

CUSTOMER PORTFOLIO MANAGEMENT

– The construct and performance

Harri Terho

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1 INTRODUCTION

1.1 Research gap

Relationship marketing has been one of the focal themes in marketing for over two decades, especially in B-to-B contexts. The main idea behind it is that the building and management of relationships is the key for success in contemporary business (Grönroos 1994b; 1996; Morgan and Hunt 1994). However, an increasing number of studies in recent years have found that stronger relationships are not always better. The myopic development of closer relationships and a strict emphasis on customer retention are open to question. Many authors have suggested that a firm should rather adjust its relationship management activities according to the value of the customer, and concentrate on managing the whole variety of its customer relationships – from transactions to strategic partnerships (Johnson and Selnes 2005).

In the last 20 years a vast number of customer portfolio models have been proposed as tools for the strategic management of all of a company's customer relationships, representing the very few existing relationship management tools. Customer portfolio models take the management of the whole customer base as the starting point. As firms have only a limited amount of resources to use on their customers it is not rational to treat and develop all relationships in the same way: it is preferable to differentiate the allocation in relation to the value of the relationship. Instead of only managing individual relationships a firm should manage its whole portfolio of relationships, and consider whether it has the right kind of portfolio of customers to secure its long-term performance (cf. Turnbull 1990). Hence, the focus in customer portfolio management moves from strict relationship building and customer retention to the more balanced view of building the right kind of relationships in order to ensure the company's long-term-effectiveness.

The recent boom in customer relationship management (CRM) has encouraged companies to make notable investments in the management of their customer base. Influential consultancies have recently been presenting customer portfolio tools to companies that have increasingly been adopting this thinking in their business (e.g., Hellman 2003; Storbacka 2005). The fact that companies have made notable investments in customer portfolio management makes it an interesting topic for research from the managerial point of view. Do the investments of companies pay off?

The current research on customer relationship portfolios has concentrated almost fully on proposing and testing various portfolio models. The testing of these theoretical models has shown that customer portfolio analysis is indeed a potentially valuable corporate tool (e.g., Zolkiewski and Turnbull 2002a; Yorke and Droussiotis 1994). However, there are very few empirical studies about their implementation in business, i.e. *customer portfolio management practices*. Of those that do exist, Räsänen (1999) studied three small profitable high-tech companies and found that their customer management practices largely followed the logic of customer portfolio models. Leek, Turnbull and Naudé (2002), in turn, explored the customer relationship management practices of UK companies and created a descriptive model of corporate practices. Their results indicate that formal systems of relationship management are rather rare, and that management practices often involve several methods, such as formal systems, personal judgment, and meetings.

Further, the overlapping empirical studies in the area of customer relationship management (CRM theories) are rather limited in focus, and they miss some major aspects of portfolio management. In other words, CRM research has focused to a large extent to the B-to-C business and it ignores the special characteristics of business markets. Some CRM theories are also heavily rooted in IT technology, which is not a relevant focus in portfolio research. Moreover, most CRM research focuses mainly on customer satisfaction or on value in a strictly financial sense, such as profitability, instead of considering customer value more broadly. Finally, CRM studies concentrate largely on the *treatment* of individual relationships in management instead of the future-oriented *development* of a whole portfolio of customers (cf. Bowman and Narayandas 2004; Reinartz, Krafft and Hoyer 2004; Ryals 2005; Wilson, Daniel and McDonald 2002).

It is clear that there is currently only little knowledge about the customer portfolio management practices of companies in business. According to the various theoretical models and empirical studies that do exist, customer portfolio management is a heterogeneous concept and consequently is difficult to approach empirically. A generally accepted definition of what it is in practice, or of what specific activities it entails in business, is missing. Consequently, current research has not produced *valid measures* for studying these practices.

Another significant gap in the research concerns the performance of companies in their customer portfolio management. There are several issues underlining the relevance of the portfolio management concept. Current research has shown that profit distribution among companies' customer relationships is remarkably heterogeneous (Jacquelyn, Reinartz and Kumar 2004; Niraj, Gupta and Narasimhan 2001; Reinartz and Kumar 2000; 2003;

Storbacka 1997; Zolkiewski and Turnbull 2002b). Moreover, different customer relationships have different roles or serve different functions in the long term (Cannon and Pereault 1999; Walter, Ritter and Gemünden 2001; Wilson and Jantrania 1997). Still, there is only scant research on the performance of customer portfolio management practices, in other words on whether the efforts are connected to better company performance in long term. Eng (2004) tested empirically how different analytical dimensions incorporated into customer portfolio models related to customer performance (net profit, ROI and growth rate). The results stressed the need for a wide array of different dimensions in the analysis, but the data was limited to the largest customers of 17 firms in one industry (banking). Johnson and Selnes (2004) compiled a theoretical relationship portfolio and carried out simulations using a theoretical model of maximum overall relationship profitability in different conditions. The results of the simulation stressed the need for weaker relationships to be included in the portfolio. Closer relationships were found to be important in situations involving lower economics of scale. However, this study is fully theoretical and is based on strict premises.

Interestingly, the question of customer portfolio management performance remains unresolved, as conflicting views about portfolio management exist. Although promising results have been achieved in tests of customer portfolio models on empirical data, several researchers argue that the models have serious problems, and two main ones have been identified in the literature.

First of all, there are problems related to the sensitivity of the models to the measurement used. This is exemplified in Zolkiewski and Turnbull's (1997, 319) comparison of Krapfel, Salmond and Spekman's (1991) and Shapiro's (1987) models, which did not appear to reveal easy correlation between the results. Pels (1992, 14–15) found that introducing qualitative dimensions into the model not only changed the customer ranking, but also introduced totally new important customers. Similarly, Nellore and Söderquist (2000, 246) emphasize the risk that the different dimensions of portfolio analysis are only approximate estimations of the parameters that are supposed to be measured and taken into account. In other words, the question of the definition, operationalization, and measurement of the analysis variables is a critical one and may seriously affect the results of the analysis (see also Wind, Mahajan and Swire 1983, 98).

Secondly, some authors suggest that portfolio models do not work properly, and may even be counterproductive when implemented in business, and therefore should not be used at all (Armstrong and Brodie 1994). This stream of criticism is generally based on the simplified nature of relationship portfolio models. Indeed, the models are sensitive to the analysis dimensions used.

Dubois and Pedersen (2001, 40–41) conclude that simplified models incorporating few dimensions and straightforward recommendations cannot be used in complex real-life situations – how is it possible to deduce feasible strategies from simple models incorporating few variables? Moreover, several authors have pointed out that customer portfolios fall short in addressing the interconnectedness of relationships (Dickson 1983, 36; Haspelagh 1982, 65–66; Ritter 2000, 324–325; Zolkiewski and Turnbull 2002a, 585), and also that the models neglect the essential aspect of interaction in business (Dubois and Pedersen 2001).

Thus, customer portfolio management is an interesting topic for research. There is only very limited knowledge about corporate practices, and in particular the performance aspect of customer portfolio management remains an unexplored question. In other words, *are companies' customer portfolio management efforts connected to better performance in practice?*

Finally, the current empirical research on relationship management has concentrated largely on performance outcomes on a general level, and only a few studies have addressed the question of contingencies. These studies have shown that company-internal issues such as rewards, organizational alignment, IT and CRM technology, and managerial involvement are important variables (e.g., Campbell 2003; Reinartz, Krafft and Hoyer 2004, 294), although several conceptual studies in the area of relationship marketing have emphasized the role of the *company context as an essential contingency in relationship management* (Broadie, Coviello, Brookes, Little 1997; Grönroos 1994a; Möller and Halinen 1999; 2000). This question of the company context remains largely unstudied. There is little knowledge about the role of the company surrounding context in customer portfolio management. The key questions here concern whether customer portfolio management is more feasible in some contexts, and whether some management styles fit certain company contexts better than others.

In sum, the phenomenon of customer portfolio management is a topical issue in customer relationship management but remains largely unstudied empirically. Portfolio management is largely heterogeneous, and current knowledge remains fragmented. There are no existing empirical measures for studying customer portfolio management in business. Furthermore, knowledge about performance outcomes in different B-to-B settings is scarce. Clearly, an interesting research gap exists.

1.2 The purpose of the research

The management of customer relationships has become a major issue in

contemporary marketing – both in business practice and in research (Boulding, Staelin, Ehret and Johnston 2005). Similarly, customer portfolio management has been recognized as a top-priority issue in research in marketing (Johnson and Selnes 2004), and customer portfolio management efforts have been suggested to be linked to company performance (Eng 2004, Johnson and Selnes 2004).

One could say that there is rich literature on customer portfolio management built around suggested normative management models and tools. There is also extensive knowledge about the outcomes of testing and simulating conceptual models. However, there is only scant and fragmented information about *companies' customer portfolio management (CPM) practices* in business. This is striking, as 1) there is no generally accepted definition of customer portfolio management, 2) there are no valid empirical measures, 3) the performance outcomes of corporate practices remain unstudied, and 4) there is little knowledge about the effect of the company context on portfolio management. This research adopts a quantitative research perspective for studying these issues.

Consequently, the purpose of this research is to *analyze companies' customer portfolio management practices and performance in business markets*. This purpose is divided into three more specific aims: 1) to conceptualize customer portfolio management in B-to-B settings, 2) to form and validate a measure for studying CPM practices in business, and 3) to study contextually the relationship between CPM practices and performance. More specifically three areas of performance will be examined: overall customer performance, customer profitability, and firm performance. In accordance with the theory, the relevant context for CPM is the companies' relational context. The logic applied in meeting these three aims is discussed in more detail next.

1.3 The structure of the dissertation

This research aims at forming a definition of and a measure for firms' CPM practices, and at studying contextually the relationship between CPM practices and performance. The structure of this dissertation follows these goals.

First, customer portfolio management is defined based on the literature and a qualitative pilot study on companies' practices. No generally accepted definition of customer portfolio management exists. Interestingly, the current knowledge is based almost entirely on various customer portfolio models, which represent the "received view", in other words ideals in the literature that may differ from the reality in business. Therefore, the CPM construct and measure are formed based on the logic of the classic works of Kohli and

Jaworski (1990) and Jaworski and Kohli (1993). In other words, this dissertation begins with a review of customer portfolio models (portfolio theory in marketing) in order to form *a theory-based definition* of customer portfolio management. The theory-based definition is followed by a qualitative pilot study of companies' *CPM practices* reflected in the activities and behaviors of organizations. The theory and the findings from the field study are *synthesized* in order to derive an *operational, activity-based definition* for studying such practices empirically.

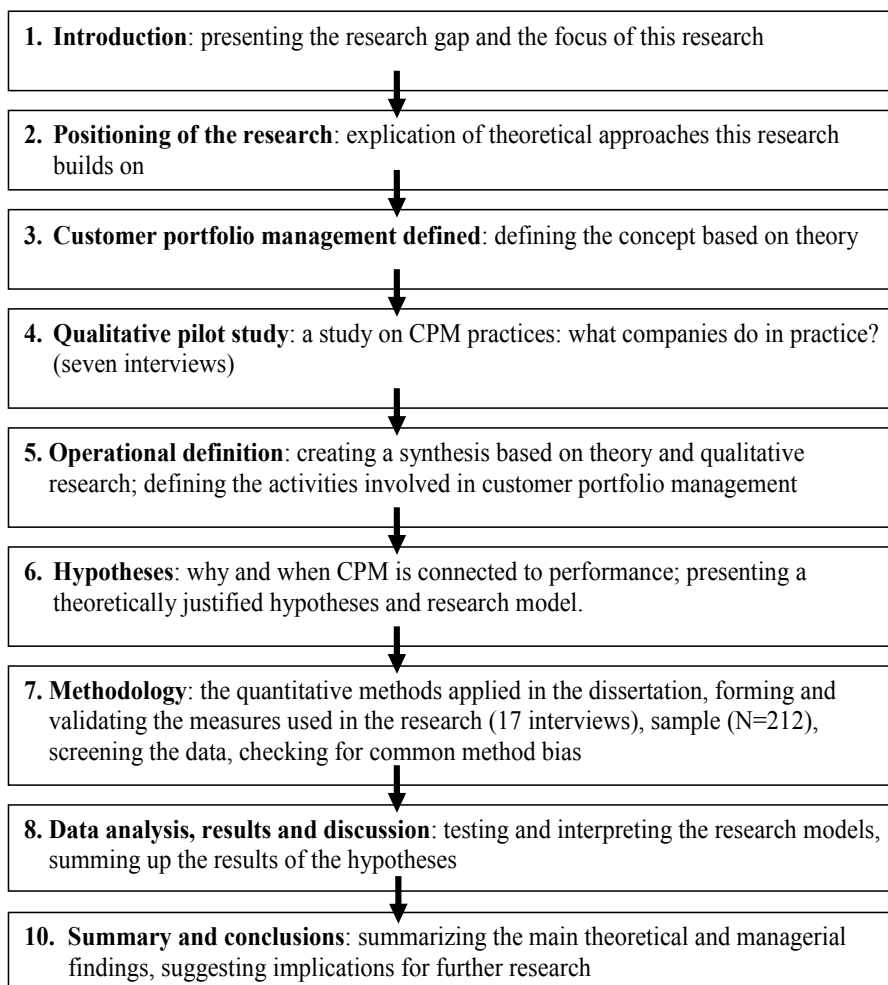


Figure 1 The structure of the study

Secondly, *the relationship between CPM practices and performance is*

studied quantitatively. After developing the operational definition for customer portfolio management hypotheses are formed based on the theory and the pilot study for studying the relationship between CPM and performance in different contexts. Then, measures are formed on the basis of the operational definition, and the hypotheses are tested on quantitative survey data. More specifically, the study is structured as follows (see Figure 1).

The *first phase* addresses the essential unresolved questions relating to customer portfolio management. A research gap is identified and the purpose of the research is thus explained.

Secondly, three theoretical paradigms are discussed, which are relevant to the study of CPM practices in business. In other words, this chapter explicates the broader theoretical foundations on which the study is built, and the areas in which it makes a contribution.

Thirdly, customer portfolio models are discussed in detail in order to arrive at a theory-based definition of CPM.

Fourthly, once sufficient knowledge is acquired based on the literature review the first empirical part of the research is reported. A qualitative pilot study was carried out in seven companies operating in different business contexts. The aim here was to contrast the theoretical definition of customer portfolio management with the companies' CPM practices.

Fifthly, an operational definition of customer portfolio management is derived based on a synthesis of the conceptual and empirical findings. This definition covers the activities involved and facilitates the empirical study of corporate CPM practices. Further detailed definitions are given for all CPM activities.

Theory-based hypotheses concerning the activities and performance of customer portfolio management in different B-to-B contexts are put forward in the *sixth* phase. The research model is also explicated.

The methodology used in this research is discussed in the *seventh* phase. This includes the methodological background, the analysis methods and the research sample. The formation and validation of the measures is also explained based on established guidelines used in marketing. Common-method bias is discussed and the process of testing the research model is explicated.

The *eighth* phase concentrates on the testing and interpretation of the research models. The main hypothesized performance outcomes are tested by means of Partial Least Squares (PLS), which is a structural equation modeling technique. The results of the research model are interpreted, and the hypotheses are discussed in the light of the empirical results.

Finally, the whole research is summarized and its contribution is discussed. Both theoretical suggestions for further research and practical implications are

put forward.

2 POSITIONING THE STUDY

A critical pluralistic view is adopted in this dissertation¹. This was done because CPM is a company-internal practice with a company-external focus, in other words customer relationships. The adoption of several theoretical approaches will therefore help to produce a more comprehensive understanding about the phenomenon. Theoretically, CPM relates to three areas: 1) interaction and network theories, 2) relationship marketing and CRM theories, and 3) organizational learning, information processing and market orientation theories.

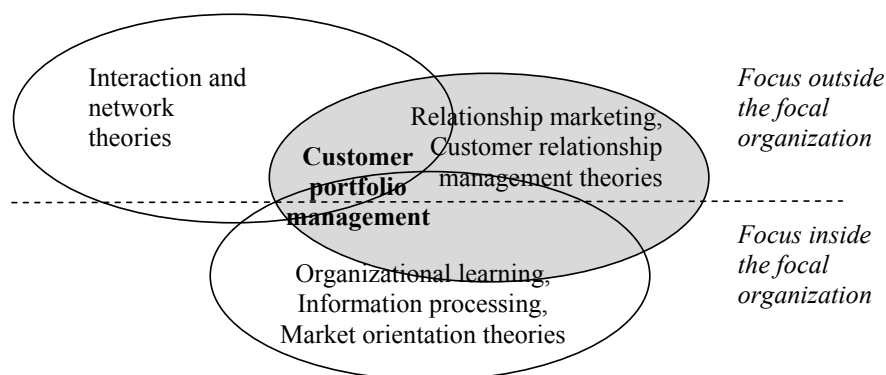


Figure 2 The theoretical positioning of the research

Figure 2 above presents the theoretical paradigms on which this research is built. Although each of the three individual paradigms is based on some common premises and they are presented as single entities in the figure, they are by no means internally coherent or homogeneous. Rather, in reality they show notable internal variance (see Möller and Halinen 2000 on relationship marketing, Möller 1994, on the interaction and network approach; Gherardi 2002 on learning).

Figure 2 also depicts the approaches as overlapping, especially *the interaction and network approach* and *relationship marketing and CRM theories* (cf. Healy, Hastings, Brown and Gardiner 2001; Mattsson 1997). The

¹ On the pluralistic approach cf. Chapter 6.1 Methodological background of this study

former is sometimes even considered to belong to the relationship-marketing paradigm (cf. Eiriz and Wilson 2004). Still, for reasons of clarity, here these approaches are considered to differ from each other. The literature on *learning-related information processing* and *theories of customer relationship management* are also partly overlapping (cf. Campbell 2003; Jayachandran, Sharma, Kaufman and Raman 2005). On the other hand, *interaction and network* and *learning theories* are not very close, as they are notably different in their theoretical and methodological foundations (Möller 1994, 361).

This study is based on all the above perspectives and contributes to all three areas of research. However, as the focus is on relationship management efforts, the main contribution will be to theories of relationship marketing and customer relationship management (see Figure 2).

These three notably differing but also overlapping theoretical paradigms and the key concepts involved are discussed in more detail in the following section. *First of all*, each approach is described on the general level in terms of its overall focus. *Secondly*, the related main concepts of each paradigm are presented and discussed from the perspective of this study. This is a fundamental issue as theoretical constructs are not meaningful in isolation – they need to be delineated from and related to other close constructs (Churchill 1979; Diamantopoulos and Winklhofer 2001). It should nevertheless be noted that this positioning chapter does not go very deeply into any specific concepts. It rather presents the basic ideas of each theoretical approach on which the research is based on the general level. All relevant theoretical constructs are discussed in more detail in the later theory chapters in conjunction with the review of customer portfolio models (Chapter 3), the conceptualization of portfolio management (Chapter 4), and the drawing up of the hypotheses (Chapter 5). *Thirdly*, the contribution of each approach to this research is explicated. Finally, a summary of the theoretical foundations is given in Chapter 2.4.

2.1 Relationship marketing and CRM theories

This section first reviews internally heterogeneous relationship marketing (RM) together with the overlapping customer relationship management (CRM) approach, which is the current dominant label for relationship marketing. Secondly, the central concepts and constructs of these approaches are discussed from the perspective of this research. Thirdly, the contribution of these approaches to this study and the study's contribution to RM and CRM are explicated.

Perceptions of *relationship marketing (RM)* vary considerably between

different authors (Blois 1998, 261; Gummesson 1994, 7), and there are several different schools of thought. Classification of the different approaches is not straightforward as the field is very fragmented (Möller and Halinen 2000, 33). Consequently, a number of different classifications exist. On the basis of their literature review of research on services, interaction, channels, and networks, Broadie, Coviello, Brookes and Little (1997, 384–385) distinguish four applications of relationship marketing: 1) as a technological tool, 2) as a focus on relationships aimed at customer retention, 3) as customer partnering in which working relationships are formed through cooperation and true interaction, and 4) incorporating all these uses (see also Coviello Broadie and Munro 1997; Coviello and Broadie 1998; Coviello, Broadie, Danaher and Johnston 2002). From these applications they derive three types of relationship marketing, namely database, interaction, and network marketing. Clearly, these approaches are not mutually exclusive. Eiriz and Wilson (2006), in turn, distinguish four approaches in RM, namely 1) supply chain and channel management, 2) the interaction and network approach, 3) database and interactive marketing, and 4) services marketing. Möller and Halinen (1999; 2000) further differentiate between market- and network-based relationship marketing in B-to-B settings. However, these idealistic classifications overlap in practice as relationship marketing is often defined in an all-embracing way to include all the facets of the different approaches (Coviello Broadie and Munro 1997, 502). The approach taken in this research is based on an alternative conceptualization. Two dominating themes stand out, namely 1) RM as understanding relational exchange and 2) *RM as management activities* (Broadie, Coviello, Brookes and Little 1997, 385–386; Oliver 2006, 85–89). For clarity, *in this research the view of RM is restricted to the managerially oriented approach to customer relationships*. This narrow meaning of RM has been emphasized in several literature reviews. McLoughlin and Horan (2002, 540) argue that the markets-as-networks approach is not part of relationship marketing as it focuses on understanding relationships and their nature enacted through interaction between organizations. In turn, relationship marketing is more managerially oriented, aiming at prescription from the focal company's perspective (see also Mattsson 1997). In practice, however, it is highly difficult to demarcate these two paradigms, and several authors regard them as a single entity (e.g., Rao and Perry 2002, 600; Healy, Hastings, Brown and Gardiner 2001). Still, this division may facilitate structured discussion of the background theories of this research. In sum, the interaction and network approach aims at describing and understanding relationships and exchange in industrial markets, whereas relationship marketing adopts a focal-company view and is aimed at managing relationships and exchange.

Relationship marketing as a managerial perspective is discussed in more

detail next, and the two most common managerial views in contemporary research are presented: the Nordic service-marketing-based RM school and the US-based RM school concentrating on relationship variables such as commitment and trust, and other relationship antecedents and outcomes.

Service-marketing-based relationship marketing has its origins in the work of Nordic researchers, and the numerous works of Grönroos and Gummesson form its core. According to Grönroos (1994, 355), the role of relationship marketing is “to establish maintain, and enhance...relationships with customers and other partners, at a profit, so that the objectives of the partners are fulfilled”. Gummesson (1994, 12–13), in turn, perceives it as an approach based on the concepts of relationships, interactions and networks, and uses thirty marketing relationships by way of illustration. These studies stress the necessity for more customer and quality orientation in general managerial ideologies rather than for concrete ways of managing customers (see Gummesson 1994, 6). The whole organization, not just marketing function or department, is instrumental to successful service marketing (Bitner 1995; Gummesson 1994). The logic behind service marketing is based on the idea of the service profit chain (see Peppers and Rogers 1995; Raval and Grönroos 1996; Rust and Zahorik 1993; Storbacka, Strandvik and Grönroos 1994). The idea is that there is a chain comprising the impact of service quality on satisfaction, of satisfaction on customer retention (loyalty), and further of customer retention on profitability (Storbacka, Strandvik and Grönroos 1994, 21; Helgesen 2006). Keeping customers is important because it is less expensive to make a satisfied customer buy more than to find a new customer (Grönroos 1995, 253). However, service-marketing-based RM has been criticized as a mere buzzword as it focuses on very general ideologies rather than specific situations (Coviello Broadie and Munro 1997, 502). Similarly, the core works within this approach remain largely conceptual, which is a weakness in terms of managerial application. As far as this research is concerned, the fact that the Nordic service school does not distinguish between consumer and B-to-B settings is a limitation.

The core of the *US-based view of relationship marketing* is encompassed in the famous work by Morgan and Hunt (1994), who define RM as “establishing, developing, and maintaining successful relational exchange”. However the main idea in their paper is that the essence of relationship marketing is the efforts of a supplier to create commitment and trust between itself and a customer. These two variables are seen as key mediating variables between relationship antecedents and outcomes. This approach closely resembles social-exchange-based interaction theories (cf. Möller 1994, 360), which as Sheth and Parvatiyar (1995) note, focus on developing a theory for the successful and efficient management of relationships. Obviously, its

strength lies in the explanations it can provide for relationship marketing efforts, and it has been widely applied in relationship management (e.g., Garbarino and Johnson 1999). However, according to Blois (1996, 162), the core of this RM approach lies in its aims rather than in the activities that might be used in its implementation. Further, the approach focuses heavily on close, individual customer relationships, thus making it difficult to apply to customer portfolio research. Clearly, from the managerial point of view the main weakness of both the Nordic and the US relationship marketing approaches is that their operational contents are unclear (Blois 1996; 1998; Gummesson 1994).

In recent years theories of *customer relationship management*, or *CRM*, have become the dominant label for relationship marketing in the literature (Day 2004, 18; Zablah, Bellenger and Johnston 2004). CRM has been widely recognized as one of the key themes in the “new dominant logic of marketing” and has become a high priority on the current agenda of marketing research (Vargo and Lusch 2004). Interestingly, this approach was largely technology driven in the beginning as companies had made notable investments in CRM technologies (Zablah, Bellenger, Johnston 2004). However, a positive consequence has been that operational contents have been strongly present in the CRM approach from the beginning. Interestingly, academic researchers have begun to recognize that the technological approach alone is not feasible (e.g., Jayachandran, Sharma, Kaufman and Raman 2005, 189; Reinartz, Krafft and Hoyer 2004, 301–302;), and that the core of CRM must lie more deeply in the corporate business processes to succeed that is stressed in most CRM literature (Wilson, Daniel and McDonald 2002). In recent years the *field of customer relationship management has begun to converge in a common definition around the concept of the dual creation of value* (Boulding, Staelin, Ehret and Johnston 2005). Payne and Frow (2005, 168) define CRM as a “strategic approach that is concerned with creating improved shareholder value through the development of appropriate relationships with key customers and customer segments....”. For Zablah, Bellinger and Johnston (2004), however it is very close to portfolio management: “an ongoing process that involves the development and leveraging of market intelligence for the purpose of building and maintaining a profit maximizing portfolio of customer relationships”. However, in practice, the managerial focus in the CRM literature is largely built (often implicitly) on the idea of the service-profit chain. Therefore most CRM frameworks concentrate on researching customer satisfaction in customer management, which in turn is considered to affect profits – the focus being on *value creation for customers* (Bowman and Narayandas 2004; Mithas, Krishnan and Fornell 2005; Srinivasan and Moorman 2005). Another dominant view stresses *the value of customers*,

which brings it closer to the ideas of customer portfolio management. However, customer value is mostly seen in the CRM literature purely as monetary value, in other words as profitability (Niraj, Gupta and Narasimhan 2001; Ryals 2005), or future-oriented customer-lifetime value, or CLTV (Gupta Lehmann and Stuart 2004; Hogan 2001; Venkatesan and Kumar 2004). In these works the core idea is similar to portfolio management, in other words that an understanding of the customer should lead to changes in how customers are managed (Mulhern 1999; Niraj Gupta and Narasimhan 2001; Reinartz Krafft and Hoyer 2004; Ryals 2005). The focus differs drastically from that in the interaction and network approaches discussed next in that most CRM studies consider management as the cost-efficient treatment of the customer rather than the cooperative building and development of customer relationships. This is evident when the operationalizations in CRM studies are examined in detail (Bowman and Narayandas 2004, 436; Niraj, Gupta and Narasimhan 2001, 8; Payne and Frow 2005, 171).

The main concepts and the contribution of the RM and CRM theories to this research are discussed next. The Nordic school of relationship marketing research is largely conceptual and the empirical studies are mostly qualitative. The focus is on the general level encompassing the orientation of the whole company. The US-based approach, in turn, concentrates strongly on managing individual relationships through the application of some central constructs affecting them, and focuses largely on consumer settings. These RM approaches are thus not very close to customer portfolio management, although they can contribute to this study on the broader level of relationship management. A common argument in various papers on relationship marketing is that contingency thinking is a prerequisite. Blois (1996) discusses the appropriateness of relationship marketing, and asks whether the customer really wants a relationship. He stresses various contingency factors for developing relationships, such as asymmetry, stability, legitimacy, necessity, reciprocity (mutually beneficial goals) and efficiency. Zolkiewski (2004) also stresses the importance of mutuality, and suggests that a contingent approach is needed rather than one-size-fits-all marketing. Grönroos (1994) proposes a marketing-strategy continuum and argues that RM is more suitable in service settings. He also considers relational customer modes essential (Grönroos 1997). According to Palmer (1994, 573), RM may not be relevant to exchanges in commodity settings, while Fuan and Nicholls (2000) argue that the appropriateness of relationship marketing depends on the nature of the particular exchange relationships and the governing mechanism of the exchange in question. The results of a rare empirical study conducted by Broadie, Coviello, Danaher and Johnston (2002) support the idea that companies use different marketing practices in different contexts. Möller and

Halinen (1999; 2000) focus on the business-to-business context in their discussion of RM contingencies, and argue that the market- and network-like contexts call for different kinds of relationship marketing (see also industry bandwidth – Anderson and Narus 1991; Day 2000). Further, Möller and Halinen (1999; 2000) distinguish four interrelated levels on which relationship management operates: the relationship level, the relationship-portfolio level, the net level, and the industrial-network level (cf. Ford and McDowell 1999). In sum, the literature on relationship marketing provides the building blocks for finding the relevant contingency factors of portfolio management, and therefore helps in forming the research hypotheses.

Some managerially oriented CRM theories and conceptualizations are, in turn, very close to customer portfolio management. In particular, Reinartz, Krafft and Hoyer's (2004) conceptualization of CRM processes comes close. This operationalization concentrates on the analysis and efficient management of customers in three lifetime stages of customer relationships (initiation, maintenance, termination). However, there are several differences. *First of all*, it focuses on B-to-C business, and *secondly*, it is based on a rather mechanical view of customer relationship life-cycles (cf. Halinen 1994). Further it concentrates strongly on the cost-efficient treatment of different customers in the different life-cycle phases and ignores the development customer relationships. Clearly, this position can be explained with reference to the B-to-C focus. *Thirdly* this CRM construct focuses largely on the management of individual customers in the relationship portfolio rather than on the future-oriented development of the customer portfolio structure (even though the idea of the portfolio is emphasized in the paper). Still, various CRM conceptualizations can support the development of the portfolio management construct and its operationalization.

The discussion now turns to how this research can contribute to RM and CRM theories. The RM literature clearly highlights the need to define and operationalize portfolio management in a concrete way, which is a major aim in this research. Most theories of relationship marketing concentrate on the management of individual relationships, and this research will contribute by creating new empirical knowledge about the management of relationship portfolios. The relationship portfolio level forms a central view in customer relationship management in industrial markets, mediating the levels of managing exchange relationships and focal company networks (e.g., Möller and Halinen 1999; Ritter, Wilkinson and Johnston 2004). Further, as discussed above, while RM and CRM studies have stressed the importance of contingencies in managing customer relationships, there is little empirical evidence on this subject. So far empirical CRM studies have concentrated almost fully on company-internal factors of performance, ignoring the role of

the surrounding context (cf. Reinartz, Krafft and Hoyer 2004; Payne and Frow 2005). Hence, studying customer portfolio management as a contextual phenomenon will contribute to the literature on relationship marketing and management. Further, the RM and CRM approaches lean towards B-to-C contexts and are often IT-centered. They emphasize cost efficiency and satisfaction, and stress customer treatment in the management of customer relationships as opposed to the future-oriented development of the customer portfolio. In sum, most studies concern individual customer relationships and their view on customer value is rather narrow, focusing on customer satisfaction, profitability, or (mostly monetary) customer lifetime value. Additionally, the CRM literature has concentrated almost totally on company-internal contingency factors in studies of customer management performance (cf. Reinartz, Krafft and Hoyer 2004; Payne and Frow 2005). Clearly this study will contribute to the research on relationship marketing and CRM by bringing in new knowledge and thereby filling some of these gaps.

2.2 Interaction and network theories

Interaction and network theories are a related set of theories focusing on exchange in B-to-B settings. In the following the main ideas of these approaches are briefly presented, the main concepts that are relevant to this research are reviewed, and finally their contribution to the research is discussed.

The *interaction approach* refers to a group of studies focusing on exchange relationships between supplier and buyer organizations. The goal on a very general level is to understand interaction and to explain its forms and development processes. How do firms interact and develop relationships? What factors influence the formation of successful vs. unsuccessful relationships? This broad approach draws on a number of disciplines for its intellectual roots: resource dependency theory, social exchange theory, and the theory of small-group social exchange. Additionally, some researchers take ideas and concepts from political economics, organizational buying theory, and transaction cost theory. More specifically, there are two distinct streams of research on interaction, the IMP school and studies based on social exchange. (Möller 1994; Wilson and Möller 1991)

The first stream of research is connected to the Industrial Marketing and Purchasing Group, and is therefore referred to as the IMP school (see Håkansson 1982; Håkansson and Snehota 2000; Turnbull, Ford and Cunningham 1996). The aim is to describe and understand exchange and buyer-seller relationships in industrial settings (Håkansson 1982, 6). Consequently, qualitative research methods strongly dominate the studies (on

the commonly applied methodology see Dubois and Gadde 2002; Halinen and Törnroos 2005). One cornerstone of the IMP approach is resource dependency theory (Pfeffer and Salancik 1978), which posits that different business actors possess unique resources that are activated in interaction with other actors and thus form the basis of their interdependence (Ford, Håkansson and Johanson 1986; Håkansson and Snehota 1995, 12-18; Turnbull, Ford and Cunningham 1996, 47). Companies interact with each other and develop relationships in order to exploit and develop their resources. For example, according to Håkansson and Snehota (1995, 25), “Relationships produce something that that neither of the two (actors) can produce in isolation and something that cannot easily be duplicated”. Thus, the exchange is seen as a mutual process in which both buyers and sellers have an active role (Håkansson 1982). Consequently, the focus of value in this research stream moves away from the purely monetary view to softer and broader conceptualizations (for a review, see Möller and Törrönen 2003). In long-term exchange relationships the value is mostly seen as co-created in mutual processes (Forsrtöm 2005). An essential element of exchange relationships comprises the processes of exchange, adaptation, and coordination (Håkansson 1982; Halinen 1994). In sum, the structure of business relationships is mostly characterized by continuity, complexity, symmetry, and informality. The interaction, in other words the processes of communication between companies, is characterized by adaptation, cooperation and conflicts, social interaction and routinization. (Hallén Johanson, Seyed-Mohammed 1993; Håkansson and Snehota 1995) Actors in business markets are hence regularly interlocked in mutual long-term relationships. In sum, by offering an empirically supported relational picture of business markets the IMP approach has challenged the traditional classical economics and marketing-management-based views. Managerial prescription is gained mainly by description – although some exceptions exist (e.g., Campbell 1985; Ford and McDowell 1999), overlapping the above-mentioned RM approach. The many customer portfolio models discussed in Chapter 3 also originate from the IMP research stream.

The other research stream in the interaction approach is based on social-exchange theories and is more explanatory and predictive in nature. It focuses on the development of inter-organizational relationships and their ongoing dynamism based on the reinforcing elements of social and economic rewards (Möller 1994, 360). The concepts of trust, commitment, and satisfaction are of major importance in exchange and relationships (e.g., Anderson and Narus 1991; Wilson 1995), and hence these theories form the basis of the above-mentioned US-based school of relationship marketing. Here the research has focused on relationships in a competitive environment, which is considered an important exchange variable. The idea of a competitive environment is

reflected in the focal constructs used to examine exchange, such as the availability of alternatives (Anderson and Narus 1984). This approach also promotes a more mechanical view of relationships than IMP research, applying largely different life-time models that make it possible to take a quantitative approach (e.g., Dwyer, Schurr and Oh 1987). Clearly the IMP research focuses more on inducing theory whereas social-exchange related research focuses more on testing theory (Schurr 2007, 22). Hence, the objective is to create explanations by building dense simplified models instead of arriving at a thorough and detailed understanding. In sum, this stream of research focuses strongly on the development of single relationships and the essential components of interaction, which are not focal constructs in portfolio management.

The *industrial network approach*, also known as IMP2, is based on the interaction theories presented by IMP researchers (see Easton 1992; Håkansson and Snehota 2000, 72; McLoughlin and Horan 2000; 2002; Ritter and Gemünden 2003; Tikkanen 1998). The approach builds directly on the findings of the interaction approach. It should be noted that it represents only a fraction of the different network studies (see Araujo and Easton 1996; Ebers 1997). Nevertheless, it is relevant to this research as it concentrates on exchange and interaction in business contexts. It aims at describing and understanding systems of inter-organizational relationships from positional and network perspectives (Möller 1994, 352). The adoption of this view in explaining exchange in business on the macro level is also referred to as the markets-as-networks approach (Johanson and Mattsson 1994), which has little in common with the understanding of the network as a governance structure in the sense of a dominant organization (McLoughlin and Horan 2002, 537): it is rather a case of governance achieved through relationships, and the network is promoted as a way of understanding the generalized connectedness that prevails, particularly in business markets (see Håkansson and Snehota 1995, 19). As the network approach builds on the interaction approach the relationships are considered processual, and they develop and change over time (Halinen, Salmi and Havila 1999). The empirical research has often applied the Actors, Resources and Activities (ARA) model to studying exchange between organizations (Håkansson and Johansson 1992), and more recently the 4R (four resources) model (Håkansson and Waluzewski 2002). The perception of the environment is interesting in the network approach. Because of strong interconnectedness and resource inter-dependency the organizational boundaries are blurred (Anderson, Håkansson and Johansson 1994; Ritter 2000). Some of the relationships between organizations in the network may constitute one of its most important resources. When the “external” resources and interdependencies assume a major role in the network

view of business organizations, it is meaningless and conceptually impossible to disconnect the organization from its context (Håkansson and Snehota 1989). Hence the environment concept is not of major concern when the focus is on exchange relationships in business markets: it is rather the relationships that form the context in which a company acts, and (environmental) changes in business networks are transmitted through them (Halinen, Salmi and Havila 1999). The focus shifts from the control to the integration of resources (Håkansson and Snehota 1989). This business approach puts tight restrictions on strategic planning and management – the best the company can do is to try to manage the networks (e.g., Håkansson and Ford 2002; Håkansson and Snehota 2000, 84). However, there is notable internal variation in how company and network management are seen: several authors stress the management potential in networks (Möller, Rajala and Svahn 2005; Ritter 1999; Ritter, Wilkinson, Johnston 2004).

The main theoretical concepts used in this research are summarized in the following. The *customer relationship* lies at the heart of the study. The view adopted is that relationship development is not a straightforward, one-sided, linear process. On the contrary, it is time-consuming and results from constant interaction between two parties (Halinen 1994) embedded in a broader exchange context (Anderson, Håkansson and Johanson 1994). It thus follows that the customer relationship portfolio cannot just be selected but is developed over time in interaction with customers (cf. Hunt 1997, 440). Given the special characteristics stressed in interaction and network theories, the question of customer relationship value is a complex one. Clearly, the *value of relationships* in business markets cannot be conceptualized in pure, narrow monetary terms (see Chapter 3.2.1 for a discussion on customer value), and customer relationships have different long-term roles and functions as far as the selling firm is concerned. Further, environmental considerations are also problematic in business markets characterized by strong long-term relationships. The *relational context of exchange* per se rather than the broad environment is thus a fruitful starting point for analyzing companies' customer portfolio management practices. Finally, the interaction and network approaches place emphasis on reciprocal interaction in managing exchange relationships vis-à-vis the stimulus-response type of managerial view (Möller 1992, 14-15).

