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The Value Perspective in Strategic Cost Management

A case study of a support function in a large manufacturing firm

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Acknowledgements

Abstract

Title: *The Value Perspective in Strategic Cost Management - A Case Study of a Support Function in a Large Manufacturing Firm*

Purpose: The aim of the study is to extend research within value-based Strategic Cost Management (SCM) by developing an Value Creation Model (VCM) adapted to a support function context in order to improve resource effectiveness. This is of specific importance in discretionary cost centers where measuring effectiveness is extra challenging.

Method: A literature study was conducted to investigate the value perspective within Strategic Cost Management.. The literature study revealed design criteria and the lack of applying VCM som a support function context. A case study was performed using semi-structured interviews and internal documents which were analyzed using content analysis and general analytical procedures.

Results & Conclusions: The literature study revealed that no previous value research within SCM had incorporated a support function perspective. After this, a Theoretical Model was constructed for conducting strategic cost analysis in a support function. The case study, conducted at the IT support function in a large company, identified how a Research Model and value attributes could be designed to fit this context. This is believed to be a foundation into further investigation of how the value perspective can contribute to SCM.

Suggestions for future research: This study opens up for operationalizing the Theoretical Model and the Research Model and consequently, evaluating their effect on managerial decision-making in relation to resource effectiveness. Also, other value perspectives of SCM may also be of relevance for future research.

Contribution: This thesis extends the research within strategic cost management towards a more value-focused perspective in management control of support functions. The findings from this case give insights to researchers and practitioners thinking about implementing VCM about what an adapted Value Creation Model can look like and how the customer-value perspective can add to SCM.

Delimitations: The value perspective of strategic cost management is limited to value creation analysis or customer value analysis (i.e. the Value Creation Model).

Keywords: Strategic cost management, the value creation model, support function, discretionary cost center, case study

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1 INTRODUCTION

This chapter aims to introduce and narrow the research field by describing gaps in current research.

Information about costs are be of great significance to managers' decision-making - and to the company (Lanen el al, 2011:5). To sustain long-term profitability on an increasingly competitive market, it is important to understand the relationship between costs and what drives customer satisfaction (Gurau and Ranchhod, 2002). Hence, the direct link between the cost of supplying customers with the finished product or service and the customer satisfaction - and thereby profitability - has been of great interest to researchers (Kaplan & Cooper, 1998; Kaplan & Narayanan, 2001). This is why the area of cost management is of interest for researchers and managers alike.

The concept of cost management has been revised and developed many times by researchers throughout the years. Over time, the three main streams of research (Cugini, Carù & Zerbini, 2007) have changed the concept of cost management from a customer-focus perspective. The first stream of cost management introduced the customer focus when investigating drivers of various customer-related cost and revenue categories (e.g. Gosman, Kelly, Olsson & Warfield, 2004). However, the problem with this was that the concept included the segmentation of particular costs and therefore fails to include all interlinked costs related to providing customers with the appropriate product (Cugini et al., 2007). The second stream, initiated by Cooper and Kaplan (e.g. Cooper, 1990; Cooper & Kaplan, 1991), was Activity-based costing (ABC) and Activity-based management (ABM). ABC similarly proclaims the need for a focus on the customer when categorizing costs (Lanen et al., 2011:376): ABC is an internal cost control technique that aims to accurately estimate overhead costs to understand the total cost of a product (Drury, 2001:462) as well as a tool for managing and controlling costs (Drury, 2001:153; Badab & Balachandran, 1993; Gupta & Galloway, 2003). However, these two cost management streams are problematic in the sense that they analyze the firm from a retrospective perspective (Jacobs, Johnston & Kotchetova, 2001) and are not directly linked to the customer's behaviour or attitude (Cugini, Carù & Zerbini, 2007). Even though some companies actually abandoned ABC in the late 1990s (Innes et al., 2000; Kaplan & Anderson, 2004), academia and influential accounting institutes still today recognise ABC as being an advantageous method (Gosselin, 2007:642).

Nevertheless, the heavy focus on efficiency of cost management pushed for a third stream of cost management research which was developed from the ideas of ABC (Shank & Govindarajan, 1989;1993). This is termed Strategic Cost Management (SCM) and examines the relationship between all costs of product production and customers' perception of value (Shank and Govindarajan, 1993; Shank 1989; McNair, 1994; McNair, Silvi & Polutnik, 2001a). Furthermore, the framework connects cost management with strategic positioning, value chain and cost drivers (Shank & Govindarajan, 1993). Strategic cost management gave

rise to value chain analysis (Shank & Govindarajan, 1989; 1993), and cost driver analysis (Silvi & Cuganesan, 2006). Later, this extended into highlighting the relation between company costs and customer value (Shank and Govindarajan, 1993; McNair, 1994; McNair and Vangermeersch, 1998; McNair et al., 2001a). This second focus within Strategic cost management was termed the Value creation model (VCM.) This model illustrates which activities the firm should target its resources on to maximize the customer value and thereby develop a competitive advantage (McNair, 1994; McNair et al., 2001). Hence, in alignment with McNair (1994:43) and McNair et al. (2001a, b), VCM provides managers with appropriate cost information about how they could allocate the firm's available resources to maximize the resource effectiveness. In general, effectiveness - or doing the right things - is rarely measured directly when evaluating the business' operations (McNair, 1994:43), which makes the Value creation model unique and useful.

The VCM model could prove useful when it comes to support functions in companies. If managers fully learned its true potential it would be more resource effective than using e.g. customer-focused cost management or ABC and potentially give the firm a competitive advantage. More specifically, support functions supply the core business with services (Bakka, Fivelsdal & Lindqvist, 2006:86); technology development and procurement is one example (Porter, 1985:40-43). Support functions tend to be discretionary cost centers (Lanen et al., 2011:448). One of the most difficult tasks of management control lies in evaluating the efficiency and effectiveness of discretionary cost centers (Drury, 2001:327. Furthermore, measurements directly assessing effectiveness are rare (McNair, 1994:43). This is where VCM could provide managers with relevant information about how to target resource on the areas which are important for customer satisfaction - information necessary for evaluating the current situation and make a decision of how to change it to maximize the resource effectiveness. This is where the value perspective could add to the strategic cost management of a support function.

To the best of our knowledge VCM has not been applied to the support function context. Consequently, the additional value perspective could add to the strategic cost management of a support function.

2 RESEARCH QUESTION AND PURPOSE

In this section, the study's research purpose, research question, contribution and delimitations are presented.

2.1 Research purpose

The objective of this study is to add to value-based strategic cost management through the addition of a support function perspective by developing an adapted Value Creation Model. This includes, based on a literature study, internal documents and interviews, developing a theoretical model ("The Theoretical Model") and a method for implementing it in a case company support function ("The Research Model").

2.2 Research question

Due to the gaps previously identified, the research question of this study is posed as follows: *How can the value perspective inform strategic cost management of a support function?*

To be able to answer this question, the support function at one company in particular has been chosen as the unit of analysis.

2.3 Contribution

This thesis aims to extend the research within strategic cost management towards a more value-focused perspective in management control of support functions. The findings from this study could give insights to researchers and practitioners considering implementing VCM about what an adapted VCM model can look like and how the customer-value perspective can add to SCM.

2.4 Delimitations

The value perspective of Strategic Cost Management is only delimited to the Value Creation Model (VCM).

2.5 Disposition

The disposition of the rest of the study is as follows: in the next, third chapter *Frame of Reference*, previous research in the research field of management of cost and value and The Value Creation Model is presented which are then connected to a support function context; in the fourth chapter *Method,* the study's research design, research process, empirical selection, data collection and method of data analysis is described; the fifth chapter *Results* starts by describing the three main articles and specifying the results of the literature study in form of design criteria for future studies, then presents the case company and illustrates the developed VCM that is adapted to the case company support function context. Finally, the sixth chapter *Discussion, Conclusion and Future Research* includes the concluding remarks of the study as well as a short discussion on the study's contribution and new areas that are of interest to future research.

3 FRAME OF REFERENCE

This chapter elaborates on the connection between management control and cost management as well as previous research in the fields of cost management and strategic cost management. In particular, the focus is on the development of the VCM, segueing into management control of support functions.

3.1 Management of costs and value - from an internal perspective to an external perspective

3.1.1 Management control systems and cost management

There is no common definition of Management Control Systems in management control research. There are many definitions - from broad to narrow, which is troublesome when interpreting the research from a management control perspective (Malmi & Brown, 2008). The concepts included in Management Control Systems in this thesis are in line with the broader definitions by Chenhall (2003) and Merchant & Otley (2007). Chenhall (2003) describes management control systems as systems applied to achieve organizational goals and monitor its progression. These systems include both consistently used management accounting systems such as budgeting as well as non-financial type of control tools built on expectations, like shared value and belief systems. Examples of studies with a narrower definition include for example Merchant & Van der Stede, 2012:5-9) exclude formulating organizational strategy, Kerr, Rouse & de Villiers (2015) focus on internal Management Control Systems from a behavioural and environmental perspective, investigating the integration of sustainability controls into Management Control Systems such as Balance Scorecard, and Su, Baird & Schoch (2015) who investigate how Management Control Systems affect employee behavioural outcome, specifically employees organizational commitment.

However, Zimmerman (2001) points out that systems used for decision-making and control are not necessarily the same: the type of system depends on the manager's intention of employing the system. If information of management control systems is produced in order for the manager to make a more appropriate decision about the production process or cash flows, the system is a decision-making system rather than a control system. Information by a control system is used to influence the behaviour of the manager's subordinates to achieve a goal (Zimmerman, 2001). Nevertheless, in line with our definition of MCS, Malmi & Brown (2008) concludes that a management control system is any type of accounting system continuously monitored and used in an organization to support manager's decision-making. Furthermore, one may argue that the Value Creation Model (see 3.2 "The Value Creation Model (VCM)"), which is exemplified in this thesis, is a type of planning control (Malmi & Brown, 2008:292) for improved resource effectiveness - i.e. for strategic cost management.

In fact, cost information may be of great significance to an organisation (Lanen el al, 2011:5). Possessing relevant accounting information and knowledge about the activity and the costs

and revenues related to that specific activity is essential (Groth & Kinney, 1994; Drury, 2001:24, 21, 455; Babad, & Balachandran, 1993; Lanen et al, 2001:5) because it enables managers to make an accurate decision about the management of the available resources in product production and thereby the product's competitive advantage (Babad, & Balachandran, 1993). A well-designed cost management system can support the managers by providing relevant and accurate cost information at the right time (Babad & Balachandran 1993; Drury, 2001:6,4; Lanen et al, 2011:376). Hence, cost management is a tool for planning and control (Babad & Balachandran 1993; Drury, 2001:6, 4; Lanen et al, 2011:376). The concept of cost management includes various meanings but commonly only one is intended; either maintaining actual variable or unit costs so that they align with a predetermined budget plan (*cost containment*), avoiding costs through process improvements by identifying possible enhancements in efficiency or effectiveness in specific activities and removing activities whose costs exceeds the benefits (*cost avoidance*) or decrease an crucial activity's fixed or variable costs (*cost reduction*) (Groth & Kinney, 1994; Drury, 2001:455). The common implication of cost management has generally shifted from the traditional management accounting systems that was the common management system used before the early 1980s (Drury, 2001:455) which focused on direct costs and overhead costs (Drury, 2001:158) and was more attentive towards cost containment, to an *ad hoc* application of cost reduction (Drury, 2001:455). Instead, managers should aim to make cost reduction decisions that would maintain or improve the customer satisfaction, not erode product quality and thereby customer satisfaction (Drury, 2001:455) or shareholder value (Groth & Kinney 1994).

As a consequence of this shift in cost management towards understanding how customers generate profit, researchers studied fundamental drivers of profit generation - the direct link between customer satisfaction and all costs of providing the customer with the final product (Gurau and Ranchhod, 2002). Over time, the field of customer-focused cost management developed into the three streams of research: Customer-centric cost management, Activity-based costing and Strategic cost management (Cugini et al., 2007).

Customer-centric cost management focuses on the customer (Cugini et al., 2007). Shapiro, Rangan, Moriarty & Ross (1987) argue that operating profit for some customers are higher than for others. It therefore makes sense to connect all types of cost of supplying the customer with the product with categories of customers to identify the most profitable group of customer and target all types of production resources on these segments to gain profitability. Similarly, Gosman, Kelly, Olsson & Warfield (2004) singled out customers with a larger percent of individual suppliers when studying profitability and pricing effects on intangible assets, based on financial statements. Gosman et al (2004) state that major customers are of great financial importance to their suppliers and concludes among else that major customers have a higher operating profitability due to advantageous agreements with the suppliers, i.e. a competitive advantage. Helgesen (2006a) categorizes the customers of the banking case company based on customer accounts. Importantly, by categorizing their customer market, managers can gain important and relevant information supporting the decision-making process of how to fulfill the customer requirements and simultaneously achieve sustainable profitability necessary for the firm's continuous operation (Helgesen, 2006a). However, the

issue with this stream of basic customer segmentation was that the concept included the segmentation of particular costs and therefore fails to include all interlinked costs related to providing customers with the appropriate product (Cugini, Carù & Zerbini, 2007). The segmentation approach is also one-dimensional: a two-dimensional matrix approach (high or low customer product margin and high or low value chain cost) could add additional insight to managers about the customers - cost relation (Helgesen, 2006a). Additionally, even though the idea is to use customer segmentation to connect customers and costs, this approach lacks the cost segmentation from a firm activity perspective - this Customer-focused stream developed into the stream Activity-based cost and, later, the stream Strategic cost management, from which the VCM model evolved, are elaborated on below.

3.1.2 Cost management and activity-based costing

In 1988, Kaplan and Cooper introduced the cost and management system Activity-based costing (ABC); the system was developed in the early 1990s (Drury, 2001:158), see for example Cooper (1990) and Cooper & Kaplan (1991). Also, common research topics during the time period included cost driver analysis (e.g. Babad & Balachandran, 1993; Groth & Kinney, 1994; Drury, 2001:153) and which activities may add value were common topics in cost management research (Groth & Kinney, 1994). The Activity-based costing (ABC) system and the soon-after developed cost management application of ABC called Activity-based management (ABM) are tools supporting decision-making (Gupta & Galloway, 2003; Drury, 2001:153; 462).

Specifically, ABC is an internal cost control technique that aims to accurately estimate overhead costs to understand the total cost of a product (Drury, 2001:462) as well as a tool for managing and controlling costs (Drury, 2001:153; Badab & Balachandran, 1993; Gupta & Galloway, 2003). ABC could also uncover previously unknown insights about the firm's customer-costs relation (Kaplan and Cooper (1998) - Lanen et al (2011:376) points out that ABC can illustrate which customers that are profitable and which are not.

Since ABC is based on the principle that one or multiple activities generate costs (Badab & Balachandran, 1993; Groth & Kinney, 1994; Drury, 2001:22 ; Lanen et al 2011:376), managers can control how costs (the effect) are generated by identifying how and what main activities (the cause) drive costs and adjust these when necessary (Groth & Kinney, 1994; Lanen et al, 2011:376). In this context, an **activity** means a bundle of one or multiple events such as tasks or units of work (Drury, 2001:164-165,156). The process of determining which costs should be linked to a particular cost object (**cost allocation**) is central in ABC (Drury, 2001:122). The process includes, firstly, categorizing the main organizational activities (Drury, 2001:165); secondly, estimating the specific costs linked between each activity and an activity cost center by solely using cause-and-effect proxy measures (**cost drivers**) such as the number of material receipts in reception of materials are used to allocate the appropriate proportion (Groth & Kinney, 1994; Drury, 2001:122); thirdly, identify cost drivers for each main activity that was established previously; and fourthly, linking activities' costs to a specific product (Drury, 2001:164-166).

Besides the initial series of articles presenting ABC by Kaplan and Cooper (e.g. Cooper (1990); Cooper & Kaplan (1991), for example Kaplan and Narayanan (2001) and Hart & Smith (1998) demonstrate how ABC could be applied to firms in order to precisely determine customers costs. Goebel, Marshal, Locander (1998) state that, compared to traditional accounting system, the ABC system can provide managers with useful types of information about costs and customers for different internal and external perspectives (e.g. products, value chain, customer segments) that facilitates managers' decision-making and management of the firm. Furthermore, although ABC has commonly been used in manufacturing companies (Drury, 2001:174), Kaplan and Cooper (1998) claim that since costs of services are mainly overheads, ABC may also be beneficial to organizations that offer services.

However, companies' reason for implementing ABC has shifted over time (Malmi, 1999). Malmi (1999) analyzed the drivers of the ABC's diffusion process among Finnish companies between 1986 and 1995, based on Abrahamson's (1991) framework of fad and fashion perspectives. Other contexts that the diffusion process has been investigated in include Norway (Bjørnenak, 1997), Vietnam (Huynh, Gong & Huynh, 2014), Jordan (Nassar, Al-Khadash & Sangster, 2011) and the United Kingdom (Innes, Mitchell & Sinclair, 2000). Malmi (1999) concluded that the drivers behind the spread on ABC as an innovation changed over time and that the companies supplying ABC most actively drove the development in the early 1990s. In the late 1980s, companies demanded more efficient ways of developing trustworthy information began adopting ABC (efficient-choice motives). Supplying companies and supporting actors such as software industry employees and consultancy firms were not very active during this initial phase. In the very beginning of 1990, ABC diffusion seemed to be driven by the supply-side of ABC solutions. In general, consultancy firm's and academia's focus on ABC intensified, hinting towards motives of especially fashion but also those of efficiency. Compared to earlier periods of time, the force of the supplying companies decreased during the mid-1990s, which according to Malmi (1999), indicate that the drive of ABC's diffusion shifted from the fashion perspective to the fad perspective. By then, organizations applying ABC tended to strive towards maximum efficiency and thereby imitate other firms' cost solutions.

Still, the ABC system is recognized by academia and influential accounting institutes (Gosselin, 2006:642) and researchers still investigate the research stream to illustrate the advantages of ABC (e.g. Khataie & Bulgak, 2013). However, there is limited support to that ABC system's activity-cost-breakdown can provide relevant insights when investigating value-adding and waste characteristics (Khataie & Bulgak, 2013). Also, the positive diffusion trend of ABC among companies seems to have changed. Innes et al (2000) suggest that ABC system was abandoned by many organizations in the late 1990 because of the great complexity of implementing ABC. Raising costs and frustrations among employees were additional reasons, according to Kaplan & Anderson (2004). The main critique directed towards ABC is related to it being very costly and complex to implement and maintain (Velmurugan, 2010; Kaplan & Anderson, 2004), therefore many organizations either reject it or use it tentatively (Velmurugan, 2010). This conflicting organizational behaviour is called the ABC paradox (Gosselin, 1997). Additionally, Armstrong (2002), criticized the basic

assumption of ABC that overhead cost can always be standardized and measurable and hence allocated to specific output activities. This, he argues, generates an approach focused on cost-efficiency of routine activities. Although there are some routine activities that benefit from ABC, services such as marketing, strategic development and human resources are not standardizable and have a more long-term impact on the firm's profitability. Hence, Armstrong (2002) argues, applying ABC to all non-core firm activities without considering this deficiency may create an organizational mentality of short-termism which may have negative long-term consequences.

3.1.3 Strategic Cost Management (SCM) and value

The focus of value creation is often firm-centric in traditional literature on strategy (Porter, 1985; Barney, 1991). A study by Hosking (1993) showed that 90% of most firm efforts in improving profitability are on increasing efficiency, despite the fact that increased effectiveness represents 90% of the added value. As a response to the heavy efficiency focus of cost management, Shank & Govindarajan (1989;1993) developed the concept of strategic cost management previously established by Shank (1989), aiming to integrate cost information from various sources to support the creation of competitive advantage. The framework connects cost management with strategic positioning, value chain and cost drivers (Shank & Govindarajan, 1993).

The areas first addressed by strategic cost management came to be known as value chain analysis (Shank & Govindarajan, 1989; 1993) and value creation analysis (Silvi & Cuganesan, 2006). Later contributions to strategic cost management extended into highlighting the relation between company costs and customer value (Shank and Govindarajan, 1993; McNair, 1994; McNair and Vangermeersch, 1998; McNair et al., 2001).

Groth & Kinney (1994) extended the strategic cost management research to include a value perspective on the business. Groth & Kinney claim that besides increased profit at the bottom line as a result of decreased costs, effective cost management may result in additional value gains. Value creation is discussed from a shareholder perspective. Since managers may affect value via cost management, managers should be aware of the relationship between cost and value and make conscious decisions that benefit the firm. Cost management is one influential factor on value creation because of the linkages between costs, business risk, financial risk and valuation; value can be added through for instance decreased business risk in net operating income, a relative increase in favourable debt and expanded tax benefits due to reduce cost.

In the same spirit, McNair (1994) introduced an additional perspective on the relationship between cost and value creation from a shareholder perspective. McNair (1994) developed the concept of profit potential of a good or service, meaning the potential profit residual of what customer subjectively is willing to pay for the good and so called value-added costs that are directly linked to satisfy that particular customer through the production of that product. McNair (1994) also states that the excess cost of activities that the customer is not willing to pay for, so called waste, reduces the firm's potential profit to the actual profit. This profit reduction due to waste is called profit squeeze. The model assumes that total-firm profit and

thereby shareholder value may increase by improving value-adding activities and finding, estimating and eliminating non-value-added costs. The available resources are then to be allocated in activities customer value so that the proportion of value-added costs increases in comparison to non-value-adding costs. Ultimately, this allocation process may result in more effective resource utilization and the firm may thereby achieve a sustainable competitive advantage.

