awareness of the operations managers regarding the top managers’ power relation over operations managers.

Further, Burchell et al., (1980) distinguish between ideal use of management accounting and actual use of management accounting. Depending on the situation management accounting is ideally used with different purposes. In certain situations the ideal use and the actual use of management accounting is to provide answers. However, with uncertainty come other ideal uses, such as to stimulate learning, generate ideas, and promote communication and debate. The actual uses are contradictory. Instead, management accounting is sometimes used to generate answers, rationalize decisions ex post, and exert power. This suggests that management accounting is not merely used in the decision process. Rather, the uses of management accounting might differ depending on the situation (c.f. Boland Jr. & Pondy, 1983) and hence, alter when other aspects changes, such as the situation or the interplay between members.

The reasoning that management accounting can be used in the three dimensions implies that decision making constitutes only a part of the potential usefulness of management accounting. Some previous management accounting researchers address usefulness in a contingency matter (c.f. Gordon & Narayanan, 1984; Hayes, 1977) as the instrumental usefulness for the decision making process (Chenhall & Morris, 1986; Hayes, 1977). However, this thesis denotes a broader aspect of usefulness (c.f. Swieringa & Weick, 1987), which does not emphasize merely the decision making aspect. Learning and criticizing is suggested to be central aspects for operations, which can take place due to useful management accounting (Argyris, 1977; Jönsson & Grönlund, 1988). It is also suggested that usefulness can denote the reaction and identification of deviations from standards (Jönsson & Grönlund, 1988; Weick, 1995). By the criticizing and identification of errors follow decisions regarding precautions and the decision may not solely be in relation to management accounting, it can be based on experience, knowledge and competence of the operations managers (Jönsson & Grönlund, 1988). Hence, the decision making process can be considered to constitute only a part of the usefulness of management accounting and the parts can be considered inseparable where the crucial aspect due to the situation is in the figure and the
remaining aspects are in ground (c.f. Boland Jr. & Pondy, 1983). Thus, in this thesis the term management accounting can best be described as; provide meaning, enhance learning and critical thinking, support and justify decisions, and coordinate and create accountability among members.

Nonetheless, if the usefulness of management accounting systems is limited for other members than the accounting department, organizations might be focusing and using resources on the wrong things and management accounting’s usefulness might be lost due to running operations as routines instead of engaging motivated, committed and information-receivable employees (De Leeuw & Van Den Berg, 2011). Management accounting is considered by management accounting researchers to have impact on actions, motivation and commitment (Swieringa & Weick, 1987). If so, management accounting could be considered useful in the sense of creating meaning for managers in their daily activities and practices.

According to Schatzki (2005), practices are organized human activities. These activities draw upon the understandings of how to do things, the taken-for-grated rules and teleoaffective structure (Ahrens & Chapman, 2007; Schatzki, 2005). Hence, practices are shaped through the meaningful activities that occur daily when organizational members are working with and constructing understandings, rules and engagements (Ahrens & Chapman, 2007). Researchers suggest that accounting practices interact with other practices, such as daily operational activities, which brings an emphasis on accounting as beyond a solely separate routine and mundane accounting, since other practices relies on accounting and accounting relies on other practices (Ahrens & Chapman, 2007; Ahrens & Mollona, 2007; Ahrens, 2009). As a result, management accounting practices and other organizational practices are in many ways interrelated in the daily activities. Bhimani (1994) concludes that the new and innovative production practices influence and affect management accounting practices and that these practices need to respond to each other. Hence, management accounting cannot be viewed as an isolated practice. Rather, the social and political forces are likely to play a significant role in the use of management accounting practices as well.

Diverse situations also determine the interplays between members (Preston, 1986), which denote that management accounting might differ depending on the interplays (Burchell et al., 1980). Further, Preston (1986) found that interplays gives reasons to doubt formal management
accounting information, since the formal information comes too late, does not provide details and are often inaccurate. Roberts and Scapens (1985) emphasizes the importance of communication and interplay, since it facilitates for accounting information to be interpreted and understood in the shared context, which will bring mutual knowledge between the managers. Similarly, Weick (1995) set forth that to gain meaning members interact in the pursuit of mutual understanding of, for example, management accounting practices. However, Preston (1986) emphasizes that personal relationships differ and by that follows implications for the interplays. Depending on the personal relationship between the managers the interplays can be broken or supported. Preston (1986) found that the interplays between operations managers were the main source for information gathering, which implies that informal information can constitute management accounting information as well. As a result, informal management accounting does not need to be described as the physical reports or documents. Hence, in present thesis, informal management accounting can best be described as communicated and discussed in the daily practices.

Hence, interplays are denoted as interplay occurring between two or more members, regarding both formal as well as informal management accounting with the intention to share knowledge to reach mutual understanding of management accounting and operations management practices. However, interplays can also result unsuccessfully where the members do not reach mutual understanding. Nonetheless are those interplays tedious, on the contrary, they have the potential to increase the understanding of the use and usefulness of management accounting in production environments, since it can broaden the understanding of modern management accounting practices (Bhimani, 1994). Hence, if management accounting is used in the interplays, it would denote interplays to be influenced by social, organizational, institutional, political and economic dimensions, in the same sense as management accounting builds upon those dimensions.

It is problematic that the knowledge regarding management accounting and its uses at operational levels are limited. Additionally, local management is considered highly context dependent, which makes it difficult for top management to manage from a distance (Ahrens & Chapman, 2007). This complexity calls for detailed field based studies in order to understand management accounting in practice (Ahrens & Chapman, 2007; Ahrens, 2009; Chapman, Cooper, & Miller, 2009; Cooper & Morgan, 2008; Hopper & Powell, 1985; Hopwood, 1983; Jönsson, 1998;
Tomkins & Groves, 1983). Thus, field based studies are required to further understand how management accounting is related with operational practices.

A relevant context to conduct research of management accounting is in the mining production environment. On the contrary to what might be expected the mining industry is suggested to be characterized by a dynamic and changing environment (Wise & Spear, 2002) due to rapid technological developments in communication and industrial automation (Chaykowski, 2002). In addition, the research of management accounting within the mining production environment is limited, especially research with an interpretivistic approach. The existing management accounting studies within the context of mining production environments are usually quantitative (c.f. Jakelski & Lebrasseur, 1997; Mahama, 2006) with a functionalistic or normative perspective, or are focusing on the financial aspects of management accounting, such as managing exchange risk (c.f. Dhanani, 2003). This implies that the research regarding understanding management accounting in mining production environments is relatively unexplored.

In sum, this points to a research gap where the operations management literature provides a description of management accounting that is overly narrow and rather instrumental at the same time as the broader stream of management accounting literature contain deficiencies in the empirical study of management accounting in production environments.

1.2 Disposition of the thesis proposal

The remainder of the thesis proposal is structured as follows: the next section declare for the tentative pre-study findings, followed by the research questions and purpose of the dissertation. The second chapter starts by addressing differences between the operations management perspective on management accounting in production environments, and the perspective of management accounting literature addressing accounting in its social context. The third chapter describes the research methodology, approach and perspective, which the present thesis rests upon, followed by the research strategy and design. The fourth chapter provides for the intended paper contributions to the thesis proposal and the fifth chapter aim to declare for the potential synergies from the five papers in relation to the research questions and purpose.
1.3 Pre-study findings

A pre-study was conducted in an organization operating in a mining production environment in order to identify research questions for the thesis to better understand how management accounting is used and is or can be useful in the context of production environments. Although, the pre-study results are tentative and need to be validated, the pre-study suggests that lack of interplay between management accountants and operations managers results in a lack of accounting information usage. Similarly, previous studies declared for in previous sections reveal that the interplay between management accountants and operations managers affected the uses of management accounting (Chapman, 1998). This lifts the question of how and why the interplay between management accountants and operations managers would be important for the usefulness of management accounting. However, there still might be informal or formal management accounting that is used in the sections where the interplay does not work well and their operations still might be successful to the organization (c.f. Jönsson & Grönlund, 1988). Consequently, operations managers could use management accounting with or without the interplay with management accountants.