The implications of interaction and network research for this study are set out below. The approach contributes in several respects, but mainly in that it provides an *understanding of the context* in which customer portfolio management takes place. In other words, the study benefits from the conceptualizations of relationships and business markets in industrial settings it provides. Similarly, the *broad view on relationship value* emphasized in the

approach is adopted. Further, as the RM approach referred to above stresses the treatment of customers, the network approach stresses the long-term, mutual *building of relationships* in the drive for long-term business success.

Still, the interaction and network approach also has severe *limitations*. The first is that the theories draw heavily on *close relationships*. As Håkansson and Ford state about the existence of business relationships “based on observations over the past 25 years...the relationships are likely to be complex and long-term and their current form is the outcome of previous interactions between business units”. Further, Håkansson and Snehota (1995, 25) argue that mutual orientation and commitment over time, as well as interdependence, are typical of the exchange interaction between companies in industrial markets. Still, the companies’ portfolio of relationships contains a variety of customer relationships including those with a transactional emphasis. This emphasis clearly varies between companies acting in different industries adopting different strategies (Anderson and Narus 1991). Secondly, the research has focused on only a *few business relationships at a time* (see e.g., Anderson, Håkansson and Johansson 1994; Johanson and Mattsson 1992). Clearly, research on customer portfolio management should take a broad perspective on relationships and the company context.

Arguably, *this research could also contribute* to the interaction and network approach. Brennan and Turnbull (2002) criticize IMP research for the absence of empirical data and evaluative studies, its predilection for conceptual model building, and its limited relevance to management practitioners. McLoughlin and Horan (2002, 536) further discuss the limitations of the IMP approach: it may give the impression that close relationships are necessarily a good thing. Similarly, the softness of the approach could be a problem (ibid. 2002, 537), in particular because of the lack of quantitative measures, the emphasis on whole systems, and the lack of attention to the focal firm. Furthermore, Möller (1992, 16) states what the interaction approach has gained in promoting understanding of the reciprocal process in industrial marketing it has lost in predictive capability. Hence this stream of research is weak in explanation and prediction (Möller 1994, 352). Still a notable body of knowledge about relationships and industrial markets has been created. Clearly, this study takes a managerial perspective, and it broadens the focus of IMP research through the application of quantitative methods and the provision of new predictive contextual measures.

2.3 Organizational learning based theories in marketing

The two theoretical perspectives described above concentrate largely on the

focal organization's surrounding context. Arguably, the internal perspective is also a fruitful approach to the corporate practices of customer portfolio management, given that it is largely about processing customer information. Hence if the literature on information processing is ignored, CPM could easily become a "black-box" practice. Further, the overlapping theories of learning, information processing and market orientation are close to portfolio management and must therefore be differentiated from the management of customer portfolios.

The structure of this section follows that of the two preceding ones. It begins with an overview of the literature on organizational learning, including theories of information processing and market orientation. Secondly the main concepts of these approaches as far as this study is concerned are discussed, and finally the contributions of these approaches to this research and vice versa are assessed.

Organizational learning is also addressed in a highly complex and broad stream of literature. Unlike the two discussed above, this theoretical perspective does not belong directly to the domain of marketing, but is rather part of organization theory. The basic idea here is that *organizational learning is not just the sum of each of the organization's member's learning*. Organizations, unlike individuals, develop and maintain learning systems that not only influence their immediate members but are also transmitted to others by way of organizational histories and norms (Fiol and Lyles 1983, 804). There is no organizational learning without individual learning, yet individual learning is a necessary but insufficient condition for organizational learning (Argyris and Schön 1978, 20). Levitt and March (1988, 320) argue that organizations learn by encoding inferences from history into routines that guide behavior. Routines refer to forms, rules, procedures, conventions, strategies and technologies around which organizations are constructed and through which they operate. Organizational memory also plays an important role in learning (see Huber 1991, 105–107).

Again, however, it must be concluded that the field of organizational learning is fragmented, and the literature reviews have revealed very different conceptualizations. Argyris and Schön (1978) identify six approaches to learning depending on how the organization is understood – whether it is a group, a collective actor, a structure, a system, or a cultural system. Shrivastava (1983, 10) separates four perspectives: learning as adaptation, as assumption sharing, as developing knowledge of the action-outcome relationship, and as institutionalized experience. Fiol and Lyles (1985, 803–806) distinguish two main approaches in the literature: learning as a change of cognition and learning as a change of behavior, in other words adaptation. Hence, learning could be defined as the patterns of cognitive associations

developed by the members of an organization (e.g., Argyris and Schön 1978; Fiol and Lyles 1985, 810–811; Weick 1991), or as the behavioral outcomes that reflect the patterns and/or cognitive associations that have developed (e.g., Cyert and March 1963, 171–175; Levitt and March 1988, 320). Reflecting this division, Huber (1991, 89) emphasizes the fact that the learning does not necessarily involve a change in behavior, but it does mean a change in the range of an organization's potential behavior. This view has also been adopted in many studies on marketing. For example, Slater and Narver (1995, 63) state that organizational learning on the most basic level is the development of new knowledge or insights that have the potential to influence the behavior of the organization. However, an important notion is that *behavior change is the necessary link between organizational learning and performance improvement* (ibid. 1995, 66).

Clearly, organizational learning per se is not the main focus of this study, and the cognitive theories are somewhat beyond the scope of the research. Organizational learning as a cognitive phenomenon represents changing associations, frames of reference and programs in organizations, and consequently calls for in-depth study of their functioning (Fiol and Lyles 1958, 811). As this study concentrates on corporate CPM practices, which represent rather concrete activities, it is not sensible to go very deeply into organization-wide learning as a cognitive process. *Rather, the learning-based theories of marketing that are closely related to adaptation represent a more meaningful stream of literature.* Two groups of learning-based theories that are especially relevant from the CPM perspective are marketing information processing and market orientation.

Learning theories play a prominent role in new theories of competitive advantage in marketing (Selles and Sallis 2003; Slater and Narver 1995, 66). The literature on *marketing information processing* and market orientation could be regarded as a focused case of organizational learning in the marketing context. Menon and Varadarajan (1992, 61) distinguish three types of use for marketing-research information, namely action-oriented (the direct application of knowledge to solve a problem), knowledge-enhancing (the use of knowledge for increasing knowledge and understanding of the issues of interest), and affective (the use of information to make people “feel good” about decisions). Significantly, they stress the need to specify the domain of knowledge unitization, in other words if it is on the corporate, business-unit, functional, strategic-management, or operational-management level, when these issues are under study (ibid. 1992, 60). Sinkula (1994, 36) distinguishes the use of market information from information processing, which encompasses the acquisition, distribution, interpretation, and storage of information, and he likens this process to organizational learning.

Jayachandran, Sharma, Kaufman and Raman (2005, 178–179), in turn, present five relational information processes: information reciprocity, information capture, information integration, information access and information use. However, these studies concentrate on the companies' use and processing of general market information. The focus in customer portfolio management is much more on the processes of analyzing, interpreting, and understanding customer information, and applying this knowledge in performing company actions. In other words, the emphasis is on how special customer information is processed rather than on the general processing of marketing information. Interestingly, the studies on information processing discuss its implications, the behavioral aspect, only on a very general level (see e.g., Jayachandran, Sharma, Kaufman and Raman 2005).

Market orientation is perhaps the most well known organizational-learning-based construct in marketing. It refers basically to how firms implement the marketing concept. It has been suggested that it is connected to company performance – when companies learn about their customers it helps them to create superior value for them and therefore affects company performance. Very mixed results related to company performance have been found, varying from positive (Ruekert 1992; Slater and Narver 1990; 1994), to mixed (Greenley 1995; Jaworski and Kohli 1993), and to very weak or non-significant relationships (Diamantopoulos and Hart 1993; Han, Kim Srivastava 1998; Pulendran, Speed and Widing II 2003). However, a recent meta-analysis of market orientation studies confirms a positive relationship between market orientation and performance (Rodriguez Cano, Carrillat and Jaramillo 2004). There are a number of different conceptualizations of how firms relate to their markets. Lafferty and Hult (2001, 100), among others, separate two main perspectives, namely market orientation as culture (cf. Deshpandé, Farley and Webster 1993; Homburg and Pflesser 2000; Narver and Slater 1990), or as behavior/management (Kohli and Jaworski 1990; Ruekert 1992; Shapiro 1998). They further argue that all conceptualizations have four things in common: they emphasize the customer, the importance of information, inter-functional coordination, and taking action. Clearly, these notions are close to portfolio management, and could help in its conceptualization. The managerial view of market orientation in particular is a close and interesting perspective in terms of this study.

The discussion now turns to the main concepts and contributions of learning-based theories to this study. Clearly, organizational learning and market orientation as discussed above are close to customer portfolio management. However, if market orientation is considered in more detail, it is seen to differ conceptually from it in several ways. First, market-orientation measures concentrate on understanding broad company-external *markets*,

including customers but also competitors (e.g., Narver and Slater 1990, 23). Further, as the focus is on company-external markets, it would be natural first to understand the customer needs in the markets and then to respond to this information. The emphasis in portfolio management is on understanding the customer base and the role and value of its relationships. Hence, CPM could be considered a special focused case of market orientation. It should be noted that when the aim is to study the customer base it is not reasonable to focus on the company-external market – it is rather the exchange context formed in interaction with customers that should be considered.

The main contribution of theories of learning and market orientation is that they will help in the conceptualization of customer portfolio management. These theories incorporate several notions concerning the processing of customer information, and form a theoretically meaningful and justified link from this to company performance. Nevertheless, current learning theories are very broad, whereas CPM is rather focused. The theories also emphasize the role of the different levels and functions of the organization in learning, which are not widely discussed in interaction and network theories, or in the context of relationship marketing and CRM.

2.4 A summary of the theoretical foundations

This research builds on three differing theoretical approaches, which not only overlap to a degree but also clash to a degree. The resulting broad theoretical framework is an outcome of adopting a critical pluralistic position. The reason for using several theoretical approaches concerned the complexity of the object of study. It was assumed that considering customer portfolio management from several differing standpoints would facilitate the production of more and deeper knowledge about the phenomenon in focus: understanding customer relationship management processes, exchange and relationships, and intra-organizational information processing. For the most part, the three theoretical approaches support each other, but in some respects there is an incommensurability problem in that they represent very different views of companies and of how corporate performance is explained. Scherer and Steinmann (1999) argue that it is possible to overcome this kind of incommensurability problem by practical means. Arbnor and Bjerke (1997) stress that incommensurable paradigms may be used in a single study if the main one is chosen and others are used to support it. Even though the chosen background theories are close to each other, there are some major differences. For example the CRM theories are mostly based on the idea of markets as the relevant context of companies, whereas interaction and network theories argue

that business markets are relational in nature.

Therefore relationship marketing and CRM theories form the basis of this research. However the interaction and network approach and learning theories also make an important contribution, as discussed in this chapter. The broad contributions of the different theoretical approaches to this research, and vice versa, are summarized below.

RM and CRM theories

The main contributions of RM theories:

- The conceptualization of CPM is supported by current CRM conceptualizations.
- The conceptual RM theories form a theoretically justified basis for studying CPM as a contingent phenomenon. The notion of market- vs. network-like contexts in particular is an interesting basis on which to form contingency hypotheses.

The contribution of this study to RM theories:

- This study conceptualizes customer level customer relationship management, which is currently lacking in RM and CRM literature.
- It broadens the focus of research on customer base management from the B-to-C, ICT, and strictly monetary customer value-centered view to a broader perspective in the B-to-B context.
- It gives new and rather rare empirical evidence of contingent RM.

Interaction and network theories

The main contributions of interaction and network theories:

- This study adopts the interaction and network approach's view of business markets. Relationships act as the dominant governance form in B-to-B markets. Given the general interconnectedness, the concept of the company environment is problematic. In reality, company-external contextual pressures are mediated through connected (customer) relationships. The exchange context is therefore the focal point in CPM.
- It also adopts the view of customer relationships inherent in the interaction and network approach: relationships are mutually developed over time, not selected.
- It adopts the view that relationship value must be seen broadly in business markets. As companies are often interdependent, the indirect, non-monetary aspects of relationship value assume major importance.

The contribution of this study to interaction and network theories:

- The study broadens the dominating focus of the research on exchange from description or understanding into an explanatory direction.
- It also broadens the current view of the company context in interaction

and network theories from considering a few actors at a time to looking at the broader corporate-exchange context. This makes it possible to compare companies' relational contexts.

Theories of organizational learning, information processing and market orientation

The main contributions of learning-related theories are:

- Learning theories enable the scope of this research to be extended from a black-box presentation of CPM to consideration of company-internal issues, thereby broadening understanding of what actually takes place inside the company.
- They form a theoretically justified link to studying the performance outcomes of CPM.

Finally, as these theoretical approaches differ considerably, the positioning of the study is illustrated by means of the framework developed by Astley and Van den Ven (1983, 247: see Figure 2 below).

	Deterministic	Voluntaristic
Macro level	Natural selection view	Collective action view
Micro level	System structural view	Strategic choice view

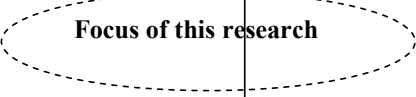


Figure 3 The meta-theoretical position of this research (cf. Astley and Van den Ven 1983)

The framework outlines a structured meta-theoretical scheme for classifying the major schools of thought in organization and management theory into four basic views. These four views are based on two dimensions: the level of analysis (micro/macro) and the relative emphasis on deterministic vs. voluntaristic assumptions about human nature. Clearly, the matrix is also potentially helpful in the context of marketing and could therefore help in explicating the basic premises about relationship management promoted in this study (cf. Walker, Ruekert, Roering 1987).

A rather straightforward focal-company perspective, as promoted in RM and CRM theories, is adopted. This is in contrast to many industrial-network theories, which have a more macro-level view on exchange. The research also promotes a very down-to-earth view of the deterministic or voluntaristic approach to relationship management. It is naturally based on the idea that it is possible to manage customer relationships, but at the same time it is recognized that these relationships always have a mutual aspect and cannot be simply managed by making just one-sided decisions.

It is assumed that some managerial styles are more likely to function better depending on the exchange context in which the company is acting. This kind of contingency thinking clearly belongs to the system-structural view of organizations, as depicted in Figure 3. In other words, “a manager must perceive, process, and respond to the changing environment and adapt by rearranging the organizational structure to ensure survival or effectiveness” (Astley and Van den Ven 1983, 248). As the hypothesis testing was conducted according to this logic, this research is positioned largely in the system-structural box in Figure 3.

However, it also takes a future-oriented view of portfolio management, according to which the company is in the long-term somewhat free to choose how and where to act, with which partners to cooperate, and how to develop its customer relationships and the structure of its customer base. This reflects the strategic-choice view, which emphasizes that “the environment is not to be viewed as a set of intractable constraints; it can be changed and manipulated through political negotiation to fit the objectives of top management” (Astley and Van den Ven 1983, 249). It could be argued that the research also adopts ideas from the strategic-choice side of the model presented in Figure 3. Hence, the ultimate position of this study belongs to both the system-structural and the strategic-choice domains.

3 A THEORY-BASED DEFINITION OF CUSTOMER PORTFOLIO MANAGEMENT

A close examination of the literature reveals the *lack of a clear, generally agreed definition* of customer portfolio management. Therefore this chapter aims at building a *theory-based definition* based on the customer portfolio models in the academic literature (cf. Kohli and Jaworski 1990). The conceptual portfolio models could be said to represent the *philosophy* behind CPM. Therefore, all of the major models published in journals will be analyzed carefully in order to identify the common unifying main themes in the theory. All significant management models concentrating on managing the customer base of a company in accordance with the value of the customers to the focal company, published in academic journals were systematically chosen for the literature review. In order to build up a comprehensive picture of the core aspects of portfolio management, the history of portfolio models in marketing is discussed first. This is followed by an analysis of the customer portfolio models that have emerged since the late 1970s. The identified main characteristics of CPM are used to derive a theory-based definition. This procedure will help to delimit the phenomenon under study, and provides a theoretically meaningful starting point for studying companies' CPM practices. Chapter 4 complements the resulting theory-based definition with a field-based view of CPM, the idea being to build up a more comprehensive picture of the phenomenon under study (cf. the discovery-oriented approach Deshpande 1983).

3.1 The history of portfolio theory in marketing

Portfolio thinking dates back to 1952 when Markowitz (1952) presented his portfolio theory for the management of equity investments in the area of finance. His work concentrates on the problem of resource allocation, or more specifically on the choice of the optimal portfolio of shares. The basic idea is that an investor considers the expected return desirable and the variance of the return (risk) undesirable. Markowitz's main contention was that it was possible to form a mathematically "efficient", diversified portfolio, i.e. the optimal portfolio that is preferable to all other non-diversified portfolios (ibid., 89).

Later, in the 1970s, portfolio models were widely introduced in marketing. The rapid rise in popularity of portfolio planning could be attributed to the fact that the 1970s-1980s was an era dominated by large, diversified multinational corporations. The management of complex companies with multiple products, acting in multiple markets of a multinational nature was a difficult task. Different portfolio models were suggested as strategic tools for dealing with this complexity and the heterogeneity large companies were facing (Wind and Mahajan 1981).

There are diverse marketing portfolio models, but like Markowitz's (1952) version they concentrate on the broad problems of resource allocation. The focal question is how to allocate effectively the limited resources of a company in order to ensure the optimal combination of business operations that will maximize the long-term returns at given level of risk (Turnbull 1990, 7). However, there are also notable differences between financial and marketing portfolios. The information available on marketing situations is far more limited than on equity investment (Turnbull 1990, 9). Moreover, marketing models deal with resources that are integral to the company rather than with neatly identified financial assets (see Ansoff and Leontiades 1976, 13-14). The evolution of portfolio models in marketing is discussed in the following with a view to producing a general picture of the portfolio phenomenon in business.

Portfolio models in marketing cover a wide *area of application*: business units (Ansoff and Leontiades 1976; Hedley 1976; 1977²; Wright 1978³), products and product lines (Day 1975; 1977; Kahane 1977; Mahajan, Wind and Bradford 1982; Wind and Claycamp 1976), the corporate and industry level (Allen 1979; Hofer and Schender 1978; Robinson, Hich and Wade 1983⁴), the international level (Wind and Douglas 1981), and general portfolio models (Wind and Saaty 1980).

They also differ notably in their *methods* of analysis. The original equity investment models were based on mathematical optimization. However, mathematical or stochastic dominance models (e.g., Kahane 1977; Mahajan, Wind and Bradford 1982) are in the minority in marketing, in which the matrix form is the most common. These include the Boston Consulting Group matrix (Hedley 1976; 1977), and the GE grid (cf. Hofer and Schendel 1978) in which two-dimensional grids are used to visualize a portfolio problem. Other methods include the Analytic Hierarchy Process, which differs from both

² The Boston Consulting Group Model is much older, however, its origins lying in the early 1970s.

³ Original: Wright (1974) *A system for managing diversity*. Cambridge, Mass.

⁴ Original: Robinson – Hitchens – Wade (1978) Directional Policy Matrix. *Long Range Planning*. Vol. 11, No. 3, 8–11.

mathematical and matrix portfolios and is used for solving complex multi-criteria problems hierarchically (Wind and Saaty 1980).

The *information* included in portfolio models also differs notably. Some of them stress the use of objective information in order to obtain good-quality results (Kahane 1977), whereas others promote the use of subjective information (Wind and Douglas 1981). Hybrid models utilizing both have also been developed (Robinson, Hich and Wade 1983).

The *objectives* of the models are directly or indirectly linked to resource allocation for managing diversity and heterogeneity. It can be stated that marketing portfolio models aim at producing a balanced portfolio, although there are notable differences in the strictness of this balance. As Markowitz (1952) described it, mathematical marketing-portfolio models aim at forming an optimal portfolio (of business units and products, for example), the idea being to build it up on the basis of dominance rules. This technique is based on the financial-portfolio theory and on the risk/return trade-off. However, an optimal portfolio can be constructed only by using mathematical methods and based on strict background assumptions (Mahajan, Wind and Bradford 1982). The matrix models also aim at efficient resource allocation, and generally stress the forming of a balanced portfolio. Portfolio balance refers to a situation in which the constituents produce the maximum long-run effects from scarce cash and managerial resources (current and future performance; Day 1978, 29), but also in which the interdependent different constituents support each other (so-called internal balance, see Day 1975, 209). It should be noted that the models differ notably in their aim to achieve a balance and in their emphasis on the interconnectedness of the different items. Some models merely provide the means for forming a portfolio as close to the “ideal” situation as possible. Interestingly, there are also models that just provide a means of visualizing the portfolio structure for management purposes, but which do not discuss the balance (Robinson, Hich and Wade 1983).

Naturally, the *analysis criteria and measurement* also differ in different models as they concentrate on different areas of application. Some general interesting notions prevail about the analysis criteria and the dimensions of the marketing-portfolio models, however. It is claimed that certain so-called standardized models are general and suit all conditions (Hedley 1976; 1977), whereas others stress the need for tailoring the criteria to company needs (Ansoff and Leontiadis 1976, 26–27; Wind and Douglas 1981, 72; Wind, Mahajan and Swire 1983, 98). The need to tailor the portfolio analysis rather than using ready-made general models is paramount, given the fact that it is highly sensitive to the definition and measurement of the analytical dimensions (Wind and Mahajan 1981, 157). The need for tailoring is supported in one of few empirical studies on corporate portfolio analysis,

conducted by Haspeslagh (1982): he found that informal adaptations were very important in management applications. Without informal differentiation in the analysis the portfolio planning easily becomes an isolated exercise rather than an integral part of the managerial process.

Finally, the *managerial implications* of the portfolio models also vary. Some of them give detailed advice on how to develop a balanced portfolio (e.g., Hofer and Schendel 1978), whereas others merely visualize or describe the optimal structure for managerial purposes (e.g., Wind and Douglas 1981). In spite of the diversity, however, the models are strongly future-oriented and provide tools for projecting current and future portfolios. In sum, the above review of early marketing-portfolio models suggests four main aspects of portfolio management.

First of all, these models are basically about managing diversity or heterogeneity through the structural analysis of portfolio constituents, the general objective being to form a balanced portfolio. However there are notable differences in strictness in terms of how they arrive at this balance. The aims vary from the explicit intention to form an optimal portfolio (possible only mathematically and thus inconsistent with business relationships), to the compilation of one that is internally balanced – which is as close to the ideal as possible – and to the visualization of a structure for management use. It should be noted that an optimal balance was the ultimate goal in the first models, but its explicit role has somewhat diminished over time. Still, the idea of an optimal portfolio may be at least implicit in all types of models (see e.g., Wind and Douglas 1981, 164–165.)

Secondly, the models are very heterogeneous. There is no single unified way of carrying out portfolio analysis, such as by means of matrixes, and there are notable differences in the methods and data used.

Thirdly, non-statistical/mathematical models incorporate strategies for managing and developing the portfolio on the basis of the analysis. Statistical models concentrate on portraying the optimal portfolio, which is clearly built on the optimal choice in the area of investment. Marketing portfolios must develop over time and cannot be pre-ordained.

Fourthly, tailoring the portfolio model, and taking the internal and external company contexts into account is stressed in the early marketing literature: portfolio models are very sensitive to measurement and definition.

3.2 Customer portfolio models analyzed

By the early 1980s the traditional marketing portfolio models concentrating on the problems of large diversified companies started to lose influence, which

could be linked to the broader changes taking place in business as it became increasingly global. The rapid changes in telecommunications, transportation, and information processing broadened the choice set of industrial buyers and consumers to the point that the products' country of origin was relatively unimportant and geographic distance was seldom a barrier. Business also became more knowledge-intensive. The global competition resulted in increasingly better product performance at lower cost to the customer, putting the dominating Western companies in a new competitive situation (Webster 1992, 4). Other major changes were also taking place, such as the shift in power structure from the traditionally strong manufacturers to distributors, and the overall need for companies to become more responsive increased (Möller and Halinen 1999, 414–416). These broad changes forced them to reorganize and restructure their assets in order to reduce costs, and incorporated the move from large complex businesses towards more flexible organizational forms. Hence, the dominant large centralized corporations started to downsize and delayer during the early 1980s. The new emphasis moved towards relationships, networks, value-adding partnerships, and alliances, which assumed importance as an organizational form (Webster 1992, 4).

These broad changes are also reflected in the literature on relationship management and the birth of the first customer portfolio models. As a traditionally strong method of strategic management, portfolio models were widely introduced in the context of relationship management in the early 1980s. So far, over 20 models have been reported in marketing journals, broadly aimed at efficient resource allocation among the customer relationships of the focal company based on the value of the customers for the focal firm. In other words, they aim at solving the difficult problem of how to differentiate between the many business relationships in a company's customer base. The logic behind this is that one should pay attention to resource allocation because customer relationships are not equally profitable, and they have different roles as far as the focal company is concerned (e.g., Zolkiewski and Turnbull 2002a; Cunningham and Homse 1982, 330).

There is a rich body of literature concerning various customer portfolio models, including several detailed reviews of the various theoretical alternatives (Eng 2004; Rajagopal and Sanchez 2005; Räsänen 1999; Turnbull 1990; Zolkiewski and Turnbull 2002a, 2002b; Yorke and McLaren 1996). However, there is currently no set definition of customer portfolio management. The existing reviews rather concentrate on the separate models and neglect the more abstract management level, and the picture therefore remains fragmented. This is exemplified in Turnbull's (1990, 20) notion about the complexity of CPM: "Portfolio analysis and management can be applied from various perspectives at various levels of aggregation and using different

combinations of factors or portfolio components depending upon the purposes intended and the specific situations confronting the company”.

Hence only a few general definitions of CPM exist. Johnson and Selnes (2004; 2005, 11) define it as “a process of creating value across a company’s customer relationships – from arm’s length transactions to strategic partnerships – with an emphasis of balancing closer relationships with weaker ones”. However, their view is more of a philosophy of portfolio management than an operational managerial perspective. The definition is abstract, neglects portfolio activities, and further ignores some major aspects of the suggested conceptual customer portfolio models.

Clearly, previous literature reviews have established some common ground. Still, the diversity and varied foci of the different models have made it difficult to form a unifying definition for CPM: the suggested approaches differ widely in terms of theoretical background, objectives, level of focus, analysis methods and criteria, and implications. Now all the major customer portfolio models published in journals to date are considered from a systematic analytical perspective with a view to identifying the core constituents of the customer portfolio concept in order to produce a unified theory-based definition.

Generally, there are two sides to the suggested models, namely an *analysis* of the customer base and the *managerial implications*. These two sides in the models produced from 1976 to date are discussed in detail below. Unlike in earlier literature reviews of portfolio management, which have concentrated on *individual* models, the focus in this one is on *comparing* the different ones and *identifying common themes*. The *models reported in the major journals are therefore analyzed in detail* in terms of their operationalization of the analysis criteria and the managerial implications. The table in Appendix 1, comprising the analysis dimensions and managerial implications for each of the published models, is used as a basis. Accordingly, the main analytical and management aspects are recapitulated in the following, and a unifying theory-based definition based on the unifying characteristics of the various models is derived.

3.2.1 The analytical dimensions of customer portfolio models

The literature on customer portfolios is dominated by matrix-type tools concentrating on analyzing the value of customers to the focal company. In the context of portfolio management, Zolkiewski and Turnbull (2002b) state that portfolio models consist of two- or three-dimensional axes, in other words customer analysis criteria comprising single, two, or three phases. These

dimensions may be further based on a single variable such as relationship revenue (e.g., Storbacka 1997), or on composite dimensions based on several criteria such as customer importance (e.g., Fiocca 1982). Research on customer portfolios has largely focused on these ready suggested dimensions, such as the difficulty of managing the relationship (e.g., Leek, Turnbull, and Naudé 2003). Generally, the studies so far have lacked a closer analysis of the variables. There are few exceptions, however, including the work of Johnson and Selnes (2005), who separate the economic, sociological, psychological, and operational perspectives in customer portfolio management, and the work of Eng (2004). The table in Appendix 1 sets out the analysis criteria (dimensions and operationalizations) applied in the different portfolio models.

Table 1 The main variables used for examining customer value in customer portfolio models

Author	Direct value			Indirect value				VP	RE	PR	BB
	prof.	volum.	safeg.	inno.	mark.	scout.	acce.				
Hartley (1976)	x	x						x			
Smackey (1977)		x						x			
Cunningham & Homse (1982)		x		x	x	x					
Canning (1982)	x	x		x	x			x			x
LaForge & Craven (1982)		x						x	x		
Fiocca (1982)		x		x	x	x	x	x	x	x	x
Dickson (1983)	x	x						x		x	
Campbell & Cunningham (1983)	x	x		x				x	x	x	
Dubinsky & Ingram (1984); Dubinsky (1986)	x							x			
Shapiro et al. (1987)	x										x
Krapfel et al. (1991)	x	x	x						x	x	
Rangan et al. (1992)	x									x	x
Pels (1992)		x		x	x		x		x	x	
Yorke & Droussiotis (1994)	x	x	x		x		x	x	x		x
Storbacka (1997)	x	x									x
Turnbull & Zolkiewski (1997); Zolkiewski & Turnbull (2002)	x		x							x	
Freytag & Mols (2001)	x	x		x	x	x	x	x	x		
Zolkiewski & Turnbull (2002)	x										
Ryals (2003)	x							x	x		
Dhar & Glazer (2003)	x		x					x			x
Johnson & Selnes (2004)	x							x	x		

VP=value potential, RE= relational element, PR= power related, BB= buying behavior

These criteria can be grouped into the following four broad theoretically meaningful classes: 1) the customer's current or future value potential for the focal company, 2) customer relationship variables, 3) power related variables, and 4) buying behavior variables. Table 1 above summarizes the main variables used for examining customer value in customer portfolio models in

academic journals.

It is clear from Table 1 that *customer value* forms the analytical basis of customer portfolio models. CPM thus represents a “selfish” approach to relationships – meaning that its value is seen from the selling company’s point of view. In other words, the focus is on the value of the customer to the focal company and not on the value created for the customer. The value of a customer is nevertheless a complicated issue, and can be approached from several different angles. The most important of these from the perspective of the selling company are discussed next (for good reviews of the broader value concept, see DeChernatory, Harris, and Dall’Olmo 2000; Möller and Törrönen 2003).

Zeithaml (1988) showed in the consumer context that the concept of value incorporates both benefits and sacrifices. This prevalent view in marketing is also relevant in business-to-business settings (De Chernatory, Harris and Dell’Olmo 2000; Lapierre 2000; Ulaga and Eggert 2005). Hence the assessment of value is a two-sided issue, comprising the negative cost-related aspect and the positive aspect. Value could be considered narrowly in purely monetary terms (e.g., Anderson, Jain, Chintagunta 1993), but there are many studies emphasizing its non-monetary benefits and sacrifices. Baxter and Matear (2004) separate tangible and intangible value in customer relationship. More specifically, intangible value comprises the human (competence, attitude, and intellectual agility) and the structural-capital (relationships, the organization, and renewal and development) dimensions. Wilson and Jantrania (1997, 297–300) separate three aspects of relationship value: economic, strategic and behavioral. The economic value involves anything from simple cost reductions to a complex concurrent engineering relationship that creates value through cost savings in design, assembly and field service, and may be beneficial in terms of reducing the time to market. Interestingly, the authors do not discuss issues of relationship profitability. Strategic value approximates the long-term aspects of value co-creation in a relationship, and refers to goal congruence, strategic fit, and competency. Behavioral value, in turn, ensures the long-term growth of a relationship and refers to social bonding, trust, and cultural aspects.

In the context of this research, the broadest and most refined conceptualization of relationship value is in the work of Walter, Ritter and Gemünden (2001), who distinguish between the direct and indirect value functions of customer relationships. The direct value functions concern profit, volume, and safeguarding in dyadic contexts, while the indirect value functions comprise innovation, market referencing, scouting, and accessing. The former may be realized within a specific selling relationship, whereas the latter are assumed to have an oblique effect on the partners because their

relationship is directly or indirectly connected to other relationships (Walter, Ritter and Gemünden 2001, 367). The various approaches to analyzing value in customer portfolio models summarized in Table 1 are based on this conceptualization. Clearly, the foci of the different models vary from the purely monetary to very broad notions of customer value.

A close examination of the customer portfolio models reveals that time is an essential aspect of portfolio management. Thus, Walter, Ritter and Gemünden's (2001) conceptualization of relationship value is expanded in Table 1 with the addition of a separate column for customer future value potential. Interestingly, 14 of the 21 models stress the future value potential of a customer, and include dimensions such as customer sales growth, customer (industry) growth, customer share, sales trends, account potential, and different customer-life-time values. These aspects are projections of expected customer value or future value potential, and are not history-based. Hence, in terms of the theory, CPM is essentially a *future oriented practice*.

Secondly, even though customer value is the most important constituent in the analysis, the models also include other variables for analyzing the portfolio of customers. The *relationship characteristics* have a major role in many of them. Clearly, these variables do not represent customer value per se, but rather concentrate on the state and nature of the relationship in terms of the following: friendship, strength, competition, length, managerial distance (Fiocca 1982); age, life-cycle (Campbell and Cunningham (1983); goals, interest commonality (Krapfel, Salmond and Spekman 1991); information exchange, cooperation, institutionalization, commitment, trust, distance, age (Pels 1992); perceived strength of the relationship indicated by experience, pricing, speed of response, frequency of contact, cooperation, trust and length, friendship, and management distance (Yorke and Droussiotis 1994); competition, mutuality, co-operation, goal similarity (Freytag and Mols 2001); risk from the customer indicated by the relationship strength, the risk of being taken over, knowledge about the customer, and how well the customer is managed (Ryals 2003). Even though these relational aspects do not represent value per se, they are connected with it because the relationship characteristics are connected to risk and the continuity of customer relationships (see Ryals 2003). Further, they approximate the behavioral value that Wilson and Jantrania (1997) argue ensures the long-term growth of the relationship. Clearly, the development of and achievements in relationships may significantly affect the realization of their future value.

The third major group of analysis variables consists of *power in customer relationships*. Examples include the relative share (Dickson 1983); buyer power (Rangan, Moriarty and Swartz 1992); power (Fiocca 1982); power balance (Campbell and Cunningham 1983); power position, criticality,

replaceability, and slack (Krapfel, Salmond and Spekman 1991; Turnbull and Zolkiewski 1997). Again, none of these aspects is directly connected to customer value, and from the customer portfolio perspective, questions of dependency and power may be vital. For example, if a company is overly dependent on a few customers it may become very vulnerable. Hence, otherwise low-value customer relationships may be very important in terms of growth, continuity and spreading risk. This was also a major finding in Johnson and Selnes' (2004) study: it seems essential for a company to include weaker relationships in its portfolio in the interest of growth.

Fourthly, aspects of *buying behavior* (in broad terms) are present in some models. Customer portfolio models do not deal with financial assets in the same way as investment portfolios do. Managing customers based only on their value to the selling company would probably be very dangerous in the long-term. Thus, buying-behavior variables that are essential to segmentation may also be crucial in portfolio decisions, which are connected to customer treatment strategies. Examples include customer requirements (Canning 1982), price sensitivity (Rangan, Moriarty and Swartz 1992; Shapiro, Rangan, Moriarty and Ross 1987), buying behavior, products and markets (Fiocca 1982), buying behavior, claims, payment problems and competitor entrenchment (Yorke and Droussiotis 1994), buying behavior (Storbacka 1997), and predictability and volatility (Dhar and Glazer 2003). Similarly, customer needs feature in some models in terms of customer requirements, products, the industry, and competitiveness (Canning 1982), or just as general needs (Fiocca 1982). Clearly, customer portfolio management should also take into account the value to customers.

This examination of analytical procedures in customer portfolio theory represented by various models indicates that *customer portfolio management is a strongly future-oriented practice*. Thus far, most studies involving the empirical testing of portfolio models have been restricted to questions concerning the most important variables explaining the performance of individual accounts (cf. Rajagopal and Sanchez 2005, 312-313; Eng 2003, 49). However, focusing only on the value of individual customers is a very narrow view in CPM terms: it is rather a question of *analyzing the roles of different customers in the customer base in the provision of value for the focal company*. For example, otherwise low-value customers may be valuable in terms of decreasing the risk of becoming overly dependent on certain others, or in providing future growth potential. Consequently, the mere maximization of the lifetime value or revenues of single customers is a restricted view of CPM. Portfolio balance is not just a question of optimizing the individual constituents: it is achieved when the different constituents support each other (internal balance, interdependency) in the attainment of long-term-

effectiveness goals. *It could thus be concluded that portfolio management concentrates on the role of different customers in providing long-term value to the company, rather than just on optimizing profits from individual accounts.*

3.2.2 The managerial implications of customer portfolio models

Now the focus turns to the managerial implications of customer portfolio models. This represents the second essential aspect – what will be done with the knowledge gained from the analysis. Again, if the various models are examined cursorily they seem to be very fragmented in their implications (see Appendix 1). Räsänen (1999, 98–99) proposed a grouping of the models into two main classes based on their nature. The first group consists of those in which the focus is on individual seller and buyer relationships. The typical model in this group “attempts to increase the effectiveness and efficiency of sales people and is therefore operative in its nature”. The emphasis in the second group is on “directing the strategic resources of the firm and directing the customer relationships for safeguarding the future of the business as a whole”. These models are thus strategic in nature. However, this research adopts an overlapping but a more abstract approach to portfolio management. All of the implications in portfolio models deal, in the end, with resource allocation (Turnbull 1990). The implications of the customer portfolio models listed in Appendix 1 can be grouped into two theoretically meaningful classes based on *matching* and *development* (see Table 2 below).

The first group concentrates on *matching the resource allocation of a company to the value of the different customers* (the first point in Figure 4). More specifically, matching refers to customer treatment decisions, in other words that important and high-potential customers should be allocated more resources than low-value customers. These implications vary in portfolio models from straightforward cost-efficient resource allocation (Yorke and Droussutis 1994) to broader issues such as how to interact with a customer (Krapfel, Salmond and Spekman 1991). Customer matching also includes sales-related implications that are connected to the efficiency of sales efforts, such as plans for market penetration in current, geographical, and other SIC (Standard Industry Classification codes) markets (Hartley 1976), sales programs for customers with a similar value and requirements (Canning 1982), different trading tactics for different customers (Dickson 1983), and broader marketing strategies around pricing and levels of service for different customers (Shapiro, Rangan, Moriarty and Ross 1987; Rangan, Moriarty and Swartz 1992), and pricing (Storbacka 1997).