The interest in value does not only include academia, in 2014, the world's largest and leading management accountant association called CIMA, which authorize professional qualification certificates for students and professionals and aims to establish global management accounting principles, (CIMA, n/a) claimed that the value perspective should very important in management control to achieve effective practice. Analyzing the effect on value is one of the four essential Global Management Accounting Principles (See *Figure 0* below) that facilitate manager's making a more suitable decision, understanding the internal and external business risks and sustaining the generated value (CGMA, 2014a): "*simulate different scenarios that demonstrates the cause-and-effect relationship between inputs and outputs.*" (CGMA, 2014b, p.11).

Figure 0. The Four Global Management Accounting Principles (CGMA, 2014b)

However, researchers in different streams of research have related to the concept of value in different ways where cost management has treated the subject of value creation using a strategic focus where value is described as shareholder value. When it comes to value creation, management scholars agree on the importance of value creation but there is little consensus on what actually constitutes value creation and the process of value creation. The benefit of the value creation may focus on shareholders, stakeholders or customers. (Lepak, Smith & Taylor, 2007)

The **strategy** literature focuses on creating value for shareholders. Barney(1991) suggests that value is created when firm resources create new advantages that enable improved efficiency and effectiveness. Similarly, Porter (1985:166) states that value creation is affected by innovation and invention by helping firms create new ways of doing things.

In other areas, such as marketing, value is defined in relation to the customer. Consequently, it is the customer's beliefs, needs, experiences and expectations that constitute the perceived value of a product or service (Zeithaml, 1991). Traditionally, the concept of **value-in-exchange** was used where the value was seen as the price received by a seller in an exchange (Vandermerwe, 1996). However, today **value-in-use** is considered more important from a marketing perspective (Grönroos, 2008).The concept of value-in-use emphasizes the role of the customer as value creator (Vargo & Lusch, 2004; 2008). A supplier supports the customer's value creation and thereby gains financial value (Grönroos & Helle, 2010). As stated by Vargo & Lusch (2011:5) "actors cannot create value for another actor but can make offers that have potential value".

Another concept, which has been developed with value-in-use, is **value co-creation**. Some researchers claim that both customers and the service providers can be seen as a co-creator of value (Vargo & Lusch, 2008) whereas others (Grönroos, 2011; Grönroos & Ravald, 2011) argue that only under specific circumstances are service providers able to co-create value together with the customer. The latter logic argues that a service provider is seen as facilitating the value creation process (Grönroos, 2008) and does not automatically create value but only support the value creation of the customer (Grönroos, 2011). For value co-creation to occur, simultaneous presence of both customer and service provider is required. This requires direct and active interactions managed through a platform where the service provider can influence the customer's usage and processes. The quality of these interactions is pivotal and the employees of the service provider have an important role in understanding customer needs and wants and supporting value fulfillment. Several marketing concepts, such as interactive marketing and part-time marketers, are tied to this business logic where firms develop more service-centric and customer-centric business models. (Grönroos, 2011)

3.2 The Value Creation Model (VCM)

Although there is limited action-related research in management accounting and especially in strategic cost management, McNair, Polutnik & Silvi (2001a, b) is one acknowledged exception (Labro & Tuomela, 2003; Watts & McNair-Connoly, 2012; Santini, 2010). In strategic cost management, the research by McNair et al (2001a) has been labeled value creation analysis (Silvi & Cuganesan, 2006) or customer value analysis (Mohamed & Jones, 2014). In fact, McNair et al (2001a) introduced the value creation model (VCM), based on the work of Groth and Kinney (1994) and McNair (1994). VCM is built on the concept of *profit potential*, introduced by McNair (1994) and indicates the difference between revenues and customer-defined valued-added costs (McNair, 1994). The profit potential states that profitability is improved if the relative amount of value-added costs increases and hence introduces the idea of managing the firm by focusing on customer perception of value (McNair, Polutnik & Silvi, 2001b). However, the work by McNair (1994) is not supported by

any quantitatively defined study, a gap which McNair et al (2001) address by developing the VCM as a tool for exploring the link between customer value and a firm's internal cost structure and applying VCM to a case company.

The theoretical discussion behind the VCM is partially gained from the marketing literature where the notion of customer-defined value attributes (Wayland & Cole, 1997) is borrowed. The idea is that customers select a product or a service based on perceived utility and value of its attributes. The VCM uses the value attributes to connect costs of delivering the attributes with the profit potential prospects through ABC. *Figure 1,* below, further explains the concept of the VCM. The price of a product or service can be broken into profit and three cost categories; *value-added costs (VA)* that contribute directly to create customer value, the costs of activities supporting the business' creation of customer *(business value-added costs, BVA)* and *waste.* The only cost that creates value for the customer, and hence revenue for the firm, is the value-added cost. The ratio between the revenue and value-added costs of a product or service is defined as the *value multiplier*, a central concept in the VCM which identifies the relative amount of costs aimed at improving the profit potential. (McNair et al 2001a) The value multiplier also illustrates which activities the firm should prioritise in order to gain a competitive advantage on the open customer market. (McNair et al 2001a; Shank & Govindarajan, 1993).
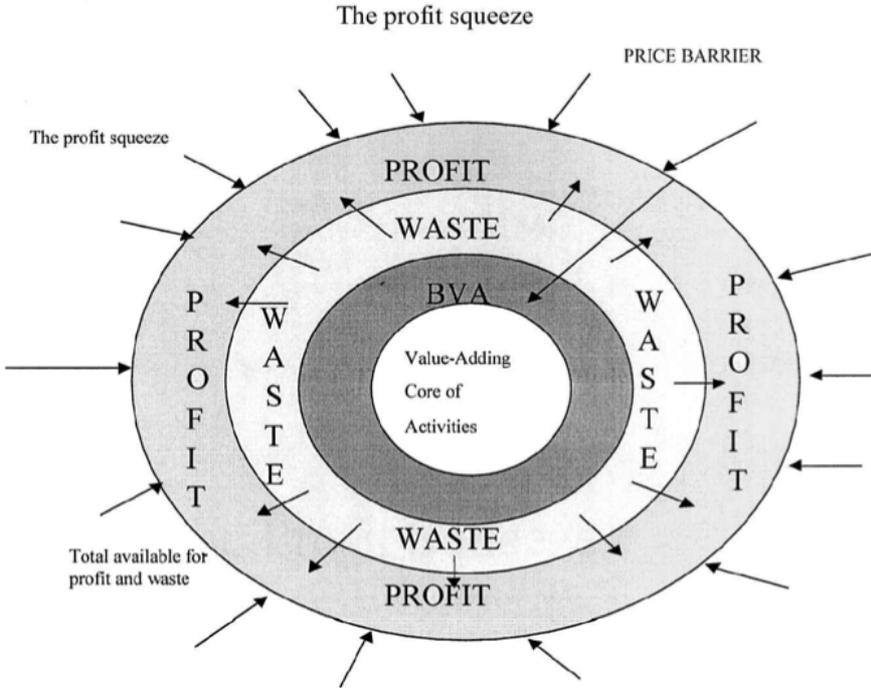
Figure 1. The value creation model (McNair et al, 2001; McNair, 1994:7)

In the case study by McNair et al (2001a) an Italian agriculture manufacturer, Celli, is used to test the applicability of VCM. In practice, this was achieved by collecting customer value attribute data regarding importance and satisfaction from an unbiased sample of 43 customer of a specific business unit at Celli through a survey. To evaluate the difference in perceived importance of value attribute, data was also collected from managers at Celli. By asking the

respondents to allocate 100 points across their most preferred bundle of attributes, the attributes are weighted and defined for each customer segment and an average value attribute profile is created for each segment. Subsequently, an activity analysis is conducted through interviews with business unit managers regarding the value chain and all activities performed as well as a collection of job descriptions and department maps. By using ABC, the costs of the activities of the business unit were classified as value-adding, BVA or waste. Value-adding costs are defined as the activities customers are willing to pay for. As a mean of linking costs and value attribute data, the budget proxies for each customer segments are estimated by multiplying the revenues from each segment with the ranking of each value attribute (%). The activities previously defined as value-adding are linked to the value attributes they support and multiplier relationships are calculated and analyzed. The analysis is further developed by comparing revenue multiplier to customer satisfaction of the value attributes. In the final step of the study, site managers are interviewed about the implications of the VCM information and its usefulness to the future operations in the business unit. Ultimately, the objective of VCM is to provide managers with new insights in order to enhance managers' decision-making ability about the firm's efficiency and effectiveness. (McNair et al, 2001a) Effectiveness is a rare direct metric in organizations, which makes the Value Creation Model a unique measurement tool (McNair, 1994:43-45, 6-8).

Overall, the study contributes to extending the applied research within strategic cost management by practically developing new linkages between customer value and costs incurred. The model facilitates more effective resource allocation, and thus improved profit potential, by aligning value attributes, customer segments and costs. However, McNair et al (2001a) emphasize that even though the case study of Celli indicated that the multiplier analysis was perceived as informative and useful, the VCM and specifically the value multipliers are quite difficult to grasp. A future recommendation also addresses the need for better apprehension of a firm's strategic context and customer value data collection methods. However, in the study McNair et al (2001a) fail to explicitly articulate how the value attributes were identified.

3.3 Cost, value and support functions

As shown in examples above, VCM has only been applied in the context of entire organizations. The approach of this thesis is to examine VCM from a support function-perspective.

3.3.1 Support functions

In line with Mintzberg's idea about support functions as one part of the organization, which includes various internal service functions in the firm, from cleaning to marketing (Bakka, Fivelsdal & Lindqvist, 2006:86), Porter (1985:38) divides the organizational design of a firm into primary and secondary activities. The primary activities are the core of the firm but must be supported by the secondary activities in order to function. Porter (1985:40-3) identifies four general support activities: firm infrastructure, human resource management, technology development and procurement, where firm infrastructure relates to all activities that connect

different parts of a firm such as management, accounting, finance and information systems (*Figure 2* below).
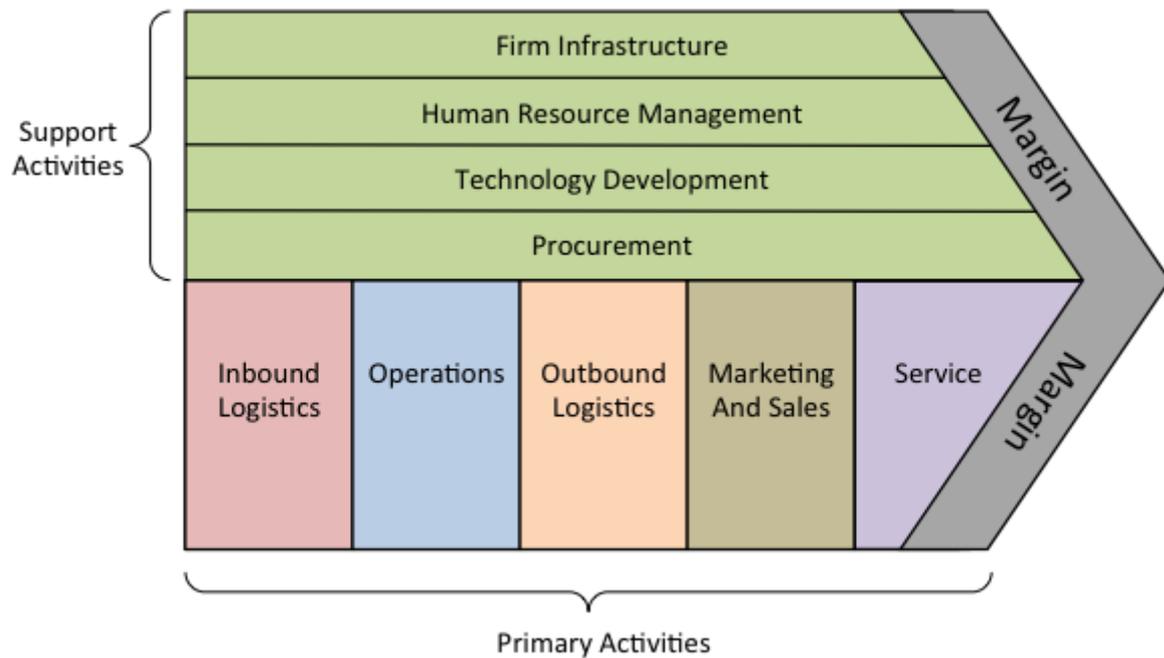
Figure 2. Porter's Value Chain (Business set free, 2013)

Support functions are often seen as non-value-adding overhead costs (Lantz, 2010) and the strong trend to focus on core business has led to an increasing amount of outsourcing of support activities. Traditionally, basic support services, such as cleaning or security, have been prone to outsourcing but lately more qualified services such as IT or finance are affected. (Nilsson, 2008:91-2) In both major corporations and governmental agencies, outsourcing of IT and business services represents the greater percentage of IT-expenditures and continued growth is expected between 2011-2015(Willcocks & Lacity, 2012:1) Contrary to the outsourcing trend, Bakka, Fivelsdal and Lindkvist (2006:86) discuss the value of in-house support functions, especially IT as a strategically important resource. Hence, this demonstrates that a support function can be viewed from many different perspectives depending on the context of a specific firm. Next, the traditional management control of a support function is described.

3.3.2 Management control in support functions

In order to ensure that the objectives of an organization are followed and supported by its employees, management control systems and devices are used to control behaviour and decisions (Merchant & Van der Stede, 2012:6).

Almost all organizations use *financial results control systems* to control the behaviour and decisions of their employees. Here, the performance is measured in monetary terms through accounting measure (revenues, costs, profits or returns). The main advantages of using

financial results control systems is that the measures are precise, objective, easily understood and relatively inexpensive compared to other forms of control. One of the main financial results control systems, apart from planning and budgeting systems and incentive contracts, is financial responsibility centers which enable the organization to spread the accountability for the financial results. (Merchant & Van der Stede, 2012:261-2)

In a cost center, performance is usually measured based on the incurred costs. Discretionary cost centers, such as research & development, human resources, purchasing and accounting, often have difficulty measuring performance since the output is difficult to measure in monetary terms and to connect output to a specific cost. Also complicating the matter, the relationship between cost and service quality is often unclear. (Lanen et al., 2011:448) Therefore, these functions are usually controlled by ensuring that they comply with the expenditure caps in the budget while pursuing their respective objectives (Merchant & Van der Stede, 2012:261). One of the most difficult tasks of management control lies in evaluating the efficiency and effectiveness of discretionary cost centers (Drury, 2001:327).The text explains why support functions usually have an extensive cost focus but also inspires ideas about how to best allocate the assigned resources depending on an organization's unique composition and needs.

4 METHOD

This chapter describes the study's research design, research process, the empirical selection criteria, data collection and method of data analysis.

4.1 Research design and research process

This study is a part of a larger on-going research project between the case company and the University of Gothenburg: School of Business, Economics and Law. The authors of this study acted as research assistants: this study is a pre-study in that larger research project.

Due to the nature of this pre-study, a practice-oriented problem in association with management control of support functions is investigated, but the main problem is still grounded in theory. This fundamental idea is aligned with the fact that management accounting is not only an academic research science; management accounting is also an applied science, where the objective is to prepare relevant theoretical solutions for practical problem solving in companies (Kasanen, Lukka & Siitonen, 1993; Mattessich, 1995; Malmi & Granlund, 2009). However, this more practical and practice-intervening approach to management accounting is rarely used in management accounting research (Kasanen et al, 1993; Scapens, 2008; Labro & Tuomela, 2003), although there are exceptions such as Kasanen et al (1993) and Labro & Tuomela (2003). In fact, in recent decades, the expansion of management accounting knowledge has mainly been limited to the social and political aspects of using accounting in organizations that are of less relevance to practice (Baldvinsdottir, Mitchell & Nørreklit, 2010; Scapens, 2008) instead of proactively interacting with practice and developing solutions more applicable in day-to-day business operations (Baldvinsdottir, Mitchell & Nørreklit, 2010; Merchant, 2012; Humphrey & Scapens, 1996). Even though the relevance of practically-based theoretical management accounting findings is questioned by some researchers (Soumala, 2009:10;Malmi & Granlund, 2009; Scapens, 2008), others argue that academic researchers should support practice by using insights from previous research findings about phenomenons observed in companies as well as developing management accounting techniques and investigating issues related to these accounting methods and systems (Westin & Roberts, 2010:8; Baldvinsdottir et al, 2010). The theoretical foundation of the practical accounting solutions should ultimately aim to contribute to improve the organizational performance and possibly gain a competitive advantage and thereby be of use to managers, organisations and society in general (Malmi & Granlund, 2009; Scapens, 2008).

To answer the research question, a case study approach(Yin, 2009) was selected. It was deemed suitable due to its ability of understanding a practical management accounting phenomenon in a specific organizational context (Ryan, Scapens & Theobald, 2002:143) as well as its diversity in possible empirical data and methods of data analysis (Eriksson & Kovalainen, 2008:116). Hence, multiple sources of empirical data may be used resulting in a more rich and complex contextual understanding (Tellis, 1997). However, the limitations of a

case study include the time-consuming process of processing all data to gain an adequate comprehension of the research context and the case's history (Collis & Hussey, 2009:83).

This study was performed using a single case study. The case company is believed to be a representative case (Yin, 2009:45) and consequently, the thesis can explain common situations and issues typically experienced in this environment (ibid). By using mostly qualitative data, the study is foremost being theoretically generalizable to organizations in a limited but similar context (Scapens, 1990; Lukka & Kasanen, 1995; Eriksson & Kovalainen, 2008:82; Ryan, Scapens & Theobald, 2002:143). Scapens (1990) claims that because the case study approach assumes that reality is socially constructed, the researcher inevitably affects the interviewee and later, the research process when interpreting the interview data. Hence, when conducting this type of social research bias is unavoidable, even though systematic data analysis and documentation of the process facilitates the research process' credibility. This is why we have strived towards describing the research process in detail. Another problem of socially constructed case study research includes limiting the scope of the case and its relation to other social contexts, since they are all interconnected. Since it is impossible to study everything, documenting clear delimitations and proxies defines the case's boundaries.

The research process of this thesis is only limited to the creation of an adapted model; the subsequent steps of operationalizing and evaluating the model is left to future research. The phases of this paper's research process are described in *Figure 3* on the next page. Even if the research process in *Figure 3* seems linear, the research process really was more iterative.

1. PREPARATION	• Content analysis of internal documents (EUS & BPS) from case company • Interview with Group IT employee (Respondent 1): more information about EUS, BPS and basic organizational structure on Group IT • Studying secondary data and internal documents: charts describing Group IT's organizational structure, management control process and areas of responsibilities • Investigate research within management control, strategic cost management and support functions • Investigate the value perspective and VCM
2. VCM-LITERATURE STUDY	• The VCM-literature study was conducted: articles citing McNair et al (2001a)
3. BASIC DEVELOPMENT OF VCM ADAPTED TO A SUPPORT FUNCTION	• Interview with IT-expert (Respondent 3): identifying best-practice IT service's characteristics and thereby best-practice value attributes • Interview with Group IT employee (Respondent 1): IT support function's organizational stucture, management control and value attributes
4. END-USER INTERVIEWS	• Interviews with 12 end-users of IT services at the case company (Respondent 4 to Respondent 15): their IT experience and verification of value attributes • Worskhop with Respondent 1 and 16: verifying the value attributes
5. DEVELOPMENT OF VCM ADAPTED TO SUPPORT FUNCTIONS	• Constructing the Theoretical model • Creating the Research model • Developing interview guides and templates
6. MODEL-EVALUATION INTERVIEW	• Interview with Professor in Economics (Respondent 2): evaluation of the Reference models and the Theoretical model:

Figure 3. The research process of this study.

First, to get acquainted with the field of research, to determine the paper's focus and to familiarize with the case company we analyzed material from four semi-annual questionnaires

called End-user survey (EUS) and two Business partner survey (BPS) collected by the case company between 2012 and 2014. Additionally, an interview with Respondent 1 provided more information about EUS, BPS and the basic organizational structure on Group IT. The questions asked were themed: "Please tell us more about EUS" or "Could you please tell us more about how the collected data is used in the organization?". We also studied secondary data (End-User Survey and Business-Partner Survey) and internal documents from the case company to understand the activities better such as text and charts describing Group IT's organizational structure, management control process and areas of responsibilities. The preparation phase also included reading research within management control, strategic cost management and support functions. The articles were found via Google Scholar, cross-checked in the search engine of Gothenburg University Library (www.ub.gu.se). Soon, the value perspective and specifically VCM was identified as an important and relevant research focus.

When writing the report, the aim was to give adequate weighting to all scientific contributions within the research area and the proficient origins of the research project, i.e. the VCM. Through proper referencing, other researchers were acknowledged for their contribution to the research area and plagiarism was avoided.

Secondly, to identify pros and cons of how previous studies have operationalized VCM in their studies, a VCM-literature study of all articles citing McNair et al (2001a) was carried out.