The pre-study reveals that in some operational units in the organization, all members participate when it comes to accounting, which puts its use in focus, whereas in other units there is no culture of using management accounting. However, the operations managers are encouraged by central levels to participate with the management accountants in the preparation of monthly financial statements. Additionally, the management accountants are encouraged by top management to be more proactive and engage with the operations managers. Further, the pre-study suggests that it is of importance that managers from all organizational levels can access and understand the information necessary for them and their work no matter what distribution channel, spoken or written.

Further, the results suggest that some relations between individual management accountants and operations managers are considered by both parties to work better depending on the understanding and knowledge about the others’ operations. The managers do not consider close cooperation as essential, rather the relations is considered to rely on hard and close cooperation in the beginning of their relation in order to develop a stable foundation where both parts can
depend on each other and create reciprocal interplays (c.f. Preston, 1986). Such interplays also constitute communication of what aspects of the formal accounting system and what other information that should be tailored to increase usefulness for the operations managers. According to the managers there was no use of accounting information and monthly financial statements in units where the interplay between management accountants and operations managers did not work well.

However, rather than relying on formal management accounting, the operations managers suggest that much of the daily operations are based on their experience and tacit knowledge. Additionally, one operations manager claims that several aspects that he/she knows by experience will increase the efficiency are invisible in the monthly financial statements but are obvious if looking at the operations. In a plea from Maskell and Kennedy (2007), where they are critical to traditional management accounting, they address this issue of not aligning management accounting to the production practices. If management accounting is not found supportive in operations managers’ practices there is a chance that different units deal with similar questions and practices but handling it in different ways, due to their tacit knowledge within that specific unit. Hence, a concern is whether the accounting expertise in operations managers reaches all the way out in the unit, and whether the operations managers base their decisions on formal management accounting or if they rather rely on informal management accounting. Another concern is if management accounting is not found useful, hence, not bringing any value to the operations is it still necessary for operations managers to partake such information?

Likewise, as the theory suggests, the pre-study findings reveals that there exists a jargon among some operations managers of management accounting as excessive. At the same time other groups in production are using management accounting and find it useful. Parallels can be drawn to Ahrens and Mollona (2007) who suggest that the knowledge about the operations and the accounting practices differ between groups in the same organization. Hence, both the academic and the practical understanding of management accounting in production environments need to be brought forward.

At the same time as the pre-study suggests that the top-management requests operations managers and management accountants to be more proactive and share information to empower
employees, the organization is introducing an efficiency program aiming to standardizing the best practices and to make the operations more lean. In addition, they are standardizing the initiatives from the employees in the sense of making the initiator fill in a form with the initiative and calculus, which are thereafter scrutinized and quality-assured in a complex process involving seven scrutinizers including the specific management accountant of the initiator.

The pre-study suggest that the efficiency program with standardizations is a way for central management to manage the organization from a distance. However, Argyris (1977) states that management from a distance can be counterproductive since the manager held responsible cannot identify and correct errors. Parallels can be drawn to the distant control system of standardization of initiatives. The quality inspector would approve or disapprove the initiative but might not possess the same necessary experience, knowledge and competence as the initiator.

This supports the validity of the broad question of whether management accounting is useful at operational levels in mining production environments in the daily activities among operations managers. Maybe the uses and the usefulness of management accounting can be understood by this interplay between operations managers and management accountants. Consequently, there is a need to studying management accounting in mining production environments to understand its potential usefulness at operational levels (c.f. Cooper & Morgan, 2008; Hansen & Mouritsen, 2006; Hopwood, 1983; Jönsson, 1998; Maskell, 2000; Tomkins & Groves, 1983).

1.4 Relevance of the research

If building on the literature and the pre-study, which suggest that the diverse organizational practices are interrelated and dependent on each other, it would not be adequate to separate management accounting from the context in order to study management accounting as a phenomenon in mining production environments (c.f. Roberts & Scapens, 1985). Hence, management accounting cannot be separated from its context since the two are interdependent due to the potential influences management accounting has on the organizational objectives (Swieringa & Weick, 1987). In addition, Bhimani (1994) points to research pursuing the potential of management accounting to enhance production processes’ effectiveness, and that the uses in production environments require greater attention from management accounting research. He
suggests that the links between management accounting and changes in production environments need to be explored and that this would support the view of management accounting as reacting to other forces and contributing to changing organizations’ actions and practices. Consequently, management accounting needs to be related to the actual activities that take place in practice (Jönsson, 1998; Roberts & Scapens, 1985). This implies that it would not be possible to understand management accounting in mining production environments without studying it in its context (Hall, 2010) as a social and institutional system (Chapman et al., 2009).

Management accounting is claimed as constantly changing in relation to social, economic (Hopwood, 2007) and political aspects (Chapman et al., 2009). Hence, management accounting as a social system denotes being communicated among members to provide meaning for the daily operational practices. For instance, Chapman et al., (2009) claim that the modern economy relies on accounting practices, which makes it crucial to understand the role of accounting in organizations and society. Existing practices are mentioned, modified and created through the actions of members (Ahrens & Mollona, 2007). By studying the interplay between managers in daily practices at operational level, the understanding of the usefulness of management accounting in production environments might increase.

Researchers stress that unless the accounting research community commit to these issues of relating management accounting to actual practices, our understanding of the practical usefulness of management accounting can be lost for organizations operating in production environments (Hall, 2010; Jönsson, 1998). The problem is old, but nonetheless unsolved. Chapman et al., (2009) claims that the research community needs to readdress this neglect. Instead of being threatened by the management accounting changes, it should be considered an opportunity for the academic community and provide meaning to the practitioner community in order to understand the use and usefulness of management accounting at operational levels in mining production environments (c.f. Hopwood, 2007; Otley, 1997).

1.5 Research gap and research question

As pointed out in the previous sections there are contradictions in the literature and in practice regarding the usefulness of management accounting at operational levels in mining production
environments. In this thesis is it argued that the view of the usefulness of management accounting presented by operations management researchers represents a deterministic and narrow view of how management accounting should be applied in specific situations. This raises questions regarding how the practices, suggested by previous studies, to improve operations are used in practice. What do the processes look like? Why are the practices successful or unsuccessful? In an attempt to shed light to some of those concerns, the research questions addressed in this thesis concerns the usefulness of management accounting in its localized setting by seeking to understand the meanings and perceptions of the managers that both develop and use accounting practices in a mining production environment (Chapman et al., 2009).

How is management accounting used and how useful is management accounting among operations managers in mining production environments?

How is the interplay between management accountants and operations managers related to the use of management accounting and why?

1.6 Purpose and intended contribution

The compilation dissertation intends to generate in-depth empirical knowledge within management accounting in mining production environments. The overall purpose of the thesis is to:

- Increase the understanding of the use of management accounting in daily practices of operations managers in mining production environments,
- Identify interplays between management accountants and operations managers facilitating the use of management accounting in the daily practices and identify interplays disrupting the use of management accounting in the daily practices at operational levels,
- Compare how and why the different interplays affect the usefulness of management accounting among operations managers in daily practices in mining production environments.
The dissertation intends to contribute with insights of how interplay between management accountants and operations managers is related to the usefulness of management accounting at operational levels and whether the usefulness of production-related management accounting can be developed through their interplay.