Table 2 The managerial implications of customer portfolio models

Author	Matching customer value (customer treatment)	Development of relationship portfolio structure
Hartley (1976)	Strategies for market penetration (present, geographical, other SIC)	
Smackey (1977)	Adjust sales force resources to estimated customer potential	
Cunningham & Homse (1982)		Help understanding different customers' roles for developing customer structure
Canning (1982)	Sales programs for customers with similar value and requirements	
LaForge & Craven (1982)	Adjust sales resources to customers with different potential	
Fiocca (1982)		Understand customer structure, improve/ hold/ withdraw position with a customer
Dickson (1983)	Differentiate trading tactics for different customers	Help for developing long-term channel distribution mix: offensive investment, defensive entrenchment, strategic retreat, abandonment
Campbell & Cunningham (1983)	Help for allocating resources (short-term)	Help for understanding and developing customer structure
Dubinsky & Ingram (1984; 1986)	Adjust resource allocation to customer value and future potential	Develop needed customer relationship categories
Shapiro et al. (1987)	Marketing strategies (e.g. price, service) for different customers	Help for understanding and developing customer (profitability) structure
Krapfel et al. (1991)	Adjust, match, and signal interaction/ management style to different customer relationship types	Help for understanding and developing customer structure
Rangan et al. (1992)	Adjust pricing and level of service to customer value	Help for understanding and developing customer (profitability) structure
Pels (1992)	Tailor marketing team to key-clients	
Yorke & Droussiotis (1994)	Adjust resource allocation to customer value	Plans which relationships to develop stronger for long-term portfolio balance
Storbacka (1997)	Adjust customer strategies to customer costs / profitability	Help for understanding and developing customer (profitability) structure
Turnbull & Zolkiewski (1997)	Adjust customer strategies to customer costs (monitor migration patterns)	Help for understanding customer portfolio structure
Freytag & Mols (2001)	Prioritization in resource allocation: how to act towards a customer	Which relationships to develop, maintain, terminate
Zolkiewski & Turnbull (2002)	Adjust relationship management strategies to customer value (such as KAM, attention, sales, contracts, time, etc.)	Explicit plans for developing customer base structure: which relationships needs to be created, developed, maintained, broken/ discarded
Ryals (2003)		Understand and develop customer profitability structure: Try to reduce customer risk, acquire less risky customers
Dhar & Glazer (2003)		Allocate funds for getting a identified optimal portfolio; Try to form an optimal portfolio (maximise risk adjusted customer life-time value)
Johnson & Selnes (2004)		Help for understanding and developing customer structure

Secondly, the focus of the resource allocation in some models is on *developing* relationships and the relationship portfolio structure (second point in Figure 4). In practice, this refers to decisions concerning *which customer relationships to develop and in what direction*. Zolkiewski and Turnbull (2002, 578) separate the possible relationship-development implications in the form of the following four questions. Do new relationships need to be created? Which relationships should be developed? Which relationships should be maintained? Are there any relationships that should be broken/ discarded? The focus here moves clearly from efficiency at the current moment to goals of long-term effectiveness. Again, portfolio balance is a major aspect in the development of the portfolio structure from the long-term perspective.

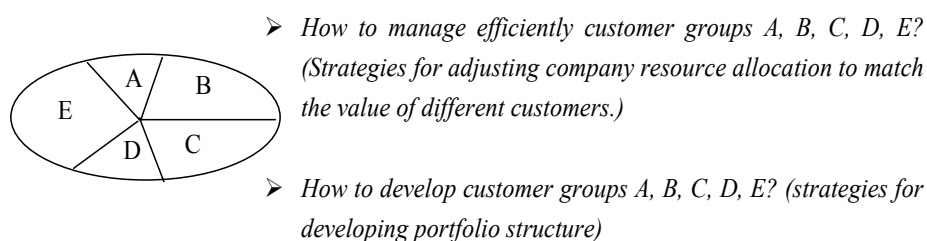


Figure 4 Two approaches to customer portfolio management in the hypothetical ABCDE portfolio

However, even this division is not exactly clear-cut: customer treatment decisions always include a relationship-development aspect and vice versa. For example, Storbacka (1997) concentrates purely on analyzing customer profitability – still this work represents both the operative matching or treatment perspective and the more strategic focus on which relationships to emphasize and develop in the future, hence touching on customer structure decisions. Clearly, the relationship-development aspect may be more implicit, such as in models aimed at visualizing the customer structure for relationship-development purposes, or more explicit when there is discussion about portfolio balance and guidelines on how to develop the structure. Finally, it is important to keep in mind the fact that relationship portfolios are always developed over time, and are not selected (Hunt 1997, 440).

Portfolio balance is discussed extensively in only a few customer portfolio models (e.g., Campbell and Cunningham 1982; Johnson and Selnes 2004). Nevertheless, on the basis of the review of portfolio models in marketing, it could be argued that the idea of portfolio balance lies at their core. In fact, careful scrutiny reveals that most of the models discuss the balance of a

relationship portfolio at least briefly. Hence, it could be said that the very basic question of balance addressed in the early marketing portfolio models is still present, but in an implicit form.

In sum, again two interesting issues emerge in terms of the implications of customer portfolio models: the time frame and the question of efficiency versus effectiveness. First of all, portfolio management has a shorter-term goal in that it concerns the efficient management of customers in the current portfolio (matching focus). Secondly, there is a longer-term perspective in terms of developing the future customer portfolio structure to meet the company's long-term goals (development focus), as pictured in Figure 4 above. Hence, in practice, differentiated resource-allocation strategies incorporate both the degree to which a company adjusts its current customer treatment to the customer value, and its strategies for developing its customer relationships in the future to better meet a balanced customer structure (cf. Turnbull 1990).

3.3 A theory-based definition

Given the common core aspects of all theoretical customer portfolio models identified above, it is possible to form a theory-based definition of CPM. If the identified key characteristics of portfolio models are taken as a starting point, customer portfolio management could be defined as: *“a practice by which a company analyzes the role of different customers in providing current and future value in its customer base for developing a balanced customer structure through effective resource allocation to different customers or customer groups”* (cf. Terho and Halinen 2007). This definition clearly reflects the core aspects present in the customer portfolio *theory*.

A customer portfolio balance could be regarded as the main analytical goal, as it is explicitly present to a greater or lesser degree in the proposed models. The balance aspect is rarely explicitly present in models of relationship portfolios, but is still inbuilt: most of them aim for a balanced combination of relationships that serves the long-term profitability and effectiveness goals of the focal firms (cf. Turnbull 1990, 21). Some authors also stress the need to see the totality of relationships as an investment portfolio in which the balance is a result of the long-term risks and revenues in customer relationships (Ryals 2003). Portfolio models also involve effective differentiated *resource allocation*, which could be seen as a key means for developing a balanced customer structure. However resource allocation inevitably broadly includes aspects of both customer treatment and relationship and portfolio development. Naturally, the analysis of the customer base involves

determining the *value of the customer relationships* to the focal firm in a broad sense, and distinguishing between customers of different value. The focus is not only on the value of the individual customer in terms of profitability, for example, but also on the *role of different customers in providing value to the focal company*. For example, a company may need certain lower-value customers in its portfolio for reasons to do with growth, economics of scale, or risk reduction. Finally, portfolio management is strongly *future-oriented* as the focus is not only on the current situation, but also on the future value of customers and the development of the future customer base.

This theory-based definition derives purely from portfolio theory represented in the various customer portfolio models. It therefore reflects the philosophy and the potentially idealistic statements on CPM. It also rests on the abstract level, and it remains unclear regarding the specific activities that translate the management philosophy into practice. It is therefore of limited practical value in a study of companies' CPM practices in business, which may differ from the portfolio management theory. In line with Kohli and Jaworski (1990, 3), it is suggested here that an *operational definition is needed* for studying this phenomenon empirically. Such a definition would move the focus from *philosophy to practice*, and would *explicate the activities represented by the CPM concept*. In order to arrive at an operational definition an additional field-based view of CPM is needed, and a qualitative field study of companies' CPM practices was therefore conducted. The next chapter describes this study, presents the findings, and offers an operational definition of CPM synthesizing the theory-based and field-based views.

4 AN OPERATIONAL DEFINITION OF CUSTOMER PORTFOLIO MANAGEMENT

4.1 A field study of CPM practices in business

When it is a question of developing new constructs, content validity must be built into the measures through the development of the items. As such, any measure must adequately capture the specific domain of interest yet contain no extraneous content (Hinkin 1995, 969). As the focus of this study is on customer portfolio management practices (in other words the implementation of the CPM concept in practice), the above theory-based definition is problematic in that the various suggested models represent a relationship-management “philosophy”, an ideal, or a policy statement (c.f Kohli and Jaworski 1990, 1). It is very probable that corporate CPM practices are not perfectly similar to academic models, and indeed that they differ from them. Similarly, the theory-based definition is abstract and does not help in studying the practices. Related to this, Kohli and Jaworski (1990, 3) discuss the differences between the “received view”, in other words the ideal in the literature, and the reality in business, and stress the need for fieldwork in the study of unexplored marketing practices. An empirical field study may give a significantly clearer idea of the domain of a construct and hence enable a more precise definition. A qualitative field study would allow the forming of a rigorous definition of customer portfolio management in the business. In sum, contrasting the theory-based ideals with empirical evidence emerging from field interviews could facilitate theory development, construct measurement, and eventually theory testing (ibid. 1990, 3).

Hence, a *qualitative field study* was conducted in order to acquire a deeper understanding of CPM practices in business (the field-based view). It could be considered an explorative *pilot study* carried out in order to gather preliminary empirical evidence about corporate CPM practices in different business contexts. There were three objectives.

First of all, the main purpose was to explore customer portfolio management in companies in order to contrast it with the theory-based definition. This empirical exploration aims at the formation of an operational definition that is not only theoretically rigorous but also matches business reality and is relevant to practitioners. Importantly, such a definition should explicate the CPM *activities* that translate the underlying philosophy into

practice. The following two aims were supportive and their role was more implicit than explicit.

Secondly, it was assumed that the field study would help in generating items for the CPM measure. When new constructs are proposed either inductive or deductive logic may be applied in the item generation (Hinkin 1995, 969). *Deductive* scale development utilizes a classification schema or typology prior to the data collection. This approach thus requires an understanding about the phenomenon to be investigated, and a thorough review of the literature to allow for the development of the theoretical definition of the construct under examination. Conversely, the *inductive* approach is so labeled because there is often little theory involved at the outset as the researcher attempts to identify constructs and to generate measures from individual responses. When there is widespread theoretical knowledge about a phenomenon it is reasonable to adopt deductive logic (from theory to empirics) in the construct development. Clearly, there are many conceptual studies concerning CPM support for the adoption of deductive logic. Hinkin (1995, 969) further separates two perspectives in deductive construct development. Fully deductive logic could be applied, or the conceptual definition could be grounded in the theory, but then a sample of respondents who are subject-matter experts could be asked to provide critical incidents that are used to develop the items. Here, the idea was that the qualitative field study would be of help in forming the preliminary items for the customer management measure.

Thirdly, the qualitative field study aimed at gathering detailed knowledge about companies' CPM practices in different kinds of contexts. This *comparative* perspective helped in forming the contingency hypotheses of this study. A separate article summarizes the detailed findings concerning company practices in different contexts – see Terho and Halinen (2007). The contribution of the qualitative pilot study to the formation of the hypotheses was not in allowing them to emerge directly from the findings: its role was rather *supportive*, and it *guided the search for a relevant theoretical basis on which to build them*. Therefore the detailed field study results are not discussed in detail in this dissertation. The selection of the companies for the pilot study and the interview themes are discussed next.

4.1.1 Selection of the companies for the field study

Several criteria were used in the selection of the companies for the pilot study with a view to obtaining a sufficiently extensive picture the phenomenon studying question. This was important in that the inclusion of only certain kinds of companies could have resulted in a distorted picture of CPM practices

in business. First of all, the companies were known to have put some effort into *customer portfolio management*. Secondly, the focus was on *relatively large companies, which are more likely to have sufficient resources for implementing CPM (vs. laissez-faire management)*. Thirdly, the *business-unit level* was targeted since the business units of a large company are likely to operate in diverse fields, thus imposing different requirements on portfolio practices. The researcher had several discussions with consultants and researchers in the process of identifying suitable companies and securing access to them.

The study was based on a *theoretical sample of seven purposefully chosen firms* assumed to represent as much variation as possible in terms of the business and the customer base, the aim being to obtain an adequate picture of various CPM practices (cf. Eisenhardt 1989, 537). This rather limited number of companies was justified on two counts. First of all, the study resources were limited and did not enable very in-depth examination. Secondly, the interviews in the companies revealed some clear patterns that contrasted with the theory-based definition of CPM. As these patterns were consistent and the companies had been carefully chosen to represent very different businesses, the number of companies was considered sufficient.

Table 3 Company characteristics in the qualitative study

	low		(medium)			high	
Industry / firm code	Energy A	Insur. B	Log. C	Paper D	Paper E	ICT F	ICT G
<i>Focal firm strategy: cost superiority / value added</i>	cost	cost	cost/val	value	value	value	value
<i>Main products / services: complexity & uniqueness</i>	2	3	3	4	4	6	7
<i>Indirect context: dynamism of industry</i>	2	2	3	5	4	6	6
<i>Interaction: intensity of exchange</i>	1	1	3	5	5	6	7
<i>Interaction: genral level of adaptations</i>	2	2	3	5	5	7	7
<i>Interaction: genral level of cooperation</i>	2	3	3	5	5	6	7
<i>Customer relationships: relational emphasis</i>	2	2	3	4	4	5	7
<i>Customer relationship: general interdependency</i>	2	3	3	4	4	6	7
<i>Customer relationships: number</i>	<10000	<10000	<10000	>5000	>5000	>500	>100

With a view to gaining access to maximally different firms in the field study, a number of factors were taken into account in their selection: differences in their strategies (cost vs. value-added emphasis), in their main products and services (simple and standardized vs. complex and tailored), in

their customer base structures (large vs. narrow), in market concentration (many vs. a few potential customers), and in industry dynamics (mature and stable vs. developing and dynamic). Table 3 summarizes the main characteristics of the selected companies in terms of strategy, products, indirect context, interaction and relationships, rated from very low (1) to very high (7) in the interviews. All the informants were asked to comment on the ratings concerning the relational context of their company as evaluated from the interview data. The comments supported the ratings and the idea that the companies covered enough different kinds of businesses and contexts of exchange. The following industries were represented: energy, insurance, logistics, paper (two companies), and ICT (two companies). For a more detailed discussion on the company selection, see Terho and Halinen (2007).

4.1.2 The interviews and themes

A total of seven semi-structured interviews were conducted in the chosen business units during 2004, each involving a top-level manager responsible for customer management. A single-informant approach was used as all the respondents were in key customer management positions and possessed the necessary overall knowledge and expertise about the management practices in the company.

The interviews lasted approximately 1.5 hours and the discussions were kept as broad as possible in the interests of obtaining rich data about the CPM practices. Even though the study themes were based on theory, the focus was still explorative and the aim was to elicit as much information about these practices as possible. The academic concept of customer portfolio management was found to be problematic in the interviews: only some of the firms used the concept – or were even conscious of its existence. It became clear that they all had put a great deal of effort into analyzing and managing their customer bases based on customer value, but they used other terms for their practices, such as value segmentation, customer base analysis, sub-segmentation, value-matrix analysis, or just customer analysis. A total of six main themes were covered in the interviews:

The first theme concentrated on *background information* on the company and the industry concerned, and further questions covered the structure of its customer base and its characteristics. The idea was thereby to obtain knowledge and to ensure sufficient coverage of all the companies in the study.

The second theme concentrated on the analysis of the customer base in the process of portfolio management, in other words how they *analyzed and classified their customers*, especially in terms of their value. More specifically,

the questions touched on issues such as the methods used, the criteria on which the customers were evaluated, grouped and ranked, and the objectives of the company in this context. This theme corresponds to the theoretical Chapter 3.2.1 on the analytical dimensions of portfolio models.

The third theme was connected to the *managerial aspects and the implications* of CPM practices. In other words, it concerned what the companies did with their customer base knowledge, and what kind of implications they drew from its management, in other words what concrete resource-allocation strategies or plans they had for different customers and customer groups. These questions are hence connected to the topics discussed in Chapter 3.2.2.

The fourth theme broadly dealt with the practical *implementation of customer portfolio management*, hence moving the focus from strategies and planning to the more concrete level, which remains largely unexplored in current studies. The discussion covered several broad areas concerning the organizational functions and levels involved, customer management responsibilities, the operative vs. strategic focus, how formal the portfolio management practices were, and the role of interpersonal and interdepartmental relations.

The fifth theme concentrated on the possible *perceived problems* in the company's customer portfolio management. The questions covered aspects referred to as problematic in the literature, such as access to customer data and other customer information, definition problems to do with customer evaluation (such as customer profitability), and other possible perceived problems in customer management practices.

Finally, the interviewees were asked about their *overall experiences and satisfaction* with their company practices. The questions covered aspects such as the position, or the role, of the portfolio practice in the company, what it had thereby accomplished, and how the interviewee felt the management practices should be developed in the future.

4.1.3 Analysis of the data

A rather straightforward procedure for analyzing the interview data was adopted, given that the issues under study were concrete aspects of strategic marketing planning and did not require extensive interpretation in to the way that narratives do, for example. Because the empirical data was not extensive, no formal coding or qualitative analysis programs such as NUDIST were used.

Yin (2003, 106–108) proposes two general strategies for analyzing case-study data: case descriptions and theoretical propositions. Even though this field study was not a case study aiming at a thorough understanding, both of

these analytical strategies were applied.

First of all, it was possible to form a broad overall picture about the companies' CPM practices (see Terho and Halinen 2007). This process did not involve detailed descriptions, but rather entailed analytic observation of the main aspects. Given a flexible interpretation, these observations provide an overall picture of the companies' practices that corresponds to a case description.

Secondly, the main purpose of the field study was to form an operational definition of portfolio management. What is interesting, therefore, are the possible similarities and differences between the theory-based definition and companies' management practices. According to the general theoretical proposition for analyzing interviews, the theory based-definition and the practice should be similar. In other words, the focus of the analysis was in finding general differences between the companies' practices and the proposed theoretical definition.

In order to increase the validity of the interpretations, the informants were asked to check the main findings from the interviews. Thus all interpretations of CPM practices were approved by the interviewees. Obtaining confirmation of findings may help in making them more meaningful, accurate and credible in that it is possible to correct possible errors in the interpretation of facts, and thus to make the ideas expressed by interviewees clearer to the researcher (Leininger 1994, 108). The comments received clearly supported the validity of the interpretations of companies' CPM practices.

4.2 The findings of the pilot study

When the interviews were analyzed two patterns were sought: the commonalities and the differences between portfolio theory (models) and praxis. The similarities are discussed briefly below, and the three following subchapters summarize the main differences.

According to the interview data, *the CPM practices of the pilot study companies were largely aligned with the theory-based definition*. Most of the companies had been developing their practices for only a few years, and they all had some planned analysis procedures in use. As with the portfolio models, there was great diversity in the customer analysis criteria and methods, and in the CPM implications. Still, on the more abstract level, the essential aspects of the theory-based definition were present: most of the companies analyzed customer value from a broad and future-oriented perspective. Moreover the practices concentrated on differentiating between customers and the prioritizing of resource allocation. Although the balance aspect was not

explicitly present, it was implicit in the long-term goals of the practice.

The heterogeneity in the company practices has a direct effect on the conceptualization of portfolio management. It was clear from the interviews that the companies had put effort into tailoring their customer management practices to the contingencies arising from the special characteristics of their business. This calls for a relatively high level of abstraction in the measurement. In other words, the CPM conceptualization and measurement should not only capture the essence of the concept, but should also be broad enough to cover the various manifestations of the practice (cf. Viswanathan 2005, 5–14).

However, the really interesting issue for this study concerns the differences between the theory and business practice. It seems from the interviews that CPM is, in practice, a broader issue than the conceptual models suggest. A comparison of the empirical material and the theory-based definition revealed three main patterns that are not present in the theoretical literature on customer portfolios and therefore in the theory-based definition of CPM: the process nature of portfolio management, the company-internal adaptation as CPM develops over time, and the role of the various organizational levels and functions involved. These three issues are discussed below.

4.2.1 CPM as an ongoing analysis and responsiveness process

First of all, the theoretical models concentrate on the mechanical design of portfolio analysis and management. Hence their emphasis is on one point in time, in other words on design and analysis, and on developing strategies for different kinds of customers. In practice this is a very limited view, however.

According to the interview data, customer portfolio management is likely to be an *ongoing, continuous process* rather than a separate act of analysis or strategy development taking place at one point in time. Portfolio management is clearly a strategic issue, but it takes place largely in daily business with customers. It seems that the main aspects of CPM processes concern *customer analysis*, in other words processing customer information, and *responding to the new knowledge*. These two activities emphasize the process nature and they are somewhat present in the theory-based definition, although they are both more generally apparent here. In particular, the idea of responsiveness is at the core of portfolio management, and also emphasizes the need to move from customer management strategies to their implementation in concrete daily actions.

This view of CPM as customer information processing and responsiveness to the knowledge gained is consistent with theories of organizational learning (Huber 1991), information processing (Sinkula 1994), and market orientation

(Kohli and Jaworski 1990), and even with a very broad view of CRM (Zablah, Bellenger and Johnston 2004). The role of customer information acquisition is often emphasized in these theories. However in this research the information acquisition is better seen as an *antecedent* rather than an active part of portfolio management. This delimitation is reasonable in terms of keeping the customer management construct focused on the core aspects emphasized in the theory. Hence, this study adopts a rather managerial view of portfolio management that is close to the strategic view of market orientation (Kohli and Jaworski 1990; Ruekert 1992; Shapiro 1998), rather than considering it part of the organizational culture (Deshpandé, Farley and Webster 1993; Narver and Slater 1990). As in Kohli and Jaworski (1990), CPM in business is considered a process that involves the two main activities of *customer analysis* and *responsiveness*. Even though this kind of conceptualization is close to the construct of market orientation, it is much more focused on the relationships in the customer base and on their value than on processing general market information.

4.2.2 CPM as an adaptation process

Secondly, it appears that CPM practices develop over time as companies *adjust* their portfolio management practices. This adaptation may be based on the explicit planning and development of customer management activities. Several companies had used external sources such as consultants in developing their practices. The interviews revealed that even though many of the companies used consultants in building up their customer management practices, they were not bound to ready solutions. Many used them to improve their current practices, and most of the interviewees stressed the need to build and tailor them in-house. Interestingly, the adaptation of practices does not have to be based on strict managerial planning, or formal development, but could be based on learning from feedback, new knowledge, insights achieved, or trial and error. Hence, the CPM practices in many firms had undergone, or were undergoing notable changes as the companies made adjustments based on their experiences. In other words, companies learn not only from their customers but also from their own practices. These findings emphasize the role of adaptation in customer portfolio management in addition to the efforts put into it.

The results of the qualitative study indicate that *the adaptations in practice differed notably from company to company*. Some firms had put lots of effort into formal planning and adapting, whereas others did not place so much emphasis on the explicit, formal design of their portfolio management

practices. Instead, they operated on a more informal level, realizing their portfolio management through daily interaction with customers – as noted by Räsänen (1999) and Leek Turnbull and Naude (2002). These differences in management style reflect the concept of CPM design, which refers to an explicit focus on the planning and adaptation of the activities. This is a useful concept in terms of throwing light on *companies' CPM style*.

Theoretically, the notion of design is connected to the concept of a mechanistic or organic management style discussed widely in theories of organizations and marketing (e.g., Burns and Stalker 1961, 96-126; Chakravarthy 1982; Dahlstrom, Dwyer and Chadrashekar 1995). The so-called *mechanistic* organizational style combines the use of formal rules and procedures with limited participation in decision-making, whereas *organic* decision-making entails few procedures but high involvement (Burns and Stalker 1961, 119-121; Chakravarthy 1982, 38; Dahlstrom, Dwyer, and Chandrasekaran 1995, 43). It appears from the interviews that CPM design is not a characteristic of the whole organization, but rather a feature of the CPM style.

In sum, CPM is not one fixed procedure, but a continuous long-term process involving the adaptation of management practices. Companies adjust their CPM activities through explicit planning and adaptation, and also by means of informal learning about customers and their own portfolio management practices. Importantly CPM efforts can but do not need to be formally designed (cf. Leek Turnbull and Naude 2002; Räsänen 1999). *CPM design implies an explicit planning and adaptation focus in portfolio management*. A higher level of design indicates a more explicitly planned, formal, top-down CPM approach. This, mechanistic CPM style approximates the formal customer portfolio models presented in the literature. In turn, the CPM practices featuring a lower design level indicate a more flexible, organic style, the lower organizational levels having a strong role realized in daily interaction with customers.

4.2.3 CPM as a cross-functional and multi-level practice

Thirdly, the various customer portfolio models give a picture of portfolio management as a fully managerial practice. On the evidence of the qualitative study, this is arguable in that, even though the managerial level is at the center of CPM, other organizational levels have a crucial role: customer boundary personnel are often involved in analyzing and ranking customers as well as in the implementation of customer management strategies (responsiveness). Hence, much of the essential customer information is produced and also

processed by lower-level boundary personnel and in various functional areas such as sales, KAM teams, accounting, and R&D, thereby making the analysis activities a non-isolated process in the organization. This has also been noted by Leek Turnbull and Naude (2002), who mention the importance of subjective knowledge and meetings in customer evaluation. In other words, managers receive a great deal of their customer information from various sources, and make decisions together with other personnel. Similarly, the importance and difficulty of putting portfolio management into practice was heavily emphasized in the interviews. Clearly, the role of the sales department and other boundary personnel is critical in the implementation of CPM strategies (cf. Matthyssens and Johnston 2006). Sophisticated customer treatment strategies do not work if the salespeople are not committed to their implementation for some reason, for example because of a reward system that encourages a sales-volume-focused orientation.

Consequently, the lower levels of the organization cannot be ignored in the analysis of CPM practices in business (see Campbell 2003; Zablah, Bellenger and Johnston 2004). This study concentrates on the managerial point of view. Nevertheless, other organizational levels and functions have a major role in information-processing and responsiveness activities, and cannot be totally excluded from an operational definition of CPM. The organization-wide role of portfolio management will thus be taken into account in building up the measures.

4.3 The CPM construct

Now the *theory-based definition* of CPM and *the field-study results* are synthesized in order to produce an operational definition of CPM.

According to the theory and field-study results, CPM is a continuous process involving four main phases related to analysis and responsiveness (see Figure 5 below). Here, CPM is assumed to develop over time as companies adjust their practices based on explicit, formal planning, but also as they learn about their own management practices. Its core lies in learning – companies gain new knowledge about the value and role of different customers through a management process that enables them to allocate their limited resources among their customers more effectively. However, as this study concentrates on the performance outcomes of company practices, the *focus is on the main activities* rather than on the overall longitudinal customer management process.

Both main activities comprise two aspects, namely the *design* (the degree of explicit planning and development, approximating *the CPM style*), and the

efforts (the degree to which an activity is carried out in practice, approximating its *existence or strength*). This kind of approach takes into account the style of the activities in addition to their existence, which is rather rare in marketing. Some similar conceptualizations of managerial phenomena exist, such as network competence incorporating task execution related to the degree of activities, and qualifications related to their quality (Ritter 1999)

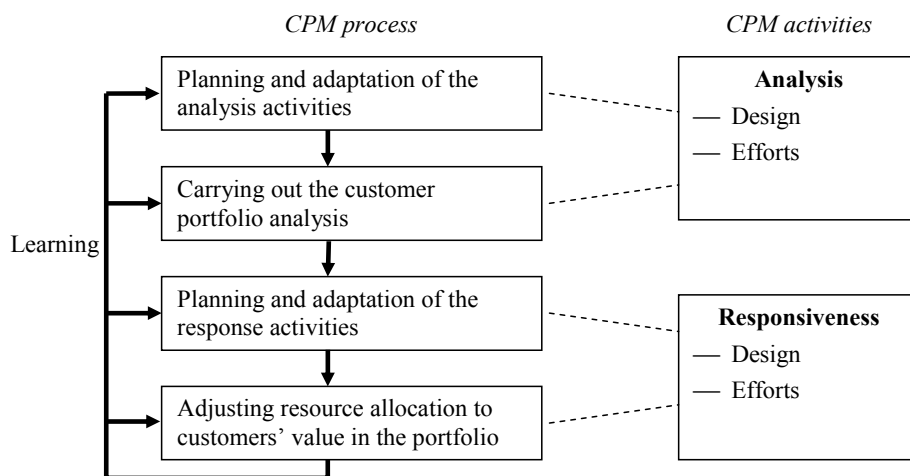


Figure 5 The CPM process and the core activities

In the following the CPM construct is explicated based on the activities presented above, thus synthesizing the theory and the empirical findings. Finally, a formal operational definition of portfolio management is given.

4.3.1 Analysis efforts

First of all, CPM activities aim at generating a thorough understanding of the role of different customers in the customer base, and in providing value for the focal company in the long term. The development of such activities in terms of understanding the value of different customers in the relationship portfolio can help firms to minimize misunderstandings. This is essential as errors in understanding are likely to lead to the under- or overspending of customer focused resources (cf. Reinartz, Krafft and Hoyer 2004, 296). When the company has an understanding about its customer portfolio structure and the role of different customers in providing value for the company it can arguably also better develop strategies for its resources allocation among the customers

for achieving its long-term effectiveness goals (cf. Johnson and Selnes 2005; Turnbull 1990, 21).

Analysis efforts refer here to the degree to which a company analyzes its whole portfolio of customers in terms of value. According to the literature and the findings of the qualitative study, it has to be stressed here that customer value must be considered broadly in portfolio analysis, the activities being by no means restricted to assessing the direct, economic value of customers. Rather, the central focus is on the *roles* of different customers in the customer base in terms of providing current and future value to the focal company (cf. Johnson and Selnes 2005). This is also supported in the study conducted by Cannon and Perreault (1999), who analyzed over 400 relationships and found diverse relationship types requiring different types and degrees of investment, and which also produced different outcomes. The authors concluded that understanding how each relationship type fits into the larger portfolio of relationships is a strategic issue for marketing managers (ibid. 1999, 457). Further, as the core issue of CPM involves resource allocation among the various customers, understanding the value of individual relationships is not enough on the relationship-portfolio level. Issues of *grouping, comparing, and prioritizing* customers assume major significance in analyzing the customer portfolio.

4.3.2 Analysis design

If the analysis activities miss some essential aspects of the business of the focal firm, are of poor quality, or concentrate on the wrong issues, they will produce unsatisfactory and potentially misleading outcomes (cf. Zolkiewski and Turnbull 2002b, 578–582). Hence, the tailoring of the portfolio management activities is essential to companies' CPM practices. This issue was brought to light in the qualitative study in that the customer management practices of the different companies varied strongly depending on the perceived CPM contingencies (for a more detailed discussion on this, see Terho and Halinen 2007; see also Salle, Cova and Pardo 2000). The development and adaptation of analysis activities may take place through learning in everyday business, and also through the explicit, systematic development of analysis activities.

The concept of *analysis design* is used to examine the degree to which a company has put explicit efforts into *planning* and *adapting* its analysis activities. In other words, design refers to how thoroughly a company has planned its analysis criteria, methods, and procedures. Moreover, the adaptation of the analysis, in other words the explicit emphasis on developing

and tailoring current activities, is essential to analysis design. As noted earlier, portfolio management is not a single act at one point of time, but rather develops over time. Its design should therefore be seen as a continuous process. As discussed earlier, high-level design is close to the concept of mechanistic management, referring to the use of formal rules and procedures and limited participation in decision-making (cf. Burns and Stalker 1961).

In sum, the analysis design approximates the style of analysis activities. High-levels of design indicate a mechanistic customer management style, and highly designed, sophisticated analysis practices are close to the use of formal portfolio models suggested in the literature.

4.3.3 Responsiveness efforts

Responsiveness to customer knowledge forms the second main element of CPM. Very little is accomplished in a thorough analysis of customers unless the firm is able to respond to the knowledge it gains through such activities. CPM is a future-oriented practice as it basically helps the company to understand its *current* portfolio of customers so that it is equipped to produce better *future resource allocation* among customers of different value.

The formal portfolio models in the literature distinguish two main strategies for resource allocation, *matching* according to the different customers' value to the focal company, and the future-oriented *development* of the customer portfolio (Table 2, page 52; Figure 4, page 53). These two strategies form the basis of responsiveness efforts. Matching relates to cost-efficient customer treatment: on the evidence of the literature and the interviews, its main aspects relate to issues such as tailored offerings, different operational models (e.g., service, channels), and the allocation of sales resources to customers of differing value. On the other hand, the development of a relationship portfolio focuses on the question of which relationships to develop and in which direction. Zolkiewski and Turnbull (2002, 578) separated the possible relationship-development implications in the form of four questions: Do new relationships need to be created? Which relationships should be developed? Which relationships should be maintained? Are there any relationships that should be broken/ discarded? Interestingly, the current overlapping CRM research concentrates largely on the first group of strategies to do with cost-efficient customer treatment, and neglects the latter aspect (e.g., Ryals 2005).

4.3.4 Responsiveness design

Another side to responsiveness concerns its *design*. Again, design approximates the responsiveness style, and refers to how much explicit effort a company has put into planning and adapting its responsiveness activities for implementation in practice. Responsiveness design must be seen as a continuous process, including the evaluation of current practices and adapting them based on feedback. In contrast to analysis design, responsiveness design incorporates implementation issues. This is not self evident as the interviewees in the pilot study indicated that many companies had difficulties putting the differentiated resource allocation into practice. This was a result in many cases of a sales-volume-oriented culture in the sales department, for example, emphasizing volume rather than profitability. Clearly, to be able to successfully implement differentiated resource allocation a firm must be able to realize the strategies in the actions of its personnel at the customer interface in various functions (cf. Campbell 2003, 380–381): instructions about customer management principles are crucial, for example.

In sum, responsiveness design refers to the careful planning of resource allocation and the adaptation of current practices. High levels of design in responsiveness indicate a more formal, mechanistic customer management style.

4.3.5 The proposed operational definition of CPM

To conclude, customer portfolio management is defined operationally as “*the company activities in analyzing its portfolio of customers pertaining to their role in providing current and future value for the focal company, and the company responsiveness to the analysis conducted*”. Furthermore, CPM consists of four dimensions.

These dimensions approximate both the strength (efforts) and the style (design) of analysis and responsiveness activities. The overall level of CPM thus comprises four constructs (see Figure 6):

Analysis design (i.e. the focal company’s continuous efforts to plan and adapt its customer portfolio analysis activities to company needs);

Analysis efforts (i.e. the focal company’s efforts to analyze its whole portfolio of customers pertaining to their different roles in providing current and future value);

Responsiveness design (i.e. the focal company’s continuous efforts to plan and adapt its responsiveness activities to company needs with a view to implementing them in practice);

Responsiveness efforts (i.e. the focal company's efforts to adjust its resource allocation according to the value of different customers in its current and future customer portfolio).

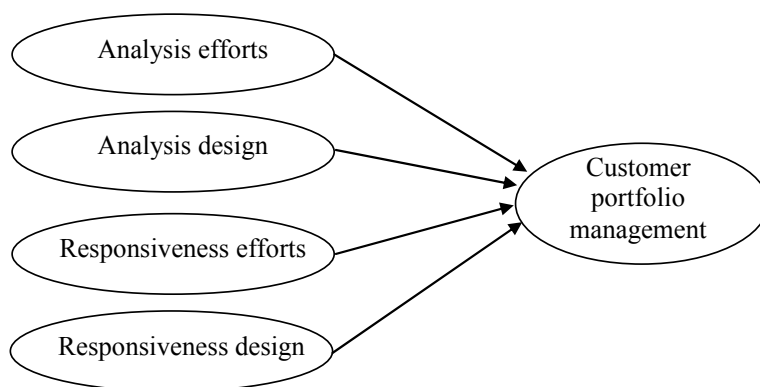


Figure 6 The CPM construct

Clearly this definition does not directly help to distinguish the presence or absence of customer portfolio management in a company. However, the reality is likely to be complex – rather than being black or white (pure presence or pure absence): CPM in business is likely to lie along a continuum representing different shades of grey.

The different facets of CPM do not necessarily hang together. It is more likely that the different activities together *form* the CPM level, indicated by the direction of the arrows in Figure 6: a company may analyze its customers but it does not necessarily have to respond to the knowledge gained in this process. Similar words could be written about design and effort in CPM activities: a company may have extensive CPM efforts in place but they do not have to be extensively designed.

Alternatively, CPM could be conceptualized according to a second-order model in which the level is determined by the two second-order activities of analysis and responsiveness. Both of these, in turn, are determined by the two first-order activities of design and efforts.

In the building of new measures choosing between first-order and second-order conceptualizations should always be based on both theoretical and empirical reasoning. In this research, both first-order and second-order conceptualizations of CPM are theoretically logical, and the choice between the two is based on empirical data.

5 HYPOTHESES AND RESEARCH MODEL

Theories of customer relationship management, or CRM, have become the dominant label for relationship marketing (Day 2004, 18; Zablah, Bellenger and Johnston 2004). It has been widely recognized as one of the key themes in the “new dominant logic of marketing” and has become a high priority on the current agenda of marketing research (Vargo and Lusch 2004). In recent years the CRM field has begun to settle on a common definition around the concept of the dual creation of value (Boulding, Staelin, Ehret and Johnston 2005; Payne and Frow 2005). The basic idea behind CRM is that both aspects of value creation – for customers and for the selling company – are connected to customer performance, which in turn is connected to company performance (cf. Helgesen 2006; Reinartz, Krafft and Hoyer 2004; Storbacka, Strandvik and Grönroos 1994).

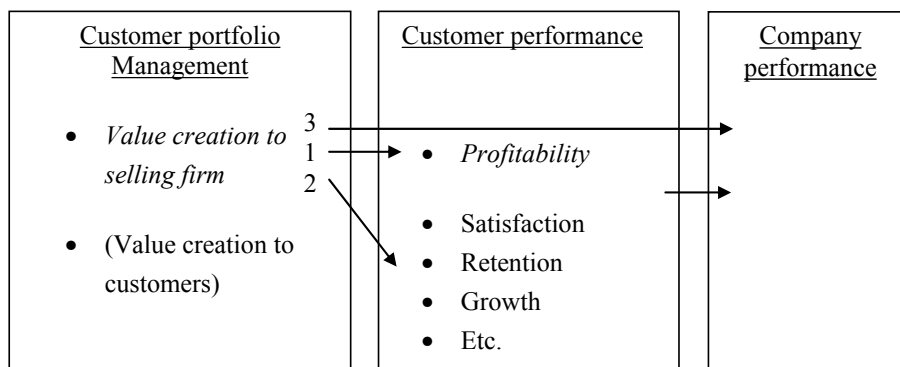


Figure 7 CPM and three aspects of performance

Interestingly, customer portfolio management concentrates on one side of CRM, namely managing customers based on their value to the selling company. In other words, CPM is a heavily supplier-focused practice. Several interesting questions arise from this notion. First, are CPM activities linked to financial customer performance, in other words customer profitability (see arrow 1 in Figure 7)? Secondly, given that CPM activities are concentrated on managing customers based on their value to the selling company, how do they affect the value customers perceive in the exchange, reflected in broader, overall customer performance (see arrow 2 in Figure 7)? Thirdly, following on

from the two above questions, are CPM activities linked to company performance (see arrow 3 in Figure 7)? These three links between customer portfolio management and performance are discussed in detail below.

5.1 CPM and the link to performance

Organizational learning at its most basic level is the development of new knowledge or insights that have the potential to influence the behavior of the organization (cf. Slater and Narver 1995, 63). Chapter 2, which established the theoretical positioning of this research, highlighted two main perspectives on organizational learning, namely learning as a change in behavior (e.g., Cyert and March 1963, 171–175) and learning as a change of cognition (e.g., Argyris and Schön 1978). A mediating view is expressed by Huber (1991), who stresses that the learning does not necessarily involve a change in behavior, but it does produce a change in the range of potential behavior in an organization.