Thirdly, we developed the fundamental components of our Value creation model, adapted to a support function. It meant creating both the Theoretical Model and the Research Model. To better understand the prerequisites of VCM, how it corresponds in the context of a support function and particularly the IT support function of the case company two interviews and a workshop were conducted. An interview with an expert in generic IT value attributes (Respondent 3) provided insights into best-practice activities and characteristics of IT support functions. The questions were general: "please tell us more about the activities in a generic IT support function." and "do you know anything about best-practice value attributes?". The list of best-practice value attributes that was discussed consisted of "Well-functioning support function", "User-friendliness", "Professional Training", "Prompt fulfillment of change request", "Adequate portfolio of solutions", "Proactivity in supporting business innovation" and "Adequate IT security". The list describes a generic IT support function. However, the list is not exhaustive and should be adapted to the characteristics of the case company's support function. Magnusson stresses the importance of clarify the meaning incorporated in each characteristic and make sure that they are directly connected to activities performed by the firm. Later, during the second interview with Respondent 1, we asked questions such as "what does Group IT's organizational structure looks like, in detail?", "how does the management control of IT at the case company work?" and "how do budgets influence your prioritization of IT projects?". He talked about the organizational structure of Group IT - the IT support function at the case company - and the activities performed by Group IT, the management control of IT in the case company, the prioritization process of IT projects and

the responsibilities of specific roles in the IT organization. Based on the discussion during the meeting about the list of best-practice value attributes, the value attributes were adjusted to fit the context. Respondent 1 accepted the best-practice attributes with the addition of a project perspective, hence an eighth perspective was included. More specifically, the attribute "Ability to execute projects" was added.

Fourthly, 12 end-users were individually interviewed to supplement the surveys EUS and BPS, to gain insight into the company and the IT services and test the format and the relevance of value attributes in an interview situation. The end-users verified the relevance of the value attributes. The first phase of the interview was structured and the second phase were semi-structured. We started by explaining the purpose of the interview and our background. During the interview, the interviewees first explained their position, title and main tasks and described their day-to-day use of IT services in terms of hardware, software and Service Desk. Then, a pre-coded, pre-defined list of value attributes was presented to the end-users and they were asked to distribute 100 points across the bundle of attributes, based on the end-users perceived importance to be able to perform their job. The interviewees were thereafter asked how satisfied they were with the IT service provided by the support function by grading each attribute on a scale from 0 to 100, where zero equals no satisfaction and one hundred equals total satisfaction. During the second phase of the interview, the respondents were asked about their IT experience of each value attribute, their overall opinion about the list of attributes and if they would like to add or remove any specific value attribute. The questions guiding the conversations were for example "how would you describe your use of IT services in terms of hardware, software, Service Desk etc.?". The reasons behind any desirable changes to the list of value attributes were also inquired: "What are your spontaneous thoughts about the list of value attributes? Are there any attributes you miss or think should be eliminated?". The interviewees were probed to give more elaborate answers on their statements. During the interview, it was noted if the respondents had any issues with understanding the format or wording of the value attribute, in order to prepare the most efficient material for the planned quantitative survey.

The interview phase also included a workshop. The workshop, where Respondent 1 and 16 participated, verified the value attributes in the context of the case company. In fact, the workshop included presenting the research project, VCM and central concepts such as value attributes. To understand the concepts better, the participants were given the opportunity to fill out the same template with the eight value attributes, identified through best-practice, as the end-users. Then, a semi-structured discussion about the value attributes occurred. Guiding questions asked during this phase were among else: "what are your spontaneous thoughts about the list of value attributes? Are there attributes you miss or think should be eliminated?" and "are these IT value attributes representative or not of your business processes?". Next, since all types of interviews were recorded, the interviews were transcribed. Before being concluded in the Results chapter, we read through the transcriptions and EUS separately before categorizing and analyzing the data from EUS and the interviews (see 4.4 Method of Data Analysis).

Fifthly, the Theoretical Model and the Research Model were developed, including templates and Survey Design Guides to all three steps in the Research Model (value attributes, cost analysis, value multipliers).

Finally, the models were evaluated for the sake of future research: an interview with the VCM expert Lidija Polutnik (Respondent 2), one of the researchers that established the value creation model in 2001, provided insights into delimitations of the Theoretical Model and the Research Model and possible implications of operationalizing them. We provided Lidija with our questions in advance. After explaining the purpose of the interview, we presented the Theoretical Model and Research Model. Polutnik then was given the opportunity to comment on each model: "what do you think about the simplicity of the Theoretical/Research Model's content?", "do you think our definition of value is suitable to the context?", "have you noticed any logical errors?" and "overall, is there anything specific that you very much dislike/question about our methods?". We also asked for general advice regarding future issues when operationalizing the models and if there was anything we should be mindful about.

4.2 Empirical selection

4.2.1 Selection criteria - literature study

In order to summarize the existing research relating to the VCM, provide the thesis with a background and determine gaps in the existing research, a literature study of VCM was conducted. Hence, a systematic review of earlier applications of VCM was performed. The purpose was to gain insight into how VCM has been applied earlier in order to develop a suitable model for a support function context.

The literature study was conducted using the search engine Google Scholar to find all works citing McNair et al (2001a). Of the 80 works found, 34 articles were included in the literature study (see *Appendix 1*). Of the 46 works omitted, 18 were excluded due to format(not being journal articles), 22 due to language (other than English or Swedish) and 6 due to inaccessibility.

4.2.2 Selection criteria - case company

In conducting a representative single case study (Yin, 2009:48), it is believed that the case company displays all typical features of a larger multinational manufacturing firm. Additionally, accessibility played a major role. Both authors have direct links to the case company. However, most importantly the case company has close ties with The School of Business, Economics & Law at Gothenburg University and the two are currently collaborating on several research projects relating to management accounting. Specifically, one of the projects concerns new ways of conducting management control of the IT support function which can explain the case company's motivation for participating in the research relating to this thesis.

In alignment with Eriksson & Kovalainen (2008:52), we believe that the relational closeness between researchers, university and case company facilitated the accessibility to individuals and internal documents and hence improved the contextual understanding of the case.

4.2.3 Selection criteria – respondents

The data collected from the respondents was used to understanding more about VCM, validate secondary data of EUS and BPS and/or gaining more insight into the case company. For the purpose of theoretical generalizability, the sample of respondents required to be able to draw conclusions from qualitative data is relatively small (Scapens, 1990; Eriksson & Kovalainen, 2008:82; Ryan, Scapens & Theobald, 2002:143). However, to prove theoretically relevant, qualitative data has to be collected from a purposefully selected sample (May, 2002:205). A list of the respondents that were interviewed are presented in *Table 1*, see 4.3 Data collection.

Even though the end-user respondents were chosen out of accessibility at the case company, they were still purposefully chosen to suit the paper's objective and based on the criteria that the respondents use Group IT's services in their daily work, are full time employees (all but End-user 1/Respondent 4 fulfill this criteria) and that the respondents are somewhat spread between different units and positions. Respondent 1 were selected for the initial interviews because of his knowledge in EUS and BPS - since he is accountable for them - and because of his role he would have extensive insight into the Group IT's organization, management control, methods of communication internally and with other business areas and the process of IT projects' prioritization. With their background in creating EUS and BPS, the workshop participants would contribute to the justification of the value attributes in the case company.

The experts assisting the research process due to their knowledge in IT or the Value creation model, respectively. Johan Magnusson (Respondent 2) - PhD in IT Governance from School of Business, Economics and Law in 2010, a consultant and a speaker on the topic - was consulted to provide additional insight in how generic organizations manage their business in terms of value vs costs as well as norms in IT management control and characteristics of IT activities. Best practice value attributes were discussed. As an author of the original article about VCM (McNair et al 2001a) and accessibility due to her association with School of Business, Economics and Law, the input of Lidija Polutnik (Respondent 3) was valuable for the research process.

4.3 Data collection

To gain deeper understanding of the subject, understand the interviewee's point-of-view and above all validate the content of EUS and BPS (Scapens, 1990) as well as test if the interviewees could relate to the phrasings used relating to our suggested value attributes in the case company, we conducted in-depth interviews. There were 18 interviews in total. In alignment with Scapens (1990), all but one interview were administered face-to face to better

notice informal clues of the respondent's intention - behavioural tendencies - and ask relevant follow-up questions to understand more about the particular topic. All interviews, except the interview with Professor Polutnik, were conducted in Swedish. The 12 end-user interviews were all conducted individually at the case company. The duration of each interview tended to be about 30 minutes, although it varied from 15 minutes to 55 minutes depending on the individual, please see *Table 1*.

Respondent	Type of respondent *	Business area	Organization	Type of interview	Duration	Location
R1	W1, O1	Group IT	VCC	Face-to-face	01:20; 1:05; 01:55	Case comp., HQ
R2	E1	Economics	Babson College, US	Telephone	0:55	-
R3	E2	Business Administration, Enterprise Resource Systems / Department of Applied IT	School of Business, Economics and Law, GOT/ Chalmers, GOT	Face-to-face	0:15	School of Business, Economics and Law
R4	EU1	Customer service	VCC	Face-to-face	0:25	Case comp., HQ
R5	EU2	R&D	VCC	Face-to-face	0:35	Case comp., HQ
R6	EU3	R&D	VCC	Face-to-face	0:25	Case comp., HQ
R7	EU4	R&D	VCC	Face-to-face	0:45	Case comp., HQ
R8	EU5	R&D	VCC	Face-to-face	0:15	Case comp., HQ
R9	EU6	R&D	VCC	Face-to-face	0:24	Case comp., HQ
R10	EU7	R&D	VCC	Face-to-face	0:20	Case comp., HQ
R11	EU8	R&D	VCC	Face-to-face	0:30	Case comp., HQ
R12	EU9	Purchase & Manufacturing	VCC	Face-to-face	0:32	Case comp., HQ
R13	EU10	R&D	VCC	Face-to-face	0:14	Case comp., HQ
R14	EU11	HR	VCC	Face-to-face	0:25	Case comp., HQ
R15	EU12	R&D	VCC	Face-to-face	0:55	Case comp., HQ
R16	W2	Quality	VCC	Face-to-face	1:55	Case comp., HQ

* Expert (E), End-user (EU), Workshop participant (W), Other (O).

Table 1. An overview of the interviewees of this thesis.

As described previously, the end-user interviews had a structured and a semi-structured phase to first collect the formal data and subsequently ask more open questions about the answers. This structure allowed us to discuss all intended topics but still allowed the interviewee to present his or her point-of-view (Eriksson & Kovalainen, 2008: 82). Prior to the end-user interviews, the value attributes had been translated to Swedish to maximize the respondent's comprehension and minimize bias due to language barriers. Additionally, we led an almost two hour long workshop with semi-structured questions. Two employees (Respondent 1 and 16), knowledgeable in the IT services and the format of EUS and BPS, participated. The face-to-face workshop was held at the case company head-quarters, please see *Table 1*. The 15 minutes long interview with Magnusson was semi-structured and held face-to-face. Polutnik

was interviewed via Skype, due to geographical inaccessibility. The questions were semi-structured and the interview lasted about an hour.

During the research phase, the interviews were conducted using voluntary participation and informed consent, in alignment with Eriksson & Kovalainen (2008:65). This project is performed partially in collaboration with case company and its employees have been the informants (interviewees) of the study and voluntary participation was applied. Prior to consenting to the interview, the interviewees were informed of its purpose and estimated length. During the interviews, the purpose was introduced again and the involvement of their employer was described more in detail as well as the role of the researchers, why they had been selected for the study and how the data would be used. Any questions the participants had relating to the study were addressed with a high degree of transparency. All interviewees were asked and consented to the interviews being recorded. Additionally, the participants from the case company were informed about their anonymity in the study and that their participation or non-participation would not be reported to their employer. In line with Collis & Hussey (2009:46) and Scapens (1990), it was anticipated that this would encourage more open responses. The non-identifiability of participants from the case company was considered extra important in the study due to the employer involvement. However, as Scapens (1990) points out: even though keeping the organization's name and the participant's identity secret from external and internal parties is a way of gaining access to information, it also affects the context of the case study and hence the reader's interpretation of the case context.

Apart from the empirical material collected through interviews, secondary data (Eriksson & Kovalainen, 2008:78, Ryan et al., 1992, 2002) was also collected to provide an additional source of evidence. The majority of the material was internal documents from the case company with the exception of a report conducted by Accenture which relates to the management of IT at the case company and specifically the achievements of the CIO. The internal documents and figures collected from the case company, used to provide a contextual understanding, include documents of the responsibilities of the IT subdivisions AMS, DPS, IMS and BE/Corporate Functions as well as figures displaying the IT function's organizational structure and corporate governance of IT. However, the largest part of the data originates from two surveys conducted internally in the case company on a semi-annual basis. The surveys, End-User Survey (EUS) and Business Partner Survey(BPS), address IT's effect on the working environment. More specifically, EUS is directed towards all the internal customer of the IT function's service. To sample respondents from the case company's 30 000 employees, 2400 email addresses are randomly selected(Respondent 1). The EUS has a response rate of 14-18% (Respondent 1) and consists of both structured and semi-structured questions. The surveys from 2012Q4, 2013Q2, 2013Q4 and 2014Q2 were studied. The second survey, BPS, is based on the results from the EUS. Now the responses from each business area are analyzed and discussed by the heads of that business area and the BLO of that specific business area. In total, 130 to 170 vice presidents and directors are interviewed in groups about the data collected from EUS. About 70 percent of the approached respondents attend these meetings. (Respondent 1) The BPS from 2013Q4 and 2014Q2 were studied.

4.4 Method of data analysis

The collected data from the semi-structured interviews, the workshop and the internal documents was sorted and reorganized using the techniques described below.

A content analysis (Collis & Hussey, 2009:164-5) was performed on qualitative data from three EUSs; 2012Q4, 2013Q2 and 2014Q2. Unfortunately, data from EUS 2013Q4 was unavailable. To sample the large amount of data, a specific response question - "Need for IT in daily work" - was chosen due to its similarities with the questions posed in the end-user interviews. Responses relating to business areas not relevant to the study were excluded. During the content analysis, coding units in the form of themes were used. The comments were then manually and systematically categorized to the following empirically-based coding units (Collis & Hussey 2009:165): "User-friendliness", "Infrastructure", "Hardware", "Applications" and "Other". Each response was only categorized into one category. For instance, if a response expressed comments relating to several coding units, the response was categorized into the coding unit which dominated the comments. However, if it could not be determined which coding unit dominated the response, the response was categorized according to the first comment in the response. Subsequently, the answers pertaining to each coding unit were counted and summarized in *Pie Chart 1*, see 5.2.4 End-user experience about IT services.

The data obtained from the semi-structured interviews and the workshop was structured by using a general analytic procedure (Miles & Huberman, 1994). Prior to structuring the data, the interviews and the workshop were transcribed. The data was then carefully studied and subsequently selected and structured manually into categories which emerged during the study phase: "Satisfaction of current IT service", "Need and use of IT" and "How the respondents understood the pre-defined value attributes and the interview format". In the second structuration phase, we studied each of the mentioned categories individually. In the first category "Satisfaction of current IT services", the responses were color coded according the value attribute which they belonged to; "Well-functioning support function", "User-friendliness", "Professional training in IT solutions", "Prompt fulfillment of change request", "Adequate portfolio of solutions to perform my job", "Proactivity in supporting business innovation", "Ability to execute IT projects" and "Adequate IT security". The second category, "Need and use of IT", was established to investigate the different needs of IT the end-users expressed, such as need of complex applications or the exclusive use of Microsoft Office. The responses were categorized according the type of use or need expressed: "General applications (email, Microsoft Office, Lync, Intranet, Sharepoint, time reporting)" , "Service Desk", "Hardware (cell phone, computer)" , "Response frequency per attribute/ formation of attributes", "Business area-specific applications", "General application and organizational characteristics", "IT-security" and "IT-training". The aim of the third category "How the respondents understood the predefined value attributes and the interview format" was to test how the respondents would perceive the pre-defined value attributes. The sub-categories used were "Type of attributes included (eliminate or adapt)", "General reflections on which end-users to target", "How could we clarify the definitions of attributes or the questions asked"

and "Other (how the survey could be designed; the importance of connecting costs with attributes)".

During the semi-structured interviews, the end-users were requested to fill out a template to indicate their perceived importance and satisfaction of the pre-defined value attributes. After conducting the interviews, the structured data was summarized in an Excel-file and the median importance and satisfaction was calculated for each attribute. The result is displayed in *Table 2*, see 5.2.4 End-user experience of IT-service.

5 RESULT

The objective of this study is to extend value-based Strategic Cost Management through the addition of a support function perspective by developing an adapted Value Creation Model by McNair et al. (2001a). This includes, based on a literature study, internal documents and interviews, developing a theoretical model ("The Theoretical Model") and a method for implementing it in a case company support function ("The Research Model"). This section presents the results of the research process. Firstly, the results of the conducted literature study are presented in form of design criteria - the literature study investigates previous applications of VCM and specifically those involving support functions. Secondly, details about the case study which is performed on a case company's support function in order to investigate the context-specific prerequisites for adapting VCM. Finally, the results from the literature study and case study are used as input to create an adapted VCM Research Model for a support function in this specific context. This chapter also includes intertwined analytical commentaries.

5.1 Literature Study of VCM

To better understand how previous researchers have approached VCM by McNair et al (2001a) and the reasons behind their approach, we conducted a literature study that will be presented below. The study ultimately resulted in lessons learned that were of use to us when developing our own adapted VCM model. The literature study also showed that operationalized research in value creation analysis - or customer value analysis - is not very extensive, according to our conducted literature review of articles (please see *Appendix 1*) citing McNair et al (2001a). Out of 34 journal articles, only three applied or partially applied McNair et al. (2001a)'s Value creation model: Mohamed & Jones (2014), Cugini, Caru & Zerbini (2007) and Silvi & Cuganesan (2006). These three articles will be described in detail.

Nevertheless, the majority of the citing articles only mention McNair et al. (2001a) briefly. In general, the ideas of McNair et al (2001a) is considered - often in relation to ABC - an important strategic cost management tool, notably in articles in the field of strategic cost management (Watts & McNair-Connolly, 2012; Himme, 2012; Bjørnenak & Helgesen, 2013; Ellram & Stanley, 2008; Santini, 2010;), cost management (Mijoč, Pekanov Starčevic & Mijoč, 2014), strategic management accounting (Cinquini & Tenucci, 2010; Tenucci, 2010), management accounting (Labro & Tuomela, 2003; Gimžauskienė & Valančienė, 2007; Mattimoe & Seal, 2011) or management control (Skoog, 2003). In addition, the concept of customer-based value is heavily integrated in marketing research (Slater, 1997, Grönroos, 2008) - McNair et al (2001a) is acknowledged in marketing research (Helgesen, 2007a; Helgesen 2007b; Helgesen & Nesset, 2010; Helgesen, Håvold & Nesset, 2010; Nesset, Nervik & Helgesen, 2011; Helgesen, Nesset & Strand, 2013; Inglis, 2008; Helgesen, 2008; Helgesen & Nesset, 2007a; Helgesen & Nesset, 2007b; Helgesen & Nesset, 2001; Helgesen, 2006b; Toppinen, Lähtinen, Leskinen & Österman, 2011; Helgesen & Nesset, 2009), target costing (Woods, Taylor & Fang, 2012; Helms, Ettkin, Baxter & Gordon, 2005; Zengin & Ada, 2010) and Just-In-Time (Madanhire & Mbohwa, 2014).

Mohamed & Jones (2014) develop a comprehensive model that includes, among else, a version of VCM. Overall, Mohamed & Jones (2014) identifies a lack in strategic management accounting where most studies only use one or two profitability drivers to manage and predict profitability. Most previous studies focused only on drivers of costs and/or revenues. The authors also claim that there is a need for a comprehensive profitability analysis tool by also including an external strategic perspective on profitability. Therefore, Mohamed & Jones (2014) identifies several techniques that would address this deficiency, namely customer value-driven cost management (VCM), intellectual capital management and customer value management. These techniques are then included in the multi-perspective model called 'The proposed profitability model' that Mohamed & Jones (2014) developed in their study in order to manage profitability. The authors recognize the importance of strategically managing the firm based on customer needs and preferences. Profitability is defined as return on assets.

'The proposed model' consists of three pillars; cost driver, asset driver and revenue drive: the first pillar, cost driver, is mainly based on McNair, Polutnik and Silvi's (2001a; 2001b) Value creation model. In *Figure 4* below, the four steps of the cost driver pillar are presented. Firstly, the customer value analysis identifies a list of value attributes appreciated by the customers, secondly, the revenue equivalent includes assigning value-weighted revenue to each attribute, thirdly, the value-added costs of each attribute are identified and, finally, using the established relationship between cost and value as a foundation for strategic decision-making. (Mohamed & Jones, 2014) Hence, the cost pillar of 'The proposed model' is very similar to VCM.
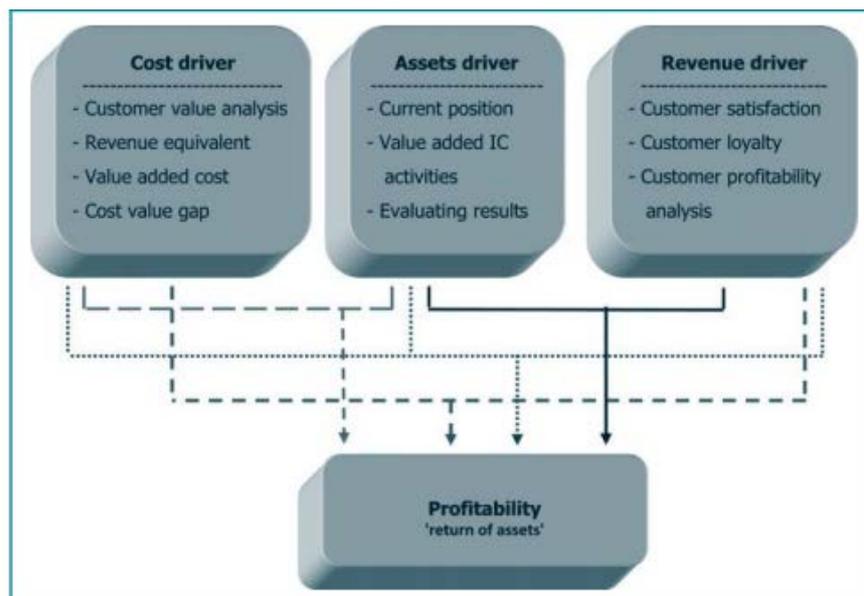

Figure 4. The proposed profitability model by Mohamed & Jones (2014:4).