This compilation dissertation will be constituted by five papers. The first paper will be a review of management accounting and operations management literature. The second paper will contribute by providing empirical research of how management accounting is used and if and how management accounting is useful in the interplay between management accountants and operation managers. The third paper aims to understand the usefulness of informal and formal management accounting in the same environment. The fourth paper aims to understand how an efficiency program reaches out in the organization and how and if it has impact on the use of management accounting practices, and the fifth paper will be a conceptual paper.
2 Theoretical frame of reference

The theoretical frame of reference is divided into three sections, where the first section discusses the perspective on management accounting provided by operations management literature. Thereafter the management accounting literature characterized by management accounting in its social context is discussed from an institutional point of view. The last section discusses the use and usefulness of management accounting in production environments and the interplay of management accountants and operations managers and their use of management accounting practices.

2.1 Management accounting from an operations management perspective

Operations management researchers claim that management accounting promotes financial aspects rather than focusing on time, quality, flexibility and innovation (Hansen & Mouritsen, 2006; Lebas, 1995). Operations management literature generally emphasizes measures; however, it can be considered a traditional and mechanic view (Neely, Richards, Mills, Platts, & Bourne, 1997). As an example, operations management literature states that measures related with the strategy are considered one of the most important parts of organizations (Melnyk, Stewart, & Swink, 2004) and that management would hardly exist without measurements (Lebas, 1995).

Neely (1999) suggest that measures in production environments are often historically focused. In addition, he drew from earlier work the conclusion that financial measures are criticized because of mainly five factors. These are; financial measurements are encouraging short-termism, do not provide data of quality and flexibility, encouraging local sub optimization, minimizing standard variances rather than improvement, and finally do not consider customer and competitor focus. The operations management literature seems to focus highly on non-financial aspects, and seldom mention financial aspects as important. This suggests that the financial aspects are not as valuable to operations managers.

Maskell (2000) stresses that management accounting would benefit from adapting to the context of production environments and provide local accounting information needed at operational levels. Also Maskell and Kennedy (2007) points to the need for management accounting to adapt to support production and direct attention to several uses that need to be altered. For example,
according to Maskell and Kennedy, management accounting need to focus on adapting the following areas; measurements, the wrong measurements results in wrong focus; costs, calculate costs for the value stream, not standard costs; the decision-making, decisions based on standard costs results in error regarding, for example, pricing and sourcing; financial statements, they are not understandable, and still operations managers base their decisions upon the statements; complex systems; and focus, it needs to shift to customer value.

Likewise, researchers suggest that the best accounting technique depends on the manufacturing environment (Tayles & Walley, 1997). Preston (1986) denotes that operations managers found formal management accounting inaccurate due to changed and developed situations. Similarly, in a questionnaire survey where experienced management accountants provided their opinions of management accounting practices, they were questioning the relevance of management accounting in relation to the manufacturing techniques (Tayles & Drury, 1994). However, management accounting and performance management was shown to have been used when successfully implementing new production practices (Hendry, Huang, & Stevenson, 2013).

However, Gupta and Galloway (2003) found management accounting practices useful at operational levels since it enhance the quality of the decision-making process and enable effective strategic decision-making. Further, operations management researchers imply that process improvement is vital for competitiveness in production environments. As an example, management accounting and measurements are suggested to increase understanding, create motivation and improvements among operators (De Leeuw & Van Den Berg, 2011). Improvements are suggested to result from measurements, since they enable identification of gaps between performance and expectations, as well as size and direction of the gaps. In addition, measurements provide information and feedback to adjust and improve processes or actions (Melnyk et al., 2004). Additionally, operations management researchers tend to suggest which management accounting practices that are appropriate and how to go ahead (Bennett, 2009; De Lange-Ros & Boer, 2001; De Leeuw & Van Den Berg, 2011), and it is suggested that this relates to improvements in behavior, motivation and processes, and promoting innovation (De Leeuw & Van Den Berg, 2011; Radnor & Barnes, 2007). Further, operations management literature emphasizes the internal processes and often tends to describe how improvements within internal
processes can be achieved by different management practices (De Leeuw & Van Den Berg, 2011; Doolen, Van Aken, Farris, Worley, & Huwe, 2008; Hendry et al., 2013).

In sum, the view of management accounting provided by operations management researchers and practitioners is shattered. Some researchers suggest that management accounting does not bring value to the operations and that it focuses on the wrong things. However, other researchers see management accounting as useful in production environments. Nonetheless, are the conclusions similar when it comes to the uses of management accounting. Usually, the perspective presented in the operations management literature is characterized by normative and functionalistic perspectives with requests for management accounting to be clearer, suitable to the operations and to possess guidelines of how to integrate management accounting with the operations. Nonetheless, several operations management researchers are keen on including human aspects into the equation, such as empowering employees and non-financial measurements. However, management accounting is solely suggested to assist in the process by providing outcomes and ratios. Thus, the image of the use of management accounting at operational levels is often narrow and instrumental and often neglects the interrelated social and political dimensions presented by management accounting researchers.

2.2 The use of management accounting in its social context

As mentioned, management accounting has a broader meaning according to the management accounting literature. Several management accounting researchers considers it a social system rather than a technical phenomenon (Bhimani, 1994; Chapman, 1998). Further, behavioral aspects, political and institutional forces and socio-cultural values affect management accounting (Bhimani, 1994; Cooper, 1980; Hopper & Powell, 1985). As a result, management accounting cannot be considered merely technical and neutral (Preston, 1986). Management accounting is, however, in normative terms, used as a basis for decisions given the information provided (Swieringa & Weick, 1987). Nonetheless, from a management accounting perspective, there are additional uses. Relying too much on financial reports may contribute operations managers to focus on the numbers, instead for on the underlying operational processes which may be what is important for them in their daily activities. Porter (2009) emphasizes that quantification brings a standardized belief and that this belief can be considered a substitute for truth. This is in line with
the accounting logic (Carmona & Ezzamel, 2009), and is considered a paradox by Roberts and Scapens (1985), since operations managers are prompted to gather information and take part of information, but at some point they need to look beyond the bottom line. Porter (2009) claims that it is abuse to analyze information without its context. Similarly, management accountants need to seize the local knowledge about the production economics that the operations managers might have (Jönsson & Grönlund, 1988).

From a management accounting perspective, management accounting is considered to reduce uncertainty as it provides sets of rules that help govern the organization (Swieringa & Weick, 1987). In addition, if the objective is known it is suggested to provide meaning to the members of the organization (Hall, 2008; Preston, 1986). Even though the stream of operations management literature provides a view of the information as too aggregated, the management accounting literature claims that the aggregated information can reduce uncertainty as it enhances comparison (Swieringa & Weick, 1987). However, like operations management research, Preston (1986) emphasizes the importance of timeliness for management accounting to be considered useful in operations. In this matter, management accounting can also create awareness as it makes aspects visible and provide insights to the organization and its operations (Miller & O'Leary, 1994; Swieringa & Weick, 1987).

According to Argyris (1977) double loop learning requires ability to identify and correct errors, and by that it is possible to question the standard condition. However, institutional theory suggests that it is difficult to unlearn old habits and institutionalized behavior (Burns & Scapens, 2000). Jönsson and Grönlund (1988) state that single loop learning is not enough if the standard condition is to be questioned, rather, the set of rules need to be set locally with space for experimental and associational learning. Hence, the necessary condition for double loop learning is the awareness of the members, which can be gained by empowerment. Another important aspect of empowered operations managers is the potential follow-ups on deviations, which might occur if the operations managers have access to and can critically scrutinize the management accounting reports (Jönsson & Grönlund, 1988). If operations managers do not scrutinize the numbers and instead choose to adjust the standards rather than following up on the numbers, some of the usefulness of management accounting might be lost.
In addition to empowerment, this would imply that the top management would need to give managers access to accounting information since it is suggested to increase the understanding for numbers and give mandate to operations managers to analyze and operate in relation to accounting information (Burns & Scapens, 2000; Jönsson & Grönlund, 1988). However, even though management accounting researchers present management accounting as used for problem solving, it is problematic to initiate and sustain the action needed, since it is claimed that even good decisions do not automatically cause effective action (Swieringa & Weick, 1987).