Organizational learning is widely recognized as an important aspect of the strategic performance of companies (e.g., Fiol and Lyles 1985, 803; Slater and Narver 1995, 66–67). However, *the behavior change is the necessary link between organizational learning and performance improvement* (Slater and Narver 1995, 66). Clearly, the definition of customer portfolio management comprises the essential aspects of organizational learning, including the behavioral element. At its core lie the processing of customer information and responding to the new knowledge and insights gained in this process. *Consequently, customer portfolio management in business could be seen as organizational learning where the behavioral component is present, also having the potential to affect company performance.*

First of all, CPM activities may produce both new and more precise knowledge about the portfolio of customers and their value to the focal firm. This is clearly an important issue, because of the notable profit heterogeneity of customers and the different roles and functions different relationships serve for the selling company (Cannon and Pereault 1999; Jacquelyn, Reinartz and Kumar 2004; Niraj Gupta and Narasimhan 2001; Reinartz and Kumar 2000; 2003; Storbacka 1997; Walter, Ritter and Gemünden 2001; Wilson and Jantrania 1997; Zolkiewski and Turnbull 2002b). The learning that takes place in CPM activities enables firms to allocate their resources more efficiently among customers, thereby avoiding under-spending or overspending (cf. Reinartz, Krafft and Hoyer 2004, 296). In other words, if companies are able to understand better the value of their various customers and to determine more effectively the contribution of these relationships to their long-term

profitability they will be better able to manage their customer base in a cost-efficient and effective way.

Therefore the CPM activities of analysis and responsiveness are both hypothesized to be connected to the financial aspect of customer performance, that is to customer profitability. Because behavior is the necessary link to performance, only CPM *efforts* form a theoretically meaningful direct link to customer profitability. In other words, the design of the activities (CPM style) does not logically have a direct link to performance. The focus will be on overall profitability instead of individual-account profitability because of the question of access to companies' customer profitability figures. Therefore the following hypothesis is put forward:

H1 The analysis and responsiveness efforts of an organization have a positive impact on customer profitability

Secondly, customer relationship management aims at balancing value creation for the customers and for the selling company (Boulding, Staelin, Ehret and Johnston 2005), while customer portfolio management focuses strongly on managing customers based on their value to the selling company. *This strong supplier focus raises the interesting question of how CPM activities affect the value customers perceive in exchange?* Based on earlier studies both negative and positive effects can be argued for (cf. Armstrong and Brodie 1994; Dubois and Pedersen 2001; Johnson and Selnes 2004, 15).

The dual creation of value could be considered a zero-sum game in which optimization of the customer value to the company will decrease the customer perceived value. Indeed, a strict focus on customer profitability and customer costs in management could decrease perceived value creation, customer satisfaction, and customer retention, all of which are reflected in overall customer performance.

However it could also be argued that the two foci in managing customers (creating value for the selling company and for the customers) are not mutually exclusive. In fact, a focus on and insight into the selling company's value creation could also result in openness and understanding of customer value. It could thus be argued that there is a positive link between CPM activities and perceived value creation, customer satisfaction, and customer retention, all of which are reflected in overall customer performance. This issue was also emphasized in the interviews conducted for the qualitative field study. In practice, companies' CPM activities are likely to take into account not only the value of different customers to the focal firm but also their needs. When companies learn about their portfolio of customers and their various roles in value provision they are likely also to learn how to meet their varying

needs while taking into account the degrees of value. Similarly, learning about the characteristics of the customer relationships and the structure of the customer base should also help in their successful development.

Therefore, it is hypothesized that CPM activities are also positively related to overall customer performance, including the aspects of value creation for customers, customer satisfaction, customer retention, and growth (cf. market performance: Homburg and Pflesser 2000). Again the analysis and responsiveness *efforts* represent the necessary behavioral link to overall customer performance. Because the analysis and responsiveness designs refer to portfolio management style it is not rational to expect them to have an independent effect on performance. The following hypothesis is thus presented:

H2 The analysis and responsiveness efforts of an organization have a positive impact on overall customer performance

Thirdly, both analysis and responsiveness efforts in CPM are hypothesized to be connected to customer profitability and to broader overall customer performance, including customer satisfaction, retention, and growth. Venkatraman and Ramanujan (1986) distinguish between financial performance measures, which refer to the fulfillment of the economic goals of the firm, and operational measures, which in turn refer to the key operational success factors that might enhance financial performance. The two areas of customer performance discussed above are clearly both key operational measures that form a meaningful link from CPM efforts to firm performance. If these links are strong enough the CPM efforts will also have a direct link to firm performance. *Therefore, it is hypothesized that CPM activities are positively connected to firm performance.* Again the analysis and responsiveness *efforts* represent the necessary behavioral link to customer performance. The third hypothesis is as follows:

H3 The analysis and responsiveness efforts of an organization have a positive impact on firm performance

Clearly, separate testing of the relationship between CPM and these three areas of performance will provide detailed information about the mechanisms through which it may affect firm performance. Further separate testing of these three aspects may be worthwhile as it is possible that the different areas of CPM will have opposite effects on different areas of customer performance, on customer profitability and customer satisfaction, for example. Next the focus turns to *CPM style and the role of the company context* in the

hypothesized CPM and performance links.

5.2 The role of the exchange context and the CPM style in the link with performance

This study builds heavily on contingency theory, which originates from organizational theory (Lawrence and Lorch 1967; Miles and Snow 1978). The main idea is that the effectiveness of management approaches is contingent upon the organizational environment in which they are applied. In other words, there is no single optimal way of managing, and the management should rather fit in with the organizational constraints and contingencies (Wetherbe and Whitehead 1977, 20).

Currently there are only a handful of empirical studies examining the role of the company context on customer relationship management and performance. Thus far the few contextual studies in the area of CRM have relied on simple control variables related to the environment, such as industry or competitive intensity (Jayachandran, Sharma, Kaufman and Raman 2005; Reinartz, Krafft and Hoyer 2004), consumer vs. B-to-B markets, and goods vs. service settings (Coviello Broadie, Danaher, and Johnston 2002), a manufacturing vs. a service context (Mithas, Krishnan and Fornell 2005), and companies' experience in the industry (Srinivasan and Moorman 2005). Most of these have reported only weak or no support for the relevance of the company context to CRM.

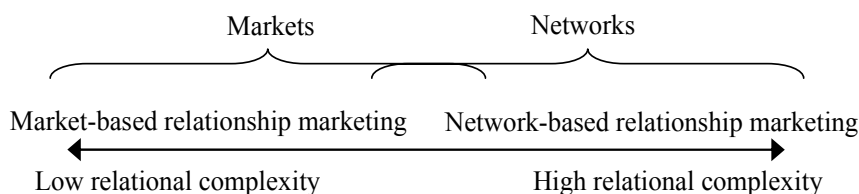


Figure 8 Two types of relationship-marketing theories (Möller and Halinen 1999, 2000)

However, according to the conceptual theory of relationship marketing and given the results of the qualitative pilot study (see Terho and Halinen 2007), it is to be expected that a company's context of exchange with its customers is a major contingency factor in CPM. Several authors have proposed that different kinds of relationship marketing and management are used, and are also needed depending on the context of the interacting firms (e.g., Broadie,

Coviello, Brookes and Little 1997, 401; Li and Nicholls 2000; Rao and Perry 2002, 606–607). Having conducted a very thorough literature review on the subject of relationship marketing, Möller and Halinen (1999; 2000) proposed that the relational complexity and the exchange context strongly affect what kind of customer management is reasonable in practice (see Figure 8).

More specifically, they propose a framework in which *an appropriate relationship-marketing style is connected to the exchange context of a company*. Relational complexity refers to the number of actors involved, to their interdependence and the intensity and nature of the interaction, and to the potential temporal contingencies in the relationship. They also stress the fact that complex relationships characterize a network context, whereas less complex relationships dominate in market-like exchange contexts, arguing that different kinds of relationship-marketing practices are needed depending on the exchange context. By market-based relationship marketing they mean customer management in which the major challenge is to treat large numbers of customers individually and still profitably. Here the managerial focus is suggested to be on planning marketing activities for regular customers, mastering customer portfolio analyses, using databases and information technology to manage the customer interface, and restructuring the marketing organization according to RM thinking. In turn, the focus in network-based relationship marketing is on the need to manage interdependencies between the business actors. The managerial challenges are suggested to relate to broader and deeper interaction with external partners. The key questions concern how to coordinate activities with different actors and how to mobilize and control critical resources through forming relationships with them. Similarly, there is a need to consider and manage customer relationships on a more individual level. (Möller and Halinen 1999; 2000)

In the light of these ideas and the interviews conducted for the qualitative field study stressing the importance of tailoring CPM activities to company needs (see Terho and Halinen 2007), the hypotheses will be adjusted to take into account the exchange context of companies.

There are a large number of studies suggesting that stable, homogeneous and routine conditions pose less uncertainty for the focal company and thus favor formal, mechanistic systems and structures. In turn, changing, heterogeneous and complex conditions favor organic management systems. (cf. Burns and Stalker 1961, 96-126; Courtright, Fairhurst, Rogers 1989, 773; Dahlstorm, Dwyer, and Chandrashekar 1995, 43; Dwyer and Welch 1985, 187–189; Jurkovich 1974; Lawrence and Lorch 1967, Paswan, Dant and Lumpkin 1988, 126–130; Thompson 1976, 70-73; Wetherbe and Whitehead 1977, 22) The so-called *mechanistic organizational style* combines the use of formal rules and procedures with limited participation in decision-making, whereas *organic*

decision-making features few procedures but high involvement (Burns and Stalker 1961, 119-121; Dahlstöm, Dwyer, and Chandrasekaran 1995, 43; Chakravarthy 1892, 38).

Clearly, the suggested market- and network-like exchange contexts differ notably from each other. It is nevertheless difficult to say which is more complex from the management point of view: both have their own distinguishable characteristics posing different management challenges. The main challenges in market-like conditions concern the number and heterogeneity of the customer relationships, whereas in network-like conditions they lie in their complexity and interdependencies (cf. Möller and Halinen 2000). In the context of the suggested market–network division it would be logical for market-like contexts characterized by *structural complexity* to favor more formal and mechanistic management styles, whereas networked contexts characterized by *complexity in relationships and interaction* would benefit from more informal and organic styles.

Customer portfolio management consists of four dimensions: analysis efforts, analysis design, responsiveness efforts and responsiveness design. The *efforts* approximate the existence or *strength of the activity*, whereas the *design* refers to an explicit focus on planning and adaptation approximating the *CPM style*. Clearly, *more designed CPM activities indicate a more top-down, mechanistic customer management style* that resembles the use of formal customer portfolio models in the literature. In turn, *less designed activities indicate a more organic CPM style* in which the lower levels in the organization have a strong role and the management focus is on interaction with customers.

In sum, it is hypothesized that a market-like context is likely to favor a more mechanistic management style. In such contexts the main challenge lies in the effective management of a large customer base. Even though the customer base structure is complex in market-like context, the relationships are simpler and therefore the relationship-management tasks are more routine-like. In these conditions a more formal, planned, top-down CPM style is hypothesized to function well. In turn, in network-like contexts the large number of customer relationships is no longer the main managerial challenge. It rather lies in the complex customer relationships and interaction, meaning that the relationship-management tasks also become less routine-like and demand more flexibility. Therefore it is hypothesized that a network-like context is more likely to favor a more organic CPM style, which is more flexible and participative. This implies that the analysis and responsiveness design mediates the relationships between the analysis and responsiveness efforts and performance in market-like exchange contexts (cf. Baron and Kenny 1986, 1176). In contrast, the design of the CPM activities is not

hypothesized to mediate the relationship between effort and performance in network-like contexts.

In practice, this means that a carefully planned, formal, top-down CRM style is expected to mediate the relationship between CPM efforts and performance, but only in market-like exchange contexts. The following hypotheses are thus put forward:

- H4** In market-like exchange contexts the design of CPM activities mediates the relationship between CPM efforts and overall customer performance
- H5** In market-like exchange contexts the design of CPM activities mediates the relationship between CPM efforts and customer profitability
- H6** In market-like exchange contexts the design of CPM activities mediates the relationship between CPM efforts and firm performance
- H7** In network-like exchange contexts the design of CPM activities does not mediate the relationship between CPM efforts and overall customer performance
- H8** In network-like exchange contexts the design of CPM activities does not mediate the relationship between CPM efforts and customer profitability
- H9** In network-like exchange contexts the design of CPM activities does not mediate the relationship between CPM efforts and firm performance

These hypotheses are based on the idea that *formal planning is not a necessary antecedent for CPM efforts* (cf. Leek, Turnbull and Naude 2002; Räsänen 1999). Analysis and responsiveness design rather refers to a style that can amplify the relationship between efforts and performance under certain conditions.

The adopted approach is in partial conflict with traditional learning theories suggesting that planning should precede action. However, most companies make CPM efforts at least to some degree in their current business. For example all companies gather customer data, segment customers, have different offerings and service packages, and develop customer relationships – all of which can be done without extensive formal planning (cf. Leek, Turnbull and Naude 2002; Räsänen 1999). Similarly, the reasoning in the hypotheses is supported by the notion from the field study that CPM is an ongoing, continuous process rather than a separate single act of analysis and strategy development. According to the strategy literature, *strategic decision*

processes are often not formal or linear (e.g., Mintzberg, Raisinghani and Théorêt 1976). There is also a notable body of research criticizing the view in learning theories that working practices can be isolated from knowledge. In fact, the learning in CPM can take place in *communities of practice* (Brown and Duguid 1991, 47-48). Arguably, this community could comprise marketing and sales people in organizations performing CPM activities.

What makes researching the suggested contingency hypotheses difficult is that there are currently no ready measures for network- or market-like contexts. However, it is argued that existing contextual measures could be adapted to the exchange context of a company. The current dominating views in the research on company surroundings are reviewed next, and this is followed by an explication of the dimensions of the exchange context.

5.2.1 Current dominating views of the company context

The current commonly used contextual measures in B-to-B marketing fall into three groups: 1) simple control variables related to the companies' environment, such as the industry, 2) theoretical environmental measures, and 3) theoretical measures related to interaction and network research. Clearly, control variables such as the industry are not theoretically meaningful or rigorous, and consequently do not help in testing contingency hypotheses. The two latter and currently dominating approaches are discussed in more detail below in terms of the exchange context. Further discussion on this subject is to be found in the work of Halinen and Terho (2006).

The concept of an *environment* originating from organizational theory dominates quantitative research in B-to-B marketing. Bourgeois (1980) brought together the main perspectives on studying the environment, which fall into three categories depending on the research approach. The first, the *environment as objects*, is based on the idea of the objective measurement of the environment, examines its different domains, and separates the general and the task environments. The general environment reflects macro-level issues such as the economic, demographic and socio-cultural conditions, whereas the task environment approximates the economists' concept of industry and includes different sectors such as customers, suppliers, competitors, regulatory groups, and sometimes also a technological component (Dill 1958, Duncan 1972).

The second perspective is also objective and concentrates on *environmental attributes*. A considerable number of task-environment dimensions or attributes have been distinguished in the research (cf. Aldrich 1979; Pfeffer and Salancick 1978, 68). However, most classic studies have emphasized two

of them over others: first of all the *structural* attributes (e.g., complexity, heterogeneity and diversity, referring to the number and variety of external factors facing the organization), and secondly the *change* attributes (dynamism, volatility and turbulence, referring to the frequency and unpredictability of change) (cf. Achrol 1991, 78; Bourgeois 1980, 33–35; Duncan 1977, 314–317; Ganesan 1994, 5–6; Klein Frazier and Roth 1990, 199–200; Miller and Friesen 1982, 3; Thompson 1967, 69–70).

The third view, the *environment as perceptions*, concentrates on firm-internal, subjective perceptions of the environmental attributes. Perceived uncertainty has been a major issue especially in strategic management research representing the subjective view. *Uncertainty* refers to the degree to which an individual or organization can or cannot anticipate or accurately predict the environment (Pfeffer and Salancik 1978, 67; see also Ashill and Jobber 1999, 523). The uncertainty is related to company decision-making and is based on perceived environmental attributes (as opposed to objective measures). These dimensions have also been used in studies on channels and business marketing (e.g., Achrol and Stern 1988).

Clearly, these environmental measures provide strong tools for studies aiming at *explanations*, and enable the *comparison* of different environments. Further, they provide a basis for *managerially oriented* explanations as they are based on the *focal firm's* point of view. However, the environmental perspective has some severe weaknesses as far as customer relationship management is concerned. The reasoning behind the traditional definition of the environment is that there exists a clear boundary between the firm and what is external to it. However, enactment theory, resource-dependency theory, and interaction and network studies have strongly criticized this view, arguing that the boundary between the firm and its surrounding environment is mostly diffused (Anderson, Håkansson and Johanson 1994; Håkansson and Henjesand and Waluszewski 2004; Håkansson and Snehota 1989). The notion of the external environment implicitly suggests that the environment is “given”, and is something “out there” that a firm cannot affect (Anderson, Håkansson and Johansson 1994, 1–4; Brownlie 1994). Clearly, the concept of the environment as a broad mix of external forces without a face is based on the idea of the market as the central governance form of exchange. Significantly, this view ignores the cooperative side of relationships between buyers and sellers, in which relationship marketing and management are rooted.

In fact, there is major incompatibility between the external, environmental view and interaction, relationship-marketing, and CRM theories (Mattsson 1997). CRM theories are based on the idea that the seller has (mutual, long-term) relationships with its customers, in other words that the nature of the context in which it operates is relational. Consequently, the current broad

environmental measures used in marketing are not well suited to CRM research. Nevertheless, existing studies on relationship management have used environmental measures in company contexts, focusing on universal *market* characteristics *and not on relationships*.

Interaction and network theories provide a totally different view of company surroundings. They have their roots in the study of dyadic exchange and interaction between single actors (e.g., Håkansson 1982), in other words in the micro-level of economic systems (see Mattsson 1997, 452–453). Later, the main focus shifted to the meso (the study of focal firm networks) and macro levels of exchange (markets as networks), the main emphasis being on the interconnected relationships between buyers and sellers (see e.g., Johansson and Mattsson 1994; Mattsson 1997). The meso level, which is the focus of this research, has been mainly concerned with the study of focal nets (e.g., Anderson, Håkansson and Johanson 1994; Håkansson, Havila and Pedersen 1999), while on the macro level the network view has challenged the traditional perception of markets as described in economic theory by questioning its atomistic view of business actors and the static nature of the model (Ford and Håkansson 2006). In other words, the industrial network view abandons the idea of markets as the dominant form of governance in transactions. Instead, markets are described as structures of relationships between companies, and market processes as interaction between active and purposeful actors within these relationships (Ford and Håkansson 2006).

However, this exchange view is inevitably complex. Networks extend farther and farther and are basically “invisible” (Anderson, Håkansson and Johanson 1994, 4). The chain of connectedness in relational networks is without limits and may span several relationships indirectly connected to the focal firm. Consequently, a boundary-specification problem arises (Håkansson and Snehota 1995a, 19). This complexity, which is a result of the interconnectedness, also creates methodological challenges for the research.

The approach in studies of industrial networks has been qualitative and focused on some key actors and relationships at one point in time or longitudinally. The company context has been dealt with through the use of analytical models such as ARA for opening up the network structures (Håkansson and Snehota 1995a). There are also some applicable focal-company-centered constructs such as the network context, the network horizon (Anderson, Håkansson and Johanson 1994; Håkansson and Snehota 1989, 192), and the relationship context (Håkansson, Havila and Pedersen 1999, 445), and these help to delimit the focal network from the broader environment by using managers’ perceptions as a defining factor (Anderson, Håkansson and Johanson 1994). There are only a few exceptions in which the network context has been examined quantitatively, and even then, the focus

has been on a few key relationships (Blankenburg Holm, Eriksson and Johanson 1996; Holm, Johansson and Thilenius 1995). Clearly, the interest in the network approach has been in describing and understanding systems rather than in individual companies and their managerial problems (see McLoughlin and Horan 2002, 537).

Hence, the focus of the current contextual constructs in the network approach is strongly on a very limited number of relationships at a time. Moreover the current constructs do not help in *comparing* company contexts or in studying how networked the company contexts are. Similarly, a focal-company view from a *managerial perspective* is largely missing in the research. This study concentrates on customer relationship management from the focal company's perspective on the meso-level of the economy, in other words on the company's exchange with all its customers. Furthermore, as the aim is to arrive at *explanations* rather than an in-depth understanding, the current relational constructs for approaching networks are not very suitable.

The current dominant approaches to the study of company contexts in business are clearly inadequate in terms of providing contextual explanations for CRM research. There is an evident need for contextual measures that are 1) based on the idea of relationships as the dominating governance form of exchange and thereby acknowledge the relational nature of the business markets, 2) focus on the meso-level of the economy and hence enable comparisons of companies' contexts of exchange with their customers, and 3) have a focal-company view, making them suitable for research aiming at explanation. In other words, there are no measures that would provide information about companies' contexts of exchange with their customers in business markets. Arguably, the nature of exchange with the whole range of customers is the starting point, and therefore a major contingency factor, for companies' CRM practices. The following section offers a new relational approach to the explanation of companies' exchange with their customers in business markets.

5.2.2 The exchange context and its dimensions

In business markets companies' networks of relationships form a context that both enables and constrains performance (Ritter, Wilkinson and Johnston 2004). The various relationships form the central context in which a company acts, and the various environmental or industry pressures are transmitted through these individual relationships (Halinen, Salmi and Havila 1999). Therefore the suggested exchange-context measure will also take into account the main broader environmental pressures on and industry characteristics of

the focal company. Similarly, it could be used to compare companies of different sizes and strategies in that it is suitable for cross-sectional analysis, as emphasized by Boulding, Staelin, Ehret and Johnston (2005, 164).

The environmental, interaction and network theories provide the backbone for identifying the main dimensions of the context of exchange a company has with its customers. Interaction and network research has shown that business markets are mostly relational in nature. Consequently, *customer relationships in the companies' customer base* are a natural starting point for studying the focal company's exchange context. The environmental view, in turn, provides the means for delimiting the dominant perspectives to exchange context. The literature has stressed two environmental aspects over others, namely the *structural* attributes, referring to the number and variety of external factors facing the organization, and *change*-related attributes, referring to the frequency and unpredictability of a change of environment. Arguably the exchange context should cover both structure and change in the focal company's customer base. Interaction and network research further emphasizes the *interconnectedness* of relationships, and makes a distinction between those that are directly and indirectly connected (cf. Achrol, Reve and Stern 1983, 57; Anderson, Håkansson and Johanson 1994). The exchange context should therefore take into account not only the directly connected customer relationships but also the indirect context, in other words third-party influences. Similarly, interaction research emphasizes the importance of understanding the nature of exchange, interaction and relationships. Clearly, the *quality* of relationships represents a central aspect of the exchange context.

The above literature review suggests a total of seven core dimensions of the exchange context from the customer relationship perspective: 1) the broadness of the customer base, 2) the heterogeneity of the customer relationships, 3) the overall strength of customer relationships, 4) customer concentration, in terms of dependency on the largest customers, 5) overall interconnectedness in the customer relationships, 6) customer turnover, and 7) customer relationship dynamism (see Figure 9).

These suggested dimensions together provide an extensive picture of the overall nature of exchange between a company and its customers. Significantly, they are based on the idea of relationships as the main governance form of exchange. However this approach is not based on a strict idea that exchange in business markets is governed with only very close relationships but it takes into account the huge variation in various companies' exchange with their customers varying from more market-like conditions to network-like conditions.

Figure 9 presents the main dimensions of the exchange context and their suggested characteristics at the two ends of the continuum, which are named

based on the works of Möller and Halinen (1999, 2000). The basic idea here is that complex relationships take place in a network context, whereas less complex relationships are characterized by market-like exchange. It should be noted that the *market- and network-like labels refer not to the governance form of exchange but rather to the nature of the company’s overall exchange with its customers*. It should also be noted that these dimensions are used to measure generally highly relational business markets.

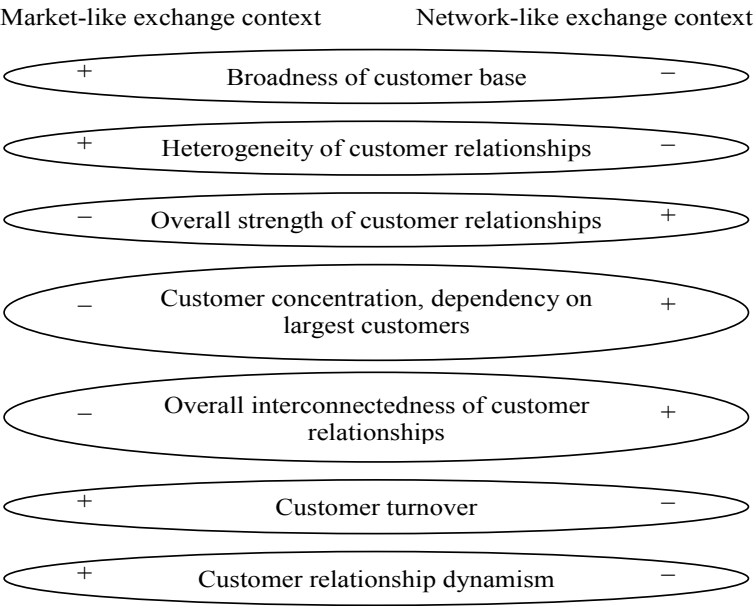


Figure 9 The suggested main dimensions of the exchange context

The first four dimensions broadly reflect the structural characteristics of the exchange context between the focal company and its customers, while the last two reflect change in the context. The fifth one captures the influence of indirect relationships while the others focus on the main characteristics of those that are directly connected. Overall, the suggested dimensions cover the quantity, diversity and quality of customer relationships, and the dynamism present in the customer base and the broader indirectly connected context. Arguably these contextual factors cover well the various factors affecting customer relationship management.

The concept of complexity has often been referred to in the environmental literature as “the number and diversity of external factors facing the organization” (Bougeous 1980), or “the few vs. large number of factors all of which may be different in the task environment” (Ashill and Jobber 1999,

524). The first dimension of the exchange context is the broadness of the customer base (cf. Tuominen, Rajala and Möller 2000, 140–141). A company may choose to create relationships with some few selected customers, or it need not rely on any single customer but seek a broader customer base (Homburg, Workman and Krohmer 1999, 5). *Broadness of the customer base refers to how broad or narrow customer base the company aims at.* Clearly, the broadness of the customer focus reflects the structural complexity of directly connected customer relationships. The customer base tends to be larger in a market-like exchange context than in a networked context.

Secondly, the perceived heterogeneity of customers is assumed to be a central aspect of the exchange context. *This dimension approximates the overall similarity or dissimilarity of the customer relationships in the customer base.* Clearly, a company's customers differ in their businesses, sizes, and service needs, for example, which is a challenge in terms of relationship management. Customer relationships in business markets are likely always to be heterogeneous. However, in market-like conditions in which a company often has a massive customer base the question of heterogeneity may be a major contingency factor. In turn, in network-like contexts in which the company concentrates on fewer but often also more complex customer relationships the perceived heterogeneity is likely to be less than in market-like conditions with a larger number of customers. Achrol and Stern (1988) drew up an environmental heterogeneity scale focusing on general market characteristics. However, when it is a question of the exchange context the focus should be on the company's current portfolio of customers.

Thirdly, the number and heterogeneity of customers says little about the nature of the relationships the focal firm has. Clearly, the overall strength of the customer relationships can provide crucial information about the quality of companies' exchange contexts. Even though many researchers stress that B-to-B markets are characterized by long-term relationships, it is very likely that there are notable differences in the overall relationship strength of different companies (cf. industry relationship band-width Anderson and Narus 1991). The strength of customer relationships can be assessed by examining the *proportions of the different customer relationship types in the customer base* (cf. Johnson and Selnes 2004; Lambert, Emmelhainz and Gardner 1996; Macneil 1980; Ring and Van De Ven 1992; Ritter 2007; Webster 1992).

Fourthly, dependence on customers has traditionally been recognized as a major issue in business markets. According to Pfeffer and Salancik (1978), dependence refers to the extent to which the main output of the focal firm is controlled by a relatively few customers. Alternatively, one could adopt the view of Buchanan (1992), who states that the key determinant of dependency is the absence of alternatives. A straightforward way of approaching depend-

ency in the focal company's exchange with its customers is through the concept of *customer concentration*, which approximates dependency on its largest customers (cf. Homburg, Workman and Krohmer 1999).

The fifth dimension, interconnectedness of customer relationships, moves the focus to the indirectly connected context. *Interconnectedness thus refers to the perceived number and pattern of connections to third parties among the customer relationships of the focal firm* (cf. Pfeffer and Salancik 1978, 68). Here, the focus is on the degree to which third parties are perceived as influential. Indirect connections such as customers' customers and the focal company's other customer relationships, suppliers or partners could be crucial in relationship management in business markets (Ritter, Wilkinson and Johnston 2004). It is likely that customer relationships in highly relational, networked businesses are more closely connected to third parties than in more market-like businesses. Some measures of interconnectedness have been used in business-network studies, but they concentrate on the role of a few actors in any one relationship (e.g., Blankenburg Holm, Eriksson and Johanson 1996).

Unlike the first five, the sixth and seventh dimensions approximate change in the relational context rather than in structure. Environmental dynamism or turbulence is often stated to be the main cause of environmental uncertainty (e.g., Bourgeois 1980). The measures of turbulence and dynamism used in environmental research refer to how frequent or unpredictable the change in the market environment is. In the exchange context the dynamism of customer relationships is the key issue. Two aspects of change have been distinguished: *customer turnover refers to the perceived rate of change in the composition of the customer base, in other words new or lost customers*, while *customer dynamism refers to the rate of change in current customer relationships and customer preferences* (cf. Jaworski and Kohli 1993, 57; Miller and Friesen 1982). The research model used to test the hypotheses is discussed next.

5.3 Research model

The research model depicted in Figure 10 below is used to test the suggested hypotheses. The continuous arrows represent the direct effects and the dashed arrows the moderating effects. The arrows in bold indicate a direct main effect and the thin arrows an intervening mediator effect (cf. Baron and Kenny 1986). Three areas of performance are considered: overall customer performance, customer profitability, and firm performance. The logic of the hypotheses and the research model are summarized below (see Figure 10).

The first three hypotheses posit that both analysis and responsiveness efforts (i.e. CPM efforts) are connected to customer profitability (**H1**), overall

customer performance (**H2**), and firm performance (**H3**) – see the arrows in bold in Figure 10. Because behavior is the necessary link to performance, it is only CPM efforts that are hypothesized to be directly connected to performance.

The second set of hypotheses concentrate on the role of CPM style (i.e. analysis and responsiveness design) in different exchange contexts. The underlying logic is that formal planning is not a necessary antecedent for CPM efforts. In fact, most companies carry out CPM at least to some degree in their current business. For example, all companies gather customer data, segment customers, have different offerings and service packages, and develop customer relationships, all of which can be done without extensive formal managerial planning. This idea is supported in the strategy literature in which strategic decision processes have been found not to be formal or linear (e.g. Mintzberg, Raisinghani and Théorêt 1976). Analysis and responsiveness design rather refer to a *CPM style that could amplify the relationship between CPM efforts and performance under certain conditions*.

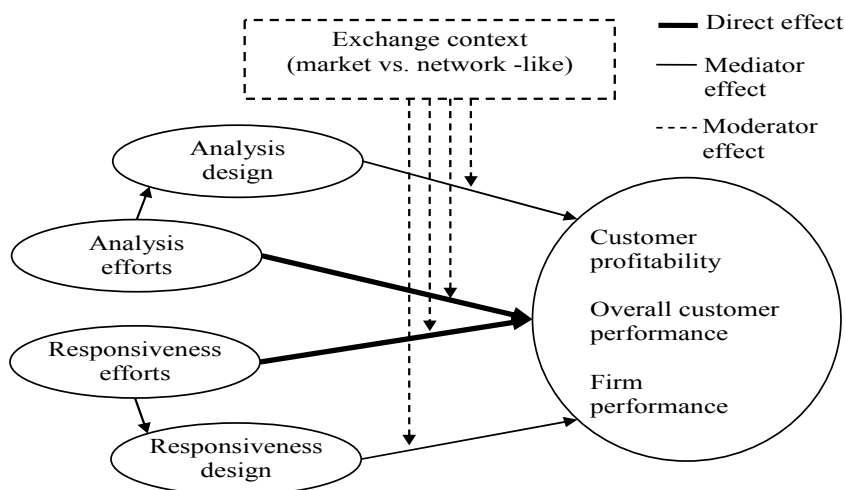


Figure 10 Research model

It is suggested that different CPM styles are more effective in different exchange contexts. In other words, the analysis and responsiveness design mediate the path between the respective CPM efforts and performance depending on the context of exchange. More specifically, it is hypothesized that CPM design mediates the paths from efforts to all three areas of performance in market-like exchange contexts (**H4–H6**, see the thin arrows in Figure 10), but not in network-like exchange contexts (**H7–H9**, see the thin arrows in Figure 10). Hence, it is hypothesized that highly designed, mecha-

nistic customer portfolio model -like practices are effective in market-like conditions in which the managerial challenges come from structural complexity in the customer base (the design mediates the effort-performance path). On the other hand, less designed and more organic management styles are needed in network-like conditions in which the managerial challenges come from the complexity of the exchange, in other words the relationships and interaction (the design does not mediate the effort-performance path). Therefore, the exchange context moderates these relationships (the dashed arrows in Figure 10).

There is no path between analysis and responsiveness efforts in the research model. This research model concentrates explaining optimally the relationship between the various CPM activities and performance. Adding a link to the model between the analysis and responsiveness efforts would provide more theoretical information about the nature of CPM activities but the model would loose its predictive capability in relation to performance. This is because PLS modeling would weight the indicators not only to optimize variation to performance but also between two CPM constructs which are highly correlating. Naturally, these alternative models were tested in this study but because of notably lower fit to data they are not discussed in detail.

The methodological background, analysis methods, sampling, measure formation, and the process of testing the research model are discussed in detail in the following chapter.

6 METHODOLOGY

6.1 Methodological background

The philosophical worldview of science in the context of this study is based on the idea of *critical pluralism*, in other words on a tolerant, open posture toward new theories and methods (cf. Anderson 1988; Caldwell 1991; Hunt 1991; Siegel 1988). Taking several different research approaches helps us to understand and explain different phenomena in society better: the different methodological paradigms inevitably have their strengths and weaknesses (e.g., McGrath 1982, 72-80; Bryman 1988). The philosophical and methodological foundations of this study are explicated in more detail below.

The study is based on the ideas of *scientific realism* (see Easton 2002; Hunt 2002, 5), which rests on the notion that the world exists independently of its being perceived. Further, the purpose of science is to develop knowledge about the world, even though such knowledge will never be known with certainty (fallibilistic realism). Scientific realism is also built on the idea that all knowledge claims must be critically evaluated and tested in order for science to progress.

In the end, all reasoning is based on either deduction or induction, although only induction can broaden our current knowledge (Niiniluoto 1983, 29). The problem of induction pointed out by Hume, however, is that it and therefore empirical research can never produce certain knowledge (e.g., Niiniluoto 33-49). In other words, one can falsify a theory based on empirical data but one can never verify it based on empirical findings, as stressed by Popper (see e.g., Hindess 1977, 167). Therefore scientific explanations cannot be found to be TRUE for certain except through falsification. However, a strict falsificationist view is not sensible if science is to evolve: it is impossible to conclusively refute a theory because realistic test situations depend on much more than the theory that is under investigation (Duhem 1953). Kuhn (1994) also stressed the fact that the complete falsification of theories is impossible – one cannot prove that some theories are better than others. Even though no knowledge created through induction can be held true with absolute confidence, it can still be trusted based on rational reasoning (Huttunen 1993). This is because of the concept of probability (Niiniluoto 1983, 33-49). It can therefore be assumed that theories, and science in the end, improve through the accumulation of knowledge gained in the testing of theories.

During the paradigm wars in marketing during the 1980's many quantitatively-oriented researchers took the strict position that the world and all knowledge in research are objective (c.f. Easton 2002, 103). The position adopted in this research is that it is possible to *approach objective reality* "out there", but the inevitably social nature of all knowledge is still recognized (e.g., Berger and Luckman 1967). The notion of social structures is acknowledged in critical realism (Bhaskar 1989). However, the focus of this study is on *creating explanations and on studying abstract structures* (i.e. CPM practices and performance), rather than on trying to understand deeply individual human actions or intentions in business organizations (e.g., exploring thoroughly why/ how managers have built certain CPM practices, or seeking a deep understanding of the long-term development of CPM processes). The focus is therefore on *structural-level explanations*, or "*universal behavior systems*", rather than on the deep understanding of systems or "particular behavior systems" (McGrath 1982, 73). Consequently, the emphasis is not on the social nature of knowledge, it is rather on broader CPM structures, in other words on performance outcomes. Clearly, it is pertinent to apply a quantitative research approach. The social nature of knowledge is taken into account in the development of the measures, and in the data collection and analysis. This is the case especially in the qualitative phase with managers when the items for the CPM measures were developed.

Given the interest in explanation in the study, the concept of *causality* is pivotal. True causal explanation needs to include 1) temporal sequentially, 2) associative variation, 3) non-spurious association, and 4) theoretical support between the examined variables (cf. Hunt 2002, 127). A natural consequence of this is that strict causal relationships can only be tested through controlled experiments, which is clearly not usually possible in the social sciences, and especially not in B-to-B research. However, a softer approach is most often taken in the social sciences and marketing, which usually involves studying relationships between constructs by means of *structural equation modeling* (Hunt 2002, 128; Bagozzi 1980). The *role of theory* is particularly important here in avoiding the faults of blind empiricism (Bagozzi 1980, 29). Therefore in testing causal relationship one should always test phenomena based on justified theory instead of "blindly" testing relationships among observable variables. Clearly the research model is strongly based on theory in this work.

In sum, the purpose of the study favors a quantitative research perspective. The methodological choices therefore follow the *nomothetical* approach, which is closely linked to the modernist (positivist) research tradition. The underlying explanatory model is causal and attempts are made to articulate the findings in the form of general laws (cf. Neilimo and Näsi 1980). The critical pluralist view, in turn, is evident in the utilization of several theoretical

perspectives, and in the use of both qualitative and quantitative methods. Qualitative methods support the quantitative approach (cf. the relative view put forward by Arbnor and Bjerke 1997, 438–454). The research model and hypotheses are tested by means of structural equation modeling (SEM). The analysis methods applied are discussed in more detail next.

6.2 Analysis methods

This section briefly describes the analysis methods used in the following chapters. The supporting methods used for screening the data, validating the measures and dividing the companies according to their different exchange contexts are discussed first. The focus then moves to the main analysis method, structural equation modeling, applied to the research model and the hypotheses.

Table 4 below sums up the empirical parts of the dissertation, together with the methods used for analyzing the data in that phase.