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Firstly, using a deductive approach, three types of drivers are established in literature and a model is created. Secondly, the method of data collection applied in the study is exploratory and based on a quantitative survey study of 190 firms in the Egyptian Information and communications technology sector. Here, the strategic use of decision-making of the model is tested through financial and senior managers responding to the proposed model in a self-administered questionnaire, hand-distributed and collected. The appropriateness of the questionnaire is evaluated by six people prior to the collection process. (Mohamed & Jones, 2014)

Mohamed & Jones's (2014) main addition to the theory of strategic cost accounting research is the development of a unique comprehensive profitability model that would improve managing and predicting profitability and how the components should be used in combination with strategic management accounting techniques. The proposed profitability model also serves as a manifestation of the value creation model's importance understanding profitability. The practical contribution of the authors lies in profitability management in the specific context of the case study, the Egyptian information and communication technology sector. However, there are certain characteristics the company needs to fulfill for the comprehensive profitability model to be applicable; for example the model would not be suitable for entities with low intellectual capital or few intangible resources. Implementation of the model also requires extensive collaboration through the establishment and training of multi-functional teams. (Mohamed & Jones, 2014)

Another study by Cugini, Caru & Zerbini (2007) tries to extend established strategic cost management in general and VCM in particular by adding a service perspective on VCM. The authors argue that VCM has only been well developed to satisfy the production of tangible goods; the deficiency identified by Cugini et al. (2007) regards the direct link between costs and customer satisfaction in service industries. An adapted version of VCM is used which illustrate how service components affecting the customer satisfaction can be identified and assess the cost of these components. Instead of using the traditional value attributes developed by McNair et al. (2001), Cugini et al. (2007) borrow the concept of service components from the marketing literature, to connect customer satisfaction and cost management analysis which they argue are more appropriate for assessing costs in services companies. Additionally, value multipliers are replaced by an activity matrix (Caru & Cugini, 1999;2000) where activities can be classified as activity dimensions as 'necessary/accessory' and as 'non-constrained/constrained'. More specifically, necessary activities indispensable to the service components while accessory activities help support and diversify the service components. With ABC in mind, constrained and non-constrained activities relate to the ability of managing the resources of the activity in a short term perspective, hence if an activity has only constrained resources; they cannot be quickly reduced. The activity matrix is displayed in *Figure 5* below.
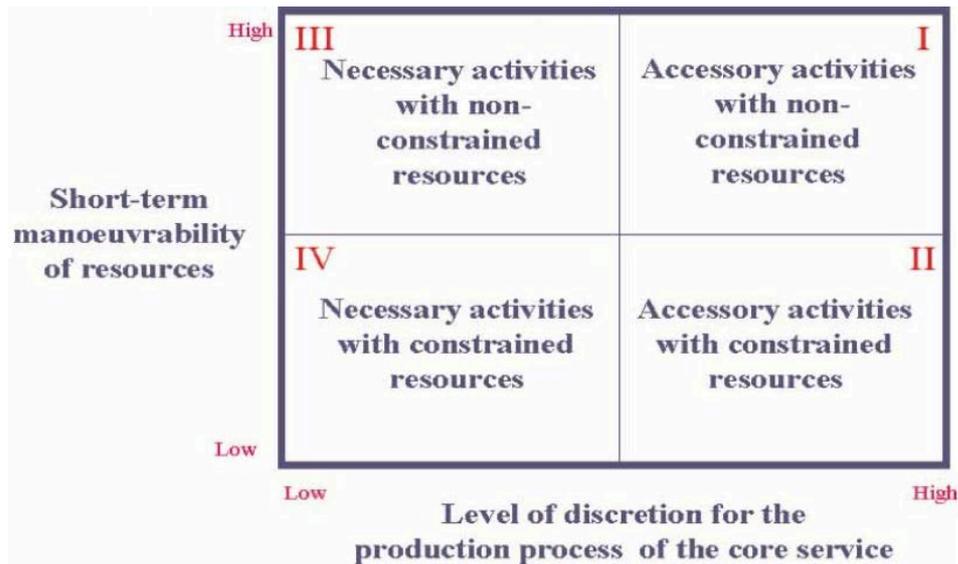
Figure 5. The Activity Matrix (Cugini et al., 2007:506)

In their study of an Italian holiday resort in the Alps, Cugini et al.(2007) test their framework for addressing the link between customer satisfaction and costs. Firstly, all costs of the firm are classified according to ABC. Secondly, service components are established through in-depth interviews with the marketing manager and the general manager of the firm as well as eight loyal customers. Also, all service components beyond the control of management are excluded from the final list of service components. Thirdly, a self-administered questionnaire is distributed to customers inquiring about their satisfaction, intensity and frequency of use of the different service components. The questionnaire helps determine the link between activities and service components as well as the costs related to each service component. The activities are then mapped in the activity matrix. Additionally, based on the 98 questionnaires, three customer segments are identified using cluster analysis techniques. The fourth step includes a cost assessment which connected the cost of each service component with the segments in relation to their reported frequency and intensity of use. In the final phase of the study, costs and customer satisfaction are investigated to see if there was a fit between effectiveness and cost. The costs of a service component are re-sized if the firm was incurring excessive costs compared to the effective use and satisfaction (over-sizing) or if the firm has an insufficient spending compared to the actual use (under-sizing). Cugini et al.(2007) argue that this allows a firm's cost structure to be decided by its optimal blend of service component capacity which is essentially based on customer behaviour.

The main contribution of the study by Cugini et al.(2007) is that it extends previous research in strategic cost management, such as McNair et al. (2001), to include service industries. By constructing a framework including the marketing concepts of service components and the activity matrix, the direct link between customer satisfaction (effectiveness) and service costs (efficiency) is further explored. However, the framework only assumes a temporary exchange of service and does not consider deeper relational ties between a firm and its customers. Also, the service components used might exclude factors contributing to customer satisfaction.(Cugini et al, 2007) It can further be argued that the framework (research) would

benefit from practitioners evaluating their perception of the usefulness of the information/knowledge provided by the framework. Moreover, Cugini et al. (2007) do not address the model's applicability in terms of complexity or whether there are any prerequisites a service firm should fulfill in order to successfully implement and use the framework.

The third article is written by Silvi & Cuganesan (2006). Silvi & Cuganesan (2006) states that the integration of knowledge management and strategic cost management is historically unparalleled. In fact, Silvi & Cuganesan (2006) claim that the two fields are highly interdependable; value creation depends on knowledge specificity (low or high) and knowledge type (tacit versus explicit) (Silvi & Cuganesan, 2006). Based on SCM techniques, a cost-knowledge management (CKM) framework (Silvi & Cuganesan, 2006) is developed and implemented into four Italian case companies. The framework's objective is attaining insight about opportunities of efficiency improvement in a company's knowledge management process, which when acted upon may enable achieving the maximum profit potential and gaining a competitive advantage (Silvi & Cuganesan, 2006; McNair et al, 2001; McNair, 1994). Ultimately, the framework makes efficiency opportunities visible and facilitates thereby that managers make informed strategic decisions about resource allocations (Silvi & Cuganesan, 2006).

The CKM framework (*Figure 6*, next page) includes three main steps. In alignment with for example target costing (e.g. Liker, 2009:60-66), the framework's first step aims to determine the cost and value (VA, NVA and waste) of the firm's main value chain activities. The second step includes identifying the type of knowledge (low or high degree of knowledge specificity as well as tactical or explicit utilization of knowledge) used in these activities. These two steps examine what drives effectiveness in knowledge management. The third step address analyzing the activities' cost drivers. These three steps combined should result in an understanding of which activities create value and the resources necessary to support these activities to improve the firm's actual profit - insight one and two. Profitability is defined as return on sales. (Silvi & Cuganesan, 2006)
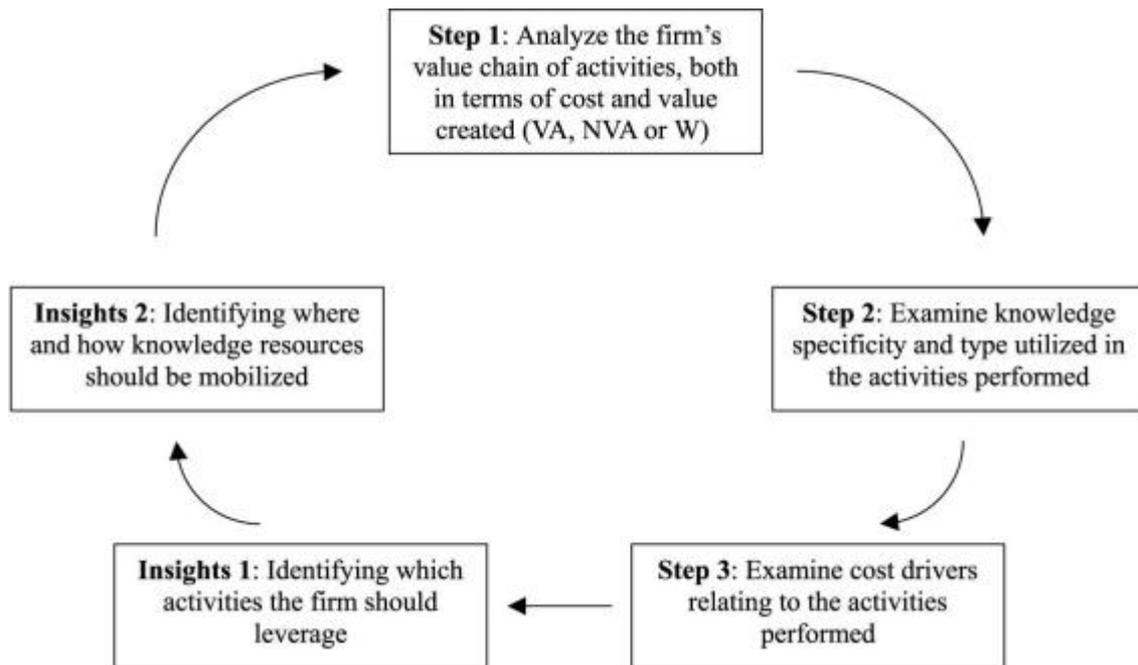
Figure 6. The cost-knowledge (CKM) model created by Silvi & Cuganesan (2006:314)

In alignment with McNair et al (2001) and McNair (1994), the application of the CKM framework illustrates how the framework can be used to assess company's current knowledge management process and how the resource distribution (the cost of making the product available to customers) and value distribution (VA, NVA and waste) among the process' activities can be leveraged in a more effective and efficient way for the firm to gain and sustain a competitive advantage. These insights can also be benchmarked with competitors. Furthermore, a more detailed understanding about the type of knowledge required by the activities can be obtained from cost-knowledge analysis. (Silvi & Cuganesan, 2006) Silvi & Cuganesan (2006) state that the exploratory case study's sample size and lack of comparability among the companies may limit the conclusions drawn. The use of return on sales as a performance metric may also be insufficient: the authors suggest applying for example a customer perspective and shareholder value metrics instead. (Silvi & Cuganesan, 2006) Indeed, it is worth noticing that the CKM framework is not based on value attributes or even attributes from a customer perspective; it suggests analyzing the activities' cost drivers after identifying the type of activities and those of costs and values (step 3) and the framework does not include calculations of value multipliers that can support the resource allocation analysis. Silvi & Cuganesan (2006) also explain that a more detailed and not overlapping categorization of knowledge specificity and type main also gain additional insights.

In summary, the literature study performed revealed that no previous study has investigated the operationalization of VCM in a support function.

5.1.2 Literature study - design criteria for an adapted Value Creation Model

The literature study shows that although McNair et al (2001) has been cited in relation to several academic articles, few previous applications of VCM exist. The few researchers who have applied VCM highlight its importance for gaining an additional external perspective on profitability (Mohamad & Jones, 2014), its role in addressing the insufficient linkages between customer satisfaction and company costs in providing services (Cugini et al, 2007) and its suitability as a strategic cost management tool in making informed strategic decisions (Silvi & Cuganesan, 2006). In general, all the above articles identify the utility of linking company costs and customer satisfaction by combining elements of accounting and marketing. Mohamad and Jones (2014) also raise the discussion about how to incorporate VCM in a larger holistic context.

The choices of method made by the researchers in the literature study also provide guidance for our own subsequent process of developing a VCM model adjusted to a support function. Both Cugini et al. (2007) and Mohamed & Jones (2014) used a large amount of questionnaires to collect the data. Before collecting the empirical data, Mohamed & Jones (2014) interviewed six people with relevant but varying backgrounds, to evaluate the appropriateness of the model in terms of understanding the format and applicability to the industry. Suitable changes were made to the template. During the empirical interviews, Mohamed & Jones (2014) asked of the manager's point of view of each variable in the model and these variables relationship. The adjusted VCM model by Cugini et al. (2007) shows that it is important to adjust factors such as value attributes to fit the purpose of the study and the theoretical and practical context. Cugini et al (2007) also imply that VCM is flexible in terms of complexity and content: there are great opportunities to develop and adapt VCM to achieve this alignment, depending on the specific prerequisites. Furthermore, Cugini et al. (2007) limits the characteristics of value attributes to only include attributes within the control of management. Silvi & Cuganesan (2006) indicated, by developing a very theoretically applied model, the importance of making a VCM model that practitioners find relevant and describe how they can operationalize it as well as easily can comprehend the content. These reflections will be taken into consideration when developing our take on VCM in a support function context.

5.2 The case company

This section will briefly introduce the case company and further describe the organizational structure and management control of the business area Group IT, the unit of analysis. The remaining sections address the current end-user experience of IT services as well as evaluating basic approach components - value attributes and interview formats.

The case company has been operating in the manufacturing industry for more than 40 years and has more than 8000 employees worldwide- with manufacturing taking place in multiple countries. The company includes, but is not limited to, the following main business areas:

"Purchase & Manufacturing", "Marketing, Sales & Customer Service", "Research & Development", "Communications", "Information Technology", "Quality Assurance", "Human Resources" and "Finance".

5.2.1 About the business area Group Information Technology (Group IT)

Information Technology (Group IT) is a business area of the case company that delivers "IT innovations that support the company's overall operations". In 2014, Group IT had around 450 employees worldwide as well as 250 consultants, serving all of the case company's employees and partner organizations. Similarly to the overall organizational structure, Group IT is based in the case company's originating city but also has a large presence on two of the largest markets. In alignment with the general trend in manufacturing, IT is becoming increasingly important for sustaining a competitive advantage. Therefore, apart from providing traditional IT services, Group IT has become an important integrated component in driving innovation of the finished product. This product area is an area in which the case company is a leading market player. The CIO of the case company states that IT is thoroughly integrated into the business operations:

"IT is an integrated part of everything we do [at the case company]." (CIO, case company)

Group IT is led by the CIO and his staff. Group IT is also indirectly supported by HR. The 'flow' of Group IT departments are represented by four main subdivisions: Business Engagement; Service Desk and Operations (SD&O); [Geographical area] IT; and Consumer IT services. The blue horizontal arrows represent cross-functional linkages with the case company's business areas, so called 'Blue arrows' which will be described later in detail.

[Geographical area] IT and Consumer IT Services will not be included in the scope this research project. The former operates as a completely detached IT subdivision, with a limited geographical focus. The latter subdivision solely focuses on the external customers and is therefore beyond the scope of the study.
The subdivision Business Engagement is the link between Group IT and the rest of the organization. The objective of Business Engagement is to support all of the business areas of the case company:

"... Business Engagement will secure IT being a business driver and realizing future and current opportunities that makes IT a competitive advantage." (internal document)

The tasks of Business Engagement to achieve this objective include developing business demand requirements and IT-strategies:

"Business Engagement is responsible for balancing requirements from the business side of the company with the capabilities of group IT" (internal document)

Business Engagement constitutes of three departments. Firstly, there is the Innovation Office which is responsible for IT innovations; secondly, Strategy and Performance Management is another department; thirdly, Customer Interface where the Business Liason Officers (BLOs) are positioned. Depending on the size of the business area, there is at least one BLO for each business area. The BLO's main responsibility is to manage requests from the business and thereby enable direct communication between two units. Gaining information and exchanging information from various business areas are the key functions of BLOs: the BLOs keeps track of what is happening in the organization. Depending on the context, BLOs have an advisory position or is a deciding party. The formal information exchange between the BLO and other units occurs through meetings, usually weekly. Foremost, the business areas' management group meetings (e.g. Research and Development or Purchase and Manufacturing) are attended by the respective business areas' BLO. Here, operational topics of the business area and possible improvements are discussed. Also, the BLOs of all business areas are present at the weekly BLO meeting to exchange information. There is an additional meeting called 'CIO round table', where BLOs from the business areas and Group IT Management Team inform the CIO of the current situation of IT and IT projects in the business areas as well as being informed by the CIO of the discussions from the case company's Executive Management Team meetings. The overall goal of this information exchange is to gain maximum awareness in order to make the appropriate and effective decision about strategic business priorities:

"At least, if we [the BLOs] are not part of the deciding forum - which we often are but not always - we can nevertheless provide them [the forum] with the right decision basis, based on what we know." (Respondent 1)

Another official information exchange forum attended by the BLOs is the so called 'Blue arrows', which is a decision-making forum. Blue arrows will be described below in more detail.

Overall, **the subdivision of Service Desk and Operations (SD&O)** manages applications, IT infrastructure and project resources. SD&O includes the three departments: Development of Professional Services (DPS), Application Management Service (AMS) and Infrastructure Management Service (IMS). The department Development of Professional Services includes resources used in projects, for example business analysts, project managers and system analyst architects. The second department, Application Management Service, handles the administration of the available portfolio of applications. Similarly to AMS, the third department Infrastructure Management Services manages the infrastructure components of IT such as networks, datacenters, servers, laptops and telephones. SD&O receives all its requirements from the BLO:s in Business Engagement related to SD&O's priorities and to SD&O's daily operations.

Blue Arrows - the meeting forum for information exchange - is an integrating function between Group IT and the rest of the case company's business, headed by the BLOs. This fulfills Business Engagements objective of mediating between the capabilities of Group IT and business requirements from other business areas. The forum consists of weekly meetings

between the BLO (or BLO:s) of a specific business area, for example R&D, and representatives from the departments of SD&O; DPS, AMS, IMS and NSC. If needed to support the appropriate decision, members of the respective business areas may also attend Blue Arrow meetings. The goal of the meeting is make informed decisions and through discussions align the priorities of SD&O with the business requirements from the different business areas. This is achieved by supporting SD&O with the necessary and suitable information to make the best possible priorities, considering the business needs:

"SD&O should never have to guess that 'this is probably [the] right [decision]' but should know [the answer] because of their membership in Blue arrows." (Respondent 1)

5.2.2 Governance and management control of the case company's support function

The Executive Management Team (EMT) is the case company's executive group; the CIO is not a member of the EMT (Respondent 1) but is invited to attend all meetings. The IT Board members are the EMT and additional Group representatives - the senior management of Group IT.

The CIO reports to the Chief Executive Officer (CEO) about Group IT's progress (Respondent 1). The annual IT budget comprises more than 350 million SEK; between 22- 25 percent is assigned to innovation and the remaining portion is used for traditional IT services. Group IT's available budget resources are distributed in order to support the case company's overall business strategy:

"Our [overall business] strategy addresses four areas: increase customer loyalty, secure the profitability of our selling agents of servicing and selling [the products], reduce lead times in R&D and sales as well as improve efficiency in internal processes. In all cases this strategy is directly applicable to IT." (CIO, case company)

This business strategy is interpreted by ITMT into a list of IT-priorities for the following 12 to 18 months (Accenture, 2014). Similarly, the IT-priorities are cascaded further down into concrete department activities needed to achieve the overall business goals, all the way down to individual performance targets (Respondent 1). Every employee has a semi-annual review of their performance target (Accenture, 2014; Respondent 1).

More than 70 IT- projects are run on an annual basis. Most projects are initiated after identifying a business need in one or several business areas. (Accenture, 2014) This process is facilitated by the business area's BLO as a communicating actor between Group IT and business area. (Respondent 1) The IT projects are evaluated based on measures of business operations' effectiveness, reduction in lead times, increased product customer satisfaction and increased sales of products (Accenture, 2014:25). Evaluating business projects has

historically been a neglected task, even though a structure for assessing some of the larger projects was initiated in 2014 (Accenture, 2014).