According to Preston (1986), management accounting needs to go beyond decision-making to be useful in production environments. As mentioned, other researchers in the field of management accounting suggest it to also include attention directing, problem solving and learning (Argyris, 1977; Burchell et al., 1980; Jönsson & Grönlund, 1988). In addition, even informal management accounting is shown to be useful since researchers found that groups framed their activities through the notion of reaching the best result even though they did not have access to formal management accounting information (Ahrens & Mollona, 2007; Ahrens & Chapman, 2007). Similarly, Powell (1984) suggests that the understanding for each other’s realities and business increases the usefulness of management accounting as a forum for debate. Hence, formal and informal management accounting could have the potential to be considered useful to all members in a group.

In summary, management accounting researchers tend to have a broader and not as normative view of management accounting uses and usefulness compared to the views provided in operations management literature. The stream of management accounting researchers is emphasizing management accounting as more than guiding decision-making. Rather, they argue for management accounting to be used in several different aspects, such as learning and critical thinking, as well as to be useful for other purposes than rationalizing. However, the different views of management accounting researchers and practitioners in contrast to the view of operations management researchers and practitioners, elevates an intriguing problem. The knowledge of management accounting in production environments is limited and the existing research is often contradictory between the two fields and often do not aim to understand the actual use of management accounting in production environments.
2.3 Management accounting in production environments

Similar to operations management researchers, researchers from the management accounting field are also suggesting that management concepts such as TQM and JIT have impact on management accounting practices (Abdel-Kader & Luther, 2008). Likewise, other researchers found evidence from a questionnaire survey that the development of management technologies in production environments determines the design of the management accounting practices (e.g. Abdel-Maksoud, Cerbioni, Ricceri, & Velayutham, 2010; Kennedy & Widener, 2008). This stems from a contingency view whereas Chenhall (2003) suggests that as organizations develop the production technologies, management accounting needs to be re-designed congruent with the new control requirements. As a result, there is a great focus on measuring the activities at operational levels. As an example, management accounting measures have been developed during the years that are specific for operational levels in production environments (Abdel-Maksoud, Dugdale, & Luther, 2005; Abdel-Maksoud et al., 2010).

However, as good as it seems, little does this type of research tell us about how management accounting is used, about the processes and why the operations management techniques are compatible with the management accounting practices. To illustrate, Van der Veeken and Wouters (2002) found in a field based study that different operations managers at different levels of the organization required different management accounting. However, they were all interested in the results that affected their operations. Consequently, it may not be as simple as suggested in functionalistic studies, where management accounting should adapt to the technologies. As an example, Bhimani (1994) emphasizes that all new innovative technologies affect the structure and dynamics of management accounting, but that it is unclear how management accounting adapts and face these demands and changes. Thus, there might be other aspects to consider as well as the technical and contingency aspects.

Bhimani (1994), for example, stresses that even in production environments, management accounting would benefit from going beyond the technical aspects. It is suggested that flexible management accounting is needed for operations managers to solve current problems (Van der Veeken, Henk JM & Wouters, 2002). Hence, there would be a need to connect management accounting to practices at operational levels (Jönsson & Grönlund, 1988). To exemplify, Van der
Veeken and Wouters (2002) shows that operations managers found it easier to use experience and tacit knowledge to solve problems in their practices, than to retrieve, analyze and understand management accounting figures. Further, they suggest that the operations managers’ tacit knowledge and experience is relevant in explaining the type of management accounting that the operations managers find useful. In addition, they suggest that the usefulness of management accounting for operations management also depends on the extent the management accounting is consistent with the practices (Van der Veeken, Henk JM & Wouters, 2002). If operations managers prefer to rely on their tacit knowledge and experience since management accounting is too aggregated, too abstract and hence too hard to understand for it to be useful in the specific situation, then management accounting is suggested to have the potential to be used for learning (c.f. Chapman, 1997; Van der Veeken, Henk JM & Wouters, 2002).

Consequently, for management accounting to be useful, Van der Veeken and Wouters (2002) conclude that it needs to; support and point out uncertainties, since it can help operations managers to plan and act differently when they are aware of the situation; support learning, tacit knowledge and experience; and support all managerial levels since different management accounting are of different use for different managers. Another illustrative example of how management accounting can contribute to changes in a production process is a field based study by Miller and O’Leary (1994) on the organizational attempts to reform management accounting in the search for cost effectiveness. Management accounting put operations managers’ focus on output rather than on cost structure, which gave operations managers understanding for how daily activities and practices affected costs. Consequently, the visibility for others than management accountants increased.

In sum, a great extent of the management accounting research takes on a functionalistic view when it comes to management accounting in production environments. However, such research does not respond to the understanding of how these interrelated practices between operations management and management accounting might be useful or how technology relates to this. Nevertheless, some research has been conducted with alternative perspectives such as institutional or contingency perspective. Although the contingency approach aims to explain reality in terms of causality on a rather aggregated level, an institutional approach can shed light
to the underlying mechanisms of what is actually going on in practice by aiming to understand the complexity of the context. Consequently, there is a knowledge gap within the field of management accounting research as well as within the field of operations management research, and between the two fields regarding how management accounting is used and how useful management accounting is for operations managers and the role of the interplays.

### 2.3.1 Management accounting practices in production environments

Regardless of the intentions behind operationalized and implemented management accounting systems as suggested by research conducted with a functionalistic or contingency approach, the reality shows that often the management accounting systems are not reaching out to the organizations’ all levels (Cooper & Ezzamel, 2013; Quattrone, 2009), which implies that the intended usefulness of management accounting would be lost. Thorough management accounting systems and strategies does not self-construct good internal practices or task solving. One issue seems to be that management concept such as JIT and TQM consists of practices; the actual activities conducted by organizational members and the prescriptions embedded in the concept. However, these might differ (c.f. Dhanani, 2003). Even though it is relevant to study how they differ, it is even more relevant to understand how it actually appears in practice (Scapens, 1994). Hall (2008) suggests that management accounting reduces members’ uncertainty about the objectives in a greater extent than their uncertainty about activities, which raises a concern about how well aligned management accounting, is to actual practices. On the other hand, it is suggested by Ahrens and Chapman (2007) that management accounting practices have potential in how members draw upon it as a shared resource. Jönsson (1998) suggests that communication, among others, influence the selection and use of management accounting practices and information. Similarly, the practices underlying different members’ actions were structured by their group belonging (Ahrens & Mollona, 2007). Nevertheless, how to decide what actions that will contribute to the objectives and how it is to be brought out in the organization is still a challenge (Ahrens & Chapman, 2007).

As mentioned, Jönsson (1998) found communication between members to be crucial in the social construction of practices. This brings the question of whether practices and interplays can be considered interrelated. To exemplify, within an organization, the members’ different tasks,
practices and technologies can make them seek other groups as well as the one assigned to them by the organization structure (Ahrens & Mollona, 2007).

### 2.3.2 Social interplays in production environments

As mentioned, in present thesis practices are described as organized human activities (Schatzki, 2005) and these activities draw upon the understanding of norms, rules and the engagements that define and connect members (Ahrens & Chapman, 2007; Schatzki, 2005). Consequently, for the actions to become practices, the interplays between the members could be crucial in our understanding of management accounting practices at operational levels.