Table 4 The main analysis methods used

Phase of the research	Analysis method
Screening the data	Chi Square test One-Way ANOVA
Measure formation / validation	Factor analysis Reliability analysis PLS modeling
Checking common method variance	Factor analysis PLS modeling
Grouping companies based on the exchange context	Cluster analysis Discriminant analysis
Testing the research models	PLS modeling

In evaluating the generalizability of the results the *data was screened* for representativeness according to the guidelines suggested by Armstrong and Overton (1977, 396) for assessing possible non-response bias. This included screening for possible differences between the respondents and the non-respondents, and the early and late respondents. This method is based on Chi-square tests and One-Way ANOVAs.

The main study constructs are unobservable and therefore multiple-item measures were applied. The reliability and validity of the measures is a vital aspect of quantitative research. Special attention was paid to *measurement*

formation because a major contribution of this study lies in the building up of new measures. The measurement formation was based on the main guidelines put forward by Churchill (1979) and DeVellis (1991) for the reflective measures, and on Diamantopoulos and Winklhofer (2001) for the formative measures. The reflective measures were tested for internal consistency (reliability) by means of Cronbach's alpha, and the unidimensionality (discriminant validity) by means of factor analysis. In turn, Structural Equation Modeling (PLS modeling) was used to test the formative measures for construct-level measurement error, as suggested by Diamantopoulos and Winklhofer (2001). Moreover, Harman's one-factor test was used to assess possible common method variance. Factor analysis was applied at this stage.

The main method used for analyzing the research model and hypotheses was structural equation modeling (SEM). Several of the hypotheses concerned the contingent nature of CPM practices. The approach in these cases was to study the moderation effects of the exchange context. However, testing moderation is very difficult in structural equation modeling. There are two general strategies: 1) dividing the data into subgroups, and 2) using interaction terms (e.g. Sauer and Dick 1993). However, because of the complexity and the data requirements, SEM techniques have serious limitations in their capacity for testing several simultaneous interaction effects at the same time (cf. Chin, Marcolin and Newstead 2003). *Therefore the moderation was tested by dividing the data into groups.* This procedure destroys variance and explanatory power, and for these reasons has been considered inadvisable. Still it has substantial advantages related to the understandability of the results and its statistical power (Hartman and Moers 1999, 296). These advantages are especially important when the analysis incorporates interactions of a higher order than two-way interactions. Here the grouping approach was chosen for several reasons: 1) in this research there would be seven interaction terms affecting two independent variables 2) the main idea of the research model is that mediation takes place under certain conditions, i.e. mediation and moderation at the same time, which would be extremely difficult to test at the same time; and 3) the grouping process was done based on theory and the subgroups represent two theoretically meaningful opposites.

The moderation effects were therefore tested by dividing the empirical data (companies) into two sets based on the identified central dimensions of exchange-context. Cluster analysis was applied in a similar way as reported in Cannon and Perreault (1999), based on the seven suggested dimensions of the exchange context. They state that when the concepts under study are highly correlated they are best modeled as higher-order factors, whereas non-covarying concepts comprising many dimensions are best approached through cluster analysis. Here, the dimensions of the exchange context were not

expected to co-vary highly so cluster analysis was a natural choice. It identifies and classifies objects or variables so that each object is very similar to others in the cluster (high within-cluster homogeneity). At the same time, it maximizes the differences between clusters (high between-cluster heterogeneity). (Hair, Anderson and Tatham 1987, 29.) Given the data characteristics (size), K-means Cluster analysis was applied.

The *research model and hypotheses* were analyzed by means of Partial Least Squares (PLS) modeling, which is a structural equation modeling technique. The SEM-based method could be seen as a coupling of traditions: the econometric tradition focusing on prediction, and the psychometric emphasis according to which concepts are modeled as latent (unobservable) variables that are indirectly inferred from multiple observed indicators. This coupling has allowed researchers in the social sciences to apply path analytic models with latent variables as opposed to first-generation analysis techniques such as principal component analysis, factor analysis, discriminant analysis, and multiple regressions. Consequently, there are two sides to SEM methodology, namely the *structural model* (also known as the outer model) and the *measurement model* (also known as the inner model). This logic is used in this report when the results of the research are presented. In general, SEM-based approaches provide the researcher with the flexibility to 1) model relationships among multiple predictor and criterion variables, 2) construct unobservable latent variables, 3) model errors in measurement for the observed variables, and 4) statistically test a-priori theoretical and measurement assumptions against empirical data, in other words carry out confirmatory analysis (Chin 1998, 296-297).

PLS modeling is a component-based SEM technique that is in contrast with maximum-likelihood-based methods such as LISREL or AMOS. These two techniques differ in orientation. The PLS approach is application or *prediction oriented* whereas the covariance-based approach is theory-testing or *parameter oriented* (Chin 1998). The SmartPLS 2.0 program is used in the analysis. Because the analysis program is a beta version the results were checked against the PLS-graph 3.0 program (also the beta version). The results were identical. There were several good reasons for choosing this approach instead of maximum likelihood based SEM techniques.

First of all, PLS is able to model latent constructs under conditions of non-normality (in contrast to maximum likelihood), which was the case in this study (e.g., Chin, Marcolin and Newstead 2003, 197). This is because the variance-based approach of PLS shifts the orientation from optimal parameter estimation to component-based predictive modeling.

Secondly, it avoids two serious problems of maximum-likelihood-based methods, namely improper solutions and factor indeterminacy (Fornell and

Bookstein 1982, 440). Attempts to explicitly model formative indicators in traditional SEM have been shown to lead to identification problems, and component-based PLS is a better option (Chin 1998, 9-10). PLS estimates the latent variables as exact linear combinations of the observed measures, thereby avoiding the indeterminacy problem and providing an exact definition of the component scores.

Thirdly, PLS modeling is suited to relatively small sample sizes, in contrast to covariance-based approaches with a minimum sample size of around 200 cases. This would have been a problem here as the data was divided into two sets of around 100 cases for testing the contingency hypotheses. The minimum PLS sample size is the larger of these two options: 1) ten times the block with the largest number of formative indicators (i.e. the largest measurement equation), or 2) ten times the dependent latent variable with the largest number of independent latent variables impacting it (i.e. the largest structural equation) (Chin 1998, 331).

Fourthly, PLS is appropriate when the theory is untested in an application domain (Göbal, Bostrom and Chin 1992, 57). Its explorative nature (indicator weights) will therefore give detailed information about the different facets of customer portfolio management. In sum, given that the data in this study is not normal, that the sample is rather small, and that CPM is a new formative construct, PLS was the natural choice of analysis method.

A Jackknifing or Bootstrapping procedure can be used to test the significance of the PLS parameter estimates. Of these, the Bootstrap procedure is recommended and it is also most widely used. In this case a sample size of 500 was used, as recommended by Chin (1998, 323).

6.3 Sampling and data collection

Earlier studies on customer portfolio management together with the qualitative study conducted in conjunction with this research indicated that there were several issues to be taken into account in the data collection.

First of all, the findings of Räsänen (1999) and Leek, Turnbull and Naude (2002) suggest that systematic CPM efforts are not very commonplace in companies. When the company size is small it is reasonable to expect such practices to be more informal, to lack a clear structure, and to be more “laissez-faire” in nature because of the limited managerial resources (e.g., Curran and Blackburn 2001, 5-8). In turn, it is likely that large companies give more attention to developing and implementing CPM activities. Given the fact that customer portfolio management has become one of the hot topics in business as a result of research and consulting efforts, it would be highly

interesting to know whether it is linked to company performance. Also, large companies are more likely to have larger customer bases than smaller ones. For these reasons, large companies are the focus of this research. According to the theory and the findings of the qualitative study, the effectiveness of CPM activities should not vary by industry: in fact, they are hypothesized to be relevant in all industries. Because of the limited number of large companies in Finland the sample used in this research could be considered convenient, focusing on the *500 largest B-to-B companies operating in the country*.

Secondly, the qualitative study showed that it is possible to organize CPM in several different ways at different organizational levels, probably depending on the exchange context, which varies notably from company to company. If a firm operates in one rather homogeneous business area its customer portfolio management is likely to be a centralized function. In turn, if it is active in many heterogeneous businesses it is likely to organize its CPM in independent business areas. In the case of a matrix organization the strategies are likely to be planned in the marketing function and implemented in the different business areas. Hence, the *level of measurement* is clearly a problematic issue in the study of CPM practices in business. Given the aim of this study to provide as comprehensive a picture as possible, it was a natural choice to *focus on units that were independently responsible for CPM activities*. Hence, when the responsibility lay with several independent business areas the questionnaire was sent to those, but if CPM was centralized only one questionnaire was sent.

Thirdly, the evident complexity of portfolio management makes it difficult to find the *most suitable respondents*. Because of the limited resources available for the study a single-key-informant approach was taken. This has several drawbacks, however – some of which may be alleviated through the careful choice of the key informant (Kumar, Stern and Anderson 1993). Clearly, the responsibility for CPM may be in the hands of very different kinds of managers, ranging from divisional or strategy managers to marketing and sales executives. Hence, the researcher contacted the senior management in every company in the sample in order to 1) identify whether there were one or more independent organizational units responsible for CPM, 2) find the managers responsible for CPM activities, and 3) motivate the respondents to participate in the study, as suggested by Huber and Power (1985, 174–175). The main aspects of customer portfolio management were briefly described, and the executives were asked whether these activities were a centralized practice in their organization, and who was responsible for portfolio management in the company or business areas.

Given the above criteria, a purposive sample was drawn from the Finnish “Fonecta ProFinder B2B” database in order to find the largest B-to-B

companies in the country. There were no statistical considerations in the company selection. In practice, taking all companies with a turnover of over 55 million euros gave a list of 630 companies. Within three months the researcher had personally contacted the senior management in all of them. Firms mainly engaged in B-to-C business, nonprofit companies, and companies mainly supplying to their owners were excluded, thereby reducing the number of suitable companies to 408. However, as discussed above, in many of these CPM was practiced in independent business areas, which resulted in a list of 493 independent units. It should be noted that in many cases the companies agreed to participate in the study, but in only one business area even though their CPM was business-area based. Of the contacted independent unit managers 446 promised to participate.

In order to ensure as good a response rate as possible, all these managers were sent an electronic questionnaire and two reminders via the web-based survey tool Webropol. The questionnaires were sent in six phases ($N = 116 + 112 + 88 + 102 + 16 + 12$). This was done in order to maximize the effectiveness of time-consuming personal contact. As CPM is an ongoing strategic-level phenomenon in companies it is highly unlikely that the time gaps had any effect on the responses (cf. Huber and Power 1985, 177). After three months of data collection a total of 225 questionnaires had been returned. In 18 cases two or more responses were returned from a single company.

An additional measure for checking respondent competency was included in this study. Kumar, Stern and Anderson (1993, 1636) suggest that specific measures are preferable to global measures (such as the length of the respondent's tenure in the firm, or the length of time the respondent has been interacting with other firms). Hence, the measure used in this case assessed how familiar the respondent was with the customer management practices of the company (very, quite, or not at all). Eight responses were removed because of low respondent competency related to the relationship-management practices of the focal company. Additionally, four responses included a substantial number of systematically missing values. Thus, there were *212 usable responses*, giving a rather high *response rate of 44%*.

Huber and Power's (1985) guidelines for improving the accuracy of retrospective reports were applied in the survey. Great care was taken in the selection of respondents. Identification of the most knowledgeable person in the organization was based on personal telephone contact with the senior management. Moreover, anonymity and confidentiality were emphasized when the survey was sent. The respondents were assured of the usefulness of the results in that the participating companies were promised a benchmark report on the CPM practices of large companies. Further, the questions were

framed in a way that was logical to the respondents: the first ones covered the main perspectives of analyzing customer value, and were followed by more abstract questions concerning customer portfolio management.

6.4 Screening the data

As recommended by Armstrong and Overton (1977), the data was screened for possible non-response bias. First, comparisons were made with known values for the population, in other words the respondent companies were compared to all B-to-B companies in the focus area of the study. Secondly, it could be assumed that late respondents are more similar to non-respondents, and therefore the early and late respondents were also compared for possible bias.

The sample comprised a large number of companies, and also independent business units or areas. However, there are no databases containing information about Finnish companies on the business-unit level, and therefore examination of non-response bias on this level is not possible. The best alternative is to consider possible differences on the whole-company level – hence the 18 cases in which many responses came from a single company were examined as a single company. The Fonceta database has three usable company-information categories to draw from, namely turnover, personnel class, and industry.

Table 5 The turnover of the respondent and nonrespondent companies

	Respondent	Non-respondent	Total
TurnoverCategory 20-100	69	83	152
100-200	57	75	132
200+	68	56	124
Total	194	214	408

$$\chi^2 = 3.934 \text{ } p = 0.140$$

The database included readily classified information about company turnover. Table 5 suppresses the turnover classes of the respondent and non-respondent companies. It shows that the respondent companies were slightly larger than the non-respondent companies. However, according to the chi-square test the two groups did not differ in a statistically significant way.

Secondly, the personnel classes of the respondent and non-respondent companies were compared by means of cross-tabulation – see Table 6. Again,

a slight bias is shown – the respondent companies were slightly larger than the non-respondent companies. This time the difference was also statistically significant ($p < 0.01$).

Table 6 Personnel size in the respondent and non-respondent companies

		Respondent	Non-Respondent	Total
PersonnelCategory	1-49	14	12	26
	50-99	9	26	35
	100-249	36	43	79
	250-499	46	65	111
	500-999	41	44	85
	1000+	48	24	72
Total		194	214	408

$$\chi^2=19.456 \text{ } p=0.002$$

The industries of the respondent and non-respondent companies were also checked for differences. The Standard Industry Classification Codes (SIC) were used – the table including the industries of the companies concerned is given in Appendix 2. No statistically significant differences between the groups were found according to the Chi-Square test $p > 0.05$ ($\chi^2=20.725$, $p=0.538$, see Appendix 2). However, the assumptions of the Chi-Square test were not fulfilled as too many cells had an expected count of less than five. A Kruskal Wallis test ($p=0.763$) was also used, and it confirmed the finding that the respondent and non-respondent companies did not differ in terms of industry.

It could therefore be concluded that the companies represented quite well the largest B-to-B companies in Finland in all industries. There was a slight bias towards larger companies, which was not statistically significant with regard to turnover, but it was significant with regard to personnel size. This result could indicate the relevance of CPM to large companies in particular. It should be noted when the results of this study are interpreted in an international context that the companies in the sample are small.

Finally, the early and late respondents were compared. Companies responding after having been sent a remainder were classified as late respondents. It has been suggested that late respondents are likely to represent the characteristics of non-respondents (Armstrong and Overton 1977). The summarized responses to the questionnaire of the early and late respondents were compared by means of a one-way ANOVA. A summary of results is given in Appendix 3. One measure differed in a statistically significant way,

namely the analysis design of the CPM measure (see Table 7 for the means for the early and late respondents).

Table 7 The means of the analysis-design measures for the early and late respondents

Response wave		Analysis Design
Early respondents	Mean	4.3922
	N	133
	Std. Deviation	1.32036
Late respondents	Mean	4.0042
	N	79
	Std. Deviation	1.33919
Total	Mean	4.2476
	N	212
	Std. Deviation	1.33752

Overall, it could be concluded that there were no systematic differences between the early and late respondents, which suggests that non-response-bias is not a problem in this study.

6.5 Measures

This study focuses on phenomena that are very abstract and unobservable rather than those that are concrete and directly observable. Therefore their measurement must be approached indirectly through the use of latent constructs with multiple indicators. A construct is an abstract theoretical (hypothetical) variable that is invented (“constructed”) to explain some phenomenon of interest to scholars (Schriesheim, Powers, Scandura, Gardner, Lankau 1993, 385). The connections between constructs and measures are referred to as epistemic relationships, or “rules of correspondence” (Bagozzi 1984; Fornell 1982; Hulland 1999, 201). Two basic types of epistemic relationships are relevant to causal modeling, namely reflective and formative indicators.

Ever since Churchill (1979) presented his article on measure development quantitative studies in marketing have devoted considerable attention to the development of *reflective* multiple-item measures with sound psychometric properties. In other words, measurement in marketing has been based on the ideas of classical test theory and its assumptions about the relationship

between a construct and its indicators. The basic assumption in reflective measurement is that the *latent variable causes the indicators* (Bollen and Lennox 1991). As the direction of the causality is from the construct to the indicators, and change in the construct causes changes in the indicators, the classic measures are called reflective. In more formal terms, it is assumed in classical test theory that the variation in the scores on measures of a construct is a function of the true score, plus error (e.g. Jarvis, Mackenzie and Podsakoff 2003, 199). The reflective indicators (questions) should therefore be *internally consistent* as they all reflect the same underlying construct (Bollen and Lennox 1991, 378). For the same reason, the indicators in reflective measurement should be *interchangeable*, and construct validity should be unchanged when a single *indicator is removed* (Bollen and Lennox 1991, 308). Figure 11 below gives a graphical presentation of a reflective measure.

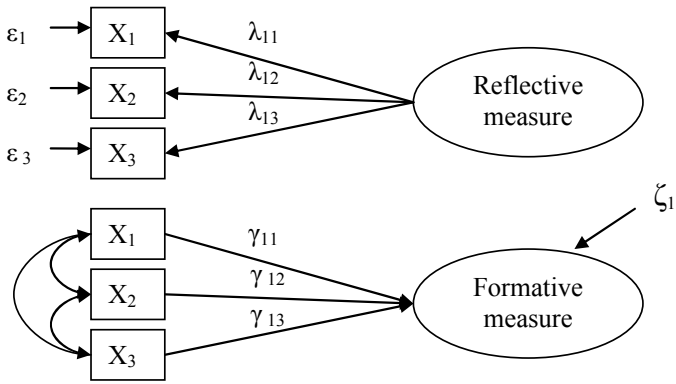


Figure 11 Reflective and formative measures (adapted from Bollen and Lennox 1991)

The second perspective on multiple-item measurement is *formative* measurement, which is based on the idea that the *indicators cause the concept measured*. Here the indicators are referred to as formative, cause, or composite (Bollen and Lennox 1991, 306). In other words, formative measures, or indexes, are often defined as combinations of relatively independent factors that determine the level of the latent construct (Jarvis, Mackenzie and Podsakoff 2003; see Figure 11). This has several effects on their properties. First of all, the *internal consistency criterion is not valid* for the cause indicators (Bollen 1984, 381). Still, the constructs may be meaningful entities for research, such as the concept of socio-economic status (it is rational to say, for example, that income or education affect socio-economic status rather than vice versa). Secondly, as the formative constructs are caused by their

indicators, *dropping an indicator may alter the meaning* of the construct (dropping education from socio-economic status, for example, makes the whole construct different). Thirdly, for the same reason the *measurement error* cannot be measured on the item level but must rather be estimated on *the construct level* (Bollen and Lenox 1991, Jarvis, Mackenzie and Podsakoff 2003, 201) – see Figure 11 above.

The formative measurement approach is rare in marketing studies, however, for historical reasons (the strong emphasis on internal consistency in measurement as emphasized by Churchill 1979) and because of the lack of validation methods. Still, many of the topics studied are, in fact, not reflective. Jarvis, Mackenzie and Podsakoff (2003) found that the problem of model misspecification was very pervasive in current research – 28% of the measures published in top marketing journals were incorrectly modeled. In particular, conceptualizations of managerial constructs in marketing are often formative. In recent years some researchers have paid more attention to this perspective, and it has become a more accepted approach in marketing research even in top journals (cf. Diamantopoulos 2008; Diamantopoulos and Winklhofer 2001; Reinartz, Krafft and Hoyer 2004; Ulaga and Eggert 2006). This is clearly important as measurement model misspecification severely biases structural parameter estimates, and could lead to the drawing of inappropriate conclusions about the hypothesized relationships between constructs (Jarvis, Mackenzie and Podsakoff 2003, 216).

There are four criteria that may be applied in deciding whether a construct is better measured by reflective or formative means (cf. Jarvis Mackenzie and Podsakoff 2003, 203). The first of these concerns the causality between the construct and the indicators – are the indicators (items) defining characteristics or manifestations of the construct? The second is to do with the interchangeability of the indicators – does the dropping of an item change the construct? The third criterion covers the co-variation among the indicators – should a change in one of them be associated with changes in others? Finally, do all the indicators have the same antecedents and consequences?

A construct should be modeled as having formative indicators when the following conditions prevail: a) the indicators are viewed as a defining characteristic of the construct, b) changes in the indicators are expected to cause changes in the construct, c) changes in the construct are not expected to cause changes in the indicators, d) the indicators do not necessarily share a common theme, e) eliminating an indicator may alter the conceptual domain of a construct, f) a change in the value of one indicator is not necessarily expected to be associated with a change in all of them, and g) the indicators are not expected to have the same antecedents or consequences (Jarvis Mackenzie and Podsakoff 2003, 203; see also Diamantopoulos and Winklhofer

2001, 270-271).

Upon examination, it can be concluded that the suggested conceptualization of customer portfolio management does not easily fit the traditional reflective measurement perspective, but is a clear example of a formative measure.

First of all, each of the four CPM dimensions are internally very broad and include a wide variety of indicators that need not be intercorrelated (see Figure 6, page 71). For example, a company may analyze its current customer value but it does not have to analyze future value potential. Similarly, a company may manage customers of different value very efficiently but it does not have to try to develop its customer structure by driving customer relationships in a certain direction.

Secondly, the same applies to the four CPM dimensions that are not necessarily intercorrelated. This is obvious, as the existence of analysis activities does not mean that the company will respond to this knowledge. Neither do the analysis or response efforts need to be carefully designed. Still, according to the theory all these CPM components form a meaningful and relevant entity. Therefore, CPM is better operationalized through the use of formative logic.

In turn, the other measures used in this study are reflective in nature. They approximate the general characteristics of the company's exchange with its customers, such as the broadness of the customer base, the heterogeneity of the customer relationships, their interconnectedness and dynamism. Additionally, customer turnover and concentration, and types of customer relationships, are rather concrete issues that are suited to single-item measures.

Sound measurement is necessary in all (quantitative) research if it is to be legitimate and hence to advance (Schiresheim, Powers, Scandura, Gardnier, Lankau 1993). Because construct validity pertains to the degree of correspondence between the constructs and their measures, it is a necessary condition for theory development and testing (Peter 1981, 133). Moreover, because reflective and formative measures differ notably from each other, the formation and validation practices are also very different. The formation and validation of the measures used in this study are discussed in more detail next. The descriptive statistics for the measures are presented in Appendix 4.

6.5.1 The development of the formative measures

Diamantopoulos and Winklhofer (2001) put forward guidelines for developing and validating formative measures. They argue that four issues are critical for successful index construction: 1) content specification, 2) indicator specification, 3) indicator collinearity, and 4) external validity. The formation of the

CPM construct is discussed in more detail below in terms of these four critical aspects. Because the formation of the CPM measure is the main contribution of this dissertation, this issue is given considerable attention.

First of all, content specification is a particularly important phase in index formation as an index is more abstract and ambiguous than a latent variable subjected to reflective measures. Further, as the latent construct is caused by its indicators rather than vice versa, failure to consider all facets of the construct will lead to the exclusion of relevant indicators and thus of part of the construct. (Diamantopoulos and Winklhofer 2001, 271) In this study the content specification of the CPM construct is firmly rooted in both theory and empirical study, which has resulted in the extensive definitions of CPM and its activities discussed in Chapter 4.3.5.

Customer portfolio management is a very complex and broad phenomenon, and consequently has been defined as consisting of multiple dimensions. More specifically, the overall level of customer portfolio management is formed by four constructs, namely analysis efforts, analysis design, responsiveness efforts, and responsiveness design (see Figure 12).

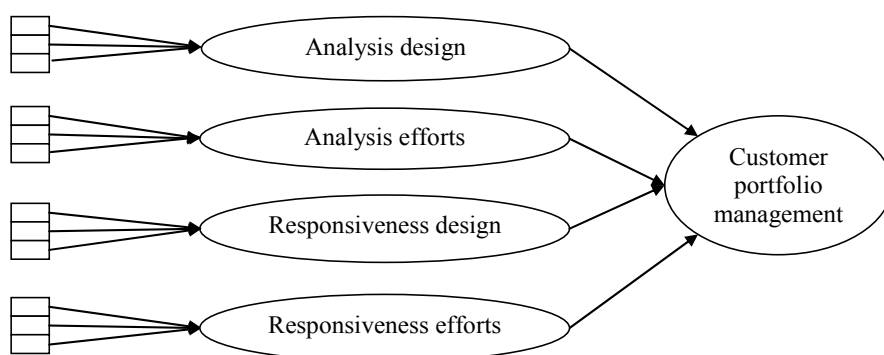


Figure 12 The CPM construct

Alternatively, CPM could be modeled in terms of second-order logic. In other words, this conceptualization consists of the two second-order constructs of analysis and responsiveness, both of which are formed from the rather independent first-order constructs of design and effort. Moreover, these first-order constructs are formative in nature, in other words their level is formed by their indicators. In Jarvis, Mackenzie and Podsakoff's (2003, 205) typology of second-order factor models, the second-order CPM activities would be Formative First-Order and Formative Second-Order constructs (see Figure 20, page 110).

Secondly, reflective measurement involves the random selection of a set of

items from the universe of items tapping the construct of interest (DeVellis 1991, 55). This is natural because of the interchangeable nature of reflective indicators. In contrast, for formative measures a *census* of indicators, not a sample, is required for the *indicator specification* (cf. Bollen and Lennox 1991, 308). In other words, the items used as indicators must cover the entire scope of the latent variable as described under the content specification. The indicator specification in this study was based on the earlier literature and also on new interviews with experts. This is discussed in detail below.

In order to ensure that the indicators covered the entire scope of portfolio management, conceptual matrixes based on the definitions of the CPM dimensions were used as a guide. They provided a structured means of ensuring that the questions evenly covered all the main aspects of the construct. The list of items measuring the different facets of the CPM construct was based on the related theoretical literature, the interviews conducted for the qualitative study, and logic.

All the items were measured on seven-point *Likert* scales, which is an established practice in marketing (DeVellis 1991, 68). DeVellis (1991, 69) suggests that the statements should be fairly (although not extremely) strong in order to produce more variety in the answers, as mild statements may elicit too much agreement. Moreover, because negatively worded items have been shown to reduce validity in questionnaire development they were not used in the suggested measures (see Hinkin 1995, 972). Finally, special efforts were made to ensure that all the questions were as specific as possible. In practice, this meant ensuring that there were no double-barreled or “and” questions (e.g., Churchill 1979, 68), for example. These points were taken into consideration in the proposed questionnaire.

This list of items was tested in interviews with experts according to the guidelines suggested by Diamantopoulos and Winklhofer (2001, 272). The interviewees were given the definitions and were asked 1) how relevant the measures were for measuring the issue they were supposed to measure, 2) how clear and concise the items were (i.e. they were asked to mark items that were unclear or had other possible content problems), and 3) whether they felt that the measures were missing some aspects of the phenomena under review. This initial qualitative testing phase was interactive, the aim being to elicit as broad comments as possible.

More specifically, the expert review of the items consisted of two parts. The academic review comprised 10 personal interviews with academic experts familiar with the literature on relationship marketing. These interviews concentrated on the conceptual side of the items, emphasizing the clarity and scope of the questions. In turn, the practitioners’ views were elicited in face-to-face interviews carried out with a total of seven senior managers responsi-

ble for customer management (in new companies not participating in the qualitative study). Here the focus was on finding how relevant, focused, and clear the questions were for the managers. Additionally, nine academics critically reviewed the questionnaire in terms of how they felt the indicators fitted the definitions (cf. Hardesty and Bearden 2004; Schriesheim, Powers, Scandura, Gardnier, Lankau 1993). During this process several questions were modified and some were dropped / added until the indicators were found appropriate. The process produced a list of 10+6+9+6 indicators that covered all of the main aspects of CPM without excessive overlap. These indicators are discussed next.

The resulting set of questions is given in the questionnaire at the end of the dissertation (Appendix 31). The original questions were in Finnish and were translated into English by an expert familiar with both the English language and with business. Below are the definitions of the sub-activities and the theory-based matrixes, which were used to ensure the scope of indicators.

	Relationship level	Portfolio level
Current (backward-looking) value	AE1-AE2	AE5-AE7
Future value	AE3-AE4	AE8- AE10

Figure 13 A conceptual matrix for forming the items for analysis effort

Analysis efforts: the focal company's efforts to analyze its *whole portfolio of customers* pertaining to their different roles in providing *current* and *future* value for the focal company. The codes in the matrix correspond to the questions in the questionnaire.

	Planning of practices	Adaptation of practices
Current focus	AD1- AD2	AD4- AD5
Future focus	AD3	AD6

Figure 14 A conceptual matrix for forming the items for analysis design

Analysis design: the focal company's continuous efforts to *plan* and *adapt* its CPM activities to company needs. The codes in the matrix correspond to

the questions in the questionnaire.

	Matching focus	Development focus
Current focus	RE1-RE3	RE5-RE7
Future focus	RE4	RE8-RE9

Figure 15 A conceptual matrix for forming the items for responsiveness efforts

Responsiveness efforts: the focal company's efforts to adjust its *resource allocation* (matching/development) according to the value of different customers in its *current* and *future* customer portfolio. The codes in the matrix correspond to the questions in the questionnaire.

	Planning of practices	Adaptation of practices
Current focus	RD1-RD2	RD4-RD5
Future focus	RD3	RD6

Figure 16 A conceptual matrix for forming the items for responsiveness design

Responsiveness design: the focal company's continuous efforts to *plan* and *adapt* its responsiveness activities to company needs with a view to implementing them in practice. Again, the codes in the matrix correspond to the questions in the questionnaire.

Thirdly, indicator collinearity should be examined in developing formative measures. Excessive collinearity makes it difficult to separate the distinct influence of the individual indicators on the latent variable, and is a severe problem in formative measurement (Diamantopoulos and Winklhofer 2001, 272). If a particular item turns out to be an almost perfect linear score of the other items, it is likely to contain redundant information and will therefore be a candidate for exclusion from the index (Bollen and Lennox 1991, 307). In other words, index-construction procedures tend to *eliminate* highly intercorrelated items (for minimizing multicollinearity), whereas traditional scale-development procedures tend to retain them (for maximizing internal consistency) (Diamantopoulos and Siguaw 2006, 271).

There are several ways of examining multicollinearity. Diamantopoulos and Winklhofer's (2001, 272) guidelines include the use of a variance inflation

factor (VIF) with a suggested cut-off threshold value of 10. According to the VIF values, none of the indicators were found problematic (see Appendix 5). Diamantopoulos and Siguaaw (2006, 271) suggest studying multicollinearity in terms of its tolerance value in building up formative measures. Tolerance value is closely related to VIF – however, the authors recommend a more conservative cut-off value of 0.30. On this basis two items turned out to be problematic and were therefore deleted (AD1 and AD6, see Appendix 5). It is also possible to use pair-wise correlations, correlations over 0.8 indicating the presence of multicollinearity (Gujarati 2003, 359). In this study, most of the correlations among the CPM indicators remained under 0.6, and all of them under 0.655 (five variables). Finally, Hair, Anderson and Tatham (1995, 153) propose a two part process for assessing multicollinearity comprising 1) looking for condition indices for values over 30, and 2) looking for two or more variance proportions over 0.5 in the condition indices. A multicolliearity problem exists when two or more variance proportions are grater than 0.5 in a condition index of over 30. When the indicators in this study were examined three of the 23 dimensions had a condition index of over 30, but none of them had two or more variance proportions over the value of 0.5 (see Appendix 6). Therefore, following the removal of two indicators, multicollinearity ceased to be a problem.

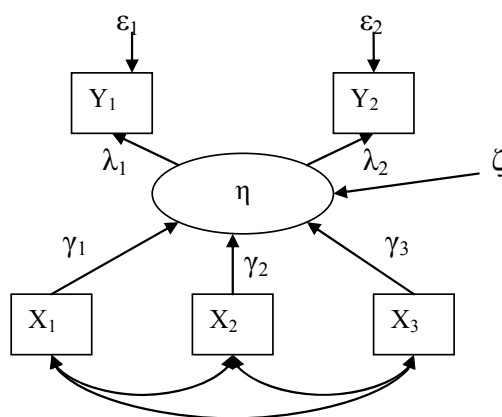


Figure 17 MIMIC model

Fourthly, external validity was considered. The goodness of measures is traditionally based their internal consistency. Formative indicators may be positively, negatively, or not at all correlated (Bollen and Lennox 1991, 307), which implies that the traditional assessment of individual item reliability and convergent validity is not meaningful for formative constructs (Hulland 1999, 201). Index error should be measured on the construct rather than the item

level. Diamantopoulos and Winklhofer (2001, 272) propose that the multiple indicators and multiple causes (MIMIC) model should be used to assess the external validity of an index (see Figure 17). According to this model, the (formative) cause indicators (X_1 - X_3 in the example) act as direct causes of the latent variable, which in turn is indicated by one or more reflective indicators (Y_1 - Y_2 in the example). If the overall model fit proves acceptable, it could be taken as supporting evidence for the set of indicators forming the index.

The CPM measure consists of the four dimensions of analysis efforts, analysis design, responsiveness efforts, and responsiveness design. The MIMIC model is tested on the aggregate level, in other words all four CPM constructs are used as causes to an overall CPM measure with four reflective indicators. This is an established procedure for validating formative constructs with several dimensions (see Reinartz, Krafft and Hoyer 2004, 298; Ulaga and Eggert 2006, 129-130). The indicators of the reflective CPM measure are given in Appendix 31. The results of the MIMIC model are discussed next – the measurement (outer) model first and then the structural (inner) model. The SmartPLS program was used for the modeling.

The reflective CPM measure with four indicators had a Cronbach's alpha of 0.66 (0.65 acceptable), a composite reliability of 0.798 (over 0.7) (cf. Churchill 1979, 68; DeVellis 1991, 85), and an AVE of 0.497 (should be larger than 0.5, Fornell and Lacker 1981, 46), with item loadings of 0.69, 0.67, 0.72, and 0.73 (ideally over 0.7, over 0.5 acceptable, see Hulland 1999, 198). Even though these figures are not ideal they could be considered acceptable given the explorative nature of the study (developing measures). Furthermore, the CPM measure is a very complex and varied construct, which makes it highly difficult to capture the whole construct in a single reflective measure.

In formative measurement item weights can be seen as validity coefficients (Diamantopoulos and Winklhofer 2001, 273). According to Chin (1998, 307), the weights provide information on what the makeup and relative importance are for each indicator in the creation/formation of the component. For that reason Diamantopoulos and Winklhofer (2001) recommend removing non-significant items in the MIMIC model. However, several authors stress that the *indicator elimination – by whatever means – should not be divorced from conceptual considerations when a formative measurement model is involved* (Bollen and Lennox 1991, 308; Diamantopoulos and Winklhofer 2001, 273). Moreover, a lot of research employing multi-dimensional formative measures and reported in top journals has been validated based on purely structural relationships, in other words parameter estimates (see Reinartz, Krafft and Hoyer 2004, 298; Ulaga and Eggert 2006, 129-130).

When the MIMIC model was tested several indicators turned out to have

negative or near zero indicator weights, suggesting the need to remove some of them. The decision was made to drop those with weights under 0.100, with two exceptions (RE1; RE4). This was possible because the suggested list of items was very fine-grained and there was a slight overlap. The item removal thus did not alter the overall measure as the final items still covered the main aspects of the CPM phenomenon. More specifically, items *AE3* and *AE4* were covered by *AE1* and *AE2*; *AE6* by *AE5* and *AE7*; *AE8* by *AE10*; *RE3* and *RE7* by *RE1*, *RE2*, *RE4*; and *RD4* by *RD5* and *RD6* (see the questionnaire in Appendix 31, the *removed items* are marked *). Questions *RE1* and *RE4* were retained for conceptual reasons. The measurement model results (item weights, loadings and t-values) for the final purified CPM measure are shown in Appendix 7. Further validity of the construct lies in the fact that all indicators had positive indicator weights and 19 of the 22 indicators were significant at least at the 10% level (retained non-significant indicators: *AE2*; *RE1*; *RE4*). Because PLS is based on standard ordinary least squares regression, misspecification due to the inclusion of “irrelevant” items will not bias the estimates of significant items (Mathieson, Peacock and Chin 2001, 107). The 10% significance level for the indicators was acceptable because of the strong conceptual support and the explorative orientation of the study. The difficulty of forming a good reflective CPM measure also strongly supports this choice as it has been shown that the nomological context matters when the relative importance of formative measures is assessed (Mathieson, Peacock and Chin 2001, 107).

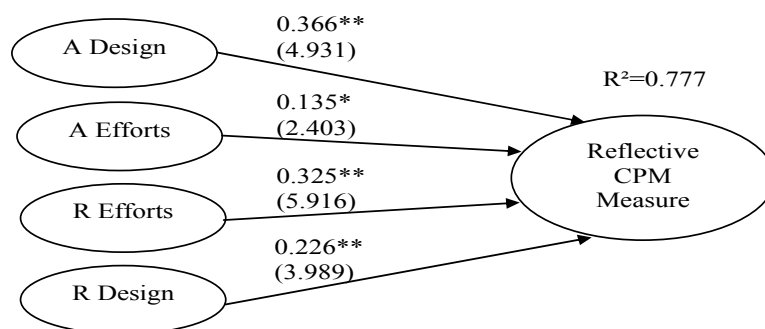


Figure 18 Testing the external validity of the CPM construct

The structural model shown in Figure 18 was also examined for construct validity. The figure shows the path coefficients, the t-values, and the R^2 value (t-values > 1.96 = 5% significance level indicated by*; t-values > 2.54 = 1%

significance level indicated by**). The interpretation of the R^2 values is identical to that in traditional regression (Chin 1998, 316). The corresponding path estimates could also be interpreted in the same manner. Following the bootstrap procedure included in the SmartPLS (500 resamples as recommended by Chin 1998, 323), all the path coefficients of the model were found to be significant. Moreover, the R^2 of the CPM construct turned out to be substantial (0.777), indicating that the reflective and formative measurement approaches share 78% of their variance and thus supporting the construct validity of the formative CPM dimensions.

Overall goodness-of-fit for the model was estimated against the GoF figure (geometric mean of the average communality and the average R^2), which was 0.644 indicating good fit (see Appendix 8, cf. Tenenhaus, Vinzi, Chatelin and Lauro 2005, 173). Therefore, the path-coefficients, the R^2 value and the GoF value all point to the good fit of the MIMIC model with the empirical data. Interestingly, CPM designs carried smaller indicator weights than CPM efforts, which were clearly caused by the very narrow scope of the reflective CPM measure. A look at the correlations and squared AVE figures for the CPM constructs sheds further light on this issue: designs correlated more highly with the reflective CPM measure than did the efforts (see Appendix 8). Further, the correlations between the constructs were smaller than the squared AVE figures, but the reflective CPM measure was an exception. This was expected as the reflective measure overlaps all the formative measures. The correlation table also indicates a correlation among all the CPM dimensions.

An alternative second-order conceptualization of CPM was also tested by means of hierarchical component analysis, as recommended by Wold (cf. Lohmöller 1989, 130-133). Here, CPM comprised the two second-order activities of analysis and responsiveness, both of which comprise CPM effort and design. Technically speaking, a second-order factor is directly measured by observed variables for *all* the first order factors. While this approach repeats the number of manifest variables used, the model can be estimated by the standard PLS algorithm (Chin, Marcolin and Newsted 2003, appendix A). In other words, the second-order constructs repeat the indicators of the lower-order constructs (for analysis 4+10 indicators and for responsiveness 6+9 indicators).