5.2.3 End-user experience of IT services

This section focuses both on the end-users' perception of the provided IT services and evaluates the most suitable value attributes in a case company context. First, to show end-users' opinions and level of satisfaction with the provided IT services. Secondly, the users' need of IT in their day-to-day work to sufficiently perform their job will be addressed. Finally, an assessment of the most suitable format for investigating value attributes will be discussed.

To give an overall picture of the current situation of end-user satisfaction with Group IT's services, data from End-User Survey (EUS), Business-Partner Survey (BPS) and our interviews will be presented. In the EUSs from 2012Q4, 2013Q2+Q4 and 2014Q2, the respondents were asked to grade different predefined values on a scale from 1 to 5 based on their satisfaction. The result is displayed in *Diagram 1* below.
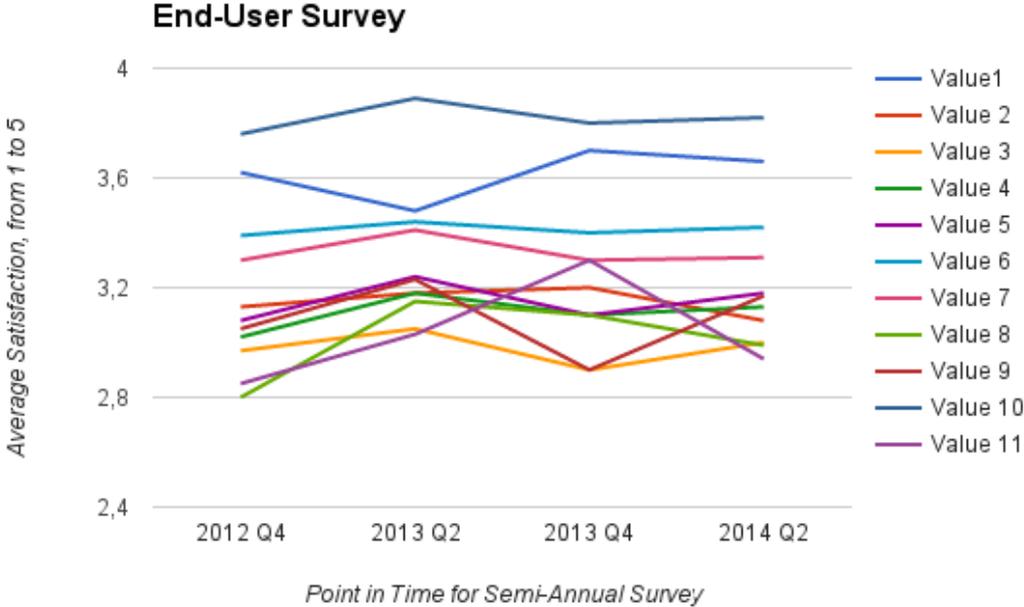
* Value 1: "IT applications support me in my daily work"; Value 2: "The IT systems and applications I use in my daily work meet my needs"; Value 3: "The IT systems and applications I use in my daily work are easy to use (user friendly)"; Value 4: "The IT systems and applications I work with are reliable and available"; Value 5: "The "IT Workplace" is reliable and available (Workplace = PC/Unix, telephone, document handling systems, remote meeting)"; "Value 6: "The IT Service Desk provides support in a good way"; Value 7: "IT provides support and incident handling in a good way"; Value 8: "IT is good at capturing future needs for [the case company]"; Value 9: "How satisfied are you overall with IT systems, applications and support?"; Value 10: "IT is a critical business enabler for [the case company] and contributes to value creation and growth"; Value 11:"The communication and information from IT is clear and meets my needs".

Diagram 1. End-User Survey. Satisfaction with different values in four successive EUS

Despite minor variations, the values seem to be quite stable over the measurement period. Three values top the list in all four surveys; "IT is a critical business enabler for [the case company] and contributes to value creation and growth" (Value 10), "IT applications support me in my daily work" (Value 1) and "The IT Service Desk provides support in a good way" (Value 6). At the bottom, three values receive the lowest score in almost in every survey; "The communication and information from IT is clear and meets my needs" (Value 11), "The IT systems and applications I use in my daily work are easy to use" (user friendly) (Value 3) and "IT is good at capturing future needs for [the case company]" (Value 8). The results imply that users agree with the importance of IT for competitive advantage, the utility of IT applications and that Service desk provides sufficient of IT support. However, it can be questioned whether Value 1 and 10 actually measure Group IT's performance or if these Values solely indicate that users appreciate the use of IT. The Values with lower scores indicate that Group IT needs to improve their communication and user-friendliness of applications, the components in the application portfolio and pro-activeness of capturing future business needs.

Additionally, qualitative data from EUS was used to identify the most common areas of complaint related to the employees' IT needs in daily work. The spread is displayed in *Pie Chart 1* below.

Comment categories for "Need of IT for daily work"*

End-User Survey 2012Q4, 2013Q2, 2014Q2**

Legend:
- Userfriendliness***
- Infrastructure
- Hard ware
- Applications
- Other
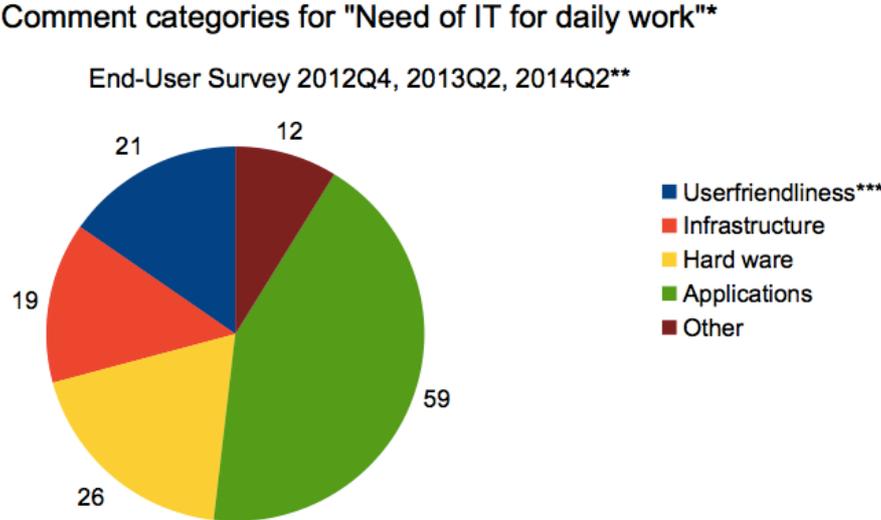
* 137 comments from all business areas are included, except the business areas IT and the business areas beyond the scope of the study.
** 2013Q4 is excluded due to inaccessibility to data in this particular question.
*** "User-friendliness": logic and level of complexity of applications, integrated systems/elimination of manual work, log-in problems; "Infrastructure": intranet; basic needs for configuration/alignment between IT machines: faster systems, faster internet connection; uptime cloud; "Hardware": faster PC, faster computer system, more RAM etc., printers; "Applications": applications portfolio, application access, communication of ordering applications; and "Other": IT communication, IT project, IT education, Service Desk complaints; complaints about link to authority's website and authorization issues.

Pie Chart 1. End-User Survey, 2012-2014. Comment categories of "IT need in my daily work".

The absolute majority of IT services complaints between 2012 and 2014 addressed applications, hardware, infrastructure and user friendliness. The majority of comments regarding applications are about the performance of **applications** such as complexity, up-time, speed, sophistications, age and need for updates, for example "systems [...] are old systems. In more and more cases they do not cover the market's needs"; "we would need systems that could provide us information that we need to build our strategies like e.g. market information, competitive information and so on" and "ability to install specific CAD apps.". One respondent concludes that "very few of the systems we have today would survive in the competition of the IT tools used outside of the company".

Hardware issues usually included comments related to the lack of computer speed, disk storage capacity, start-up speed, more RAM memory and printer performance: "A computer powerful and portable enough to run all applications I am supposed to be able to access during the day to work efficiently" and "I need a computer that does not take 15 minutes to start".

Furthermore, one end-user states that "network speed is to low leading to long times for saving data to central storage disks". All in all, the more common **infrastructure** difficulties are Wi-Fi accessibility, network speed, intranet connectivity, lack of synchronization between cell phone and computer, accessibility to intranet from various devices.
Regarding **user-friendliness,** most comments were related to systems not being integrated which results in unnecessary manual information transfer, frequency of required logins and the lack of logic and intuitive user-experience of applications. Typical comments include "I do not want multiple systems to report the same information in"; "easy fast information without login in and out of old relics of systems" and "should be much more easy to use and more user friendly applications/systems: too many different systems that works so different from each other.

The few comments in the category labelled as **"Other"** were among else about IT communication; IT projects; IT education; IT service desk complaints.

During the interviews with end-users, their individual perception of IT services in relation to their daily work was inquired. *Table 2* , please see below, presents information collected during the end-user interviews regarding importance and satisfaction of the predefined value attributes where the respondents' answers have been summarized and the median calculated. In relative importance, the value attributes "User-friendliness", "Adequate portfolio of solutions to perform my job" and "Well-functioning support function" were considered most important whereas "Adequate IT security", "Ability to execute projects" and "Prompt fulfillment to change request" were considered the least important. When it came to satisfaction all respondents were able to grade their satisfaction with the three most important value attributes.

Value Attribute*	Importance	Satisfaction**
	Median	Median
Well-functioning support function (day-to-day operations - incident handling via service desk)	15	70
User-friendliness	20	70
Professional training in IT solutions (applications and systems)	10	50
Prompt fulfillment of change request (extraordinary activities - problem change)	7.5	55
Adequate portfolio of solutions to perform my job (applications and systems)	17.5	72.5
Proactivity in supporting business innovation (responsive towards supporting the business innovative needs of the organization - i.e. supporting the introduction of new ideas, workflows, methodologies, IT-related services or IT-related products)	10	40
Ability to execute projects (right content, right time; right quality; IT's supporting capabilities)	5	65
Adequate IT security	5	75

* The value attributes are based on best practice from the interview with Respondent 3, with the exception of value attribute "Ability to execute projects" which was developed in collaboration with Respondent 1.
**All respondents did not answer each value attribute due to ignorance.

Table 2. End-user interviews. End-user experience of IT services from a value attribute perspective

In general, each end-user's perception of the provided IT services varies (see *Appendix 2*) Still, the following trends can be identified as a result of the structured part of the interview conducted by us: end-users seem relatively satisfied with the most important attributes, User-friendliness, Well-functioning support function and Adequate portfolio of solutions. Although it is of relatively low importance, users rank "IT security" and "Ability to execute projects" as satisfactory. The attributes considered of medium importance - "Professional training in IT", "Prompt fulfilment of change request" and "Proactivity in supporting business innovation" - are interestingly considered to be neither very unsatisfying nor very satisfying. During the semi-structured part of the interview, some respondents explained their point of view, for instance claiming that without a suitable portfolio of applications, the other attributes are irrelevant (Respondent 16), that user-friendliness is crucial for not holding up the daily work (Respondent 9 and 1) and that proactive support of business innovation is very important in the business operations, in terms of quickly change to and being flexible to the business' needs (Respondent 7). Also, consistent user-friendliness of applications - recognizable-after-

change as well as easy to understand logic and HMI - is essential to facilitate efficient thought-to-computer process (Respondent 5, 7).

During our end-user interviews, some users (Respondent 13, 5, 12, 15, 5) express that they are generally satisfied with IT as a **well-functioning support functioning,** particularly Service Desk: the service contacts are helpful and fulfills their needs and expectations. Nevertheless, since Service Desk has been outsourced to India, the quality of the first line service has decreased (Respondent 11, 5, 14, 15, 7) in terms of IT competence and knowledge of the business (Respondent 5, 15, 11, 7), language difficulties (Respondent 7, 10) and longer waiting times (Respondent 15). It is often hard for the service providers to comprehend the problem and thereby support the user resulting in the end user being passed on from support contact to support contact (Respondent 5, 11, 14, 15), even though they are getting better and better (Respondent 5). However, the users are satisfied with the second-line support of local technicians (Respondent 5, 15, 10, 14, 7): *"I think it [the service] has deteriorated - on the other hand, if you get hold of the right person it works really well. So sometimes it's good and sometimes it's a pain."* (Respondent 11). Additionally, some respondents complained about the intranet and the reliability of specific applications (Respondent 11, 12).
Regarding **user-friendliness**, many end-users express dissatisfaction (Respondent 6, 7, 8, 11, 5, 15, 7). Some comment on the lack of user-friendliness of the intranet (Respondent 11), or in specific tools such as the lack of intuitive understanding and logic connections (Respondent 5)
Another issues addressed is that the amount of passwords required to perform daily work which negatively affects the user-friendliness (Respondent 8, 15). Respondent 15 claims that user-friendliness is higher in externally developed and standardized programs that are not flexible enough to meet the performance requirements, while firm-developed programs tend to be less user-friendly but higher in performance. Firm-developed applications are not logical and reliable (Respondent 1). There are also many old, user-hostile programs, developed in the 1980s, still in use (Respondent 15, 6, 7). Furthermore, Respondent 7 expresses that IT does not consider user-friendliness and improved HMI experience when purchasing new applications.

About **professional training**, Respondent 7 states that the less user-friendly and problematic the application is to use, the more IT education is necessary to achieve effective use. Furthermore, professional IT training is unsatisfactory (Respondent 15, 5, 9, 6): the quality of the training is inconsistent (Respondent 15) - the quality of training in specific firm-developed applications is low (Respondent 6), education needs to provide deeper knowledge in programming language as well as in generally used applications such as Microsoft Office (Respondent 5) and Sharepoint (Respondent 9). In contrast, some users experienced that the training in for example Excel was satisfactory (Respondent 9)

There were no comments during the interviews directly linked to **Prompt fulfillment of change request** but there were many comments about the **portfolio of applications.** End-users of supporting applications such as Outlook, Excel and Word are content with the service provided (Respondent 7, 8, 11, 1, 13). Regarding TeamCenter, some users like it (Respondent

13) and others dislike it (Respondent 15). Furthermore, some users are satisfied with the all or the majority of the available applications (Respondent 6, 8, 11, 14, 9, 13, 5, 7, 9) while some simultaneously express discontent with certain applications (Respondent 5, 7, 6, 15). One dissatisfied respondent (15) at Research & Development remarks that there are many overlapping systems with similar capabilities or identical but missing information: *"Couldn't you [IT] develop the old systems or remove the old system and implement a better system that can handle everything? [...] Often, we have to report the same thing in different system: this is a waste of time."*. Another respondent (12) at Purchase & Manufacturing identifies a need for additional applications: foremost they use common Excel-documents instead of an application with alert/follow up-functionality about price changes, forecasts and target follow-up. Additionally, the applications used are not synchronized, which means manual transfer and processing of information between applications: *"[...] I think it is totally crazy we don't have a system for stuff that is this important, instead we use locked Excel-files unfortunately [...] which I think is not good at all."*. In contrast, the HR employee (Respondent 14) expresses that although that integrating solutions such as Sharepoint exists, the common information storing processes of individuals and business areas differs which results in issues with project planning and document management.

Respondent 5, 6 and 7 claim that the satisfaction level varies between different types of applications. The central and standardized applications are generally disliked due to price and lack of flexibility to the business' needs (Respondent 7). Similarly, Respondent 5 highly appreciate an application that is more specific to R&D due to it is possible to adapt to the current needs and the fact that they can perform this change themselves. Respondent 6 additionally explains that the application portfolio in general supports him in his daily work even though there are a few exceptions of firm-developed "hopeless", really old, still not changed applications from the 1980s.

On the one hand, according to Respondent 14 from HR, the **IT support regarding innovation** is satisfactory and he sees that the IT function strives towards proactively support high innovation in the business. From Respondent 9's perspective at R&D, IT is good at driving IT-projects, both in terms of the content of the assignment and keeping within the budget. On the other hand, Respondent 7 and 5 from R&D, declare that they are dissatisfied with IT proactive approach to innovation: IT lacks the necessary flexibility and quick responsiveness to changes demanded by the business (Respondent 7). Instead, R&D has to drive their own IT innovation process in collaboration with external IT companies and with minimal support of IT and (Respondent 5): *"I'm not sure if IT should be involved: they are a much more inert organization that does not engage in these sort of things, so it's probably best that they let well enough alone. If they had been a quickly responsive organization that can support software development - sure - but they aren't. So I would like to praise the company that we have engaged that makes a really, really good job."*. Other R&D respondents (10 and 15) complain about not always getting access to new interesting applications that are considered too expensive and would not engage enough users to maximize its utility.

During the interviews, 4 out of 12 end-users expressed that **IT projects** were not relevant to their day-to-day work (Respondent 4, 5, 8 and 10). However, of those users in contact with IT projects, many respondents express content with IT's ability to execute projects (Respondent 15, 11, 9) with the right content and without exceeding budget (Respondent 9). Respondent 15, R&D, agrees that IT provides IT project support but thinks that Group IT has a more administrative role and that R&D themselves are responsible for buying and developing the necessary tools; they are more dependent on internal support from within their own business area. Because of the organizational nature of Group IT, could support the development of general programs such as Excel but IT should not be too involved in firm-developed IT projects that require flexibility and innovative skills (Respondent 15 and 5). Similarly, Respondent 7 at R&D states that Group IT has supported firm-developed applications in form of servers and Service Desk but has had limited participation in the process. However, when IT is extensively involved in projects, these tend to be large, centralized, inflexible and have a large budget: the execution of these types of projects tends to stretch over a long period of time, progress is very slow and are resulting in poor quality. Respondent 5, R&D, concludes that IT projects are usually run without the involvement of Group IT.

One fourth of the interviewees didn't come in contact with **IT security** in their daily work. External IT security is important to the business but internal IT security is currently counterproductive since it limits employees from performing their job in an optimal way, due to information access limitations and time spent on experimenting on how to get around it (Respondent 7). In addition, Respondent 15 agrees that IT security is important but internal security is too high, demonstrated by 20 different passwords that you have to, first, remember and then, use multiple times during the day. Only one respondent (14) expressed any specific knowledge about the current level of external IT-security by stating that Group IT has high ambitions. In general, many respondents had difficulty in appreciating the status of IT security (Respondent 5, 9, 11, 12) because to assess the IT security, a very specific knowledge in that field is required (Respondent 5): *"It [IT-security] feels like a fundamental business quality, I expect that someone has thought about it, so that I as a user don't have to think about it" (Respondent 9).*

To conclude, the interviewees express both content and discontent with the IT services provided. Also, there are specific value attributes that show that employees in different roles and business areas have different IT needs and require various applications and competences to successfully perform their job. Specifically, Attribute User-friendliness, Proactivity in supporting business innovation, Ability to execute IT projects and Adequate IT security highlight the need for investigating the concept of user profiles.

In general, end-users employ their computers and telephones (Respondent 9 and 12) and the service of Service Desk (Respondent 4, 7, 15). Furthermore, the end-users describe that they use general applications with low business area specificity such as Microsoft Office tools (Respondent 7, 6, 10, 5, 13, 12, 16 and 9) , e-mail applications (Respondent 4, 8, 11, 7, 6, 5, 13, 12, 14, 9 and 16), TeamCenter (Respondent 8, 7, 6, 13), Lync (Respondent 15, 14, 11), Sharepoint (Respondent 8, 11, 14, 6, 10), intranet (Respondent 8), time-report application

(Respondent 11), a travel-booking application (Respondent 11), Team Minutes, Billboard and SAP-based applications (Respondent 9). Respondent 10 describes himself as a typical user of IT services: *"[...] no special applications, more Excel, PowerPoint, Outlook, Sharepoint and everything else. Then, we have a few firm-unique applications like CAD-information and documentation management. [...] So I don't use a lot of stuff that others don't use. It is nothing special, so I guess I pretty representative.".*

A noticeable trend within applications is that there are specific applications for specific business areas or even sub-divisions within business areas. For example, Customer Service uses applications for inventory management (Respondent 4); Purchase has specific needs of purchase management applications (Respondent 12); multiple business areas use applications for change requests (Respondent 13 and 12); R&D employees describe working with planning tools (Respondent 15), programming applications (Respondent 5) and requirement database management applications (Respondent 5, 6, 7, 8, 11). An application that manages product specification information is also used at multiple business areas (Respondent 12, Purchase, and 15, R&D). Respondent 15, R&D, describes using several different types of analytical software applications. HR has HR-specific applications such as applications for benefit management, time reporting, payroll and pension as well as an application for managing business travel (Respondent 14). Respondent 14 also points out the necessity of IT security in the HR applications due to management of sensitive personal data about the employees - he is also the respondent that ranked IT security the highest among the end-user (*Appendix 2*).

The users also **varies** in their connections to different attributes, both among business areas and within business areas. Respondent 16, at the business area Quality, explains that he only uses Microsoft Office in his work. He also claims that he is mainly concerned with the attributes "Well-functioning support function", "User-friendliness" and "Adequate portfolio of solutions". This reflection corresponds with being the value attributes that all interviewees felt knowledgeable enough to grade according to level of satisfaction (*Appendix 2*). In contrast, Respondent 1 and 6 describe R&D as being IT intensive and more inclined to changes. This is also exemplified by the fact that R&D is the business area which has by far the largest IT-project budget (Respondent 1). Respondent 7 - an R&D employee with high **innovative needs** - explains: *"Proactive in supporting business innovation, yes, that is something that we constantly promote and by this we really mean flexibility [...] and is the critical factor, because we know with certainty that we can't predict the future. We are certain of that. So that's why you can't decide what the future will look like, instead you must always leave room for change.".* However, the end-user interviews reveal that there are also variations within R&D, there are users with specific IT innovation requirements (e.g. Respondent 5, 6, 7, 8, 15) but also general R&D users with more basic IT needs (e.g. Respondent 10, 9, 13, 11) . For example, R&D employee Respondent 10, which previously described himself as a typical user, states that he isn't touched by all value attributes on a daily basis, including IT innovation.