Tayles and Drury (1994) emphasizes that the physical distance between management accountants and the production environment might be dysfunctional for the organization. Similarly, by interplay the use of management accounting were found to reduce uncertainty, create awareness, and facilitate for decision-making and problem solving at operational level (Preston, 1986). As an example, uncertainty can be considered as increasing the relevance of management accounting information (Chapman, 1997). Hence, in uncertain environments, the role of accounting is considered beneficial and interplay patterns of management accountants are suggested a crucial moderating factor in the relationship between management accountants and the rest of the organization (Chapman, 1998). This intimacy is a way to avoid anxieties that stem from members in different contexts gathering and interpreting information (Roberts & Scapens, 1985). Further, Roberts and Scapens (1985) emphasizes the importance of face-to-face interplay, since it facilitate for management accounting to be interpreted and understood in the shared context, which will bring mutual knowledge between the members. In addition, Mouritsen (1996) found management accountants with a proactive role to be involved in the management across the organization in greater extent than management accountants with a more passive role.

Similarly, experienced management accountants believe that their involvement can contribute with better and more relevant management accounting information to support operational activities (Tayles & Drury, 1994). Thus, the interplay is not only considered a source of information but also considered to create meaning and taking action (Preston, 1986) when members share their meanings of the situation. Similarly, Miller and O’Leary (1994) suggest that
reciprocal interplays occur as the members share concerns of the competitiveness of the organization or the unit.

Further, Jönsson and Grönlund (1988) found that relevant management accounting information comes from interplay between operational level and accounting level since the interplay brings information and knowledge about the process, which is necessary for the organization. If building on previous statement, it is suggested by Ahrens (2009) that members should be expected to experiment in their pursuit to reach best possible result. This could bring implications for operations managers in their pursuit to reach central objectives if relying on monthly financial statements instead of the aspects they know by experience and tacit knowledge brings value.

At the same time, formal management accounting is, according to the literature, imbued with a lack of perceived usefulness. As an example, research conducted in organizations’ production units operating in production environment revealed that the perceived usefulness was not enhanced by a broader scope of management accounting, which included external, non-financial and future oriented information (Mia & Chenhall, 1994). As an alternative, Preston (1986) found that managers searched for alternative and informal ways to inform each other, which were considered highly valuable to the managers and their practices. If so, the existing research of management accounting in production environments may not be sufficient in explaining the use of management accounting in the interplays between operations managers and management accountants. For instance, due to changes in production environments, Bhimani (1994) emphasize that there is a need to explore the changed relationship between organizational members, such as between operations managers and management accountants or among operations managers.

This implies that the interplays between operations managers and management accountants regarding management accounting can be studied and understood. Thus, this can bring deeper and more detailed insights to the use and usefulness of formal and informal management accounting in the interplay and how these are interrelated and affect each other at operational levels in mining production environments.
3 Research methodology

This thesis proposal starts on the premise that management accounting constitutes organizational rules and routines for how to operate daily practices (e.g. forms and reproduce structures and institutions), (Burns & Scapens, 2000) as well as being shaped by structures and institutions (Ahrens & Chapman, 2007; Roberts & Scapens, 1985). Action and structure presuppose each other, which is mentioned duality of structure and takes form of a dialectic relationship (Roberts & Scapens, 1985). Focus on management accounting solely is not enough since society is characterized by complexity with several connected practices (Ahrens, 2009). Researchers suggest that there is no value free research (Cooper, 1980; Hopper & Powell, 1985; Tinker, 1980), since social, political and economic relations shape and are shaped by accounting (Chapman et al., 2009). Rather, management accounting is constructed by social reality and is constructing social reality; hence, management accounting is partial in itself (Boland Jr. & Pondy, 1983). The modern economy relies upon accounting practices, which brings researchers to call for research to understand the roles of management accounting in organizations and institutions (Chapman et al., 2009).

Kuhn (1962) reacted on unprejudiced science since all research is formed by paradigms and theoretical perceptions of what is important and relevant. Researchers with different perspectives will not see the same relevance in the scientific work. Consequently, there is a need to declare the perspective of the paper and the underlying assumptions to facilitate assessment and avoid my ideology to be accepted without doubts (Hopper & Powell, 1985). Hence, the paradigm will provide given theoretical assumptions and legitimize chosen methods. The perspective of a dialectic relationship between accounting, social structures and institutions brings the notion that accounting research benefits from moving beyond a normative paradigm. The reasoning regarding no objective reality suggests an interpretivistic epistemological point of view. Interpretivism focuses on understanding the individuals’ construction and interpretation based on their knowledge and experience that lead to actions, which shapes and are shaped by social reality (Chua, 1988). As a result, the present thesis is based on an interpretivist paradigm (Ahrens & Chapman, 2007).
3.1 Research approach – ontological assumption

The most appropriate ontological assumption for this thesis is symbolic interactionism (Chua, 1988; Covaleski & Dirsmith, 1990; Tomkins & Groves, 1983), to capture the members shaped by structures and institutions and their interplay with others and hence, their shaping of the social reality that they are part of. It reflects the above outlined ideology of accounting theories (Cooper, 1980; Hopper & Powell, 1985). The members are in this point of view considered to not only be shaped by but also construct the reality where they operate (Covaleski & Dirsmith, 1990; Roberts & Scapens, 1985). Researchers advocate that leaving out other aspects than accounting and its functionality will miss important aspects in our understanding of management accounting (Burchell et al., 1980; Cooper, 1980; Tinker, 1980). Instead of considering the factors as independent, management accounting could benefit from taking on a more holistic approach to organizations and their effectiveness (Cooper, 1980).

3.2 Perspective

As mentioned, Burchell et al., (1980) state that management accounting research needs to go beyond rationality and decision-making. Similarly, Roberts and Scapens (1985) emphasizes that reality cannot be interpreted with a deterministic view of action. In addition, Bhimani (1994) propose that also in production environments management accounting would benefit from going beyond the technical and instrumental use of management accounting.

As a respond to the call, this research builds on an institutional and a practice perspective, which denotes that the organizational members and their practices are central. The institutional perspective facilitates for studying practices (Scapens, 1994), and to capture how members work and their intentions, there would be a need to study them in action (Ahrens & Chapman, 2007; Boland Jr. & Pondy, 1983). Researchers suggest that accounting practices interact with other practices, such as daily operational activities (e.g. Bhimani, 1994), which brings an emphasis on accounting as beyond solely routine and mundane accounting, since other practices relies on accounting and accounting relies on other practices (Ahrens & Chapman, 2007; Ahrens & Mollona, 2007; Ahrens, 2009). Hence, the complexity of researching and understanding everyday accounting might be harder than suggested by accounting literature with a functionalistic
perspective. The ways accounting is understood and practiced by practitioners based on their experience, knowledge and judgment can bring insights to how accounting is used by practitioners in their pursuit to reach individual, organizational and social objectives without relying on accounting changes (Ahrens, 2009).

3.3 Research strategy – qualitative research

As mentioned, Ahrens (2009) suggests that intentions of the members is crucial and can be identified by studying accounting practices in action, since meanings and practices are interrelated and the intentions of the member affects practice, since the intentions affects the behavior. Groups are suggested to arise from practitioners’ daily tasks and shop floor practices, from the knowledge and experience of the members, and the members’ social background for joining the specific groups (Ahrens & Mollona, 2007; Ahrens, 2009). Thus, to understand accounting in a mining production context it would be appealing to study individuals using management accounting in practice, since they both are shaped and are shaping accounting (Ahrens, 2009; Roberts & Scapens, 1985). Dhanani (2003) points to the qualitative research as contributor to explaining and understanding the differences between practice and theory in the context of risk management in the mining industry in UK.