Importantly, the outer model results (indicators weights) are similar in this model to the already tested first-order conceptualization of CPM. Therefore both these MIMIC models suggested keeping and dropping the same indicators providing further support for the validity of the construct. The R^2 value of the tested second-order model was 0.775, indicating that choosing a second-order conceptualization of CPM does not lead to better model fit. Therefore the simpler first-order model is a reasonable choice.

Finally, the nomological validity of the formative CPM measure has to be tested. This involves linking the index to other constructs with which it should be linked, i.e. antecedents or consequences (Diamantopoulos and Winklhofer 2001, 273). This is done in the hypothesis testing in which CPM is linked to customer performance, customer profitability, and two measures of firm performance. Moreover, the alternative second-order conceptualization is further compared to the first-order conceptualization of CPM in the hypothesis testing.

In sum, both measurement model results and structural model results of MIMIC model were good. Therefore, together with the content validity established in the conceptual phase of this research, the empirical results give support for the construct validity of the suggested CPM measure.

6.5.2 The development of the reflective measures

The rest of the measures used in this study relate to the exchange context and to company performance. All of these constructs can be measured on reflective scales, and in some cases also by means of single item measures. In the former case the underlying construct is measured on items that *reflect* the phenomenon. Hence, a natural consequence is that the indicators used should be *internally consistent*. In short, using multiple reflective indicators entails having a *sample* of items tapping the different nuances. Similarly, *changing out items* in the sample has no effect as long as they are reflective (Bollen and Lennox 1991; Churchill 1979).

Ready measures should always be used when possible. Therefore measures described below are ready scales or based on earlier scales when possible. All the new measures were developed in line with the guidelines given by Churchill (1979) and DeVellis (1991). A qualitative pretest of the scales was carried out, as with the formative measures – this included pre-interviews with academics (N=10) and practitioners (N=7). Again, all the items were measured on seven-point Likert scales unless stated otherwise (DeVellis 1991, 68). Using the seven-point scale instead of the five-point scale makes it easier to get more variation in the data. Similarly, very strongly worded statements are avoided. The items were carefully worded, as suggested by Hinkin (1995, 972) and Churchill (1979, 68). Five or six items per ready scale could be considered optimal – although even three-item scales could produce adequate internal consistency reliabilities (Hinkin 1995, 972).

Appendix 31 lists the proposed measures approximating the *exchange context in which companies act*. The dimensions of the exchange context are discussed in detail below. Four of the contextual measures are reflective

scales, one is a single-item measure, and the other two are based on calculation formulae with three single-item questions.

1) The broadness of customer base scale is a new measure as no similar ones exist (for a conceptual discussion see Homburg, Workman and Krohmer 1999, 5; Tuominen, Rajala and Möller 2000, 141). Instead of focusing on the absolute number of customers it approximates the relative number of customers the focal firm aims to serve. The reasoning is that a relative measure may be applied to compare companies of different sizes, which is not the case in scales concentrating on the absolute number of customers.

2) The heterogeneity of customers scale is based on the diversity scale devised by Achrol and Stern (1988), which focuses on general market conditions. It was therefore adapted to apply to a company's current portfolio of customers. This scale approximates the overall similarity or dissimilarity of customer relationships in the customer base.

3) The dynamism in customer relationships scale is based on the environmental dynamism scales developed by Jaworski and Kohli (1993) and Miller and Friesen (1982). Again, the emphasis was changed from the very general market level to that of the portfolio of customer relationships of the focal company. The focus of the scale is on the rate of change in customer relationships and preferences

4) The interconnectedness of customer relationships scale was adapted from a business-network-connection scale developed by Blankenburg, Eriksson and Johanson (1996) in order to suit the purposes of this research. This time the focus of the measure was broadened from a few most important customer relationships to cover the whole customer base. The interconnectedness scale focuses on the perceived number and patterns of connections to third parties in the customer relationships.

5) The customer turnover scale features a totally new single-item measure. This was considered reasonable as customer turnover is a rather concrete issue – also for the respondents: in this context it refers to the perceived rate of change in the composition of the customer base (new or lost customers).

The *content validity* of these measures is supported by the theoretical basis on which they were built, together with the qualitative phase in their development. The *discriminant validity* of all the scales was assessed by testing their unidimensionality by means of factor analysis. The KMO test (0.674) and Bartlett's test for sphericity (1233.3 with a significance level of 0.000) supporting its use (Hair, Anderson and Tatham 1987, 285). The most commonly utilized rotation method, varimax rotation, was used in the factor analysis (see Table 8).

Both the scree plot test (see Appendix 9) and the eigenvalue criterion supported the choice of the five factors (see e.g., Hair, Anderson and Tatham

1987, 245–248). Table 8 below gives the results of the factor analysis, including factor loadings larger than 0.300. According to Hair, Anderson and Tatham (ibid.), loadings greater than 0.300 are considered significant, around 0.400 are considered more important, and around 0.500 very significant.

Table 8 The discriminant validity of the contextual measures

Rotated Component Matrix(a)

	Component				
	1	2	3	4	5
cbasesize1	.745	.326			
cbasesize2	.799				
cbasesize3	.835				
cbasesize4	.864				
intercon1			.662		.339
intercon2			.592		
intercon3			.767		
intercon4			.820		
dynam1				.858	
dynam2				.818	
dynam4				.639	.314
heterog1		.739			
heterog2		.801			
heterog4		.835			
heterog5		.759			
Customer turnover					.878

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a Rotation converged in 5 iterations.

Two items (dynamism 3 and heterogeneity 3) were removed because of poor loadings on the main factor and rather strong loadings on others. The three remaining items with double loadings are clearly not a serious problem in terms of validity as they loaded very strongly on their main factor and the other loadings remained close to 0.300. The decision to leave these items in the scales was further supported by the fact that a factor loading of above 0.400 is the most commonly used criterion in scale development (Hinkin 1995, 975).

In sum, factor analysis *supports the discriminant validity of the scales*. Their *reliability*, in turn, is evaluated by calculating Cronbach's alphas. All the alphas were either at a satisfactory (over 0.65) or a good level (over 0.7), thus supporting the reliability. The measures had the following alphas: broadness of customer base $\alpha = 0.840$, interconnectedness $\alpha = 0.693$, Dynamism $\alpha =$

0.719 and heterogeneity $\alpha = 0.802$.

Further, two aspects of the customer base structure were included in the measures, namely the overall strength of the customer relationships, and customer concentration. They are both concrete but nevertheless complex issues. Arguably, they could best be assessed on single-item questions measuring the perceived percentage numbers of different relationships in the customer base.

6) The overall strength of customer relationships scale was based on descriptions of the three relationship types (transactional and long-term relationships, and partnerships) suggested in the theoretical literature (Johnson and Selnes 2004; Lambert, Emmelhainz and Gardner 1996; McNeil 1980; Ring and Van De Ven 1992; Ritter 2007; Webster 1992). The detailed descriptions for these relationship types can be found in Appendix 31. The scale approximates to the overall strength of the customer relationships in the customer base. The percentages of the three different relationships in the customer base are measured first (total 100%), and the final value is then calculated based on the following formula:

$$\frac{(0 * \text{Transactional relat.} + 1 * \text{long-term relat.} + 2 * \text{Partnership relat.})}{2} / 100$$

This relational complexity scale varies from 0 to 1. The value 0 means that all of a company's relationships are transactions whereas the value 1 means that they are all close partnerships. If they are all long-term the index value is 0.50

7) The Customer concentration scale was adopted from Homburg, Workman and Krohmer (1999, 14), and refers to the percentage of sales coming from the largest customer accounts. In this research the concentration of the largest customers was calculated according to the following formula:

$$\frac{(\text{Cust_concentration1} + \text{Cust_concentration2} + \text{Cust_concentration3})}{3}$$

Here, the Cust_concentration1 approximates the percentage of sales coming from the largest customer, Cust_concentration2 the percentage of sales coming from the five largest customers, and Cust_concentration3 the percentage coming from the 10 largest customers. The scale varies from 1 (less than 1%) to 7 (over 50%), which means that the results of the customer concentration formula vary from one to seven. A final value of one means that the 10 largest customers represent less than 1% of the company's sales, whereas a final value of seven means that the largest customer alone represents 50% of the sales.

The last measures focus on performance. Venkatraman and Ramanujan

(1986) differentiate between financial measures referring to the fulfillment of economic goals and operational measures, which in turn refer to the key operational success factors that might lead to financial performance. Two measures of operational performance are used in this research, namely customer profitability and overall customer performance. Financial performance is assessed in terms of firm performance. The underlying idea is that CPM activities directly affect overall customer performance and profitability, which in turn affect firm performance.

The use of objective performance measures would naturally be preferable. However, there are several problems involved. Homburg, Krohmer, and Workman (1999, 349) list four reasons for using perceptual rather than objective measures. First, financial-performance measures such as ROI and ROA are not typically available at the business-unit level. Secondly, objective performance measures computed at the business-unit level are usually highly firm-specific, making cross-company comparisons difficult. Thirdly, respondents are often reluctant to give figures, and this kind of data is often not available. Fourthly, perceptual performance measures have been shown to have a high correlation with objective financial performance, which supports their validity. Because this research concentrates on companies from all industries, the focus is on the business-unit level, and the data-collection resources were limited, the decision was made to use perceptual performance measures. This is an established practice in marketing research, even in top journals. However, in the interests of increasing validity the companies were also asked to give an objective ROI figure. The performance measures are discussed more in detail below.

1) The first measures are operational and relate to customer performance. The overall customer performance and customer profitability measures were adapted from Homburg and Pflesser's (2000, 460) market-performance scale. Overall customer performance is a broad and largely non-financial performance measure incorporating aspects such as customer satisfaction, retention, sales growth, value creation to customers, and customer profitability (cf. market performance, Homburg and Pfeffer 2000; Reinartz, Krafft, Hoyer 2001, 293). Clearly, overall customer performance will not immediately affect firm performance, but it does so in the long run (cf. Bowman and Narayandas 2004; Helgesen 2006; Mithas, Krishnan and Fornell 2005; Srinivasan and Moorman 2005; Storbacka, Strandvik and Grönroos 1994, 21). In turn, customer profitability has a financial orientation that may relate to firm performance already in the short term. The overall customer performance and customer profitability measures are given in Appendix 31. Many of the perceived performance measures are often requested in relation to competitors. Because figures for overall customer performance and customer profitability

are probably highly company-specific and are not public, respondents may find it impossible to estimate them with respect to their competitors. Therefore, overall customer performance and customer profitability were both measured in terms of perceived performance in relation to both goals and competitors (cf. Jaworski and Kohli 1993) (see Appendix 31).

2) Two measures were used for firm performance. The first of these was perceived firm performance, which in turn includes two indicators: firm performance in relation to 1) goals and 2) competitors during the last three years (cf. Jaworski and Kohli 1993). The questions are listed in Appendix 31. The second measure was the objective measure of ROI, its advantage being that it is relative and can be used to compare firms of different size and from different industries. In order to increase the response rate, ROI was classified in nine categories ranging from 0-4% to over 40% (see Appendix 31). This approach resulted in 171 responses out of 212, which is good compared with the ROI response rate in other related studies (cf. Reinartz, Krafft, Hoyer 2001, 293).

Table 9 Correlations of perceived and objective firm performance

		ROI	Firm_perf combined	Firm_perf goal	Firm_perf comp
ROI	Pearson	1	.463(**)	.415(**)	.437(**)
	Correlation				
	Sig. (2-tailed)		.000	.000	.000
	N	174	174	174	174
Firm_perf combined	Pearson	.463(**)	1	.923(**)	.898(**)
	Correlation				
	Sig. (2-tailed)	.000		.000	.000
	N	174	214	214	214
Firm_perf goal	Pearson	.415(**)	.923(**)	1	.659(**)
	Correlation				
	Sig. (2-tailed)	.000	.000		.000
	N	174	214	214	214
Firm_perf competitors	Pearson	.437(**)	.898(**)	.659(**)	1
	Correlation				
	Sig. (2-tailed)	.000	.000	.000	
	N	174	214	214	214

** Correlation is significant at the 0.01 level (2-tailed).

The correlated objective and subjective firm performance measures given in Table 9 allow estimation of the goodness-of-fit of the perceptual performance figures. The results show that the former are significantly correlated ($p < 0.01$) to each other. The two indicator measure combining perceived firm perform-

ance in relation to goals and to competitors shows the highest correlation to the ROI figure. This finding supports the use of two indicators in measuring perceived firm performance. According to Cohen (1988), correlations between 0.1–0.29 are small, between 0.3–0.49 are medium and over 0.5 are strong. Thus the correlation between ROI and perceived firm performance is medium but close to strong. It should be noted that *even though ROI is a relative performance figure and can be used to compare firms of differing sizes, its values vary a lot from one industry to another depending on the risk involved in the industry* (Aaker and Jacobson 1987).

For example, a good or bad ROI figure in high-risk industries such as ICT and engineering differs notably from a good or bad figure in low-risk mature capital-intensive industries such as heavy manufacturing and real-estate rental. Therefore, even though ROI is a relative performance indicator, it does not allow very accurate comparison in a heterogeneous cross-industry sample. The medium-level correlation of 0.463 thus supports the validity of the perceived firm performance measure.

6.6 Common method bias

Common method variance may bias the findings when both independent and dependent variables are obtained from the same source. Therefore asking the same informant about these variables should be avoided in research. However, because of the limited resources and the very problematic target group (senior executives) the single-informant approach was adopted in this case. This is common practice in research focusing on senior management, even in top marketing journals. The existence of common method bias was investigated in two ways: first, the most common approach, namely *Harman's one factor test*, was run, and secondly the *subjective performance figures were compared to the objective performance ROI figure*.

Harman's one-factor test involves entering all the variables of interest into a factor analysis and assessing the results of the unrotated factor solution in order to determine the number of factors that are necessary to account for the variance. According to Podsakof, MacKenzie, Lee and Podsakoff (2003, 889), common method bias is present when either 1) a single factor emerges from the factor analysis, or 2) one general factor accounts for the majority of the covariance among the measures. The principal component analysis conducted in this study generated 14 factors with eigenvalues higher than one. Further, the first factor accounted for 20% of the variance, whereas the 15 factors together accounted for 71% of the total variance, thereby indicating the absence of common method bias (see Appendix 10). These results are similar

to those produced by other studies reported in top journals (cf. Reinartz Krafft and Hoyer 2004, 301; Jayuachandran, Sharma, Kaufman and Raman 2005, 186).

Even though the single-factor test may support the absence of the common method problem it does not, in fact, guarantee that the measures are free from it (see Podsakof, MacKenzie, Lee and Podsakoff 2003, 889). Moreover, current tests (including Harman's one-factor test) are based on classic test theory and are ill suited to formative measures. Podsakof, MacKenzie, Lee and Podsakoff (2003, 900) stress the fact that in the case of formative measures, traditional means such as Harman's test should not be used to assess common method bias. Therefore, the goodness of the subjective performance measures was further examined based on their relationship to the objective ROI measure. It should nevertheless be noted that the ROI figures are also given by the respondents, which may affect their validity.

The *whole-company financial performance measure ROI is an objective measure* and therefore immune to common method bias. A total of 171 companies reported their ROI figures for this study, and it is therefore appropriate to discuss the relationship with other subjective measures with regard to the whole data set. Thus far the ROI figure and the perceived firm performance measure have shown medium but close to strong correlation (see Table 9, page 104), which supports the validity of the latter. Next, the relationships between the operational perceived performance measures and the objective ROI measure are examined further by means of PLS-modeling.

The *perceived company performance* is strongly connected (path 0.457, significant at the 1% level **) to the objective ROI figure, explaining about 21% of the variance (see Figure 19).

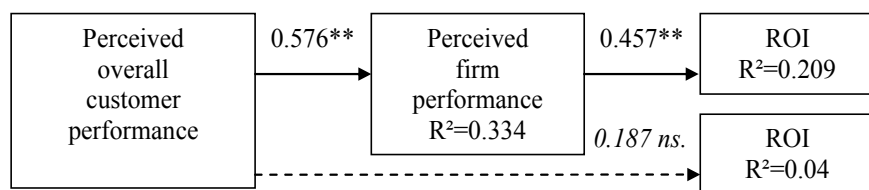


Figure 19 Overall customer performance and ROI

The R-square value is not high, but this is natural in a cross-industry sample as the goodness of the ROI figure varies between industries. Similarly, perceived company performance is a broader issue than strictly financial performance. Overall customer performance is connected (path 0.457 significant at the 1% level **) to perceived firm performance but is not directly connected to ROI in a statistically significant way. Perceived overall

customer performance is clearly an operative performance figure that will relate to company performance in long-term. It includes both financial and non-financial aspects of customer performance such as satisfaction, retention, value creation, growth, and customer profitability. Hence the PLS model results are logical and meaningful.

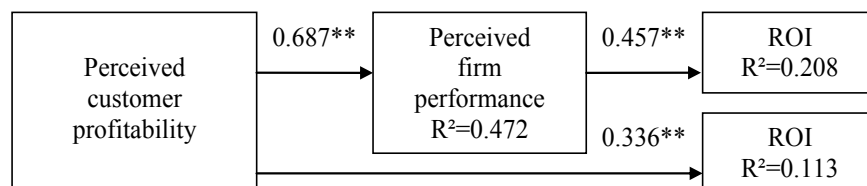


Figure 20 Customer profitability and ROI

Customer profitability is also an operative performance measure affecting company performance, although in comparison to overall customer performance it represents a much more financial perspective. This is also visible in the results of the PLS model, in which customer profitability has a notable effect on perceived company performance (path 0.687), explaining 47% of the variance (see Figure 20). Significantly, perceived customer profitability is also directly connected to objective ROI, thereby supporting its validity. The path coefficient is 0.336 (significant at the 1% level **), and profitability explains 13% percent of the variance in ROI. Even though this link is not high in absolute terms, the result supports the validity of the measure of perceived customer profitability as there is a huge number of other variables affecting ROI, and ROI figures differ from one industry to another.

In sum, Harman's one-factor test for common method bias indicated that it would not be a problem this study. Further, the correlations and PLS modeling for subjective and objective performance measures showed that these measures were connected to each other, indicating the validity of the subjective measures. However, the procedures used cannot guarantee the absence of common method bias.

6.7 The process of testing the research models

The research model presented in Chapter 5.3 is tested in the next chapter. However, as it is a highly complex model the testing comprises several phases. The process of testing the model is revealed in this section.

First of all, *each area of performance under study*, in other words customer profitability, overall customer performance, perceived firm performance, and

ROI, is tested on individual PLS models. The main reason for testing separate research models for each of the four success measures is the predictive nature of PLS modeling, in which indicators are weighted in order to explain optimal variance in the dependent variable (Chin 1998, 307; Chin, Marcolin and Newsted 2003, 197). Importantly, it can be expected that different areas of CPM will have opposite effects on different areas of performance, e.g., on financially oriented customer profitability and on largely non-financial overall customer performance. Testing separate models for each one will provide detailed information about the relationship between CPM and the four different areas, and therefore about the mechanism through which CPM may affect company performance. This includes both the structural relationships between the constructs and the role of different CPM areas (indicator weights). Indicator weights in formative measurement provide information about the makeup and relative importance of each indicator in the formation of the component. As the indicators of the CPM construct were chosen on a theoretical basis the measurement model results concerning the formative measures can also be interpreted in a theoretically meaningful way.

Secondly, it is hypothesized that the *exchange context*, which has several dimensions, will have a *moderating* effect on the link between corporate CPM practice and performance. Testing moderation is difficult in structural equation modeling, however. There are two general strategies in use: 1) dividing the data into subgroups, and 2) using interaction terms (e.g., Sauer and Dick 1993). Here the moderating effect of the exchange context on CPM will be tested by dividing the data into two sets. There are several reasons for choosing the grouping approach. First of all, there would be seven interaction terms affecting two independent variables, which would make the research model too complex. Secondly, the main idea behind the research model is that mediation takes place under certain conditions, i.e. mediation and moderation at the same time, which would be also extremely difficult to test simultaneously. Thirdly, the grouping process is strictly based on theory. Cluster analysis is used to divide the companies into two groups representing different ends of the exchange context. *Therefore, a total of eight research models are tested.* In structural equation modeling one should always test competing alternative models and choose the one that best fits the data and is theoretically sound. Hence, alternative research models are also examined in order to check the reliability of the suggested CPM conceptualization.

Figure 21 depicts the two theoretically meaningful ways of studying the CPM-performance link. The first of these is based on the suggested first-order conceptualization of CPM (see the left-hand side of the figure). The *first* step in the process is to test whether CPM efforts have a direct link to performance, and the *next* is to see whether the designs mediate these paths. Modeling CPM

designs as mediators is logical because only efforts represent the behavior or actions necessary for performance attainment. The design of activities approximating the CPM style cannot alone affect performance, but it can mediate the relationship between effort and performance. In other words, the CPM design could be seen as an active organism that intervenes between the two constructs (cf. Baron and Kenny 1986, 1176).

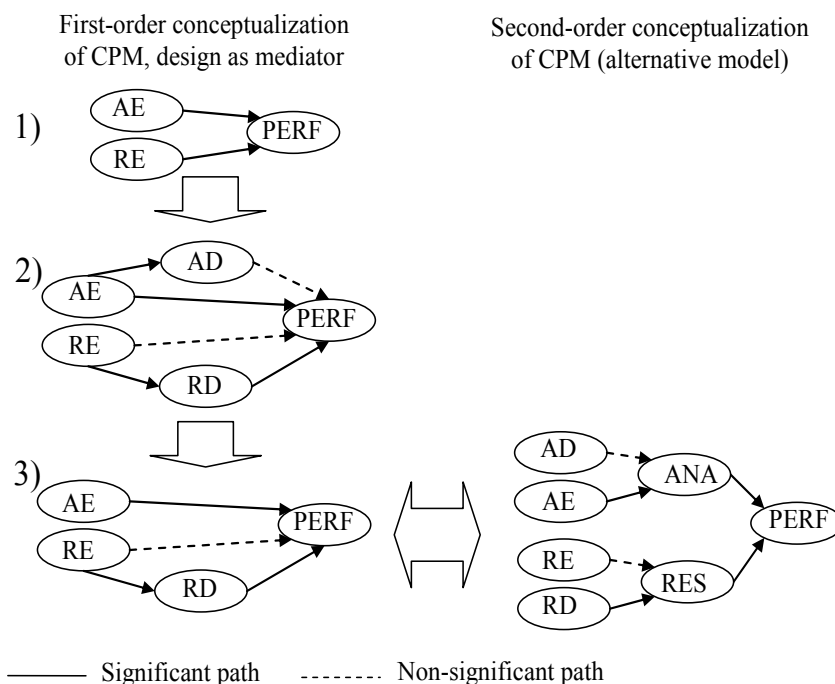


Figure 21 The process of testing competing research models (example)

Studying mediation as opposed to moderation is rational as the four CPM dimensions are all highly correlated (see Appendix 8). A moderator variable should not be correlated with either the predictor or the criterion (dependent) variable if it is to provide a clearly interpretable interaction term. Therefore, there is no use testing designs as moderators in the model (cf. Baron and Kenny 1986, 1174), and testing mediation is both technically and theoretically meaningful.

The mediation effect is tested according to the process developed by Baron and Kenny (1986, 1176-1077). In order to establish mediation the following conditions must be met. *First*, the independent variable (AE, RE) must significantly account for the variations in the presumed mediator (AD, RD). It could be questioned whether CPM efforts really affect its design. In practice, however, CPM is a continuous process and it is problematic to say which

construct precedes the other. As there is a strong link between them it is feasible to suggest that this condition will be met (see Appendix 8). The logic here is that formal planning (design) is not a necessary antecedent of CPM efforts. Instead, the designs represent the CPM style, which could amplify the relationship between effort and performance. *Secondly*, the independent variable (AE, RE) must be shown to affect the dependent variable (PERF). *Thirdly*, the mediator (AD, RD) must affect the dependent variable (PERF). If all these conditions hold in the predicted direction, mediation takes place when the effect of the independent variable (AE, RE) on the dependent variable (PERF) reduces when the mediator variable (AD, RD) is added to the model. The strongest demonstration of mediation occurs when the path between the independent and the dependent variable becomes zero (full mediation).

Figure 21 shows the three steps for testing mediation taken in this research: *first*, the CPM efforts-to-performance path was examined for condition 2; *secondly*, mediator variables were added to the model in order to test conditions 1 and 3; and *thirdly*, the possible non-relevant constructs were removed, and a cut-down model showing the possible mediation effects is thus presented. For example, Figure 21 would indicate that both types of CPM effort are linked to performance. However, only responsiveness effort (RE) is (fully) mediated through responsiveness design (RD). In turn, analysis design (AD) does not mediate the path of analysis efforts (AE) to performance, and it was therefore removed from the final cut-down mediator model shown in Figure 21 in order to clarify the results.

Further, an alternative second-order research model is always tested and compared to the main model presented in the text. The alternative model comprises the two second-order activities of analysis and responsiveness, which are in turn formed by the two first-order constructs of effort and design (see the right-hand side of Figure 21). The first-order construct paths could be used to indicate their relative importance for the second-order construct (Chin and Gopal 1995, 49). For example, the paths in Figure 21 indicate that the results of the first-order and second-order models are similar. Because both models are theoretically meaningful, the choice between the two is based on the empirical results. In other words, the models showing the best fit to the empirical data are chosen.

The research model does not have a path between analysis and responsiveness efforts. This is because of the aim of this research and the predictive nature of PLS modeling. The current research models concentrate on the optimal explanation of the relationship between CPM activities and performance, which is the primary interest here. Adding a link between analysis and responsiveness efforts would provide more theoretical information about the nature of CPM activities. However, the model would

then lose its predictive capability in relation to performance because PLS weights the indicators in order to optimize variation not only in performance but also between two CPM constructs that are highly correlating. These alternative models were also tested, but because of their notably lower fit to the data they are not presented in detail in this dissertation.

7 DATA ANALYSIS AND RESULTS

The research model developed for this study (see Chapter 5.3) is tested in this chapter. As explained in Chapter 6.7, the testing is done in several phases. *First* in order to test the hypothesized moderation effects the data is divided into two clusters based on the suggested dimensions of the exchange context. *Secondly*, given the likelihood that different areas of CPM will have opposite effects on different areas of performance (customer profitability, overall customer performance, perceived firm performance and objective firm performance ROI), eight separate research models are tested for each area in both market- and network-like exchange contexts. As this process includes testing the mediation effects and alternative models, it results in a total of 32 separate models. The purpose of this chapter is to *identify the best research models for each of the areas of performance examined in both exchange contexts*. In other words, the aim is to identify eight research models that best fit the empirical data. Because of the large number of research models, the interpretation of the relevant results is given in the following Chapter 8. This will help to keep the interpretation of the models more focused, and will also facilitate systematic comparison of the results for different areas of performance in different exchange contexts.

7.1 Companies acting in market- and network-like exchange contexts

The central hypothesis in this study is that CPM is connected to performance, but is contingent on the exchange context of the company. The companies are therefore divided into two distinct groups representing market- and network-like exchange contexts in order to test the contingency hypothesis. It was decided to divide the data into sets instead of testing the moderation effects by means of interaction terms because otherwise the tested research model would become very complex, and structural equation modeling is very limited in terms of testing several moderator relationships at any one time (cf. Chin, Marcolin and Newstead 2003). It was possible to avoid these problems by dividing the data into two parts based on the characteristics of the exchange context.

The exchange context has been discussed a great deal in the literature, but the level has remained conceptual (e.g., Easton and Araujo 2003; Ebers 1997,

14-16; Möller and Halinen 1999, 2000). Seven major dimensions have been identified (see Figure 9, page 86), and the measures for all these dimensions have been developed and validated (see Chapter 6.5.2). The division of the respondent companies into two groups was based on these major dimensions.

There is a variety of analytical techniques for developing taxonomies of exchange contexts. When the exchange context characteristics are assumed to be highly correlated, they may be modeled as a higher-order factor using structural equation modeling techniques. This approach assumes the phenomenon of interest to lie along a one-dimensional (close-distant) continuum. Yet, in this study the dimensions of the exchange context are not expected to co-vary. In fact, one only needs to look at the data to see that the suggested dimensions are not highly correlated (see Appendix 11). Instead, *they provide differentiated information about the various aspects of exchange context* (cf. Cannon and Perreault 1999, 447–448). It is for these reasons that the taxonomy of exchange contexts is best approached through cluster analysis.

A K-means cluster analysis was run with the data using summed measures with reverse scoring where applicable. Because the aim of this procedure was to contrast the two differing ends of the exchange-context dimension, a two-cluster solution was chosen. The analysis produced a meaningful, easily interpreted solution (see Table 10). Further, the solution was very balanced as the numbers of cases in each cluster were very similar. The clusters were named the *market-like cluster* ($N=127$) and the *network-like cluster* ($N=85$), based on the work of Möller and Halinen (2000).

Table 10 The market- and network-based exchange contexts: the results of the cluster analysis

Cluster	Cb_size	Heterog.	Relat.	C_turnover	Concentr.	Interconn.	Dynam.
Range of the scale	1-7	1-7	0-1	1-7	1-7	1-7	1-7
Network Cluster center	5,00	4,24	0,60	2,00	5,59	4,73	4,22
Mean	4,91	4,29	0,60	1,87	5,59	4,69	4,19
Std. Deviation	1,07	1,38	0,23	1,01	1,00	1,08	1,18
Market Cluster center	2,00	3,47	0,48	2,00	3,86	4,64	4,15
Mean	2,39	3,44	0,48	2,38	3,86	4,66	4,17
Std. Deviation	0,91	1,30	0,17	1,23	1,12	1,24	1,18
Total Mean	3,40	3,78	0,53	2,17	4,55	4,68	4,18
ANOVA F-test	358,82	16,77	20,20	9,14	132,61	0,31	0,22
sig.	0,000**	0,000**	0,000**	0,003**	0,000**	0,578ns.	0,643ns.

It should be noted that these labels do not explain the governance form of exchange, but rather refer to the overall characteristics of the exchange a company has with all of its customers. The idea behind this is that complex

relationships take place in a network context whereas less complex relationships are characterized by market-like exchange (Möller and Halinen (2000, 43).

Table 10 above presents the cluster centers, cluster means, and the results of the significance test – five of the suggested dimensions differed in a statistically significant way that was relevant to the exchange context. The examined dimensions behaved as expected, with two exceptions: the means of interconnectedness and the dynamism scales did not differ in a statistically significant way. Hence, these dimensions do not provide information about the exchange context.

First of all, the network-like context differed very much from the market-like context in terms of the *size of the customer base*: the number of customers a company aims for is notably larger in the latter than in the former.

Secondly, the customers in the customer base were more *heterogeneous* in market-like exchange and more *homogeneous* in network-like exchange.

Thirdly, as expected, the *customer relationships* differed in *overall strength* according to the context (the scale ranges between zero and one): they were stronger in a network-like context and more transactional in a market context.

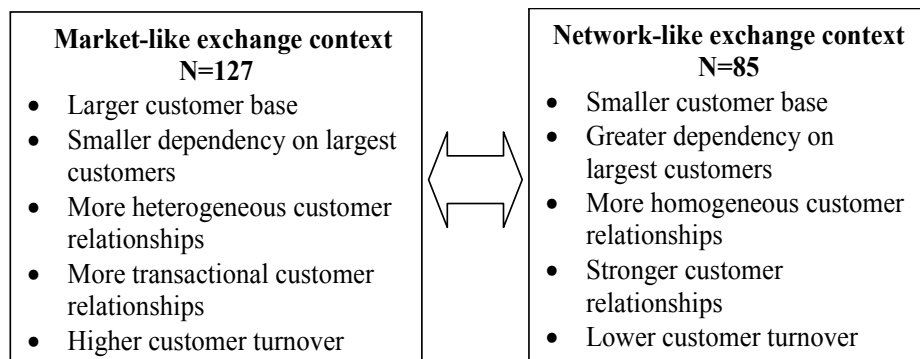


Figure 22 The market- and network-like exchange contexts summarized

Fourthly, earlier studies have confirmed that customer relationships are mostly stable and long-term in B-to-B markets (Håkansson 1982), and companies have more of a relational emphasis than in consumer markets (Coviello Broadie, Danaher, and Johnston 2002, 40). This was also evident in the data of this study as the cluster centers of the *customer turnover* dimension were low (only two) for both market- and network-like exchange. However, the mean values differed in a statistically significant way, being 2.38 for the former and 1.87 for the latter (see Table 10). Therefore this dimension is also meaningfully interpreted even though the differences between the clusters are

small.

Fifthly, the customer concentration differed significantly between the companies acting in the two contexts: those in the market-like context were far less dependent on their largest customers.

The significant dimensions of the exchange context are summed up in Figure 22. A discriminant analysis was conducted with the five significant dimensions as the independent variable and the market- and network-like clusters as the grouping variable in order to examine how important the different dimensions are in dividing the data between the two contexts. The results of the discriminant analysis reveal two variables with large discriminant power: the size of the customer base and customer concentration (see Appendix 12). Nonetheless, all five dimensions differ significantly in the market- and network-like clusters, thus providing information about the overall characteristics of exchange in both of them.

Because this grouping approach destroys the variance in testing moderation, the removal of the “middle cases” could further improve the results when testing moderation (cf. Hartman and Moers 1999, 296). However, given PLS data requirements this cannot be done. It is still assumed that the moderation effects will be strong enough with the current clusters including all cases.

Next, the research models are tested on these two sub-samples. CPM practices and performance are examined first in the market-like context (Chapter 7.2) and then in the network-like context (Chapter 7.3).

7.2 CPM and performance in market-like exchange contexts

Four research models are tested on data from companies acting in a market-like context (N=127). More specifically, the relationship between CPM and overall customer performance, customer profitability, perceptual firm performance and objective ROI is assessed. The different areas of performance are tested separately in order to investigate the contingency hypotheses and to gain a deeper knowledge of contingent CPM (for a summary of the hypotheses, see Chapter 5.3).

7.2.1 Overall customer performance

First, the relationship between customer portfolio management and *overall customer performance* in a market-like context is examined. The first research model is tested in three phases, as discussed in Chapter 6.7. The *main model* concerns the relationship between analysis and responsiveness efforts and

overall customer performance. Then the focus moves to the possible mediation effects of the analysis and responsiveness designs on the relationships between CPM efforts and performance. Here, the *mediator model* includes CPM *designs* as mediators of the relationships between CPM efforts and overall customer performance. Finally, a *cut-down mediator model* is presented, the non-relevant constructs having been removed in order to clarify the main results. In this third phase the results are also contrasted against an *alternative second-order research model*.

The results of the main *structural model* are presented in Figure 23. The figure includes all the essential information about the structural models. The path coefficients are followed by information about path significance, again followed by the t-value in parenthesis obtained by means of a bootstrap procedure (500 samples) used to assess the path significance. The following symbols are used to indicate the levels of significance in the figures: ns.= not significant, *= significant at $p<0.05$ ($t>1.96$), **= significant at $p<0.01$ ($t>2.54$). The path coefficients can be interpreted within a regression context. Further, the figures include the R^2 values, which again can be interpreted similarly as in traditional regression analysis, in other words as indicative of the proportion of variation in a variable explained by its relationship with the variables that are assumed to affect it.

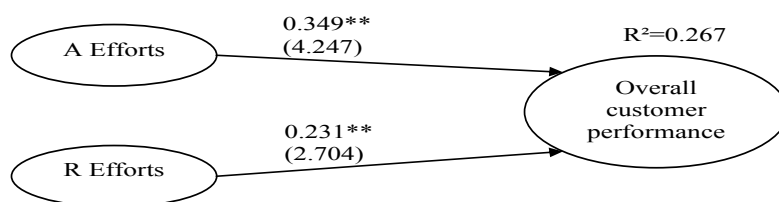


Figure 23 Analysis and responsiveness efforts and customer performance in a market-like exchange context

The first model in Figure 23 shows the relationships between analysis and responsiveness efforts and overall customer performance. It is evident from the structural model that both analysis and *responsiveness efforts are connected to overall customer performance in a statistically significant way* ($p<0.01$): it explains approximately 27% of the variance in overall customer performance. This result also indicates that Baron and Kenny's (1986) second condition for mediation is fulfilled for both analysis and responsiveness efforts, in other words the independent variable is connected to the dependent variable.

The analysis and responsiveness design constructs are inserted into the research model in order to test the mediation effects. Appendix 13 shows a

mediator model including all the constructs. The path from responsiveness efforts to performance (0.106ns.) becomes non-significant whereas those from responsiveness efforts to responsiveness design (0.668**) and responsiveness design to performance (0.373**) are significant. Therefore, responsiveness design fully mediates the path from responsiveness efforts to performance.

A highly problematic result is that both paths from analysis effort (0.091ns.) and analysis design (0.005ns.) to performance are non-significant. This is not meaningful, however, as the analysis efforts were previously well connected to customer performance. The problem was caused by the strong relationship between analysis efforts and design. A technical explanation for this is that PLS modeling with formative indicators does not attempt to explain the variance in the observed indicators: the goal is rather to maximize the variance explained at the latent-variable-component level (emphasis on prediction). Thus, the indicators for each block were weighted optimally in order to maximize the correlation between two latent-variable component scores (Chin 1998, 307). Adding the analysis-design construct to the main model optimized the indicator weights of the analysis-effort construct so that they no longer fitted overall customer performance (the path becomes non-significant, reduction in R^2 value). The results clearly indicate that adding the analysis-design constructs lowers the fit of the original model to the empirical data. The aim in structural equation modeling is always to find a theoretically meaningful model that best fits the data. Clearly, analysis design is not relevant here and a final cut-down research model without this problematic construct was therefore tested.

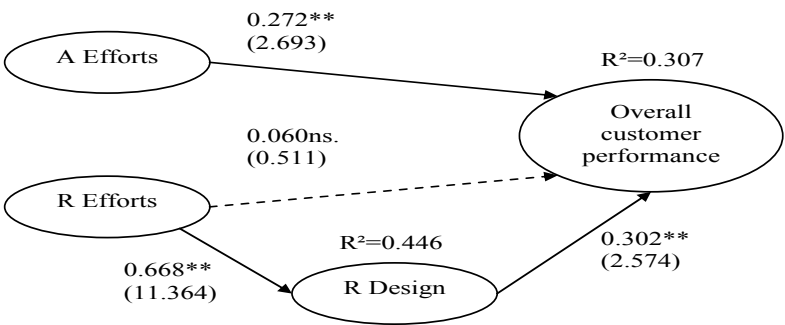


Figure 24 CPM and customer performance in a market-like exchange context

The cut-down final mediator model is shown in Figure 24. The results are meaningful and the R^2 value (0.307) is significantly higher than in the first and second models tested (effect size 0.06). The structural model indicates that

analysis efforts (0.272**) are well connected to overall customer performance. In turn, the path from responsiveness efforts to performance is fully mediated through responsiveness design (RE-RD 0.668**, RD-overall customer performance 0.302**). It is clear from the path coefficients and the R^2 value that this model fits the empirical data best.