This perception is also partially confirmed by data from EUS. As *Diagram 2* shows, there are different levels of satisfaction with ITs ability to capture future needs of the case company.

Average of "IT is good at capturing future needs of the case company" *
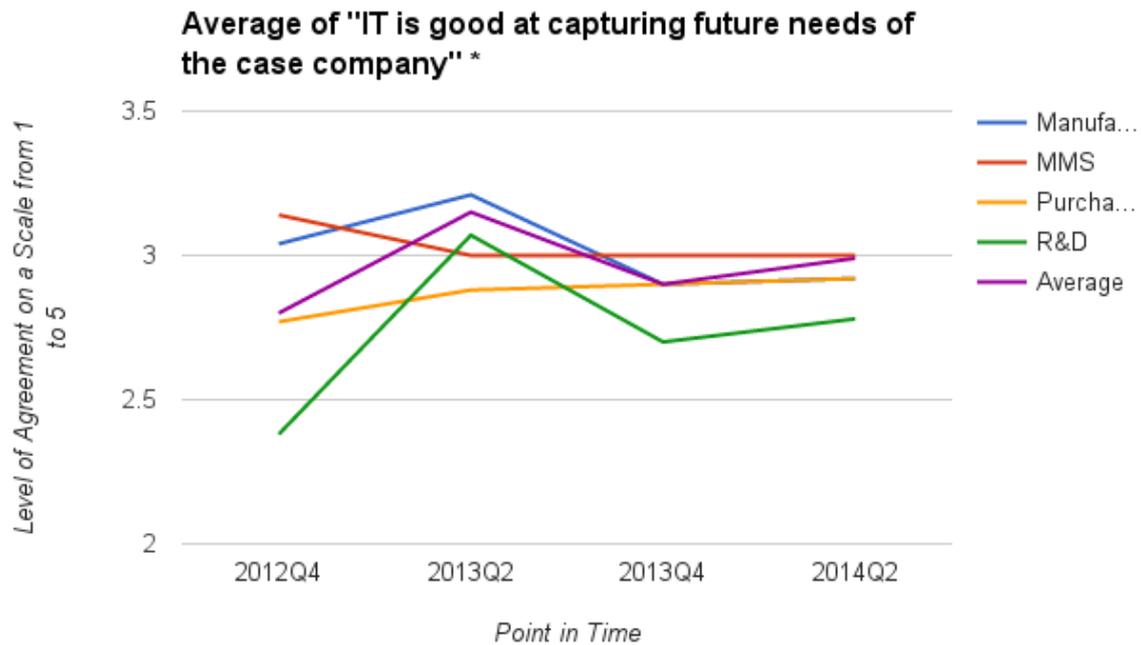
* 2013Q4 and onwards, the business areas Purchase and Manufacturing merged to Purchase & Manufacturing

Diagram 2. End-User Survey, 2012-2014. Average of respondents' experience of "IT is good at capturing future needs of the case company".

The business areas represented in *Diagram 2*, Manufacturing, Purchasing, MSS and R&D, were chosen due to the fact that they are the largest business areas and constitute the majority of the employees in the case company (Respondent 1); the other business areas had too few respondents to be representative. However, all business areas are included in the "Average" category in order to portray a mean satisfaction level of the whole company. The diagram shows that compared to the other large business areas, R&D is general less satisfied with Group IT's ability to support their future IT needs. R&D is also constantly below company average in this aspect. This can be interpreted as R&D having higher demands on the innovation capabilities of Group IT than other large business areas. As previously explained, this effect is counterbalanced by the more basic needs of some R&D end-users, which can explain why R&D satisfaction level in *Diagram 2* does not differ extremely from the company average.

To summarize the end-user experience of IT services, data from EUS and our own current end-user interviews provide a cohesive picture of the context and the challenges facing Group IT service satisfaction levels. The interviews also validated that previous problem expressed in the EUS still occur as well as provided insight into the reason behind the responses. Furthermore, based on internal documents and conducted interviews, one can conclude that end-users have varying needs of IT services because of different utility of the services, different more or less IT related roles in the organization and the association of business areas. There are individual variances and trends between and within different business areas.

However, common themes are still identified, raising the question of the necessity to adapt the survey to suit the respondent's level of IT needs.

5.2.4 Evaluation of basic approach components - value attributes and interview format

During the interviews and the workshop, employees commented on the irrelevance of specific attributes for their position and daily work. This was also reflected in the structured part of the end-user interview which resulted in *Table 2*. End-users were given the option to leave a blank space if they felt that the attribute was not applicable to their daily work or they did not know the answer. This resulted in many attributes with several "not-applicable" responses: 4 out of 12 were left the attributes "Adequate IT-security", "Ability to execute project" and "Prompt fulfilment of change request blank"; "Proactivity in supporting business innovation" was given 5 out of 12 blank responses; and 2 out of 12 failed to assess their satisfaction with "Professional training in IT-solution".

The eight presented value attributes cover all aspects important to IT in the case company (Respondent 1, 6, 8, 15, 12, 13, 14). Some respondents state that all attributes are relevant to their daily work (Respondent 15, 14). However, many interviewees mention one or several attributes that are of less relevance to them, even though they are important to the overall business: "Proactivity in supporting business innovation" (Respondent 16, 10), "Adequate IT-security" (Respondent 16, 5, 9, 10, 11, 12), "Proactivity in business innovation" (Respondent 4, 8, 10, 11, 13), "Ability to execute projects" (Respondent 1, 4, 5, 8, 10), "Prompt fulfilment of change request" (Respondent 4, 8, 11, 12, 13), and "Professional training in IT-solutions" (Respondent 4, 6, 8, 11). This finding is confirmed by Respondent 1 and 16 during the workshop: *"the attributes are relevant but there might be attributes that are irrelevant for all end-users" (Respondent 1).* Nevertheless, just like previous highlighted, there are differences both between and within business areas. These variations indicate a need to tailor the survey questions to fit the specific-user profiles related to their connection to the value attributes (Respondent 1 and 16).

One suggestion was to include a series of introductory questions in order to determine the user's profile and hence, what value attributes of relevance to that individual. The question could for instance be about what business area the end-users work for, job title, area of responsibility and if they are involved in IT-project and if they use complex applications (Respondent 1). Many users commented that they are not competent enough to assess the IT security (Respondent 11, 8, 5, 13). This can be explained by the fact that the knowledge required to assess IT security is very specific (Respondent 5). Common users do not notice lacking IT-security until it is really poor (Respondent 5) and hence, it is hard to them to assess the level of IT security. IT security is just supposed to work and not being noticed (Respondent 9 and 11). It raises the question if the value attribute "Adequate IT-security" should be eliminated. Moreover, in alignment with *Table 2* (5.2.4 End-user experience of IT services), Respondent 16 comments that there are three attributes that are of relevance to all

users, namely "Well-functioning support function", "User-friendliness" and "Adequate portfolio of solutions". All in all, the key is to find a balance between inclusion and exclusion.

End-users also had comments about the format of the value attributes, both regarding wording and specificity of the value attributes as well as improved instructions for filling out the level of importance and satisfaction during Phase 1 (Value attributes) in the Research Model, please see *Figure 8* below (5.3.2 The Research Model). The following suggestions were received.

Regarding wording and specificity, Respondent 1 suggests improving the value attributes by clarifying the wording and specifying the definitions of the value attributes to limit the possibility of alternative interpretations than intended. This is supported by the comments by Respondent 8 and 4. On a general level, Respondent 11 requests a clear definition of "IT" as well as examples of the eight pre-defined value attributes. The respondents also remarked on specific value attributes. Firstly, there were many questions regarding what could be attributed to Attribute 1, "Well-functioning support function", for example change of desktop (Respondent 11), operational reliability (Respondent 1, 13 & 16), intranet (Respondent 11). Moreover, Respondent 10 complained that it was difficult to differentiate between "Well-functioning support function" and "Prompt fulfillment of change request (extraordinary activities - problem change)". Respondent 1 states that "Well-functioning support function (day-to-day operations - incident handling via service desk)" is a very broad definition, while Respondent 11 wants the attribute to become more disaggregated.

Secondly, it was unclear what unit is supposed to be evaluated in terms of "User-friendliness" (Respondent 10). Perhaps "User-friendliness" should be divided into "Information Quality" and "Logical and Intuitive Orientation" (Respondent 5). Thirdly, it was questioned who would receive the "Professional training in IT solutions (applications and systems)" (Respondent 9 and 10) and what type of training it included (Respondent 10 & 12). Fourthly, what is meant by "Ability to execute projects (right content, right time; right quality; IT's supporting capabilities)" (Respondent 11 & 12). Fifthly, the definition of "Proactivity in supporting business innovation (responsive towards supporting the business innovative needs of the organization - i.e. supporting the introduction of new ideas, workflows, methodologies, IT-related services or IT-related products)" is unclear (Respondent 5).

Regarding improved instructions for filling out the level of importance and satisfaction, many respondents had difficulties comprehending what approach they should have when evaluating the importance of the value attributes: the respondent's own perspective or colleagues perspective (Respondent 10,11, 14); and existing or desired situation (Respondent 9 and 12). About the point distribution system relating to importance, the system needed further explaining (Respondent 6, 9), also it was inquired whether it was possible to use the same number twice (Respondent 15). The method of leaving a blank space had to be explained multiple times (Respondents 9 and 12).

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During the semi-structured follow-up questions during the interview, all respondents tended to interpret the question "What are you spontaneous thoughts regarding the value attributes?" differently. Consequently, it can be argued that the question should be disaggregated, for example; "What is your opinion about the current state of the services provided by Group IT?" and "What are your spontaneous thoughts about the list of attributes in terms of relevance and conclusiveness?".

During the interviews and the workshop, we also received comments about the set-up of attributes as well as the connections between cost, activities and value attributes. One comment focused on the necessity of randomizing the order of the value attributes to prevent bias (Respondent 16). Moreover, some respondent claimed that it was difficult to provide a general overall picture of the satisfaction level of the value attribute "Adequate portfolio of solutions to perform my job". It was claimed that the average satisfaction does not display a representative picture, due to the ranging satisfaction level among the different applications. To counteract the bluntness of the measurement, it was suggested that individual applications should be graded separately. (Respondent 5, 6, 7). Another suggestion was to give the respondent the opportunity to rank the applications of their choice, for example the ones that the users are the most and/or the least satisfied with (Respondent 7). An additional proposal was to categorize the applications into three categories - central, local and individual applications - and assess each category individually according with the value attributes (Respondent 7). During the workshop, another discussion evolved around the connection between cost and value attributes, specifically how to link business activities to the intangible attributes "User-friendliness" and "Proactivity in supporting business innovation". It was thought that "User-friendliness" would be most closely connected to projects through good specification of requirements and creating intuitive and logical HMI. Also, the latter attribute was thought to be tied to a well-functioning Business Engagement subdivision within Group IT, specifically the Innovation Office.

To conclude, there are some areas of improvement to clarify the value attributes, the method of filling out the form and general improvements. It is noteworthy that many respondents experienced that they do not come into contact with all attributes, which raises the question of segmenting the users according to user-profiles. It was discussed how individual user-profiles could be developed - it was implied that it was unsuitable to base user-profiles segmentation solely on the end-users' business areas. Moreover, definition and wording of particular attributes had to improve, especially "Well-functioning support function" and "User-friendliness" and the instructions on how to complete the structured form during Phase 1 of Value attributes (*Figure 7,* below). Additionally, the critique of the bluntness of the measurement was also addressed. The data from the end-user interviews and the workshop gives an opportunity to perfect the relevance of the Research Model, making sure that to fits similar companies: improved information quality assists managers' decision-making.

5.3 The developed VCM models to fit a support function context

This section aims at describing the Theoretical Model and the Research Model we have developed. The Theoretical Model derives from the notion of profit potential (McNair, 1994) and the Value creation model introduced by McNair et al. (2001a). The Research Model is derived from McNair et al (2001a) and, based on the empirical data from the previous sections, adjusted to the case company context.

This thesis is a pre-study aiming to investigate the value-perspective of SCM by studying the VCM model's applicability and providing material for future operationalization of VCM. More specifically, it aims to provide the necessary material from conducting a large-scale survey of customer value attributes in the case company. In alignment with the established design criteria from the literature study (section 5.1), the end-user interviews and EUS were used to evaluate the appropriateness of the Research Model and the Theoretical Model in terms of respondents' understanding the format and the Models applicability to the industry and to a support function. Possible additions or eliminations of element in the Models were also addressed. Among else, value attributes which are beyond the control of Group IT were excluded since the performance of the attributes cannot be effected by Group IT. Also, the reciprocal relationships between the value attributes were studied, which are basic components in the Model that enable linking costs and customer satisfaction. During the development of the Research Model and the Theoretical Model, one objective has been to make the Models comprehensible and adaptable to a real-life context. The suitable changes to the original VCM, resulting in the Research Model and the Theoretical Model, are discussed in more detail below.

5.3.1 The Theoretical Model

After conducting the Literature study, a need was identified to develop a Value creation model specifically adapted to the need of a support function. The developed Theoretical Model aims to illustrate the specific linkages between the internal cost structure of a support function and customer-defined value. The Model includes almost the same fundamental concepts as used in VCM; concepts introduced by McNair (1994) and further developed by McNair, Polutnik & Silvi (2001a,b) and McNair, Polutnik & Silvi (2006). McNair et al. (2006) define customer value as expressed through both concrete and subtle features (value attributes) of a product or service. In our model, "value" is defined as features that the customers understand and desires to perform their job. Since the business' employees are the customers of the support function's services, the customer-defined value is based on their subjective perception of value.

There is one difference between the Theoretical Model and VCM: in the Theoretical Model, the outer boundary "price barrier" is replaced by "budget". A support function rarely has any revenue (or income) but is measured and controlled through costs: it is the budget that usually limits the support function's actions on the organization's internal market. (Lanen et al., 2011:448) Hence, in our model the focus lies on maximizing customer satisfaction and value

for money based on the available budget. This objective is achieved by defining and understanding the relationship between total costs, waste, business-value added costs and customer-defined value-added costs. By reducing waste and increasing the percentage of value-added costs, available resources may be allocated to areas that generate customer value directly and hence the effective and efficient use of available resources that satisfy customers' needs and preferences should increase. The model also aims at improving priorities in resources allocation and improving management control of support functions. The model should support manager's' decision-making process about resource priorities and management control through the introduction of an increased customer focus.

As displayed in *Figure 7* below (5.3.2 The components of the Theoretical Model), the available *budget* is seen as the outer boundary of what a support function can offer in-house customers in terms of services. The total budget of the support function can be linked to activities which in turn are assumed to be related to the services' value attributes. Hence, costs can be directly connected to the corresponding value attribute. The costs related to each value attribute can also be divided into a specific cost structure: value-added core costs, business-value added costs and waste. In alignment with McNair et al. (2001a; 2006) and McNair (1994), the model suggests that only **value-added costs** directly contribute to end-user value. **Business value added-costs (BVA)** are defined as current and future non-value added as well as non-core related costs which are required in the organization in order to perform the customer value-added activities but do not directly result in perceived end-user value. **Waste** is those costs that provide neither direct nor indirect value to customers or the support function.

Another important concept is the **value potential**. The value potential is the value of the available budget less the value-added costs (value-added costs and business-value added costs) and thus equals waste. Eliminating waste is thereby a mean for exploiting the value potential. The **value multiplier** is defined as the proportion between total costs and value-added costs. This relative relationship illustrates how much of the total costs are aimed directly at end-user value creation for each unit of value added-cost. (McNair, 1994; McNair et al. 2001a; 2006) Consequently, the model's objective is to highlight the value potential and thus minimize waste and maximize end-users perceived value with the available budget. The purpose of this study is to add to value-based strategic cost management through the addition of a support function perspective by developing an adapted Value Creation Model. Thereby, we hope to increase the focus on customer value in management control and improve resource prioritization, based on customer preferences about the provided services, through this increased focus on perceived customer value of support functions.
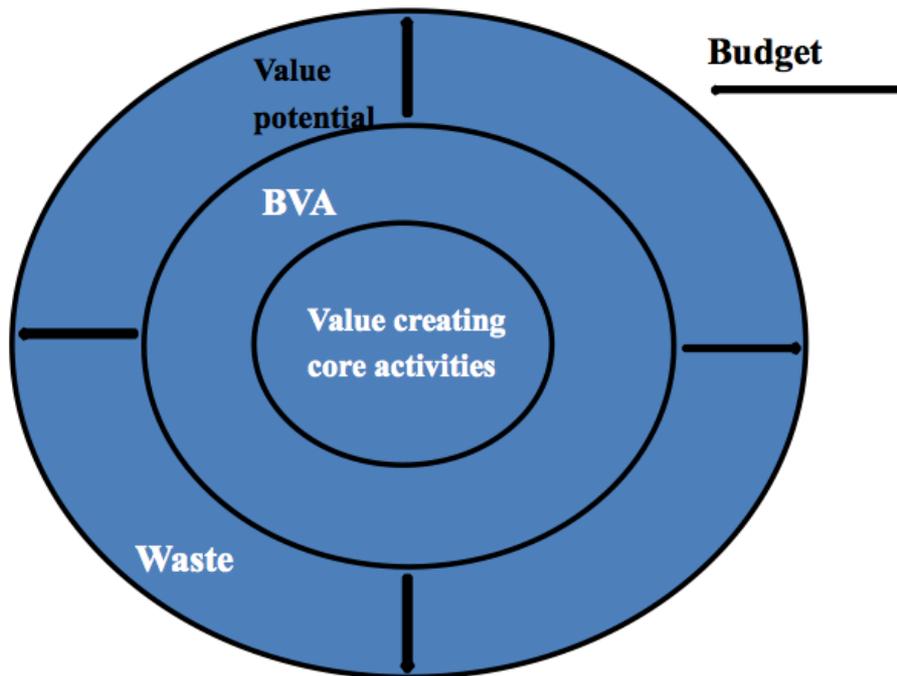
Figure 7. The Theoretical Model

5.3.2 The Research Model

As *Figure 8* below (5.3.2 The Research Model) shows, the Research Model describes how the Theoretical Model should be operationalized to extract information about which activities to prioritize to achieve maximum resource effectiveness and thereby support managerial decision-making. The Research Model described below includes three main steps: appraising value attributes, performing cost analysis and calculating value multipliers. Each of these steps is described in a separate subsection below.
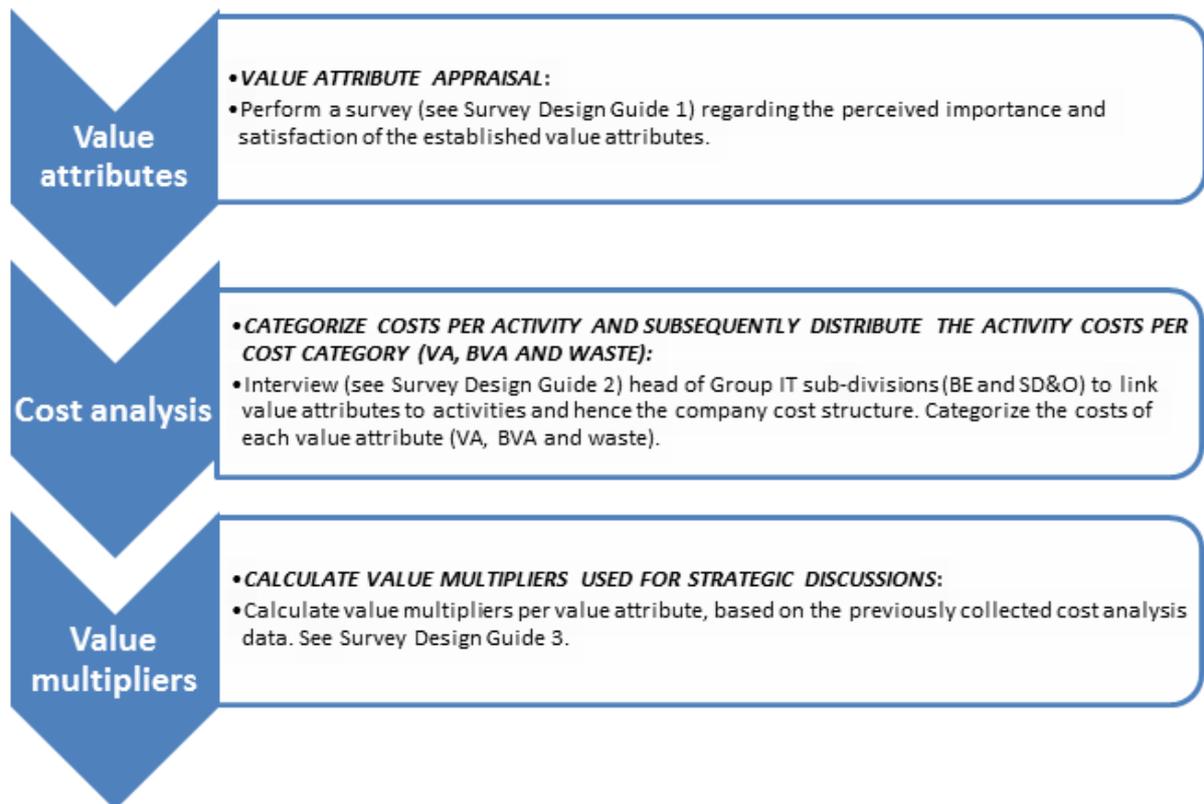
Figure 8. The Research Model

The first step in the Research Model (Figure 8 above) is Value Attributes. The following section aims to describe the process of how we arrived at the final list of value attributes we recommend for further research in the case company.