Hence, it would be suitable to study accounting in the context where accounting and production takes place to contribute with insights of accounting functions in its social, organizational and technical context (Ahrens, 2009). Consequently, an understanding for management accounting as a social practice can take form by studying individuals solving problems by using, interpreting and experiencing management accounting (Boland Jr. & Pondy, 1983).

3.3.1 Research design – case study

As mentioned, local management is considered context dependent (Ahrens & Chapman, 2007; Ahrens, 2009; Chapman et al., 2009; Cooper & Morgan, 2008; Hopper & Powell, 1985; Hopwood, 1983; Jönsson, 1998; Tomkins & Groves, 1983) and the complexity of the empirical context emphasizes the importance of qualitative empirical research and detailed field based studies to study and understand management accounting in action to more fully comprehends the environment where management accountants and operations managers meet to understand how
management accounting is used and can be useful in production environments. Van der Veeken and Wouters (2002) points to the relevance of field based studies when aiming to understand the use of management accounting in relation to operations management practices. Similarly, Ahrens and Chapman (2007) emphasizes the diverse ways management accounting is implicated in wide ranges of activities and social arrangements, which makes it hard to understand the interplays between management accountants and operations managers and their use of management accounting in any other way than by presence. Hence, the research will be conducted as a field based study.

Another reason for choosing field based study is to seek insights to a relatively undiscovered research area (Yin, 2014) such as management accounting in the mining industry. Management accounting research has been conducted in the mining industry, however (e.g. Dhanani, 2003; Jakelski & Lebrasseur, 1997; Mahama, 2006). Nevertheless, the research is often based on normative (c.f. Jakelski & Lebrasseur, 1997) and functionalistic perspectives (c.f. Mahama, 2006). This leaves the interpretivistic area of management accounting research in mining production environments relatively undiscovered. In addition, the complexities of the mining industry propose an interesting intersection between complex industry and the use of management accounting, which requires research. To study the phenomena as a case can hence be informative for the theory (Bryman & Bell, 2011 p. 87) and bring knowledge to the research area.

3.3.2 Selection of case

LKAB was selected as a suitable case since access is of great importance in order to gain sufficient data for the case (Yin, 2014 p. 28). Access is granted to different levels and titles of management, and more essential, the size of the organization requires great extent of communication. Due to LKAB’s advanced technology (LKAB, 2012), they make an interesting case for the study of management accounting in companies challenged by increasingly advanced technology in production environments. In addition, the pre-study suggested that the organization relies on management accounting information in the daily activities and it is considered an essential part of the operations. As an example, efficiency measures and investments increased LKAB’s production from 20 million tons in year 2000 to 26.1 million tons in year 2011.
LKAB’s operations are the mines, refining and logistics. The ore body in Kiruna is 80 meters wide, 4 kilometers long and at least 2 kilometers deep, and the new level put into service in 2013 are at level 1,365 kilometers. LKAB is the world’s second largest producer of iron ore pellets, with an annual production capacity of 28 million tons of iron ore products. In addition, LKAB is processing all iron ore in their own facilities located near the mines. They have over 30 million tons of freight each year (35 percent of the freight tonnage on Swedish railways).

**Empirical context of the research**

The context where the organization is operating is characterized as an engineering context. The pre-study suggests that the organization is process-oriented, with a mindset of optimization. Hence, it is possible that management accountants and operations managers have different perspectives since they all might be institutionalized in their environment of accounting in contrast to operations. To avoid potential implications and misunderstandings, the pre-study suggested that an understanding for each other’s reality and operations may be vital in the matter. However, it is claimed that changing institutionalized behavior and routines are not easy (Burns & Scapens, 2000). Nevertheless, practices change constantly to keep relevance to daily activities (Ahrens, 2009).

As mentioned, the research will be conducted in an organization operating within an engineering context, hence, with a strong production culture where most members have backgrounds as engineers, including managers. Since management accountants with background as engineers are not unusual in the organization, it might bring pros and cons. The hybridization in the aspect of management accountants with an engineer background might not be beneficial in all aspects. There may be two possible outcomes. Knowledge of the context and the culture could be of advantage since there may be an understanding between the two parts and possibly lead to empowered operations managers. Conversely, the pre-study suggests that knowledge of the context and culture could bring management accountants to keep a process-oriented mindset, which diminish the possibilities to look outside the box. Optimization and process-orientation is common features and this may reduce the proactive features needed in a management accountant (c.f. Davila, Foster, & Oyon, 2009; Miller, Kurunmäki, & O’Leary, 2008).
The complexity of the empirical context emphasizes the importance of empirical research to more fully comprehend the environment where management accountants and operations managers meet to understand how useful management accounting is in mining production environments. In order to understand the use of management accounting and its usefulness in mining production environments, there is a need for researching accounting in this specific industry (c.f. Roberts & Scapens, 1985).

**Literature search**

A literature search was conducted to gain insights in the area of the use and usefulness of management accounting in production environments. The same literature search was made for the first paper (see approach below in section 4.1.3). In addition, literature from earlier PhD courses has influenced the management accounting literature in present thesis.

**The structure of the pre-study**

The pre-study was conducted during spring 2014, where information meetings about the organization, the production and their objectives were held. In addition, interviews were made with management accountants who had contact with different units (see appendix 1 for interview questions), project managers responsible for planning, introducing and implementing project to the organization, and operations managers from different units (see appendix 2 for interview questions). Meetings with top management were held afterwards to provide for the pre-study results and potential research questions as well as setting a plan for further studies.

**Data collection in the main study**

The data collection will take form of semi-structured interviews where focus will be on the interplay between operations managers and management accountants and the use of management accounting.

As suggested previously, the interrelated practices cannot be isolated (e.g. Ahrens & Chapman, 2007), which makes it suitable to conduct field based observations of formal meetings (meetings between production units, meeting between accountants and meetings where both representatives are present). Interviews with the managers, regarding the formal meetings, will take place
subsequently. According to Jönsson (1998), the observations of the interplay between management accountants and operations managers’ conversations regarding management accounting should be studied since managers are working with words in order to bring understanding of their interplays.

*Selection of interplays and situations*

The management accountants for a section are usually in contact with seven units, collecting and distributing management accounting information both vertically and horizontally. In order to illuminate the research questions raised previous in this thesis, the operations managers would preferably be part of the same section (and hence, have contact with the same management accountant) but belong to different units. By this approach, it is possible to capture interplays with different characteristics and members with different intentions and practices. It is also possible to capture interplays with different frequency, duration, and consequences.

Different situations are possible to construct different interplays. Hence, the interplays might differ dependent on the situation. Consequently, it would be of importance to try to capture different situations where the operations managers are using management accounting in different ways. Hence, it would be applicable to capture routine situations (everyday activities) as well as non-routine situations (stoppages, downtimes, improvements and so on) in order to observe how operations managers are using management accounting in the actual situation.

*Interpretations*

In order to bring reliability to the research it is important to work hard to report all evidence fairly (Yin, 2014 p. 20). However, a selection of illustrations will be necessary when collecting great amounts of data. Episodes will be illustrated, however, to help exemplify the researchers’ interpretations of the data (Miles & Huberman, 1994 p. 83).
4 Paper contributions for the doctoral thesis

The dissertation intends to constitute five independent, but interrelated, papers of the use of management accounting in the social interplay between management accountants and operations managers in mining production environments. The synergies from the five following papers are considered filling the purpose. Different perspectives may be necessary in order to capture the usefulness of management accounting.

4.1 Paper 1: The use of management accounting at the shop-floor in production environments – A review of management accounting and operation management literature

The first paper of the doctoral thesis is a review of management accounting and operations management literature. This literature review is necessary to identify management accounting practices used and useful at operational level in production contexts. The paper aims to investigate the question of which management accounting practices are used and considered useful in operations in production environment according to the literature in the area of management accounting and operations management, and which management accounting practices that are considered unnecessary or excessive. The purpose of reviewing two fields is to comprehend the perspective of management accounting research as well as operations management research since the perspective of management accounting seems to differ between the two fields.