The only suggested global fit measure for PLS modeling is the Goodness of Fit (GoF) value suggested by Tenenhaus, Vinzi, Chatelin and Lauro (2005, 7). This value is 0.448 for the final cut-down research model 1 (see Appendix 14). It varies between zero and one, being the square root of the product of the average communality of all constructs and the average R^2 value of the endogenous constructs. On the basis of the categorization of effect sizes for R^2 (small 0.02; medium 0.13; large 0.26) developed by Cohen (1988), and with 0.5 as a cut-off value for commonality (Fornell and Larcker 1981), the GoF criteria for small, medium, and large effect sizes are 0.1, 0.25 and 0.36. Consequently, the GoF value of 0.448 could be considered good. It should nevertheless be noted that this value is based on the AVE figure and therefore on the idea of internal measurement consistency. This is not an expected in formative measurement and is therefore not well suited to models with formative measures.

The sample size in PLS modeling should be ten times the highest number of formative indicators in one construct or ten times the number of paths. There are seven formative indicators in the responsiveness-efforts measure. Consequently the $N=127$ of the market-like exchange context is sufficient for the model.

The *measurement model* results for the best-fitting cut-down mediator model are presented in Appendix 15. Item weights can be used in formative measures to examine how much each indicator contributes to the overall construct (Chin 1998, 307). A bootstrap procedure with 500 samples was used to calculate the t-values of the indicators in order to assess their significance. All the significant indicator weights are in bold in the table. Most of the items have a good positive weight on overall customer performance, but there are three indicators with negative weights and one of them is significant (analysis effort 7), meaning that they have a negative impact on overall customer performance. This is not a problem as the positive indicator weights dominate. The negative item weights are not unexpected as the CPM construct indicators are not necessarily intercorrelated and they were theoretically chosen so as to cover the whole broad CPM spectrum. Moreover the validity of the mediator model is supported by the fact that the number of significant indicator weights rise from four in the main model to ten.

The formative indicators cause (rather than reflect) a construct and need not be correlated or have high internal consistency. Hence, traditional parameters

used to examine the reliability or validity of a measure, such as composite reliability, Cronbach's alpha, or Average variance extracted (AVE), are not meaningful in formative measurement. Overall customer performance is the only reflective measure in the research model, the focus being on indicator loadings instead of item weights (see Appendix 15). The composite reliability (0.885), Cronbach's alpha (0.747), and Average Variance Extracted, AVE (0.794) support the reliability of this measure.

Discriminant validity is usually assessed according to the square root of AVE and the correlations. The AVE value should be greater than 0.50, indicating that more than 50% of the item variation is captured by the construct (Fornell and Lacker 1981). Moreover, the square root should be greater than the correlations for discriminant validity. Again, AVE is not suitable for formative measures where the discriminant validity is based on conceptual reasoning. However, the squared AVE and construct correlations are presented in Appendix 14 in order to establish the CPM construct relationships. Overall, the squared AVEs are larger than the correlations between the constructs. However, the results confirm that responsiveness efforts and responsiveness design overlap considerably as their correlation is higher than the squared AVE. Clearly, this is not a problem as CPM constructs are formative measures that are not based on the idea of internal consistency.

Finally, an *alternative model* of CPM and overall customer performance was tested in order to increase the validity of the results and to further justify the first-order conceptualization of customer portfolio management. The results of the alternative second-order model turned out to be very similar to those of the final first-order mediator model (see Appendix 13). According to the alternative conceptualization, CPM comprises the two second-order activities of analysis and responsiveness, which in turn comprise two first-order constructs, namely design and efforts. Hierarchical component analysis was applied in the second-order model, as recommended by Wold (cf. Lohmöller 1989, 130-133). Here, a second-order factor is directly measured according to the observed variables for all the first-order factors. While this approach repeats the number of manifest variables used, the standard PLS algorithm can be used to estimate the model (Chin, Marcolin and Newsted 2003, 123).

First-order construct paths can be used to indicate their relative importance for the second-order construct (Chin and Gopal 1995, 49). Analysis efforts and responsiveness design were the only significant first-order constructs, and they accounted for almost all of the second-order constructs. This is an identical result to that achieved from the tested first-order model. However, of the second-order activities only responsiveness is connected to overall customer performance in a statistically significant way ($p < 0.05$), although in terms of

the t-value of analysis activity it is significant at the 10% level ($t > 1.64$, indicated by †). The model explains around 32% of the variance in overall customer performance.

Clearly, the path coefficients in the final first-order mediator model are stronger than in the second-order model, and the R^2 values are very close to each other (first-order model 0.307, second-order model 0.318). The significance of the differences in the R^2 values can be calculated in terms of effect size (see Chin Marcolin and Newsted 2003, 211). Cohen (1988) classified effect sizes as small >0.02 , medium >0.15 , and large >0.35 . In this case it is 0.016, indicating that the R^2 values of the models do not vary significantly. Hence, the first-order mediator model fits the empirical data better as it is simpler and has better path coefficients than the second-order model.

The results of this research model give support to hypothesis H1 and partial support to H4. In other words, analysis and responsiveness efforts were found to be connected to overall customer performance. Further, the research model indicated that responsiveness design mediates the relationship between responsiveness efforts and overall customer performance.

7.2.2 Customer profitability

The focus now moves to the relationship between CPM and customer profitability. Research model 2 is tested again in three phases, as discussed in Chapter 6.7. The first phase is to test the main model examining the relationship between CPM efforts and customer profitability, and the next is to test a mediator model by adding the CPM design construct. Finally, a cut-down model is presented summarizing the main findings.

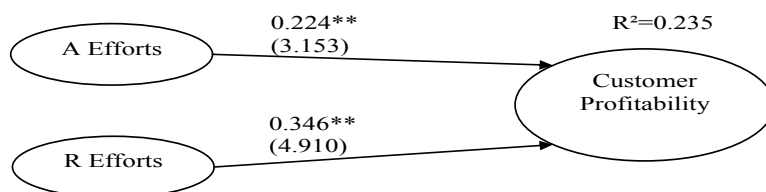


Figure 25 Analysis and responsiveness efforts and customer profitability in a market-like exchange context

Figure 25 summarizes the results of the main model when only *CPM efforts*

are included. Both analysis and responsiveness efforts are significantly connected to customer profitability ($p<0.01$), and together these constructs explain around 24% of the variance. This result also indicates that Baron and Kenny’s (1986) second condition for testing mediation effects is fulfilled for both constructs, in other words the independent variable is connected to the dependent variable.

The constructs of analysis and responsiveness design are inserted into the research model in order to test the mediation effect of CPM design. The whole mediator model is shown in Appendix 16. The previously significant path from analysis efforts to customer profitability becomes non-significant in the structural model, whereas both mediator paths are significant. Clearly, analysis design fully mediates the path between effort and design. There is no mediation in responsiveness as the path between responsiveness efforts and customer profitability remains significant, and the design path is non-significant. Because analysis design turned out to be a non-relevant construct, a third cut-down mediator model without responsiveness design is tested in order to clarify the main results.

The *structural model* results for the final cut-down research model 2 are summarized in Figure 26. Responsiveness efforts have the strongest path to customer profitability (0.338**). In turn, analysis efforts are no longer directly connected to customer profitability. It is now fully mediated through analysis design (AE-AD 0.676**, AD-customer profitability 0.290**). The R^2 value (0.238) is also slightly higher than in the first and second models. However, the difference is not significant (effect size > 0.02). CPM activities together explain around 24% of the variance in customer profitability. Significantly, the path coefficients are stronger than in the first and second tested models, indicating that the third model fits the empirical data best.

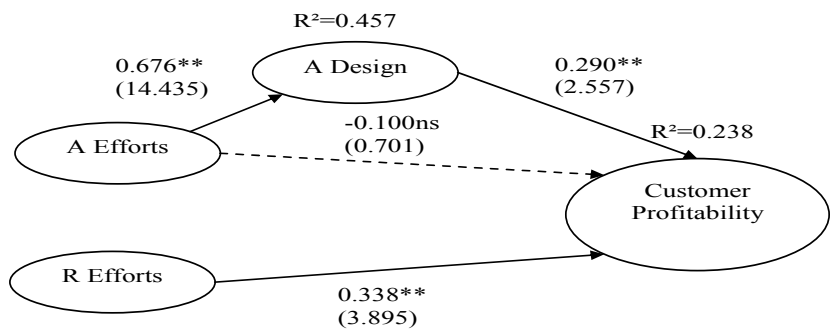


Figure 26 CPM and customer profitability in a market like exchange context

The Goodness of Fit (GoF) value for the research model is 0.440, which is

good (Tenenhaus, Vinzi, Chatelin and Lauro 2005, 173). For a closer view of the GoF value, see Appendix 17. The sample-size requirements are also fulfilled again as the largest number of indicators in a construct is seven ($N=127$).

The *measurement model* results are presented in Appendix 18. The table shows the indicator weights and t-values for the formative measures. The results are good as most of the indicator weights, and all seven significant ones, are positive. Four items have negative weights but none of them is significant. In turn, the item loadings for the reflective measure are presented together with the internal-consistency-based parameters, which are good (composite reliability 0.880, Cronbach's alpha 0.729, Average Variance Extracted, AVE 0.786). Significantly, the measurement model results are better for the mediator model than for the main model tested earlier. The number of significant indicator weights has risen from four (including one negative one) to seven (none of which are negative). This result underlines the relevance of the mediator model.

The square roots of the AVE figures and the construct correlations are presented in Appendix 17. The AVE figures (communality) are low for the CPM dimensions, but this is natural as they are very close formative measures. As formative indicators may but do not necessarily co-vary this is not a real problem in terms of the validity of the CPM measure. Still, the squared AVEs are higher than the correlations for all constructs.

Finally, in order to increase the validity of the results and to justify the first-order CPM conceptualization an *alternative second-order model* was tested. The results of the cut-down first-order mediator model and the alternative second-order model were very similar (see Appendix 16). Both second-order analysis (0.246*) and responsiveness (0.288**) activities are connected to customer profitability and explain around 24% of the variance. The first-order analysis-design (0.921**) and responsiveness-efforts (0.719**) constructs dominate the second-order CPM activities.

The first-order mediator model and the alternative second-order model turned out to have very similar R^2 values for customer profitability. The effect size was under 0.01 and is therefore not significant (effect sizes: small >0.02 , medium >0.15 and large >0.35 according to Cohen 1988). Moreover, the first-order mediator model has stronger and more significant path coefficients. Therefore, the first-order model fits the empirical data better than the alternative second-order CPM conceptualization. This supports the adoption of the former.

The results of this research model give support to hypothesis H2 and partial support to H5. In other words, both analysis and responsiveness efforts were found to be connected to overall customer performance. Further, the research

model indicates that analysis design mediates the relationship between analysis efforts and overall customer performance.

7.2.3 Firm performance

Thirdly, the relationship between CPM activities and firm performance in market-like exchange contexts is examined. Again, research model 3 is assessed in three phases. First, the main model including only CPM efforts is tested, and then the mediation effects are added. Finally, objective firm performance ROI is also assessed (research model 4).

The main *structural model* including only CPM efforts is examined first. Both analysis efforts (0.336**) and responsiveness efforts (0.198**) are significantly connected to firm performance, explaining around 18% of the variance (see Figure 27). As both are linked to firm performance, the second mediation condition is also fulfilled (Baron and Kenny 1986).

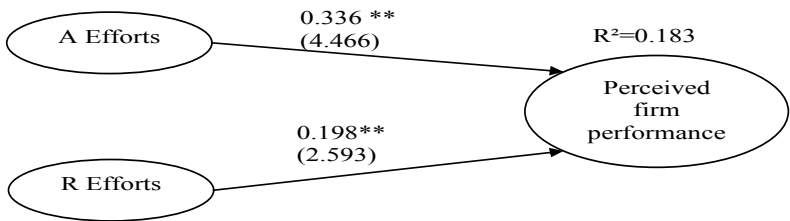


Figure 27 CPM and perceived firm performance in a market-like exchange context

Analysis and responsiveness design were added to the research model in order to test the mediation effects (see Appendix 19). However, no mediation effects were found. Neither the paths from analysis design (0.084ns.) nor those from responsiveness design (0.132ns.) were linked significantly to firm performance. Further, the R^2 value came close to zero at 0.08. The dramatic decrease in the R^2 value was due to the fact that the path from analysis and responsiveness efforts to firm performance was also non-significant. This problematic result was caused by the link between the effort and design constructs. Adding the design constructs to the model optimized the indicator weights of the effort construct so that they no longer fitted overall customer profitability as well as they used to do. The aim in structural equation modeling is always to find a theoretically meaningful model that fits the empirical data best. In this case it was the original main research model with

only the two CPM effort constructs.

The GoF figure for the model turned out to be low, only 0.284 (see Appendix 20). This was caused by the low AVE figures (communality) of the CPM constructs and the rather low R^2 value of the model. Again, it should be emphasized that AVE figures and therefore also GoF are based on the idea of internal consistency in measurement. This is not a relevant issue in formative measurement, to which AVE-based figures are therefore not well suited. The sample-size requirements for PLS modeling are fulfilled.

The *measurement model* results are presented in Appendix 21. There are five negative weights out of 13 items, and one of them is significant. This result is clearly inferior to the results of the two earlier models. Still, the overall results are acceptable as several indicators have good positive weights. The perceived-firm-performance measure is good (composite reliability 0.894, Cronbach's alpha 0.762, Average Variance Extracted, AVE 0.808). A table summarizing the latent-variable correlations and squared AVE is given in Appendix 20. The *alternative second-order model* has lower path coefficients and R^2 value than the main model. In fact, only analysis is significantly connected to firm performance (see Appendix 19). This indicates that the first-order conceptualization of CPM fits the empirical data better.

Complementing the subjective measures, the objective *ROI* figure is also used to assess firm performance. Figure 28 summarizes the results of the structural model. Both paths from analysis and responsiveness efforts to ROI are clearly non-significant. Further, the R^2 value of the ROI figure remains at the irrelevant level of 0.068. The measurement model results are very bad as none of the indicators have significant indicator weights at the 5% level or higher. Clearly, there is no link between CPM and the ROI figure. The sample-size requirements were fulfilled as 101 companies had given their ROI figure in a market-like exchange context. Clearly the overall results stress the need to interpret the link between CPM and perceived firm performance with great caution.

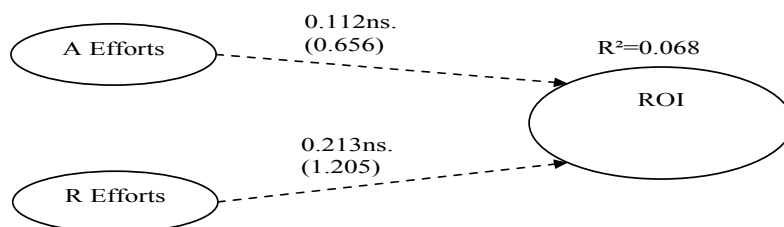


Figure 28 CPM and ROI in a market-like exchange context

The results of the research models are somewhat problematic. CPM efforts

were connected to perceived firm performance but not to objective ROI. Naturally, given these conflicting results, the link between CPM efforts and perceptual firm performance should be interpreted with great caution because of the rather weak path coefficients, the R^2 values, and the possibility of common method bias. It could be concluded that the research models give only very weak support to hypothesis H3. Further, because no mediation took place H6 is rejected.

7.3 CPM and performance in network-like exchange contexts

The focus in this section is on companies’ customer portfolio management and its performance in *network-like contexts*. Again, four separate research models are considered separately. These models test the relationships between CPM and overall customer performance, customer profitability, perceptual firm performance and objective ROI, the aim being to acquire contingent knowledge about CPM and the different areas of performance.

7.3.1 Overall customer performance

The relationship between CPM and overall customer performance in a network-like exchange context is examined first (research model 5). Again, this relationship is tested in several phases, starting with a main model examining the relationship between CPM effort and performance. A mediator model is then tested by adding the CPM design construct. Figure 29 shows the *structural model* results for the main model.

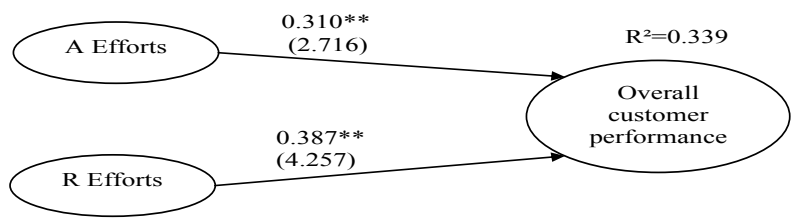


Figure 29 CPM and customer performance in a network-like exchange context

Both analysis efforts (0.310, significant at the 1% level) and responsiveness efforts (0.387, significant at the 1% level) are well connected to overall customer performance, and together explain approximately 34% of the variance in overall customer performance. This result shows that the second

condition for mediation is fulfilled, in other words the independent variables are connected to the dependent variables (Baron and Kenny 1986).

In order to test the possible mediation effects of CPM design a new research model was tested in which analysis and responsiveness were added (see Appendix 22). However, there was no mediation as both the analysis (-0.094ns.) and responsiveness design (0.086ns) paths to overall customer performance were non-significant. The R^2 value was also lower (0.279) than in the original research model. The path from analysis efforts to customer performance turned non-significant when CPM design was added. Adding the design constructs optimized the indicator weights of efforts such that they did not fit overall customer profitability as well as previously. In practice, this indicates that this addition had a negative effect on the model's fit to the empirical data. As there is no mediation, the original main structural model pictured in Figure 29 fits the empirical data best.

The Goodness of Fit (GoF) value for the model is good at 0.396 (Tenenhaus, Vinzi, Chatelin and Lauro 2005, 173). The calculation of the GoF figure is set out in Appendix 23. The sample size for companies acting in a market-like exchange context was 85. PLS modeling accepts small sample sizes, and the minimum data size should be ten times either the highest number of formative indicators in one construct or the number of paths. Therefore the data requirements are fulfilled as the largest number of formative indicators was seven for responsiveness.

The *measurement model* results are presented in Appendix 24. The item weights together with the t-values are given for the formative measures, and the item loadings for the reflective measures. Indicators with good positive weights dominate the results. A total of four indicators have negative weights but they all remain non-significant. The existence of negative weights is natural as the CPM indicators cover a broad variety of theory-based variables. Indicator loadings rather than weights are given for the reflective measures. The overall customer performance measure has good composite reliability (0.855), Cronbach's Alpha (0.666) and AVE (0.747).

The squared AVE and the correlations of the CPM constructs, which are presented in Appendix 23, further examine the relationships of CPM constructs. The AVE (communality) figures are not suited to formative measures, although the squared AVE is higher than the correlations among the latent variables for all constructs.

Finally, an *alternative, second-order model* was again tested (see Appendix 22). The results were similar to those of the first-order model except that the analysis construct was connected to customer performance only at a 5% significance level. The results of the second-order structural model show that analysis and responsiveness efforts dominate CPM, as in the first-order main

model. Analysis (0.976, significant at the 1% level) and responsiveness (0.877, significant at the 1% level) efforts account almost alone for the second-order constructs. The R^2 value (0.362) of the alternative model is slightly higher than that of the first-order model (0.339). The effect size between the R^2 values of the main and alternative models is 0.036, which is small (0.02-0.15) according to Cohen (1988). Still, the first-order conceptualization fits the empirical data better as it is simpler and has more significant path-coefficients.

The results of this research model give support to hypotheses H1 and H7. In other words, both analysis and responsiveness efforts were found to be connected to overall customer performance. Further as hypothesized, analysis and responsiveness design did not mediate the relationship between CPM effort and overall customer performance.

7.3.2 Customer profitability

Secondly, the relationship between customer portfolio management and customer profitability in network-like exchange contexts is examined. Research model 6 is again tested in phases, as discussed in Chapter 6.7. First, the main model examining the relationship between CPM efforts and customer profitability is assessed, and then the CPM design construct is added in order to test for a mediator model.

First, a *structural model* with only analysis and responsiveness efforts included was tested (see Figure 30). The results show that both analysis (0.280**) and responsiveness (0.340**) efforts are connected to performance at a 1% significance level. In total, these activities explain about 30% of the variance in customer profitability (R^2 is 0.295). As these efforts are linked to firm performance, the second mediation condition is fulfilled (Baron and Kenny 1986).

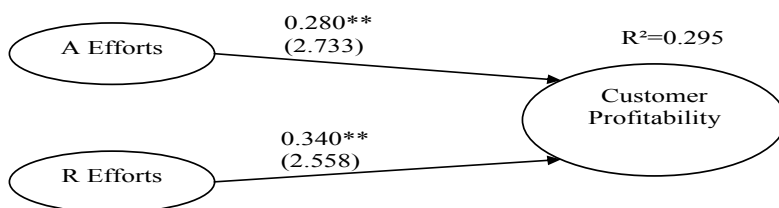


Figure 30 CPM and customer profitability in a network-like exchange context

The mediation effects of CPM design were tested on a new model in which

the analysis and responsiveness design constructs were added (see Appendix 25). There was no mediation because analysis and responsiveness designs were not significantly connected to customer profitability. Moreover, the R^2 of the new model decreased. The inclusion of the design constructs optimized the effort indicator weights in such a way that they no longer fitted overall customer profitability. Adding them to the original model therefore lowered the fit of the structural model to the empirical data. Structural equation modeling is always aimed at finding a theoretically meaningful model that best fits the empirical data. Clearly, in this case it was the original main research model with only CPM effort included (see Figure 30).

The Goodness of fit (GoF) value for the best fitting main model was again at a good level, 0.393 (Tenenhaus, Vinzi, Chatelin and Lauro 2005, 173) – see Appendix 26 for details – and the sample-size requirement was fulfilled ($N=85$, the minimum number of indicators for the model is 70).

The *measurement model* results are presented in Appendix 27. The item weights and t-values are given for the formative measures, whereas the item loadings are reported for the reflective measure. There are only three indicators with significant indicator weights. Still, positive indicator weights clearly dominate the results in that in 10 out of 13 cases they are positive, the three with negative weights all being non-significant and low. Therefore the results of the overall measurement model are reasonably good. The table shows the item loadings for the reflective customer profitability measure: the composite reliability (0.894), Cronbach's alpha (0.765), and AVE (0.809) support its validity.

Even though the AVE figure does not suit formative measures, the squared AVE values and the correlations between the constructs were still examined (see Appendix 26). The squared AVE values were higher than the correlations between the latent variables.

Finally, an *alternative, second-order model* was tested (see Appendix 25). The path coefficients showed the same emphasis as the first-order model. Both the second-order constructs of analysis (0.258**) and responsiveness (0.356**) were connected to customer profitability at the 1% significance level. The first order-activities of the model and the first-order mediator model showed identical emphases: analysis (0.849**) and responsiveness (0.871**) efforts virtually dominated the second-order CPM activities. The second-order model had an R^2 value of 0.309. The effect size between the original and the alternative R^2 model was small (0.02), indicating that the second-order model explained customer profitability slightly better. The path coefficients were of similar size. Still, the overall result supports the adoption of the first-order conceptualization of CPM because it is simpler, and the more complex second-order conceptualization does not provide a much better fit to the

empirical data. The earlier models also support the first-order conceptualization.

The results of this research model give support to both hypotheses H2 and H8. In other words, both analysis and responsiveness efforts were found to be connected to customer profitability. Further, analysis and responsiveness design did not mediate the relationship between CPM efforts and overall customer performance.

7.3.3 Firm performance

Thirdly, the relationship between CPM and firm performance in network-like exchange contexts is examined in research models 7 and 8. Both perceptual firm performance and objective firm performance (ROI) are tested.

The main model tested the relationship between CPM effort and perceptual firm performance. The results of the *structural model* show that only analysis efforts were connected to firm performance in a statistically significant way (0.336**), the connection of responsiveness efforts (0.218ns.) being insignificant (see Figure 31). Therefore the second condition for mediation is realized only for analysis efforts (Baron and Kenny 1986).

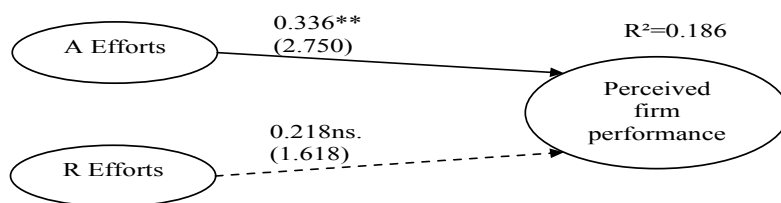


Figure 31 CPM and perceived firm performance in a network-like exchange context

A new model in which the design constructs were added was used to test the mediator effects of CPM design (see Appendix 28). However, analysis design (-0.250ns.) did not mediate the relationship between analysis efforts and perceived firm performance. Interestingly, even though the path between analysis design and firm performance turned out to be non-significant, it was quite strong and also negative. Further, the results confirm that the link between responsiveness efforts (0.177ns.) and perceived firm performance remained non-significant when responsiveness design was added to the research model. The link between responsiveness design and firm performance was also logically non-significant (-0.063ns). Naturally, the R^2 value was

lower than in the original model that included CPM effort. Therefore, the original main research model as depicted in Figure 31 has the best fit to the empirical data.

The GoF figure for the model turned out low, at only 0.284 (see Appendix 29). This was caused by the low AVE figures (communality) of the CPM constructs, together with the low R^2 value of the model. However, the AVE and therefore also the GoF figures are based on the idea of internal measurement consistency and therefore are not suited to formative measurement. Again, the sample-size requirements for PLS modeling are fulfilled.

The *measurement model* results are presented in Appendix 30. The non-significant responsiveness measure shows only one high, significant indicator weight, whereas the other indicator weights are low, and three of them are negative. In turn, there are three strong positive and significant weights for analysis efforts, but also three negative but non-significant weights. Clearly, the overall results are inferior for this model compared with those of the two earlier models concentrating on operational customer performance measures as dependent variables. Still, they could be considered acceptable in terms of analysis effort in that the CPM constructs are internally very broad and include a wide variety of indicators that need not necessarily be intercorrelated.

The reflective firm-performance measure is good (composite reliability 0.920, Cronbach's alpha 0.827, Average Variance Extracted, AVE 0.852). Even though the AVE figure is not suited to formative measures, the squared AVE values and the correlations between the constructs were examined (see Appendix 29). The squared AVE values are not good but still turned out higher than the correlations between the latent variables.

The alternative second-order model has an R^2 value of 0.201, which is slightly higher than that of the first-order model (R^2 0.186). However, the path-coefficients show that the second-order model has a lower fit to the empirical data than the first-order model. Only the second-order construct of analysis is marginally connected to perceived firm performance, at a 10% significance level (see Appendix 28). Therefore, the results again support the first-order conceptualization of CPM.

Finally, firm performance is also considered in terms of the objective ROI performance figure (research model 8). Again, both paths from analysis and responsiveness efforts to ROI are noticeably non-significant, and the R^2 value remains at the irrelevant level of 0.086. Furthermore, the measurement model fits the data badly as only one indicator weight is significant at the 5% level. The sample-size requirement was again fulfilled as $N=70$ and the data requirement is 70 (the maximum number of indicators is 7).

In sum, only analysis efforts turned out to be connected to perceived firm performance in a statistically significant way in the network-like exchange-

context. Further, the relationship with ROI remained non-significant. Clearly, the direct path from portfolio management to firm performance should be considered with great caution because of the rather weak path coefficients, the R^2 values, and the possibility of common method bias.

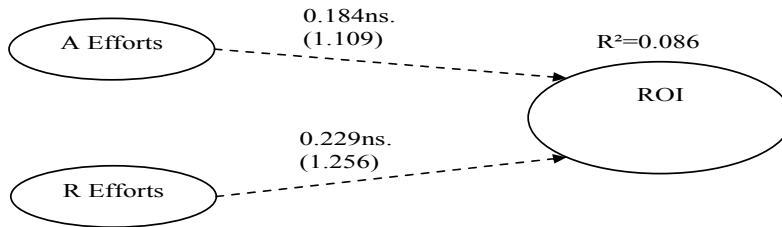


Figure 32 CPM and ROI in a network-like exchange context.

It could be concluded that research model 7 gives only very weak support to hypothesis H3. Further, because no mediation effects took place H9 is supported.

8 DISCUSSION OF THE RESULTS AND THE HYPOTHESES

The aim in this chapter is to interpret the results of the eight tested research models and to discuss the hypotheses in the light of these results. This process has two phases. *First*, the link between *CPM efforts and overall customer performance, customer profitability and firm performance* is discussed with regard to hypotheses 1–3. *Secondly*, the focus moves to CPM style in the different exchange contexts. More specifically, the *mediating role of design* and the *measurement model* results are discussed in detail. These topics relate to hypotheses 4–9.

The discussion of the results is based on the first-order conceptualization of CPM. According to the models tested in Chapter 7, this first-order conceptualization fits the empirical data better than the alternative second-order conceptualization. It is also theoretically more meaningful. It would be logical to assume that only CPM effort, in other words behavior, could provide a direct link to performance. Consequently, it would also be more meaningful to consider analysis and responsiveness design, referring to CPM style, as a mediator of CPM efforts – performance relationships rather than a construct that equates to such efforts. This conceptualization supports the notion expressed by Slater and Narver (1995, 66) that behavior change is the necessary link between organizational learning and performance improvement.

8.1 The relationship between CPM efforts and performance

Table 11 summarizes the results of the eight tested research models examining the relationship between CPM efforts and performance. The table shows the *path coefficients* together with the R^2 values for performance in both market- and network-like exchange contexts.

The table also includes additional research models tested on the whole data set in contrast to the market- and network-like contexts. It incorporates *effect size*, which examines the significance of the differences in the R^2 values (see Chin Marcolin and Newsted 2003, 211). Cohen (1988) classified effect size as small >0.02 , medium >0.15 , or large >0.35 . Here the effect sizes are used to assess whether the research models tested in market- and network-like exchange contexts explain the relationship between CPM effort and

performance better than the models tested on the whole data set. The results suggest that the exchange context is highly significant for explaining the relationship between CPM and performance. All but one of the effect sizes turned out significant, varying from small (0.03) to medium (0.15). This result indicates the relevance of the exchange context in examining CPM practices. Moreover, it suggests that different kinds CPM efforts are important at the two extremes of the exchange context, thereby *emphasizing the need also to examine the indicator weights of the CPM activities*. This is done in Chapter 8.2 (cf. Ramaswamy, Kroeck and Renforth 1996; Sullivan 1994).

Table 11 The relationship between CPM efforts and performance

	Whole data	AE	RE	R ²	E-size
1W	Overall customer performance	0.261** (3.650)	0.271** (3.940)	0.224	-
2W	Customer profitability	0.209** (3.260)	0.287** (4.082)	0.196	-
3W	Perceived firm performance	0.198** (3.522)	0.170** (2.678)	0.094	-
4W	ROI	0.117ns. (1.133)	0.191ns. (1.605)	0.059	-

	Market like context	AE	RE	R ²	E-size
1M	Overall customer performance	0.349** (4.247)	0.231** (2.704)	0.267	0.055
2M	Customer profitability	0.224** (3.153)	0.346** (4.910)	0.235	0.049
3M	Perceived firm performance	0.336** (4.466)	0.198** (2.593)	0.183	0.098
4M	ROI	0.112ns. (0.656)	0.213ns. (1.205)	0.068	0.010

	Network like context	AE	RE	R ²	E-size
1N	Overall customer performance	0.310** (2.716)	0.387** (4.257)	0.339	0.148
2N	Customer profitability	0.280** (2.733)	0.340** (2.558)	0.295	0.123
2N	Perceived firm performance	0.336** (2.750)	0.218ns. (1.618)	0.186	0.102
4N	ROI	0.184ns. (1.109)	0.229ns. (1.256)	0.086	0.029

** Significant at 1%, * Significant at 5%, ns. Non-significant

Analysis and responsiveness efforts are significantly linked to both overall customer performance and customer profitability in both exchange contexts at a 1% significance level. CPM efforts explain overall customer performance better than customer profitability (see the R² values in Table 11). Overall customer performance includes aspects such as customer satisfaction, value creation, customer retention, growth, and customer profitability. Therefore this result is rather surprising as the CPM is a heavily supplier-oriented practice focusing on the management of the customer base in terms of customer value to the focal firm. Some earlier studies have even suggested that formal customer management models are problematic in that they ignore the real-world complexities of interaction and interconnectedness, and may therefore be counterproductive (e.g., Armstrong and Brodie 1994; Dubois and Pedersen 2001). Clearly, the positive relationship between CPM effort and overall

customer performance indicates that companies' CPM activities are flexible enough in practice to take into account the complexities of exchange in the long-term. Further, the insights concerning selling company's own value creation also seem to imply openness and understanding in terms of customer value.

The tested research models also show that CPM efforts are significantly (1% level) linked to customer profitability, explaining around 24-30% of the variance. The lower R^2 values compared to overall customer performance indicate that customer profitability is a complex issue and difficult to achieve: increasing it requires a thorough understanding of its central drivers and of the customer base. In sum, hypotheses 1-2 are supported:

- H1** The analysis and responsiveness efforts of an organization have a positive impact on customer profitability – supported
- H2** The analysis and responsiveness efforts of an organization have a positive impact on overall customer performance – supported

The results are far more ambiguous with regard to hypothesis 3, which focuses on the relationship between CPM efforts and firm performance. Two measures of firm performance were used, namely perceptual performance and objective ROI. Both analysis and responsiveness efforts were connected to perceived firm performance in the market-like exchange context at a 1% significance level, explaining around 18% of the variance, while in the network-like contexts only analysis efforts were significantly linked (1% significance level), again explaining around 18% of the variance (see Table 11). However, both of these structural models produced low goodness-of-fit values (GoF is 0.284 for both models). Further, the measurement model produced inferior results compared to models concentrating on overall customer performance and customer profitability, in other words they included more negative and fewer significant indicator weights, indicating a weak relationship with performance. The results of the structural model could be considered acceptable as the GoF figure is based on internal measurement consistency and is not suited to formative measures such as CPM. The internal-consistency criterion is not valid for cause indicators because the formative indicators could have positive, negative, or zero correlations (Bollen 1984, 381; Bollen and Lennox 1991, 307). The main significant items have positive indicator weights in the measurement model, with the exception of analysis effort₇ in the market-like exchange context (see Appendices 20 and 29)

The research models focusing on the relationship between CPM effort and

the objective ROI figure revealed no statistically significant relationship between analysis and responsiveness efforts and ROI (see Table 11): the path coefficients turned out to be small and non-significant, and the R^2 values very low for both types of exchange context. The measurement models also indicate a bad fit to the data in that there is only one significant indicator weight ($p > 0.05$).

Clearly, the differences in the results between perceptual and objective firm performance are problematic. There are several possible explanations. This research is based on a cross-industry sample covering all of the largest B-to-B companies in Finland operating in a wide variety of industries. The ROI level has been shown to be statistically connected to industry through risk (see Aaker and Jacobson 1987). In other words, a good or bad ROI figure in high-risk industries such as ICT or engineering is very different from a good or bad ROI figure in low-risk mature capital-intensive industries such as heavy engineering or real-estate rental, and this could make it problematic in cross-industry research. Naturally, given the conflicting results on firm performance, the link between CPM efforts and perceptual performance should be interpreted with great caution because of the rather weak path coefficients, the R^2 values, and the possibility of common method bias. The tests for common method bias suggested its absence in this research, but could not guarantee it (see Chapter 6.6).

In sum, the relationship between CPM efforts and firm performance is meaningful in terms of overall customer performance and customer profitability, but this direct link to firm performance is weak and must be interpreted with great caution. In order to produce more reliable results in the future, researchers should adopt a multiple-respondent approach in examining the link between CPM and firm performance. Furthermore, the CPM-ROI link should be tested in a single-industry context. Therefore:

H3 The analysis and responsiveness efforts of an organization have a positive impact on firm performance – weak support

Finally, a rather surprising result is that CPM activities explain all of the tested areas of performance in network-like contexts better than in market-like contexts (see the R^2 values in Table 11). This finding emphasizes the importance of relationships and their management in more relational contexts. The important role of relationships has probably been recognized in network-like contexts, whereas relationship thinking in market-like contexts is a more recent phenomenon and has been influenced by the current developments in CRM. As the proper implementation of CPM activities is likely to take time their possible later introduction may also affect their performance. More

significantly, this result emphasizes the importance of maintaining a *broad conceptualization of CPM*, and indicates that CPM efforts are not only suited to managing large, heterogeneous or changing customer bases.

An examination of different CPM styles could help in explaining and deepening these findings. Therefore, the role of analysis and responsiveness design in the CPM-performance link is discussed in the next section. The measurement model results for the various areas of performance in the different exchange contexts are also examined in order to further understanding about the contingent nature of CPM.

8.2 CPM style and performance in market- and network-like exchange contexts

The discussion now moves from analysis and responsiveness *efforts* to CPM *style*. *First* the mediation effects of CPM design on the relationship between effort and performance are discussed in different exchange contexts, which will give some indication of the effectiveness of CPM practices. Hypotheses 4–9 are discussed in the light of the findings. *Secondly*, given that CPM constructs are formative measures, the results of the measurement model could also be meaningfully interpreted in that the indicator weights provide information on the makeup and relative importance of each indicator in the formation of the component (Chin 1998, 307). Therefore the results are examined in more detail in order to compare the indicator weights for overall customer performance, customer profitability, and firm performance in market- and network-like exchange contexts.

Table 12 The mediation effects for CPM performance link in a market-like exchange context

	Market like exchange context				
	AE	AD	RE	RD	R ²
Overall customer performance	0.272**	ns.	0.06ns. FM	0.302**	0.307
Customer profitability	-0.100ns. FM	0.290**	0.338**	ns.	0.238
Perceived firm performance	0.336**	ns.	0.198**	ns.	0.183
ROI	0.112ns.	ns.	0.213ns.	ns.	0.068

** Significant at 1%, * Significant at 5%, **ns.** Non-significant, **FM** Fully mediated through design

Table 12 summarizes the mediation effects for the tested research models in

the market-like context. It only shows the paths of the effort and design constructs to the different areas of performance, and the R^2 value.

The AE-AD and RE-RD links are not shown, but they were found to be very strong (path coefficients around 0.67, R^2 values around 0.360, correlations around 0.67) in all of the research models. The design of the CPM activities approximates how much explicit effort the company has put into their planning and adaptation. A high score in design indicates a more formal, mechanistic customer management style that is close to the use of formal portfolio models in the theoretical literature (cf. Burns and Stalker (1961, 96–126).

CPM design mediates the effort-performance relationship in two research models in a market-like exchange context. *First of all*, responsiveness design mediates the path between responsiveness efforts and overall customer performance (see Table 12; Figure 24, page 132). This indicates that the complexity of the customer base caused by the large number of customers, their heterogeneity and the higher turnover create challenges for customer management in terms of making systematic responses. Hence, planning and the systematic implementation of customer responses into practice are important in terms of enhancing overall customer performance (cf. Burns and Stalker 1961, 119–120). In other words, activities such as the planning and evaluation of management practices, issuing instructions to personnel working at the customer interface, and the constant adaptation of practices will enhance the implementation and therefore the effectiveness of the responsiveness efforts.

Secondly, analysis design mediates the path between analysis efforts and customer profitability (see Table 12 Figure 26, page 136). This suggests that the design of the analysis activities is instrumental in attaining customer profitability in market-like contexts. This result is very logical in that sophisticated analysis activities promote understanding of the complex issue of customer profitability when there is a large, heterogeneous and changing customer base. This mediator effect emphasizes the need to develop and tailor the analysis activities carefully to the company's special needs.