To be clear about what field you as an interviewer want the respondent to answer question about, defining Information Technology (IT) is helpful. In our case, IT means any type of technological device - physical or intangible - to manage information. Furthermore, in alignment with the idea of McNair et al (2001a), Value Attributes are defined as a service or a product characteristic, or overall effect, which the end-user recognizes, understands, desires and that the case company can afford, and hence creates value for the end-user. The final list of six case company-adjusted value attributes - suitable for future inquiries - is presented in *Table 3* directly below.

FINAL VALUE ATTRIBUTES		
No.	Value attribute	Examples (not exhaustive)
1	Group IT provides reliable and competent services in day-to-day operations	Service Desk provides quick, high-quality incident handling; quick replacement of damaged IT equipment; adequate hardware and internet connection; intranet; and high uptime of systems and applications, self-instructions of how to use applications.
2	User-friendliness of applications and systems	The display format is easy to understand; and logical, effective and intuitive to navigate
3	Prompt fulfillment of change request	Bug-fixing; system enhancement request (update); and new operating systems/applications.
4	Adequate portfolio of applications and system to perform my job	End-users have the required applications for current and future needs in terms of functionality (what it can perform and range of capability).
5	Proactivity in supporting business innovation	IT is responsive and flexible in supporting the business' innovative needs - i.e. established workflows and methodologies are adequate to support the introduction of new ideas.
6	Group IT's ability to execute IT-projects (with the right content, to the right quality, at right time; IT's supporting capabilities)	Software development - merging database or simple installations; hardware installations or removing old servers; network upgrades; business analytics and data management projects; and implementing IT services.

Table 3. The final list of value attributes for future research.

Based on best-practice value attributes and the interview respondents' comments, the value attributes have been adjusted and clarified to fit the case company context even better. Examples have also been provided to ease the end-user's understanding of the value attributes (*Table 3* above). However, during the interviews it became evident that the absolute majority of respondents in various business areas had very little knowledge about IT security and most respondents had great difficulties in estimating their perceived satisfaction with the value attribute "Adequate IT security". It can further be argued that the level of IT security is not related to giving the business a competitive advantage in the manufacturing industry, which implies that IT security is more of a hygiene factor than a determinant for success. The end-user interviews shows that a diminutive proportion of the respondents in other business areas than IT are competent enough to assess the status of IT security, especially since these value attributes are targeting all business areas *but* Group IT. The survey is not self-assessing but investigates the relationship between Group IT and the other business areas. Therefore, we have decided to eliminate IT security as a value attribute.

Additionally, we have chosen to eliminate the value attribute "Professional training in IT-solutions" based on information about Group IT's supposed activities. Even though HR is responsible for the education once they have been contacted by a business area, the budget for professional training in IT-solutions rests with each individual business area. Only sporadically is the training performed by Group IT - usually external parties are contracted (BPS 2013Q4, Respondent 1). This means that Group IT is not directly responsible for the training and hence has no direct influence on the education in applications that each business area commissions. Therefore, using the logic of Cugini et al (2007), it would be unsuitable to measure Group IT's performance regarding "Professional training in IT solutions". This is also supported by Professor Polutnik (Respondent 2), who claims that if an activity is not performed by the unit under study, it should not be included among the value attributes in any kind of VCM.

As previously discussed, there are different user-profiles within the case company. However, the user-profiles should not be categorized solely based on business area, since there are individual variances within each business area. For example, our end-user interviews revealed various user needs within R&D. However, in order to perform the VCM model it is crucial that all respondent weight the entire list of value attributes in relation to importance. Therefore, no prior question-segmentation will be adopted. In the first stage of applying VCM to the case company, we recommend only to create an average customer value profile and *not* to segment the answers prior to the Cost Analysis-step.

During the first step of the research process - Value Attribute Appraisal - we recommend performing a survey to assess the end-users' opinion about the IT services' importance and satisfaction. In general, the point is to collect data from a larger number of end-users through a survey in order to create an average end-user profile used in Step 3, Value Multiplies. First, present the end-users with the pre-defined list of value attributes (*Table 4* below) and ask the end-user to distribute totally 100 points across the six Value Attributes, based on their perception of the Value Attributes' importance for the respondents' ability to perform their daily work. Based on the end-user interviews, we discovered that is important to point out that it was the respondent's own perspective that was important, not the general point-of-view, and they should consider the current situation, not the desired situation. The same weighting-number is allowed multiple times.

"How important are these value attributes for you when you perform your daily work?".
Please distribute a total of 100 points - integers only - among the value attributes to indicate *your* perceived relative importance. Zero points equals 'not important'. The same point is allowed multiple times.

Value attribute	Points
Group IT provides reliable and competent services in day-to-day operations	**20**
User-friendliness of applications and systems	10
Prompt fulfillment of change request	10
Adequate portfolio of applications and system to perform my job	20
Proactivity in supporting business innovation	20
Group IT's ability to execute IT-projects (with the right content, to the right quality, at right time; IT's supporting capabilities)	20
Total	**100**

Table 4. Example of visual interface of survey for estimating perceived importance

A similar interface can be used in the second section of the survey, "Satisfaction":

"On a scale from 0 to 100, where 0 equals 'very dissatisfied' and 100 equals 'very satisfied', how satisfied are you with each value attribute?"
Please indicate *your* average satisfaction level of each value attribute. If a value attribute is not applicable to your function or you don't know your satisfaction level of a value attribute, please tick the N/A box for that specific value attribute.

Value attribute	Points	N/A
Group IT provides reliable and competent services in day-to-day operations	72	
User-friendliness of applications and systems	35	
Prompt fulfillment of change request		X
Adequate portfolio of applications and system to perform my job	75	
Proactivity in supporting business innovation		X
Group IT's ability to execute IT-projects (with the right content, to the right quality, at right time; IT's supporting capabilities)	60	

Table 5. Example of visual interface of survey for estimating perceived satisfaction

In the Satisfaction section, there should also be an alternative for "do not know" or "it is not applicable" since there are end-users that do not come in contact with all Value Attributes. Present the Importance factor and the Satisfaction factor separately, since it resulted in confusion the end-user presenting them together. Moreover, to minimize bias in the survey, the order of the Value Attributes should be randomized for each respondent - the same order for both Importance and Satisfaction reduces confusion. Additionally, outside the scope of VCM, we would recommend additional questions relating to the attribute (4) "Adequate portfolio of solutions" (*Table 4* and *Table 5* directly above). Based on the end-user interviews and EUS, it was evident that only using an average estimation of satisfaction of applications was insufficient in order to provide Group IT with actionable information. Therefore, we recommend asking respondents about information regarding their satisfaction of specific applications, for example asking them to state the names of the applications they use the most and subsequently asking them to comment or grade their satisfaction of each individual application. This could counteract the perceived bluntness of only grading the average satisfaction of the entire value attribute "Adequate portfolio of solutions".

After the survey has been completed, one or several **average value attribute profiles** will be created, based on the mean of importance and the mean of satisfaction for each value attribute. If user profile segmentation is deemed suitable or necessary, several average value attribute profile will need to be created based on the survey data. Subsequently, the users' importance profile or profiles will be used to create **Budget proxies** for distribution of total budget, see *Table 6* directly below. The Average satisfaction profile is in a later Step.

Value Attribute	Customer Weight = average of Importance	Budget Proxy, percent (SEK)	Total budget: XXXXXXX	Average customer satisfaction
1. Group IT provides reliable and competent services in day-to-day operations		Revenue Proxy = (Customer weight*total budget)/100		
2. User-friendliness of applications and systems		Revenue Proxy = (Customer weight*total budget)/101		
3. Prompt fulfillment of change request		Revenue Proxy = (Customer weight*total budget)/102		
4. Adequate portfolio of applications and system to perform my jo		Revenue Proxy = (Customer weight*total budget)/103		
5. Adequate portfolio of applications and system to perform my jo		Revenue Proxy = (Customer weight*total budget)/104		
6. Group IT's ability to execute IT-projects (with the right content, to the right quality, at right time; IT's supporting capabilities		Revenue Proxy = (Customer weight*total budget)/105		

Table 6. How to calculate Budget Proxies per Value Attribute.

The second step in the Research Model (Figure 8 above) is Cost Analysis. After conducting the survey of end-users perceived importance and satisfaction of the suggested value attributes, a cost analysis should be performed to establishing the links between the average value attribute profile and activity costs. In other words, individual interviews (Respondent 2) with heads of Group IT's subdivisions provide insight in how to link value attributes to all Group IT activities and hence to company costs. In order to cover all the costs of all Group IT's internal service activities, interviews should be held with representatives from both BE and SD&O (IMS, AMS and DPS).

In order to prepare for the cost analysis interviews, it is crucial to thoroughly understand the tasks and the responsibilities of each unit to assess the range of possible activities. As Professor Polutnik points out, the most important factor is to be able to accurately estimate the cost of labour by costing the activities of the labour. To better do this, she recommends using job descriptions of the most common job titles which will create an understanding of what activities occur in the organization. Process maps should also improve the comprehension of activity lines. Additionally, Professor Polutnik comments that using ABC to cost activities is a crucial part of the VCM and that the works of Robert Kaplan gives great guidance.

When conducting a cost analysis-interview with a head of sub-division, the first step involves asking the interviewees to state all the activities within his or her function's responsibility and as well as each activity's total yearly budget. Secondly, the costs for each activity are to be labelled as "Value-adding", "Business-value-adding" or "Other" (Waste). Professor Polutnik again points out the advantage of using job descriptions and process maps since they explicitly state what the employees should be doing and deviations indicate situations which might be labelled as waste. Additionally, Professor Polutnik state that using the word "Other" is preferable instead of "Waste" since the latter has a directly negative association which might result in defensive behaviour. *Table 7* (directly below) provides an example of activity categorization (left column) and cost structure analysis (the three middle columns), within the function AMS of the subdivision SD&O. The procedure has to be repeated for each function or sub-division (BE, AMS, IMS and DPS).

Activities	Value Added	Business Value Added	Other	TOTAL ACTIVITY BUDGET
(AMS) - TOTAL				
(AMS) - Activity 1 Application Management				
(AMS) - Activity 2 Second and third level support				
(AMS) - Activity 3 Daily incident and problem resolution				
(AMS) - Activity 4 Application/technology cycle plans				
(AMS) - Activity 5 Verified Service Level Offers (i.e. verify underlying OLA & Underpinning contract structure)				
(AMS) - Activity 6 Service Level fulfillment reporting				
(AMS) - Activity 7 Supplier performance evaluations				
(AMS) - Activity 8 AMS internal Methods, Processes and Tools				

Table 7. Example of Activity Categorization and Cost Structure Analysis

Thirdly, the interviewees are asked to distribute value-adding costs of each subdivision's activities according to his or her judgement of which activities are linked to what attributes. Subsequently, the interviewees should consider the cost structure (see the Theoretical Model) within each activity: "how many percent of each activity is related to what attribute?" (first part of the yellow box, *Table 8* below). Each percentage of Activity/Value attribute should be multiplied by the "Total value-adding costs of each Attribute" (yellow box) to get the Value-adding costs per activity and attribute. Linking the value attributes to this cost structure contained a considerable amount of judgement. The pink column in *Table 8* below "TOTAL value added costs per activity" is identical to the column "Value Added" in *Table 7* above.

Activities	Value attribute 1	Value attribute 2	Value attribute 3	Value attribute 4	Value attribute 5	Value attribute 6	TOTAL value adding cost per activity
(AMS) Activity 1	Value attribute cost = (Percent of activity 1 related to Attribute 1) * Total VA costs of Attribute 1	Value attribute cost = (Percent of activity 1 related to Attribute 2) * Total VA costs of Attribute 2	Value attribute cost = (Percent of activity 1 related to Attribute 3) * Total VA costs of Attribute 3	Value attribute cost = (Percent of activity 1 related to Attribute 4) * Total VA costs of Attribute 4	Value attribute cost = (Percent of activity 1 related to Attribute 5) * Total VA costs of Attribute 5	Value attribute cost = (Percent of activity 1 related to Attribute 6) * Total VA costs of Attrubte 6	Total VA cost attributed to Activity 1
(AMS) Activity 2							
(AMS) Activity 3							
(AMS) Activity 4							
(AMS) Activity 5							
(AMS) Activity 6							
(AMS) Activity 7							
(AMS) Activity 8							
TOTAL value added cost per Attribute	Total VA cost of Attribute 1	Total VA cost of Attribute 2	Total VA cost of Attribute 3	Total VA cost of Attribute 4	Total VA cost of Attribute 5	Total VA cost of Attribute 6	TOTAL VA COSTS of all Attributes and Activites

Table 8. Matching Value Added-costs to Value Attributes

The third step in the Research Model (Figure 8 above) is Value Multipliers. Calculating the Value Multipliers (*Table 9* below) is the final step in the process of directly linking costs with customer satisfaction, via average customer importance proxies and business activities.

Value Attributes	Budget Proxy (SEK) -per Attribut	Value-added costs (SEK) - per Attribute	Value Multiplier
1. Group IT provides reliable and competent services in day-to-day operations	0	Total VA cost of Attribute 1	Multipler = Revenue Proxy/Total VA cost of Attribute 1
2. User-friendliness of applications and systems	0	Total VA cost of Attribute 2	
3. Prompt fulfillment of change request	0	Total VA cost of Attribute 3	
4. Adequate portfolio of applications and system to perform my jo	0	Total VA cost of Attribute 4	
5. Adequate portfolio of applications and system to perform my jo	0	Total VA cost of Attribute 5	
6. Group IT's ability to execute IT-projects (with the right content, to the right quality, at right time; IT's supporting capabilities	0	Total VA cost of Attribute 6	

Table 9. Example of how to calculate Value Multipliers per Value Attribute.

By dividing the previously calculated "Budget Proxy" (green column, *Table 9*) with the "Total value-added cost per value attribute" (pink column, *Table 8*) value multipliers can be calculated. Subsequently, the multiplier relationships should be analyzed to determine areas of improvement. However, as McNair et al. (2001a) point out, it is important to compare the value multipliers with customer satisfaction data. In our case customer satisfaction data means the *average* end-user satisfaction profile (right yellowish column, *Table 6* further up). For example, a high multiplier combined with either low or high customer satisfaction (right yellowish column, *Table 6* further up) indicate different scenarios. According to McNair et al. (2001a), a high multiplier combined with high customer satisfaction usually indicate resource effectiveness in satisfying customer needs. Analyzing Value Multipliers is the first step in connecting efficiency and effectiveness of a support function. Ultimately, this information obtained from an adapted VCM can be used to support managers' decision-making about how to maximize customer satisfaction with the existing resources.

6 DISCUSSION, CONCLUSION AND FUTURE RESEARCH

This section will address the contributions from our study in relation to Strategic Cost Management, the Value Creation Model and support functions. Moreover, it will conclude our thesis findings as well as provide recommendations for future research.

6.1 Discussion

The result of the thesis adds to the development of a value perspective in SCM by developing an adapted Value Creation Model suitable for a support function. This was achieved by applying design criteria from a literature study of articles citing the original VCM article (McNair et al., 2001a) and through a case study by investigating internal documents and conducting interviews. Based on the results, a adapted Research Model and a Theoretical Model were developed which fits in a support function context. Additionally, value attributes were developed to fit the case company context as well as design criteria for conducting a large-scale Value Attribute Appraisal, guideline for performing a Cost Analysis and Calculating Value Multipliers.

The literature study showed that there is a limited amount of research applying VCM using McNair et al (2001a) even though many benefit from their work. However, no existing research looked upon VCM from a support function perspective. The literature study also revealed that VCM is easily adaptable to different contexts and that adaption is necessary. Hence, we had to construct our own model but the flexibility of VCM was facilitative. The articles in the literature study provided guidance when adapting VCM. In addition, the case study resulted in guidelines for adapted the VCM model to a support function context could look like, providing guidance and inspiration to future researchers conducting a similar study and managers thinking about operationalize VCM. If applied, the information provided by the Research Models and the Theoretical Model could potentially identify the current resource effectiveness as well as areas of improvement in the activities of a support function, activities that better contribute to satisfying customer needs. The aim is to directly link costs with customer satisfaction. Hence, if timely provided, this information could be of relevance and support in managers' decision-making process.

The results of the literature study are important due to the identified lack of applied research in this field implying a gap for future researchers to investigate. Research also showed that the VCM is possible to adapt to different contexts and would therefore be of interest to apply in new context. Furthermore, the case company support function, which was chosen due to its representativeness, provided the study with findings transferrable to similar contexts. The theoretical consequences of this pre-study will be foremost be future operationalization and evaluation of the presented developed Theoretical Model and Research Model. The findings from this study could give insights to researchers and practitioners thinking about implementing VCM regarding what an adapted VCM model can look like and how the customer-value perspective can add to SCM. Another possible consequence, highlighted by the findings, is that VCM's rare possibility of directly measuring a firm's current resource

effectiveness (McNair, 1994:43) could illuminate the resource effectiveness in a discretionary cost center. By comparing the current situation with the desired situation, managers' can make decisions about resource allocation for maximum resource effectiveness in satisfying customer needs.

Regarding the reasonableness of the results, the data used in the case study, describing the end-user experience, showed cohesiveness. The general analytical procedure used to categorize the responses from the end-user interviews (primary data) and the content analysis of EUS (secondary data) displayed clear similarities. The data triangulation, the method triangulation and the total number of respondents enhance the quality of the data.

When discussing how the choice of method has affected the results, several issues should be mentioned. Firstly, the scope of thesis is limited to only study the internal customers of the case company and thereby excludes the sub-divisions within Group IT *not* handling internal customers. Secondly, the respondents of the end-user interviews included a large portion of R&D employees (9 out of 12 respondents) which might create bias, which is a possible indication that the need for customer segmentation is over-estimated. On the other hand, the respondents of the EUS were randomly selected and represented all relevant business areas of the study. Noteworthy, all IT employees were consciously not selected as respondents of the end-user interviews and their data from the EUS was disregarded in the compilation. Moreover, more participants could have participated in the workshop; this would have provided the study with richer information.

Given the choice, we would not change methods of data collection since the case company provided the study with sufficient, suitable and reliable data. It is believed that signing Non-Disclosure Agreements and promising the end-user respondents complete anonymity resulted in a higher degree of trustworthiness. Also, the 12 end-user interviews were deemed to have reached a desirable degree of saturation, due to the prior knowledge gained through four EUSs, two BPSs and two interviews with Respondent 1. However, the methods of data analysis could be improved by choosing more advanced methods such as semantic analysis to gain deeper insight into context and question formulation. As previously disclosed in *Pie Chart 1*, data from EUS 2013Q4 relating to the comment field "Need for IT in daily work" was inaccessible, this might have affected the dispersion of the end-users responses in the pie chart.

The major limitation of the study is that the practical and theoretical usefulness of the Theoretical Model and the Research Model are unknown but are ready to be operationalized and evaluated in the same or a similar context. Additionally, the study is limited to only investigating the value perspective of VCM and excludes other value perspectives which could possibly add to SCM. Another issue includes the lack of a holistic theoretical framework directly explaining the value phenomenon behind applying VCM to organizations and its effect on SCM. There are only disconnected explanations investigating possible VCM implications.

There are no previous studies examining VCM in a support function context combined with management control of a discretionary cost center. If the Theoretical Model and the Research Model were to be operationalized, a straight comparison to other VCM research would not be possible, due to different types of units of analysis and that the Theoretical Model is adapted to fit a cost center support function. Differences between McNair et al. (2001a) and the Theoretical Model include among else the elimination of the outer boundary circle "profit" and addition of an outer arrow that illustrates "budget pressure". Even though the fundamental idea and technique behind how to get all the information to be able to calculate the value multipliers, the Research Model and McNair et al. (2001a) differs for example in terms of the value attributes; the case company in McNair et al. (2001a) is a company that offers agricultural machines to the open market, while this study's case company is an support-function. Also, there are no revenue proxies in the Research Model but "budget proxies".

The most important result from this study is the development of Models that may explain the direct relationship between cost and customer satisfaction which can be used to improve managerial decision-making in discretionary cost centers.