4.1.1 Purpose of the paper

The purpose of the paper is to:

- Review management accounting and operations management literature to describe how the use of management accounting in production environments has developed over time within the two research fields,
- Comparing management accounting and operations management literature for differences and similarities in the use and usefulness of management accounting in production environments within the two research fields,
• Identify suggested challenges and solutions with management accounting at operational levels in production environments within the two research fields.

4.1.2 Perspective of the paper

Based on the notion that management accounting systems are created, interpreted and changed in a historic process (Boland Jr. & Pondy, 1983), the first paper will use an institutional perspective. The institutional perspective is interesting in a historical matter, since it realize an understanding for management accounting change. Changes in management accounting are considered depending on several aspects such as the institutional realm and the realm of action (Burns & Scapens, 2000). Consequently, an institutional perspective of the historical aspect can enhance the understanding for the potential development of management accounting in production environments.

4.1.3 Research strategy and design

The intention is to use the highest ranked journals within the management accounting research fields and the highest ranked journals within operations management in order to find the journals that make the highest imprint. To identify the highest ranked journals, the fourth version of the academic journal quality guide by Association of Business Schools (ABS) will be used.

4.2 Paper 2: The interplay between management accountants and operations managers and the use of management accounting in practice

The pre-study suggests that management accountants want to take on a more proactive role. Considering the complex environment of the mining industry it might not be sufficient to use management accounting as generating answers, since the objectives might be clear but the causation is uncertain (c.f. Burchell et al., 1980). Consequently, it seems it would be of importance to initiate management accountants to operate near production where the information is being collected and then distributed as a way to introduce a more proactive role for the management accountants. Further, the pre-study suggests that it is of importance that managers from all organizational levels can access and understand the information necessary for them and their work. Additionally, the pre-study implies that interplay facilitate for the understanding
between operations managers and management accountants. This is supported by Porter (2009) who claims that management accounting information needs to be analyzed with an understanding for the context, and hence each other’s operations. This brings the question of how the interplays between operations managers and management accountants appear and whether the interplay between the managers results in management accounting use and usefulness.

4.2.1 Purpose of the paper

The purpose of the paper is to

- Increase the understanding of how management accounting is used in the interplay between management accountants and operations managers in mining production environments,
- Identify interplays between operations managers, and between management accountants and operations managers when they are using management accounting,
- Compare the interplay between management accountants and operations managers in different sections to understand what characterizes interplays which increase usefulness of management accounting.

4.2.2 Perspective of the paper

To capture the intentions of management accountants and the operations managers in their interplays, a practice perspective would be applicable (Ahrens & Chapman, 2007). The paper aims to capture how management accounting is used in their interplays and hence, influences the values and standpoints of managers (Burchell et al., 1980).

4.2.3 Research strategy and design

The research will take form of a field based study. The data collection will be in form of semi-structured interviews with management accountants and operations managers. In addition, observations will be applicable at the units’ morning meetings and other informal meetings where the management accountant and the operations manager meet to discuss management accounting
or other aspects. Thereafter, it would be important to do interviews where the involved managers can be interviewed regarding the interplays.

4.3 **Paper 3: The uses of management accounting and its usefulness for the daily activities in mining production environments– A field based study**

The third paper of the doctoral thesis builds on the findings from the second paper and the pre-study findings. As suggested by the pre-study, there might as well be informal management accounting that is considered useful at operational levels rather than traditional management accounting, since the reliance on the monthly financial statements shows to not always be appropriate to the operations according to the operations managers. Porter (2009) suggests that quantification could be hampering since it can become a substitute for truth, which could lead to operations managers not using their knowledge, experience and competence and rather focusing on the monthly financial statements. However, the pre-study suggests that operations managers are encouraged by top management to extract and scrutinize the monthly financial statements and that management accountants and operations managers focus on the monthly financial statements in great extent. However, this brings the question of whether operations managers need to partake formal management accounting that are of little value to them or if it would be more appropriate to use other informal management accounting.

4.3.1 **Purpose of the paper**

The purpose of the paper is to

- Increase the understanding for what characterizes useful management accounting at operational level practices in a mining production environment,
- Identify how formal and informal management accounting is used in the daily practices at operational levels,
- Compare how formal management accounting is used and useful to operations managers in their daily practices with how informal management accounting is used and useful to operations managers in their daily practices.
4.3.2 Perspective of the paper

To capture the intentions of the management accountants and operations managers in their daily practices, a practice perspective would be relevant (Ahrens & Chapman, 2007).

4.3.3 Research strategy and design

The research will be conducted as a field based study, with interviews with management accountants regarding management accounting distributed to and received from operations managers, and interviews with operations managers regarding management accounting received from and reported to management accountants. Observations regarding operations managers’ use of management accounting would be necessary, in terms of guided tours in the production, formal meetings and informal meetings of how they work and what they are doing. Further, interviews regarding the observations will be necessary in order to more fully comprehend the situations observed, and what was going on. In addition, second hand data will be used in terms of documents, the logs of operations managers and the formal monthly financial statements.

4.4 Paper 4: Standardizing best practice – and what is worse about it

As mentioned, the organization is introducing an efficiency program, OPEX, which includes a process description over how initiatives are to be managed within the organization. The member with an initiative fills in a complete suggestion form with all necessary information (such as calculus, budget, plan and time frame) and hand it to a program coordinator. Thereafter the initiative will be scrutinized by the management accountant and thereafter the initiative will be sent forward to, all in all, seven different reviewers and the reviewers are likely to take part several times.

This suggests great focus on calculus and raises a concern of what will happen to the informal initiatives that occurs in the daily operational activities. Due to the standardization there might be some useful initiatives that will never be taken. The standardized and formal way for initiatives together with the quality approving implies that there would be no space for mistakes and risks. Hence, the standardization appears as an attempt to diminish the mistakes and instead promote efficient management accounting systems (c.f. Davila et al., 2009). Rather than looking to the whole this could imply that the members would look for standardized routines and not use their
knowledge, experience and competence (Porter, 2009). According to Hall (2008) members need to have understanding for both their work role as well as the work process and that the understanding affects the self-perceived competence and impact of their daily tasks. In addition, Kanter (1989) suggests that information both provided and shared between units and departments is a requirement for possessing the knowledge to promote initiatives.

Thus, the management accounting research implies that practitioners need to be able to use their competence, knowledge and experience, which means not only learning the practices but the processes around it in order to develop a deep understanding for the practice (Burchell et al., 1980; Roberts & Scapens, 1985; Tinker, 1991). Additionally, if the top management is not aware of the local context it could be tricky to pursue central objectives at operational levels (Ahrens & Chapman, 2007). This whole idea builds on a logical consistent notion of optimality (Cooper, 1980) and its underlying rationality. Hence, the wish to govern from distance by limiting initiatives could be a way for top management to eliminate risk taking. However, Davila et al (2009) suggest that organizations can benefit from experiments and mistakes that in the first stage can lead to inefficiency, since it in the next stage can lead to initiatives and innovations.

This brings the question of how standardization of initiatives and best practice affects the interplay between management accountants and operations managers, the practices, and the use of management accounting at operational levels.

4.4.1 Purpose of the paper

The purpose of the paper is to

- Understand how standardization in an organization affects the interplay between management accountants and operations managers and the use of management accounting in the daily practices at the operational levels.

4.4.2 Perspective of the paper

This paper builds on the notion that people do not behave like machines (Roberts & Scapens, 1985). As a result, it builds on a skepticism towards a deterministic view of action, and hence towards the concept of best practice. As an example, research shows that regardless the intentions
of operationalized and implemented management accounting systems, the reality show that it is often not as simple as suggested by textbooks (Quattrone, 2009). One suggested reason would be that change is a sluggish process not only depending on the action but also on institutional factors such as the taken-for-granted ways of doing things (Burns & Scapens, 2000). In addition, the activities constitute the practices, and in order to capture how this affects the actual daily practices at operational levels a practice perspective would be suitable.

4.5 **Paper 5: Towards an amplified concept of production-related management accounting – A theoretical contribution**

The literature suggests a need for management accounting to be related to its practices (Jönsson & Grönlund, 1988). However, according to a literature search conducted in the beginning of the thesis proposal, it seems like little has happened in the research area of management accounting in production environments since the late 90’s. As a result, the fifth paper of the doctoral thesis is building on the review of management accounting and operations management literature together with the findings in the second, third and fourth paper, in order to readdress this issue and develop the knowledge of the use of management accounting in production environments. Both the literature as well as the pre-study suggests that informal management accounting might be valuable in the interplay between management accountants and operations managers in their daily practices. The intention is to extend the concept of management accounting by its actual uses in daily practices.

4.5.1 **Purpose of the paper**

The purpose of the paper is to:

- Develop the concept of production-related management accounting by a synthesis of the formal and informal uses of management accounting practices with the daily practices used by operations managers in production environments,

- Compare the findings from the field-based studies and the literature review,

- Identify the use of formal and informal management accounting in the interplays between operations managers and management accountants in their daily practices.
4.5.2 Perspective of the paper
This paper builds on the actual use of management accounting practices and operations management practices, which denotes a practice perspective. In addition, it builds on the importance of organizational routines and institutions in shaping the process of management accounting (Burns & Scapens, 2000).

4.5.3 Research strategy and design
The intention is to build this paper on the findings from the literature review and the previous studies addressed in this paper. The findings will be compared and assessed against each other in a classification scheme in order to identify similarities and differences between the field-based studies and previous literature. In order to develop the concept of production-related management accounting, combining the formal and informal uses of management accounting practices with the daily practices used by operations managers in production environments is necessary. As a result, the fifth paper can be considered a theoretical contribution to the research of management accounting in production environments.
5 Synergies from the five papers

The five papers described above intend to create synergies to more fully understand the social interplay between operations managers and management accountants and their use of management accounting in their daily practices in mining production environments. The first paper aims to provide a historical review of management accounting in production environments. This can be supplemented with the findings from the second paper, regarding what the interplays between management accountants and operations managers looks like, together with the third paper, regarding what management accounting that are actually useful and valuable in the interplay between management accountants and operations managers and to the operations managers in their daily practices at operational level. The fourth paper will contribute by providing insights with how top management directives of standardizing best practices will affect the interplay between management accountants and operations managers and the daily practices. These four papers will result in the fifth paper addressing the question of how management accounting in mining production environments can be conceptualized.

5.1 Time frame of the research

The intention is to produce five papers during my doctoral studies. Below is a plan for presenting and publishing the papers for the dissertation.

The first paper, the literature review is intended to be presented at the potential conference Nordic Accounting Conference in January 2016.

Paper two is intended to be presented at the potential conference Manufacturing Accounting Research Conference in November 2016.

Paper three is intended to be presented at the potential conference Management Control Association in November 2017, and there after the aim is to publish the paper in the potential journal, Journal of Accounting Literature.

Mid-seminar in November 2017 at Luleå University of Technology.
Paper four is intended to be presented at the potential conference *European Accounting Association* in July 2018, and thereafter published in a journal to be decided.

Paper five is intended to be presented at the potential conference, *Conference on New Directions in Management Accounting* in February 2019.

Between May and October, 2018, the intention is to write the introductory chapter for the compilation thesis.

Internal final seminar in September 2018, at *Luleå University of Technology*.

Defense of dissertation, October 2019 at *Luleå University of Technology*. 
References


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Appendixes

Appendix 1: Interview questions – management accountants

The purpose with the pre-study is to gain insights in the objectives and practices in the operations from an operations management perspective and a management accounting perspective. Further, to gain insights in the relations and the interplay and how this interplay appears between management accountants and operations managers. The pre-study aims to specify research questions and start the planning of present research project.

1. What are your main activities/tasks? Explain.
   a. For how long have you been working at LKAB?

2) Which policies and guidelines are you working with? Give an example.

3) Which information systems are you using in your daily work?
   a. How are these used?
   b. How are these connected? Integrated?

4) How is the relation and the cooperation with the production unit?
   a. What characterizes the relation?
   b. What characterizes a successful relationship/cooperation? Can you give an example of an especially successful cooperation and a less successful cooperation? Can you explain the situation?
   c. Is the cooperation intimate or does it appears sporadically?
   d. Are there other significant members in the interplay between you? How are they related? Exemplify?

5) Which exchange of information do you have with the production unit?
   a. Is it several units? Which ones?
   b. Can you describe the exchange?
   c. What does the information consist of? The one you give and receive?
d. How are you using the information you receive? Explain.

e. What is your thought of how the information you provide to operations managers is used?

6) Can you tell me about the budgetary work at LKAB? Can it be connected to the prognostic work? Can you explain?

7) How does the follow-up appear?

   a. Can you tell me about that?

   b. Of the information you receive from the production units? Often – seldom? At what levels (individually)?

   c. How do you assess your own work? Give an example?

   d. Is there a need for management accountants to critically scrutinize the information received from the production units? How does that work? If the follow-up reveals deviations other than expected? Give an example?

8) What are the most important challenges for you as management accountant? Can you explain, give an example?

9) What are the primary improvements you would see in the exchange with operations managers? Explain.
Appendix 2: Interview questions – operations managers

The purpose with the pre-study is to gain insights in the objectives and practices in the operations from an operations management perspective and a management accounting perspective. Further, to gain insights in the relations and the interplay and how this interplay appears between management accountants and operations managers. The pre-study aims to specify research questions and start the planning of present research project.

1) What are your main activities/tasks?
   a. For how long have you been working at LKAB?
   b. What does a regular day look like?

2) What policies/guidelines do you work with?

3) How is the relation and the cooperation with the production unit? Explain, give an example?
   a. What characterizes the relation?
   b. What characterizes a successful relationship/cooperation? Can you give an example of an especially successful cooperation and a less successful cooperation? Can you explain the situation?
   c. Is the cooperation intimate or does it appears sporadically?
   d. Are there other significant members in the interplay between you? How are they related?

4) Which exchange of information do you have with the accounting department?
   a. Can you describe the exchange?
   b. What does the information consist of? The one you give and receive?
   c. Do you have control over the content of the information? Can you identify causes? Give an example.
   d. How are you using the information you receive from the accounting department?
   e. To what extent is the information useful? Can you explain, give an example?
f. Do you have access to reports? What reports? Are you satisfied/dissatisfied with the reports? Is the information aggregated or in detail? Explain.

5) What processes of information supports you in your work?
   a. Are you using other information than the one received from the accounting department as a complement in your work? If so, how? What is the most useful? Why? Explain

6) How does the follow-up appear?
   a. Can you tell me about that?
   b. Of the daily operations?
   c. Of the information you receive from the accounting department?
   d. How do you conduct your improvement work in relation to your objectives?

7) What are the most important challenges for you in a production unit?
   a. What is your focus? Flexibility, productivity?
   b. How serious is stoppages/shutdowns, and so on?
   c. How are you assessed and measured? Standards? Do you know what you need to improve? Do you possess knowledge of the things you are measured upon? Give an example.
   d. Is it easy or difficult? Explain.

8) What are the primary improvements you would see in the exchange with the accounting department?