6.2 Conclusion

The purpose of this pre-study is to contribute to value-based Strategic Cost Management through the addition of a support function perspective by developing an adapted Value Creation Model. In general, support functions tend to be discretionary cost centers, which have great difficulties in evaluating resource effectiveness for maximizing customer satisfaction while maintaining the same budgetary limitations. To perform this assessment, a literature study was conducted to investigate previous research specifically in VCM. The study revealed that no previous research had combined the VCM and support functions, which is why we decided to later develop our own adjusted VCM - the Theoretical Model and the Research Model - partly based on lessons learned from the literature study. In order to investigate the addition of a value perspective to management control of a support function, a case study was performed at the IT-department of a large manufacturing company. By studying internal documents and interviewing end-users, we gained in-depth context specific knowledge and were able to design suitable value attributes as well as a templates for designing a Value Attribute Survey, a template for conducting a Cost Analysis and for calculating Value Multipliers. The interviews also revealed a need for complementing the Value Attribute Survey with extra questions regarding specific value attribute in order to gain actionable information. The development of the Theoretical Model and the Research Model is a first step in investigating improved ways of measuring resource effectiveness in discretionary cost centers by using the notions of value attributes, cost analysis and value multipliers and thereby provide manager with new information for improved decision-making. Our main contribution lies in building a foundation for further exploration of how the value perspective can add to SCM in relation to support functions. This is specifically important due to the need of measuring resource effectiveness by directly linking costs and customer satisfaction in a discretionary cost center. In summary, there is great uncertainty when it comes to measuring resource effectiveness in discretionary cost centers, our pre-study

provides a foundation for extending the value perspective of Strategic Cost Management in order to address this deficiency.

6.3 Future research

In terms of recommendations for future research, our pre-study provides an opportunity for investigating if the value perspective - provided by the Value Attribute Appraisal, Cost Analysis and Calculating Value Multipliers - which might contribute to the field of Strategic Cost Management to better understand the resource effectiveness in discretionary cost centers. Most importantly, how managers can use this information provided by the Value Multipliers to redirect spending so that it is better aligned with the customer preferences. Additionally, other value perspectives which can add to SCM and management of discretionary cost centers may also be of interest. Studying Mohamed & Jones (2014) in the literature study also raised the question of how our adapted VCM model would fit into a larger holistic perspective, especially in relation to Management Control. Also, on the one hand VCM is based on ABC - linking firm activities to the VA, BVA and Waste cost structure - but on the other hand the ABC paradox (Gosselin, 1997) remain, which is why VCM might not be suitable to all types of support functions or be complex or costly to implement if there is no clear activity-cost structure. Hence, alternative proxies and cost structures may be of interest for future researchers. Further, it could be of interest to extend the discussion of the definition of value and its connection to the budget of a support function and how this value discussion might improve the management control of support functions in the future.

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APPENDIX

APPENDIX 1 - Overview of the literature study

SUMMERY – literature review

Number of articles excluded because of the type of paper (conference papers and any type of theses excluded)	18
Number of articles excluded because of language (all languages but English and Swedish excluded)	22
Number of articles excluded because they could not be accessed	6
Number of articles used in our thesis	34
Total number of articles citing McNair et al (2001) https://scholar.google.se/scholar?cites=17523152850717176607&as_sdt=2005&sciodt=0,5&hl=s [2015-04-12]	**80**

Hit no.	Author(s)	Public-ation year	Titel	Journal/ book	No. times cited
1	Helgesen, Ø.	2006	Are Loyal Customers Profitable? Customer Satisfaction, Customer (Action) Loyalty and Customer Profitability at the Individual Level	Journal of Marketing Management. 22(3), pp. 245-266.	144
2	Helgesen, Ø. & Nesset, E.	2007	What accounts for students' loyalty? Some field study evidence	International Journal of Educational Management, 21(2), pp. 126-143.	148
3	Helgesen, Ø. & Nesset, E.	2007	Images, Satisfaction and Antecedents: Drivers of Student Loyalty? A Case Study of a Norwegian University College.	Corporate Reputation Review ,10(1) , pp. 38-59.	118
4	Labro, E. & Tuomela, T-S.	2003	On bringing more action into management accounting research: process considerations based on two constructive case studies.	European Accounting Review ,12(3), pp. 409-442.	100
5	Helgesen, Ø.	2008	Marketing for Higher Education: A Relationship Marketing Approach.	Journal of Marketing for Higher Education, 18(1), pp. 50-78.	72
6	Skoog, M.	2003	Visualizing value creation through the management control of intangibles.	Journal of Intellectual Capital, 4(4), pp. 487-504.	60
7	Silvi, R. & Cuganesan, S.	2006	Investigating the management of knowledge for competitive advantage.	Journal of Intellectual Capital, 7(3), pp. 309-323.	52

8	Bhimani, A.	2002	European management accounting research: traditions in the making.	European Accounting Review 11(1), pp. 99-117.	42
9	Helms, M.M., Ettkin, L.P., Baxter, J.T. & Gordon, M.W.	2005	Managerial implications of target costing.	Competitiveness Review 15(1), pp. 49-56	41
10	Helgesen, Ø.	2007	Customer accounting and customer profitability analysis for the order handling industry—A managerial accounting approach	Industrial Marketing Management. 36(6), pp. 757-769	36
11	Cinquini, L. & Tenucci, A.	2010	Strategic management accounting and business strategy: a loose coupling?	Journal of Accounting & Organizational Change, 6(2), pp. 228-259.	41
12	Ellram, L.M. & Stanley, L.L.	2008	Integrating strategic cost management with a 3DCE environment: Strategies, practices, and benefits	Journal of Purchasing and Supply Management, 14(3), pp. 180-191	29
13	Forsberg, A. & Saukkoriipi, L.	2007	Measurement of waste and productivity in relation to lean thinking	Proceedings of the 15th Annual Conference of the International Group for Lean Construction, East Lansing, Mich. 2007.	24
14	Zengin, Y. & Ada, E.	2010	Cost management through product design: target costing approach.	International Journal of Production Research, 48(19), pp. 5593-5611.	25
15	Gimžauskienė, E. & Valančienė, L.	2007	Changing role of management accounting: Lithuanian Experience case studies	Engineering Economics, 5(55), pp. 16-23.	23
16	Helgesen, Ø. & Nesset, E.	2010	Gender, store satisfaction and antecedents: a case study of a grocery store	Journal of Consumer Marketing 27(2), pp. 114-126.	21
17	Helgesen, Ø., Håvold, J.I. & Nesset, E.	2010	Impacts of store and chain images on the "quality–satisfaction–loyalty process" in petrol retailing.	Journal of Retailing and Consumer Services 17(2), pp. 109-118.	22
18	Cugini, A., Carù, A. & Zerbini, F.	2007	The Cost of Customer Satisfaction: A Framework for Strategic Cost Management in Service Industries.	European Accounting Review., 16(3), pp. 499-530	20

19	Nesset, E. & Helgesen, Ø.	2009	Modelling and Managing Student Loyalty: A Study of a Norwegian University College	Scandinavian Journal of Educational Research, 53(4), pp. 327-345.	15
20	Woods, M., Taylor, L. & Cheng Ge Fang, G.	2012	Electronics: A case study of economic value added in target costing	Management Accounting Research, 23(4), pp. 261-277.	12
21	Helgesen, Ø.	2007	Drivers of customer satisfaction in business-to-business relationships: a case study of Norwegian fish exporting companies operating globally.	British Food Journal, 109(10), pp. 819-837.	13
22	Mattimoe, R. & Seal, W.	2011	Pricing in a Service Sector Context: Accounting and Marketing Logics in the Hotel Industry.	European Accounting Review, 20(2), pp. 355-388.	11
23	Nesset, E., Nervik, B. & Helgesen, Ø.	2011	Satisfaction and image as mediators of store loyalty drivers in grocery retailing.	The International Review of Retail, Distribution and Consumer Research, 21(3), pp. 267-292.	11
24	McNair, C. J., Polutnik, L. & Silvi, R.	2000	Outside-in cost and the creation of customer value	Advances in Management Accounting, 9, pp. 1-42.	10
25	Lähtinen, K.	2009	Assessing the resource usage decisions and financial performance in Finnish sawmills within the resource-based view framework	PhD. study. Joensuu, Finland: University of Joensuu (2009	10
26	Malleret, V.	2009	Peut-on gérer le couple coûts-valeur?	Comptabilité-Contrôle-Audit, 15(1), pp. 7-34.	15
27	El Kelety, I.	2006	Towards a conceptual framework for strategic cost management-The concept, objectives, and instruments	qucosa.de	8
28	Meyssonnier, F.	2012	Le contrôle de gestion des services: réflexion sur les fondements et l'instrumentation.	Comptabilité-Contrôle-Audit 18(2), pp. 73-97.	11
29	Van Caillie, D.	. 2003.	L'exercice du contrôle de gestion en contexte PME: étude comparée des cas français, canadien et belge	24ème Congrès de l'Association Francophone de Comptabilité-" Identification et maîtrise des risques"	11

30	Inglis, R.M.	2008	Exploring accounting and market orientation: an interfunctional case study.	Journal of Marketing Management, 24 (7), pp. 687-710.	7
31	El-Dyasty, MM.	2007	A framework to accomplish strategic cost management	El-Dyasty, M. M. (2007). A framework to accomplish strategic cost management. Available at SSRN 704201.	7
32	Bjørnenak, T.	2003	Strategisk økonomistyring–en oversikt	Strategisk økonomistyring–en oversikt. Magma, 6(2), pp. 21-28.	4
33	汪方军, 陈琳, & 王平心	2005	作业基础成本改善控制研究	管理评论, 17(3), pp. 42-45.	7
34	Watts, T. & McNair-Connolly, C.J.	2012	New performance measurement and management control systems	Journal of Applied Accounting Research, 13(3), pp. 226-241.	5
35	Helgesen, Ø., Nesset, E.	2011	Does LibQUAL+ TM account for student loyalty to a university college library?	Quality Assurance in Education, 19(4), pp. 413 - 440.	5
36	Carlbäck, M.	2011	From Cost Accounting to Customer Accounting in the Hospitality Industry-a Constructive Approach.	gupea.ub.gu.se	4
37	Carlbäck, M.	2010	From cost accounting to customer accounting in the restaurant industry	International Journal of Revenue Management, 4(3), 403-419.	4
38	Antoniou, P. H., Levitt, C. E., & Schreihans, C	2009	Managing value chain strategy.	Antoniou, P. H., Levitt, C. E., & Schreihans, C. (2009). Managing value chain strategy. In Allied Academies International Conference: Proceedings of the Academy of Strategic Management (Vol. 8, No. 2, pp. 8-14). http://www.alliedacademies.org/public/Proceedings/Proceedings25/ASM%20Proceedings.pdf#page=12	4
39	Saukkoriipi, L.	2004	Perspectives on non-value added activities: The case of piece-rate in the Swedish construction industry.	Saukkoriipi, L. (2004). Perspectives on non-value added activities: The case of piece-rate in the Swedish construction industry. In International Group of Lean Construction (Vol. 12). http://publications.lib.chalmers.se/publication/9438	4

40	Filomena, T. P., & Neto, F. J. K.	2003	Modelo de Gestão de Custos para o Desenvolvimento de Produto.	In VII Congreso del Instituto Internacional de Costos, Punta del Este. Anais…, Punta del Este.	3
41	汤勇力, & 胡欣悦.	2007	基于动态任务价值链的虚拟企业组织体系	科学学与科学技术管理, 28(10), pp. 145-149.	3
42	Filomena, T. P., & Neto, F. J. K.	2004	Modelo para medição e controle de custos no desenvolvimento de produtos.	?	3
43	Hanid, M., Siriwardena, M., & Koskela, L.	2011	What are the big issues in cost management?.	RICS Construction and Property Conference, p. 738.	2
44	Kotri, A., & Mourey, J.	2012	Identifying customer value in emerging markets via conjoint analysis: a case study of an Estonian packaging company.	International Journal of Business and Emerging Markets, 4(1), pp. 49-68.	2
45	Friestad, L. B. H.	2008	Design and use of management accounting and control systems in Norwegian primary and lower secondary education.	brage.bibsys.no	2
46	Toppinen, A., Lähtinen, K., Leskinen, L. A., & Österman, N.	2011	Network co-operation as a source of competitiveness in medium-sized Finnish sawmills.	Silva Fennica, 45(4), pp. 19	2
47	Orelli, R. L., & Visani, F.	2005	Analisi e gestione dei costi negli enti locali: stato dell'arte modelli e applicazioni di cost management	Analisi e gestione dei costi negli enti locali: stato dell'arte modelli e applicazioni di cost management (Vol. 366). FrancoAngeli.	2
48	Andersson, C., & Liljenvald, J.	2009	Lean-tänkandet i Sverige- en kvantitativ undersökning av medelstora tillverkningsföretag.	https://gupea.ub.gu.se/bitstream/2077/19287/1/gupea_2077_19287_1.pdf	1
49	Abdelmoneim Mohamed, A., & Jones, T.	2014	Relationship between strategic management accounting techniques and profitability–a proposed model.	Measuring Business Excellence, 18(3), pp. 1-22.	1
50	Himme, A.	2012	Critical success factors of strategic cost reduction	Journal of Management Control, 23(3) , pp 183-210	1

51	Valančienė, L., & Gimžauskienė, E.	2007	Does implementation of mangern management accounting conceptions ensure corporate value creation?	Economics & Management.	1
52	Loreta Valanciene , Vytautas Boguslauskas , Bronius Neverauskas	2004	Customer Differentiation System: Compatibility of Value Creation and Cost Management	Acta Universitatis Lodziensis. Folia Oeconomica, 173, pp. 121-131.	1
53	Jönsson, M., & Ericsson, H.	2007	Ekonomistyrning med kundfokus	Jönsson, M., & Ericsson, H. (2007). Ekonomistyrning med kundfokus. rapport nr.: Ekonomistyrning 06-07-23M. https://gupea.ub.gu.se/handle/2077/2583	0
54	Lovén, A. & Åkerberg Salmin, N.	2014	Upplevelseredovisning : Resursallokering i en restaurang	Örebro universitet, Restaurang- och hotellhögskolan, Social studies. Supervisor: Carlbäck, Mats http://www.diva-portal.org/smash/record.jsf?pid=diva2%3A789388&dswid=-4853	0
55	Madanhire, I., & Mbohwa, C.	2014	Application of just in time as a total quality management tool: the case of an aluminium foundry manufacturing	Total Quality Management & Business Excellence, (ahead-of-print), pp. 1-14.	0
56	Valančienė, L., & Kvainauskaitė, V.	2003	The True Benefit of Customer Differentiation System: METHODICAL SOLUTION OF VALUE CREATION AND COST MANAGEMENT INTEGRATION (MANAGEMENT ACCOUNTING APPROACH).	Management of Organizations: Systematic Research, (26).	0
57	Cugini, A.	?	Measuring Customer Profitability in a B-To-B Service Company: CIM Case Study	?	0
58	Helgesen, Ø., Nesset, E., & Strand, Ø.	2013	"Brain Drain" or "Brain Gain"? Students' Loyalty to their Student Town: Field Evidence from Norway.	European Planning Studies, 21(6), pp. 909-943.	

59	Santini, F.	2010	The Three-Stage Evolution of Full Cost Accounting in Business Economics.	Business Performance Measurement and Management (pp. 251-266). Springer Berlin Heidelberg.	0
60	Mijoč, J., Pekanov Starčević, D., & Mijoč, I	2014	Investigation of the relationship between contemporary cost management methods and improvement in financial performance.	Economic Research-Ekonomska Istraživanja, 27(1), pp. 393-413.	0
61	Andresen, K., Friestad, L. B. H., & Robertsen, K.	?	Styring av kvalitet i offentlig tjenesteproduksjon.	?	0
62	Nemeschansky, B., & von der Heidt, T.	2013	The future of restaurant analysis: A customer-driven approach for an experience economy.	ANZMAC.	0
63	Minis, I., & Kourounis, T. C.	2006	Estimation of target selling price in new product development.	ASME 2006 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (pp. 583-590). American Society of Mechanical Engineers.	1
64	Tenucci, L. C. A.	2010	Strategic management accounting and business strategy: a loose coupling?	Journal of Accounting & Organizational Change, 6(2), pp. 228 - 259	0
65	Nemeschansky, B., & Williamson, D.	2014	Listening to the consumer voice-a customer-driven approach to restaurant analysis.	Chien, P.Monica. CAUTHE 2014: Tourism and Hospitality in the Contemporary World: Trends, Changes and Complexity. Brisbane: School of Tourism, The University of Queensland, 2014: 1040-1045. Availability: <http://search.informit.com.au/documentSummary;dn=408463179556868;res=IELBUS> ISBN: 9780987050755. [2015-04-15].	0
66	Bjørnenak, T., & Helgesen, Ø.	2013	Customer Relations and Cost Management.	Bjørnenak, T., & Helgesen, Ø. (2013). Customer Relations and Cost Management. The Routledge Companion to Cost Management, 250-266.	0
67	Hanid, M. B.	2014	Design science research as an approach to develop conceptual solutions for improving cost management in construction	Doctoral dissertation, University of Salford	0

68	Shantapriy an, P. T., Stringer, C., Adler, R., & Greatbanks , R.	2012	Measuring Service Performance in a Shared Service Support Environment.	PMA 2012 Conference (pp. 1-17). http://ecite.utas.edu.au/86370	0
69	Pendaries, M.	?	De la gestion Coût–Délai–Qualité au pilotage par la valeur de la performance organisationnelle.	?	0
70	胡欣悦, 刘金兰, & 汤勇力.	2006	基于任务分解结构的虚拟企业构建过程研究.	工业工程, 8(6), 15-20.	0
71	李从东, 洪宇翔, & 汤勇力.	2012	我国风电产业价值链全面解决方案研究.	科技进步与对策, 29(3), 74-79.	0
72	盛振江, & 罗永泰.	2014	基于价值创新的精益服务与便利服务融合研究.	科技进步与对策, 31(7), 20-25.	0
73	Van Caillie, D., & Kabwigiri, C.	2002	L'Approche En" Coût Client", Une Méthodologie De Calcul Des Coûts Propre À L'Entreprise Orientée" Client"	Technologie et management de l'information: enjeux et impacts dans la comptabilité, le contrôle et l'audit (pp. CD-Rom).	0
74	汪方军, 常华, & 曹建安.	2008	种衡量作业效率与效果的作业价值乘数指标.	管理科学, 3(003).	0
75	Specialisti ca, C. D. L., & Gestionale, I.	?	Universita degli studi di Brescia Facolta de Ingegneria	?	0
76	Fantasia, M. M. G.	2014	Análise da cadeia de valor como suporte da gestão estratégica de custos: uma aplicação à indústria.	?	0
77	de La Villarmois, O., Levant, Y. & Benavent, C.	?	La gestion strategique de couts: proposition d'un cagre d'analyse	researchgate.net	0
78	Meyssonni er, F. & Mincheneau, M.	?	ent de Travail W	hal.archives-ouvertes.fr	0
79	Meyssonni er, F.	2011	Le contrôle de gestion des services: Réflexion sur l'instrumentation et les concepts	Comptabilités, économie et société (2011). hal.univ-nantes.fr	0

| 80 | Czajor, P. | 2008 | Integracja narzędzi strategicznej rachunkowości zarządczej w procesie tworzenia wartości przedsiębiorstwa | Zeszyty Teoretyczne Rachunkowości. ceeol.com | 0 |

The individual responses to IT's importance in the users daily work (100 points distributed over eight attributes) and their satisfaction with the IT services (maximum 100 points per attribute) are presented below.

IMPORTANCE

Attr. Nr*	EU1	EU2	EU3	EU4	EU5	EU6	EU7	EU8	EU9	EU10	EU11	EU12
1	20	5	5	5	20	5	20	30	15	10	15	15
2	20	40	30	25	20	80	18	20	15	20	15	20
3	10	5		5	5	5	12	5	10	10	10	15
4	10	10	15	5	10	2	20	5	0	5	10	5
5	20	5	15	25	15	2	12	20	40	20	15	20
6	0	30	20	25	20	2	10	10	0	5	10	10
7	10	5	5	5	5	2	2	5	20	20	10	10
8	10		10	5	5	2	6	5	0	10	15	5

* Attributes: (1) Well-functioning support function (day-to-day operations - incident handling via service desk); (2) User-friendliness; (3) Professional training in IT solutions (applications and systems); (4) Prompt fulfillment of change request (extraordinary activities - problem change); (5) Adequate portfolio of solutions to perform my job (applications and systems); (6) Proactivity in supporting business innovation (responsive towards supporting the business innovative needs of the organization - i.e. supporting the introduction of new ideas, workflows, methodologies, IT-related services or IT-related products); (7) Ability to execute projects (right content, right time; right quality; IT's supporting capabilities); and (8) Adequate IT security.

SATISFACTION

Attr. Nr*	EU1	EU2	EU3	EU4	EU5	EU6	EU7	EU8	EU9	EU10	EU11	EU12
1	80	70	30	25	70	80	80	70	70	80	30	30
2	60	80	40	75	50	95	70	80	70	70	50	40
3	60	30	20	25		90	80		10	50	60	50
4	10	30	40	50		80	75				60	70
5	60	80	70	25	60	80	75	80	30	80	80	20
6		40	20	25		50			5		70	40
7			50	50		70		60	50	80	70	70
8	90		30	25	70	90				70	90	80

* Attributes: (1) Well-functioning support function (day-to-day operations - incident handling via service desk); (2) User-friendliness; (3) Professional training in IT solutions (applications and systems); (4) Prompt fulfillment of change request (extraordinary activities - problem change); (5) Adequate portfolio of solutions to perform my job (applications and systems); (6) Proactivity in supporting business innovation (responsive towards supporting the business innovative needs of the organization - i.e. supporting the introduction of new ideas, workflows, methodologies, IT-related services or IT-related products); (7) Ability to execute projects (right content, right time; right quality; IT's supporting capabilities); and (8) Adequate IT security.