Even though analysis and responsiveness design mediated overall customer performance and profitability, it did not mediate the relationship between CPM effort and firm performance. This finding is probably connected to the weakness of the link between CPM and firm performance.

Clearly, these results give partial support to the idea behind hypotheses 4–6, that market-like exchange contexts favor more planned and mechanistic CPM styles (cf. Burns and Stalker 1961, 96–126; Courtright, Fairhurst, Rogers 1989, 773; Dahlstorm, Dwyer, and Chandrashekar 1995, 43; Dwyer and Welch 1985; Lawrence and Lorch 1967, 187–189; Paswan, Dant and Lumpkin

1988, 126–130; Wetherbe and Whitehead 1977, 22).

- H4** In a market-like exchange context the design of CPM activities mediates the relationship between CPM efforts and overall customer performance – partial support: responsiveness efforts are mediated by responsiveness design
- H5** In a market-like exchange context the design of CPM activities mediates the relationship between CPM efforts and customer profitability – partial support: analysis efforts are mediated by analysis design
- H6** In a market-like exchange context the design of CPM activities mediates the relationship between CPM efforts and firm performance – rejected

The results concerning the mediation effects of CPM design clearly differ in *network-like exchange contexts*: design mediates none of the relationships between CPM efforts and overall customer performance, customer profitability, or firm performance (see Table 13). In other words, even though both analysis and responsiveness efforts are connected to performance, putting explicit effort into planning and developing these activities does not enhance this relationship. It is not the highly planned, formal practices, but the interaction and daily contact with customers that are essential in CPM. In other words, learning about customers and responding to this knowledge take place on a daily basis.

Table 13 The mediation effects for the CPM-performance link in a network-like exchange context

	Network-like exchange context				
	AE	AD	RE	RD	R ²
Overall customer performance	0.310**	ns.	0.387**	ns.	0.339
Customer profitability	0.280**	ns.	0.340*	ns.	0.295
Perceived firm performance	0.336**	ns.	0.218ns.	ns.	0.186
ROI	0.184ns.	ns.	0.229ns.	ns.	0.086

** Significant at 1%, * Significant at 5%, **ns.** Non-significant, **FM** Fully mediated through design

This is a natural outcome as the challenge for management in the network context lies in the complexity of customer relationships and interaction. As Möller and Halinen (2000, 47) put it in their conceptual review of relationship

marketing: “Network-based relationship marketing can be briefly described as the management of interdependencies between actors. The tasks and challenges in the management involve broader and deeper interaction with external partners...The key questions concern how to coordinate activities with different actors and how to mobilize and control critical resources through relationships with them”. Burns and Stalker (1961, 121) emphasize the need for flexible, organic management in “changing conditions which give rise to fresh problems and unforeseen requirements for action which cannot be broken down or distributed automatically arising from the functional roles defined within a hierarchical structure”, which is the case when the customer base is dominated by complex, dynamic customer relationships and exchange.

Clearly, these results give support to the ideas behind hypotheses 7-9 that network-like exchange contexts favor more informal and organic CPM styles (cf. Burns and Stalker 1961, 96-126; Courtright, Fairhurst, Rogers 1989, 773; Dahlstorm, Dwyer, and Chandrashekar 1995, 43; Dwyer and Welch 1985; Lawrence and Lorch 1967, 187-189; Paswan, Dant and Lumpkin 1988, 126-130; Wetherbe and Whitehead 1977, 22). Therefore, hypotheses are supported. In other words, CPM design does not mediate the relationships between CPM effort and performance in a network-like exchange context.

- H7** In a network-like exchange context the design of the CPM activities does not mediate the relationship between CPM efforts and overall customer performance – supported
- H8** In a network-like exchange context the design of CPM activities does not mediate the relationship between CPM efforts and customer profitability – supported
- H9** In a network-like exchange context the design of CPM activities does not mediate the relationship between CPM efforts and firm performance – supported

Finally, in order to further deepen our understanding about CPM styles in different exchange contexts the *measurement model results* are examined contextually. These results are not normally interpreted in structural equation modeling, but a meaningful interpretation of the indicator weights of formative measures is possible in PLS modeling because the CPM indicators have been theoretically chosen. Moreover, the indicator weights provide information on the make-up and relative importance of each indicator in the formation of the component (Chin 1998, 307). In other words, rather than assuming equal weights for all indicators of a measure, the PLS algorithm

allows each one to vary in how much it contributes to the composite score of the construct. Therefore, indicators with weaker relationships to related indicators and to the latent construct are given lower weightings, and these varied weightings are carried through to an assessment of the theoretical estimates (Chin, Marcolin and Newstead 2003, 197).

Table 14 Indicator weights for the research models (>0.100)

Research models / Indicator weights	Market-like exchange context			Network-like exchange context		
	Customer perf.	Customer profit.	Firm perf.	Customer perf.	Customer profit.	Firm perf.
analysiseffort1 -> AE	0,161	0,321		0,322	0,300	
analysiseffort2 -> AE	0,382	0,214	0,169	0,472	0,136	0,515
analysiseffort5 -> AE	0,436	0,236	0,764	-0,326		-0,299
analysiseffort7 -> AE	-0,402	0,156	-0,580	0,161		0,604
analysiseffort9 -> AE	0,330		0,380	0,711	0,618	0,600
analysiseffort10 -> AE	0,258	0,469		-0,334	0,213	-0,480
responseffort1 -> RE	0,310	0,149	0,604	-0,194	-0,136	-0,178
responseffort2 -> RE	0,307	0,456	0,530	0,712	0,644	1,039
responseffort4 -> RE	0,359	0,450	-0,120		-0,153	-0,253
responseffort5 -> RE		-0,152		0,342	0,355	0,207
responseffort6 -> RE		0,149		0,246	0,190	-0,189
responseffort8 -> RE	0,100	-0,313	-0,367	0,234	0,280	0,316
responseffort9 -> RE	0,303	0,299	0,313		0,210	

Clearly, analyzing the measurement model weights could further extend the results of the structural model. The indicator weights of the different research models are compared in order to examine the CPM contingencies. Table 14 shows all the indicator weights over 0.100: the lower values were removed in order to clarify the main results. Items that are significant on at least a 10%-level are in bold, and those with negative weights are highlighted. Because the models examining the relationship between CPM and ROI were clearly non-significant they are excluded from the table. Further, as analysis design and responsiveness design mediated CPM efforts only in two models they are not shown in the table, but they are discussed separately in the text. The questions corresponding to the indicators are to be found in the questionnaire in Appendix 31.

Several interesting issues stand out in Table 14. The most significant of

these is that the central indicator weights of the CPM performance constructs vary considerably depending on the type of exchange context and the type of performance.

This finding highlights the relevance of the exchange context to CPM practice, and the need to tailor CPM to the contextual contingencies. Table 14 also reveals several negative indicator weights, implying a negative influence on performance. Clearly, too, the negative items vary considerably depending on the exchange context and the area of performance. Therefore the indicators with a negative weight are valid and should be retained in the CPM measure because they all have positive weights in the other exchange context or in another area of performance. The CPM indicator characteristics are discussed in more detail below in terms of the exchange contexts.

The focus first is on the *market-like exchange context*. As far as *analysis efforts* are concerned, all but one item have positive indicator weights, the only negative one being analysis effort 7, which refers to segmenting customers based on their value. Interestingly this item has a *significant* negative influence on both overall customer performance and firm performance, but a positive but non-significant influence on customer profitability. The probable explanation for this effect is that a strict financially oriented approach to customer management can negatively affect customer satisfaction, value creation, retention, and growth, which are included in overall customer performance. Therefore this finding underlines the need to take into account customer needs and value creation in customer management. A look at the positive indicators reveals that those with high weights are more evenly distributed than in the network-like exchange context. Customer grouping is at the heart of analysis efforts in the market-like exchange context in that it has a strong positive impact on all areas of performance (strong role of analysis effort 5).

Upon closer examination of *responsiveness efforts*, a clear pattern emerges from Table 14: all of the positive and significant indicator weights are concentrated on the responsiveness-effort indicators 1, 2, 4, and 9. These indicator weights approximate the cost-efficient *treatment* of customers, including the tailoring of products and services, the adoption of different operational models including the level of service and service channels, and the directing of resources to customers with high potential. Further, the acquisition of new customers is a major issue, as suggested by Johnson and Selnes (2005). On the other hand, the indicators concentrating on the *development* of the customer base (indicators 5–9) have very low, non-significant weights, many of which are negative. This result illustrates the more transactional nature of the customer base than in the network-like exchange context, and is consistent with the ideas of Möller and Halinen (2000) on market and network-like

relationship marketing.

Finally, the discussion turns to the two design mediators in the market-like exchange context. In terms of *responsiveness design*, indicators 1, 2 and 5 are emphasized for overall customer performance. This indicates the importance of careful planning, the continuous evaluation of customer management practices, and the issuing of concrete instructions to personnel at the customer interface. In turn, as far as *analysis design* is concerned, the evaluation of current practices (analysis design 2) and the tailoring of the analysis criteria to the company characteristics (analysis design 4) are emphasized in maintaining customer profitability. Interestingly, investments in analysis methods carry a negative but non-significant weight in this respect. This result is consistent with the related findings that the successful implementation of CRM requires more than just the technology (e.g., Reinartz, Hoyer and Krafft 2005, 302).

Secondly, the indicator weights are examined in the *network-like exchange context*. The positive weights for *analysis efforts* are quite evenly divided among the indicators, although analysis efforts 2 and 9 are the most significant. This illustrates the importance of monitoring customer costs and analyzing the development of different customer groups in the customer base in improving operational and firm performance. The two indicators with negative weights are analysis efforts 5 and 10: the former shows that strict customer grouping is not essential in analyzing the customer base in a network-like exchange context. Moreover, analyzing the health of the customer base in the long term carries a negative indicator weight, which implies the need to analyze *individual customer relationships* rather than the *structure of the customer base*.

The positive and negative indicator weights for *responsiveness efforts* are almost opposite to the corresponding figures in the market-like exchange context. The negative weights focus on the cost-effective treatment of customers, such as the tailoring of products based on value and the directing of resources to those with high potential (responsiveness efforts 1 and 4). Another interesting issue is that the focus on customer acquisition has a very low weight. This is consistent with earlier research findings suggesting that industrial markets are characterized by stable long-term relationships (e.g., Håkansson 1982). The positive weights focus on the *development* of the customer base: making low-value relationship more valuable, developing the most valuable ones, and ignoring or terminating certain unprofitable relationships (responsiveness efforts 5, 6, and 8). The different operational models of the service-level and channel type are of major importance in terms of performance (responsiveness effort 2).

In sum, the measurement model results support the validity of the CPM measure. Even though some negative indicator weights were found in the

testing of the CPM–performance link, they were generally non-significant and, significantly, varied according to the context. In other words, the CPM construct is a broad measure and its main aspects vary according to the exchange context and the area of performance in question. Overall, these results emphasize the need to tailor CPM practices to company needs.

8.3 Summary of the results

This section summarizes the key findings of the research. *First*, it appears from the empirical data that CPM is best modeled on the four first-order constructs of analysis effort, analysis design, responsiveness effort and responsiveness design. Analysis and responsiveness effort represents the strength of the CPM activities, whereas design represents their style. Only analysis and responsiveness efforts, in other words behaviors, provide a theoretically meaningful direct link to performance. In turn, design, which represents CPM style, acts logically as a mediator between effort and performance rather than having a direct link to performance.

Secondly, analysis and responsiveness effort was connected to overall customer performance and profitability. Further, there was weak support for a relationship between CPM effort and firm performance. Overall customer performance and profitability represent two areas of operational performance, which in turn are connected to the firm's financial performance. The relationship between CPM and the two areas of operational performance was very clear, while the direct link between CPM activities and firm performance was more ambiguous. In other words, both analysis and responsiveness efforts in a market-like exchange context and analysis efforts in a network-like exchange context were connected to perceived firm performance. However, the measurement model results are inferior to research models examining areas of operational performance. Moreover, no link was found between CPM activities and the objective ROI figure. Therefore, the direct link between CPM and firm performance must be interpreted with great caution. Still, this relationship is possible as this research was based on a cross-industry sample and the ROI figure is known to vary notably between industries. Clearly, further research is needed with multiple respondents. The relationship between CPM and the ROI figure should also be further tested within one industry. In sum, the data provided support for the first three hypotheses as follows:

- H1** The analysis and responsiveness efforts of an organization have a positive impact on customer profitability – supported

- H2** The analysis and responsiveness efforts of an organization have a positive impact on overall customer performance – supported
- H3** The analysis and responsiveness efforts of an organization have a positive impact on firm performance – weak support, should be interpreted with caution

Thirdly, different kinds of CPM styles are effective in market- and network-like contexts. The mediation effect of the design on the relationship between effort and various areas of performance was tested. The style was considered in terms of the analysis and responsiveness design constructs. A high level of design refers to an explicit focus on planning and adaptation in CPM activities, indicating a mechanistic customer management style closely resembling formal portfolio models. The results support the notion that CPM style is contingent on the exchange context.

An effective CPM style in network-like contexts was aligned only with analysis and responsiveness *efforts*. In other words, no mediation effects were found. This applied to all the areas of performance tested. Thus the network-like context favors a more flexible, *organic management style* that is suited to complex customer relationships and exchange.

In turn, an effective management style in a market-like context is different from an effective style in network-like contexts. Analysis and responsiveness *design* mediated the relationship between CPM efforts and performance in two cases in the former. First, responsiveness design fully mediated the relationship between responsiveness efforts and *overall customer performance*. This result underlines the need for planning systematic responses, engaging in constant evaluation, and providing concrete instructions to the personnel in the effective implementation of responsiveness activities. Sophisticated *design in analysis activities*, on the other hand, is essential for maintaining customer profitability. In other words, analysis *design* fully mediates the relationship between analysis efforts and customer profitability. The constant evaluation and development of analysis practices and their tailoring to company needs enhance the performance link between the activities and customer profitability. Hypotheses 4–9 were supported as follows:

- H4** In a market-like exchange context the design of CPM activities mediates the relationship between CPM efforts and overall customer performance – partial support: responsiveness efforts are mediated by responsiveness design
- H5** In a market-like exchange context the design of CPM activities mediates

the relationship between CPM efforts and customer profitability – partial support: analysis efforts are mediated by analysis design

- H6** In a market-like exchange context the design of CPM activities mediates the relationship between CPM efforts and firm performance – rejected
- H7** In a network-like exchange context the design of CPM activities does not mediate the relationship between CPM efforts and overall customer performance – supported
- H8** In a network-like exchange context the design of CPM activities does not mediate the relationship between CPM efforts and customer profitability – supported
- H9** In a network-like exchange context the design of CPM activities does not mediate the relationship between CPM efforts and firm performance – supported

Fourthly, the CPM measure is formative and the indicators were chosen on a theoretical basis. The indicator weights in formative measurement provide information about the makeup and relative importance of each indicator in the creation/ formation of the component. Thus the measurement model results concerning the formative measures could also be interpreted in a theoretically meaningful way. Comparison of the results of the tested research models revealed that the high indicator weights of the CPM constructs varied notably according to the exchange context and the examined area of performance.

In a market-like exchange context the high indicator weights were quite evenly distributed among all areas of performance, although customer grouping was consistently in a focal position. Interestingly, customer segmentation based on value carried a negative weighting for both overall customer performance and firm performance, thus indicating the need to take into account customer needs and value-creation aspects in CPM. The high indicator weights for responsiveness efforts in market-like exchange contexts clearly support the cost-efficient treatment of customers (*matching* resource allocation to customer value) – see Figure 4, page 53. Moreover, the acquisition of new customers was found to affect performance in market-like exchange contexts.

Then again, in *network-like exchange contexts* the major high weight indicators for analysis efforts focused on the monitoring of customer costs and on analyzing the development of customer groups. In turn, the indicators referring to customer grouping and analyzing the health of the customer base

even had negative weights. The high indicator weights for effective responsiveness efforts focused on the development of the customer relationships and the customer base (customer portfolio *development* aspect). Furthermore, the indicators referring to different operational models for customers with different value, such as level of service and service channels, were central in all of the tested areas of performance.

In sum, CPM efforts were connected to overall customer performance and customer profitability, but only with great caution to firm performance. Further, different CPM styles are needed in order to maximize performance in market- and network-like exchange contexts. Planned and mechanistic CPM practices as in the academic-portfolio model are best suited to market-like contexts of structural complexity caused by the large number of customers, their heterogeneity and higher turnover. Sophisticated value analysis, in other words analysis design, focuses on customer profitability, whereas responsiveness design covers overall customer performance with its emphasis on planning and adapting the responsiveness activities in putting them into practice. In turn, the network-like context favors an organic CPM management style because of the complex customer relationships and considerable customer dependency.

9 SUMMARY AND CONCLUSIONS

Customer portfolio management (CPM) is an important area in theories of relationship marketing and customer relationship management. It focuses on the whole portfolio of customer relationships, from transactions to strategic partnerships and their management based on the value of the various customers to the selling company. The academic research so far has produced a wealth of conceptual knowledge about CPM in terms of proposing and testing a large number of relationship-portfolio models (Turnbull 1990). However, the implementation, in other words corporate CPM practices, has remained a fragmented and blank area. This is striking because companies have made considerable investments in portfolio management and CRM systems. Further, several studies have argued that customer management models miss the essential aspects of business and could even be counterproductive. The implementation has been ignored, which makes the related management practices an unexplored area. Clearly, new studies are needed on both the theoretical and the practical level.

The purpose of this research was to analyze companies' CPM practices and performance in business markets. More specifically, there were three more specific aims: 1) to conceptualize customer portfolio management in B-to-B settings, 2) to form and validate a measure for studying CPM practices in business, and 3) to study contextually the relationship between CPM practices and performance, in other words overall customer performance, customer profitability, and firm performance.

This dissertation builds on several streams of research, including theories of relationship marketing and customer relationship management, interaction and network theories, and theories of information processing and market orientation related to organizational learning. A definition of CPM was developed based on the literature. This theory-based view was further synthesized with a field-based view (a qualitative pilot study in seven firms) in order to reach an operational definition that would explicate CPM activities and allow the empirical study of the practices.

A CPM measure was formed and validated based on the operational definition, the 17 interviews, and the survey data (N=212). The measure derives from rather rare formative measurement logic instead of reflective mainstream measurement logic. In practice, many of the major aspects of marketing are not reflective, which applies especially to managerial constructs

such as CPM. Adopting a formative measurement perspective when necessary is important because measurement model misspecification severely biases structural parameter estimates, and may lead to the drawing of inappropriate conclusions about the hypothesized relationships between the constructs.

Moreover, theoretically justified hypotheses and a research model were used to investigate CPM performance in different contexts. The sample population comprised 493 independent business units concentrating on B-to-B trade from the 408 largest companies in Finland. The eventual number of usable responses was 212.

The research model and hypotheses were tested by means of Partial Least Squares (PLS) modeling, which is a structural equation modeling technique. There were several reasons for choosing this rather rare form of modeling technique. First of all, it can model latent constructs under conditions of non-normality, unlike maximum likelihood methods such as LISREL. Secondly, it avoids two serious problems inherent in maximum-likelihood-based methods, namely improper solutions, and factor indeterminacy, and is therefore suited to formative measures that easily lead to identification problems in traditional SEM. Thirdly, it is suited to relatively small sample sizes, unlike covariance-based approaches. Finally, it is appropriate when the theory has not been yet tested in an application domain (Göbal, Bostrom and Chin, 1992, 57). The study results show that uncommon PLS methodology is well suited to B-to-B research in which data size is often rather limited. The theoretical and managerial implications are discussed next, together with the limitations and suggestions for further study.

9.1 Theoretical implications

First, this study was based on a *critical pluralistic approach*. In other words, it combines three partly overlapping but also partly conflicting theoretical research streams in equal measure. This is rather uncommon in that most studies build heavily on a particular theoretical approach. The starting point here was that a single approach could not effectively cover the real-world complexity of customer portfolio management, which is a company-internal managerial practice engaged in outside of the focal organization through customer relationships. Theories of relationship marketing and customer relationship management formed a natural starting point for investigating corporate CPM practices. They helped in conceptualizing portfolio management and in finding relevant contexts in which to study studying CPM performance. Concentrating narrowly on CRM theories would have led to a poor understanding of their context, in other words customer relationships and

exchange in business-to-business markets. Interaction and network theories have helped in promoting a better understanding of the CPM context, in other words the customer relationships and the relational context of exchange. Finally, these two theoretical approaches alone represent a rather black-box view of CPM practices in business. Theories related to organizational learning, including information-processing and market-orientation theories in marketing, provide a better picture of what actually takes place in companies. These theories have also provided a theoretically meaningful mechanism through which to explain the link between CPM practices and performance. The results of this research indicate that the open-minded application of a critical pluralistic view and the critical combination of different research approaches is a fruitful position and can benefit the study of complex relationship-management phenomena.

Secondly, a significant theoretical contribution of this research is the *conceptualization and formation of a CPM measure*. A wide variety of customer portfolio models have been developed since the late 1970s. These theoretical models form a heterogeneous and complex entity, as “portfolio analysis and management can be applied from various perspectives at various levels of aggregation and using different combinations of factors or portfolio components depending upon the purposes intended and the specific situations confronting the company” (Turnbull 1990, 20). This has resulted in the lack of a single unifying definition and the fragmentation of the customer management field.

The following theory-based definition of CPM is put forward, based on a careful literature analysis: “*a practice by which a company analyzes the role of different customers in providing current and future value in its customer base in order to develop a balanced customer structure through effective resource allocation to different customers or customer groups*”. This definition is abstract, however, and is of only little help in the study of corporate CPM practices. It is also totally theoretical, and does not necessarily fully cover these practices in reality. In order to form a measure and to study management practices, therefore, an operational definition was needed.

The focus in the operational definition moves from the abstract philosophical level to the level of concrete activities, and synthesizes both CPM philosophy and business praxis. For this purpose, a qualitative pilot study was conducted in seven companies. The results of the study reveal three main differences between the theory and the praxis of portfolio management. First of all, CPM in reality is a continuous ongoing analysis and responsiveness process rather than a single act in time. Secondly, it is not a static procedure and companies adapt their management practices, thus making the design of portfolio activities a major factor. Thirdly, it is not just a managerial activity

carried out within the marketing function, but is rather a cross-functional and multi-level practice.

Hence, CPM is defined *operationally* as: “company activities in analyzing its portfolio of customers pertaining to their role in providing current and future value, and company responsiveness to the analysis”. Both of these main analysis and responsiveness activities have two aspects: effort and design. Therefore, CPM consists of the four dimensions of *analysis design* (i.e. the focal company’s continuous efforts to plan and adapt its customer analysis activities to company needs), *analysis effort* (i.e. the focal company’s efforts to analyze its whole portfolio of customers pertaining to their different roles in providing current and future value), *responsiveness design* (i.e. the focal company’s continuous efforts to plan and adapt its responsiveness activities to its needs with a view to implementing them in practice), and *responsiveness effort* (i.e. the focal company’s efforts to adjust its resource allocation according to the value of different customers in its current and future customer portfolio).

Importantly, this view broadens the CPM focus from the production of analyses and matrices to the adoption of a broader and more realistic perspective covering various corporate practices. This conceptualization is based on the concept of organizational learning, and approximates both the *degree* and the *style* of customer management activities. It is a measure not only of the strength of these activities, but also of the degree to which companies put explicit effort into planning and adapting them. PLS modeling was used to validate the CPM measure empirically. The empirical data supported the adoption of the suggested first-order conceptualization instead of the alternative second-order conceptualization.

Thirdly, this study develops *measures for studying companies’ context of exchange with their customers*. The contexts of companies and their influence on management practices have been discussed widely in the field of marketing. The current quantitative studies on relationship management have thus far applied mainly environmental measures in research (c.f. Bourgeois 1980). However, according to theories of relationship marketing and industrial networks, and to empirical studies on customer relationship management in B-to-B contexts, environmental measures are not well suited to CPM research (e.g., Mattsson 1997; Håkanson 1982). The alternative relational approach focuses on business networks (e.g., Anderson, Håkansson and Johansson 1994). However, this is also problematic in that it provides little help in terms of comparing company contexts and creating explanations. Thus, current measures are not useful for studying CPM contextually.

A new way of approaching the firm context is therefore suggested, namely via the *exchange context*. This has been discussed extensively in the literature,

but the debate has remained conceptual (e.g., Easton and Araujo 2003; Ebers 1997, 14-16; Möller and Halinen 1999, 2000). The approach suggested here 1) is based on the idea of relationships as the dominating governance form, 2) has a focal-company view on the meso-level of the economy, and 3) is suitable in terms of explanation. It is argued that business markets are characterized by relationships as the dominating governance form, but that notable differences exist in the overall characteristics of exchange. Based on the work of Möller and Halinen (1999, 2000) a measure was developed for companies' contexts of exchange with their customers, varying from *market-like* to *network-like*. A background idea here is that complex relationships take place in a network context, whereas less complex relationships are characterized by market-like exchange. It should be noted that the market- and network-like labels refer not to the governance form of exchange, but rather to the nature of the company's overall exchange with its customers.

Seven dimensions of the exchange context were presented covering contexts that were directly and indirectly connected, together with the main structural and dynamic aspects of the corporate context. A K-means cluster analysis of the suggested dimensions of the exchange context confirmed its existence. *Five* of the seven scales varied significantly in the two clusters representing market- and network-like contexts. First of all, the network-like context differs highly from the market context in terms of the *customer base size*: in the latter the number of customers a company aims for is notably larger than in the former. Secondly, the customers are similarly more *heterogeneous* and more homogeneous, respectively. Thirdly, as expected, the *nature of the customer relationships* differs accordingly: the customer base consists of stronger customer relationships in the network-like context and of more transactional relationships in the market-like context. Fourthly, *customer turnover* also varies slightly, being higher in a market-like than in a network-like context. Fifthly, there is a significant difference in *customer concentration*: companies are far less dependent on their largest customers in a market-like context. The customer base size and customer concentration dimensions were found to be the main drivers for the exchange context. Interestingly, the empirical results of this research strongly suggest that the exchange context is an extremely relevant variable in customer relationship management.

Fourthly, in terms of theoretical implications, the main contribution of this research concerns the *examination of CPM performance from a contingent perspective*. Earlier studies have found that portfolio management could be a valuable concept for companies (e.g., Zolkiewski and Turnbull 2002a), but it has also been suggested that CPM systems are doomed to be counterproductive (e.g., Dubois and Pedersen 2000). A notable body of both conceptual (e.g., Möller and Halinen 2000) and empirical (e.g., Broadie, Coviello,

Brookes and Little 1997) research has described relationship management as a highly contingent endeavor, but there are currently no performance-related empirical studies on corporate CPM practices. A total of nine hypotheses concerning CPM performance outcomes were presented on the basis of the theory. The core idea in these hypotheses was that CPM efforts should always be logically connected to performance, but that the most effective customer management style is likely to differ depending on the exchange context.

Hypotheses 1–3 concerned the performance outcomes of analysis and responsiveness efforts. The first two concerning the link between CPM and operational performance, in other words overall customer performance and customer profitability were strongly supported (cf. Venkatraman and Ramanujan 1986). The positive relationship between CPM efforts and overall customer performance is particularly interesting and indicates that companies' actual CPM activities are flexible enough in practice to take into account the complexities of exchange in the long term. Further, the insights concerning the selling company's own value creation also imply openness and understanding of customer value. However, the third hypothesis concerning the link between CPM efforts and firm performance received only weak support. In other words, analysis and responsiveness efforts in market-like exchange contexts and analysis efforts in network contexts were weakly connected to perceptual firm performance. No significant link was found between CPM activities and the objective ROI figure. CRM research has produced similar findings in a consumer context. Reinartz, Krafft and Hoyer (2005, 300) report that their CPM measures were connected strongly to perceived performance, but only marginally to objective ROI (see also e.g. Homburg, Grozdanovic and Klarmann 2007). Moreover, their study focused on the single-industry context, which facilitates a better comparison of ROI figures (c.f. Aaker and Jacobson 1987). Clearly, the results of this study indicate that CPM activities are important in enhancing operational customer performance in business markets. Given the huge number of other variables affecting firm performance as a whole, the direct link with CPM is weak. Still, the findings underline its positive relationship with CPM activities in that the examined areas of operational performance were, in turn, connected to overall performance.

Hypotheses 4–9 were based on the general ideas suggested in organizational theory concerning the roles of organic and mechanistic management styles in more or less uncertain environments (cf. Burns and Stalker 1961). The first three of these posited that CPM design would mediate the relationship between CPM efforts and performance in market-like exchange contexts, and the latter three that there would be no mediation in the CPM efforts and performance relationship in network-like contexts. The *responsiveness design* fully mediated the relationship between effort and

overall customer performance, and the *analysis design* fully mediated the path from effort to customer profitability. Hence, hypotheses 4 and 5 were partly supported and hypothesis 6 was not supported. In turn, no mediation effects were found in network-like exchange contexts, thereby supporting hypotheses 7–9.

It therefore appears that companies acting in market-like exchange contexts dominated by a broad customer base, heterogeneity of customer relationships and relatively high customer turnover, with more transactional customer relationships and a less concentrated customer structure will benefit from formal, carefully planned and adapted CPM practices. In other words, a mechanistic customer management style fits market-like exchange contexts in which the challenges in managing customers are based mainly on the complexity of the customer portfolio structure. In turn, companies acting in a networked exchange context characterized by strong, complex customer relationships and high dependency, with fewer customers, a less heterogeneous customer base and a lower customer turnover benefit from organic, flexible CPM practices that are less formal and more participative. In other words, CPM efforts were linked to performance, although their careful planning did not enhance this link. This was an expected result in that uncertainty in network-like exchange contexts is caused by the complexity in the interaction and the customer relationships per se, underlining the need for flexible management practices and more autonomy for the personnel at the customer interface.

This finding is of great importance and underlines the need to take into account the *relational contingencies* in future research. The empirical results of this research therefore support the findings of conceptual studies emphasizing the need to focus on the exchange context (Möller and Halinen 2000) or the customer portfolio characteristics (Johnson and Selnes 2005) in relationship management. Thus far the various empirical studies on customer relationship management have given only scant attention to the relational contingencies of companies. In fact, most of them have focused on the general link between CRM activities and performance (e.g., Reinartz, Krafft and Hoyer 2004). Some of them have considered general environmental or industry-related variables, but have found no support for their relevance to customer management (e.g., Jayachandran, Sharma, Kaufman Raman 2005).

The *measurement model results* were also studied more closely, which made sense in that the CPM measure is formative and the indicators are chosen on a theoretical basis. The indicator weights therefore provide information on the makeup and relative importance of each indicator in the formation of the component (Chin 1998, 307). A comparison of the results of the tested research models clearly showed that *the high indicator weights of*

the CPM constructs varied notably according to the exchange context and the examined area of performance. This finding further underlines the relevance of the exchange context in CPM, and stresses the need for companies to tailor their CPM practices to their relational contingencies. The tailoring of portfolio management has also been emphasized in theoretical portfolio models (cf. Wind, Mahajan and Swire 1983, 98).

The indicator weights for responsiveness efforts were particularly interesting. Their high weighting in *market-like exchange* contexts clearly approximated the cost-efficient treatment of customers (matching resource allocation to customer value). The related CRM research has largely focused on this issue (cf. Bowman and Narayandas 2004; Reinartz, Krafft and Hoyer 2004; Ryals 2005; Wilson, Daniel and McDonald 2002). The acquisition of new customers was also found to influence performance, as emphasized by Johnson and Selnes (2005) in their theoretical CPM simulation.

In turn, in *network-like exchange contexts* the main indicators with high weightings focused on the development of the customer relationships and the structure of the customer base (customer portfolio development). This finding emphasizes the need for a relational management focus in networked exchange contexts, as emphasized in the interaction and network approach (cf. Håkansson 1982; Ritter, Wilkinson and Gemünden 2004). Furthermore, the different operational models, such as the service level and channel, for customers of different value to the company were effective in all the tested areas of performance in the network context.

9.2 Managerial implications

The managerial implications of this study are discussed in detail below. The results indicate that customer portfolio management is connected to both overall customer performance and customer profitability in a statistically significant way. These two aspects of operational performance, in turn, were connected to overall performance, explaining about 30–40% of the perceived firm performance. Moreover customer profitability explained 13% of the variation in the ROI figure. CPM activities were also directly connected to perceived firm performance but not to objective ROI.

CPM entails two main activities, namely the analysis of customer value and responsiveness, in other words the management of different customers according to their value to the selling company. The results of this study confirm that both of these activities are equally important for overall customer performance, customer profitability, and firm performance. However, different CPM styles affect performance outcomes depending on the business context.

The tailoring of portfolio management to suit the focal company needs and business is therefore essential in terms of maintaining performance. The characteristics of the relationships in the customer base significantly affect effective CPM practices.

When a company has a large customer base, extensive customer heterogeneity, and a higher customer turnover, but more transactional customer relationships and a less concentrated customer base (the so-called market-like exchange context) the design of its CPM activities assumes more importance, especially in terms of customer profitability. In other words, more sophisticated and formal CPM styles are connected to performance. It is essential to plan the analysis activities and to tailor them to the company needs. Clearly, sophisticated analysis methods are well suited to these kinds of contexts given their great potential in terms of maintaining customer profitability. As far as management is concerned, the cost-efficient treatment of customers is essential. Concrete examples of this include the tailoring of products and services (offerings), the use of different operational models (channels, level of service) based on customer value, and the systematic allocation of resources to customers with high potential. The acquisition of new customers is also important in terms of enhancing performance. Furthermore, complex customer base structures emphasize the need for the management to design the responses carefully. The careful formal planning of customer management implications is important. In other words, the continuous planning and adaptation of activities together with the issuing of concrete instructions to the personnel at the customer interface enhance performance.

When a company has a smaller, more concentrated customer base, with intense and complex customer relationships but lower customer turnover, and heterogeneity dominated by exchange complexity (the so-called network-like exchange context), it is the strength of the analysis and responsiveness activities rather than their careful formal design that assumes major significance in terms of performance. In other words, very formal, top-down CPM activities do not guarantee better performance. On the contrary, more flexible management modes are needed because of the complexity in the interaction and the relationships. These kinds of companies need to develop a relational mode and flexibility in management. Clearly, the important learning about customers takes place largely in interaction with them, underlining the strong role of customer boundary personnel. Finally, the results indicate that the development of customer relationships and the customer base structure is a core management issue. In other words, it is essential to make low-value customers more valuable, to develop worthwhile customer relationships, and in certain situations to give up bad relationships and to acquire new ones. The different operational models (channels, level of service) of customer value

also have a major role in maintaining performance.

9.3 Limitations and implications for future research

This study also has limitations to be taken into account. These limitations relate to the generalizability of the results, the novelty of the measures, and the use of the single-respondent approach.

The research sample consisted of the 493 largest B-to-B business units of companies in Finland, taken from the Bluebook database. Two issues should be noted in any interpretation of the results. First of all, the companies in the sample are very small in international terms, and this should be kept in mind when the results are considered in a global context. Secondly, a test for possible bias in the sample indicated that the responses represent large companies in Finland in all industries quite well. However a slight bias towards larger companies was found. No systematic bias was found in the context of early and late respondents.

This research developed a new CPM measure, and the contextual measures used were also partly new or modified from earlier studies. The empirical results of the study support the reliability and validity of the new measures. The formative CPM measure is based on theory, on a qualitative pilot study, and on expert interviews, all supporting its *content validity*. It further explained 77% of the variance in the reflective measurement perspectives in MIMIC modeling, thereby supporting its *external validity*. Moreover, the results were good as 19 of the 22 indicator weights were significant, thus indicating external validity. The three non-significant items were retained for contextual reasons. The CPM measure also shows *predictive and nomological validity* as it is significantly linked to overall customer performance and customer profitability, and weakly to perceived firm performance. The alternative second-order conceptualization provided similar results, which further supports the results of this research. Finally, the reflective exchange context measures show good reliability and validity. Still, as the CPM and exchange context measures are new they need to be *cross-validated in the future with a fresh set of data*.

The major limitation of the research is the use of the single-respondent approach. This approach was adopted because of the limited resources available: data collection from top management in a B-to-B context is difficult and time-consuming, and in this case it took three months. One of the problems with the single-respondent approach is the danger of common method bias. Statistical tests were carried out and they indicated the absence of this problem, although they cannot provide absolute proof. The objective

ROI figure also turned out to be statically connected to subjective performance measures. However, when considering the validity of the ROI figures it should be noted that they were given by the respondents, which may affect their validity. Another problem with the single-respondent approach is that CPM is a cross-functional and multi-level practice. The respondents were carefully chosen, and they were knowledgeable about their CPM practices. Nevertheless, they represented only a managerial view, which is a further limitation.

The results of the research supported the connection between CPM practices and operational customer performance. In other words, there was a clear link between CPM activities and overall customer performance and profitability. However, the findings concerning the link between CPM and firm performance were ambiguous, and this relationship needs to be tested in future in a *multiple-respondent* research context. The connection with *ROI* should also be tested in a *single-industry* context.

Company-internal antecedent and moderating variables should be tested in future studies. According to the results of the pilot study, and to the existing literature on relationship management, there may be several company-internal moderating effects on CPM performance. In other words, the roles of customer orientation, customer information acquisition and its quality and adequacy, information technology, organizational alignment, inter-departmental relationships among the functions engaged in CPM, and accounting in portfolio management should be examined further.

This study relied on relatively uncommon *formative measurement logic*, and on *PLS modeling*. PLS modeling is a component-based structural equation modeling technique that differs from maximum-likelihood-based methods such as LISREL and AMOS. These two types of technique are different in orientation: the PLS approach is application or *prediction* oriented, whereas the covariance-based approach is theory-testing or *parameter oriented* (Chin 1998). The former was applied in this research in quite an explorative way even though the research model and the hypotheses were strictly based on theory in order to avoid blind empiricism. For example, the measurement model results were interpreted in an unorthodox manner, which provided highly interesting results. This was possible because the indicators in the formative CPM measures were carefully chosen based on the theory, and because the indicator weights in PLS modeling provide information about the relative importance of each indicator. The results of this study indicate that these methodological choices may be especially fruitful in areas of research that are largely unexplored. In other words, PLS modeling and formative measures may provide very broad, explorative information about the issues under study. However, this approach calls for rigorous development of formative measures and a strong role of theory in the interpretation of the

results.

This research opens up new avenues for studying corporate CPM practices. Further empirical research is needed in order to validate the CPM and exchange-context measures with new data, and to study the performance link in more detail. The exchange-context measure was found to be highly relevant in terms of contingency explanations, and could clearly be very useful in other related studies on customer management.

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Appendix 1 Customer portfolio models analyzed

Author	Steps	Dimensions and operationalisation	Managerial implications
Hartley (1976)	1) Sales analysis 2) Market penetration strategies	Sales volume, Customer's industry, Sales trend	Strategies for market penetration: (present geographical, other SIC market)
Smackey (1977)	1) Account analysis 2) Sales forecast and planning of sales resource allocation 3) Monitoring results	Sales volume: history, current, targeted Compare sales volumes, product lines, and sales efforts	Allocate sales force resources to estimated customer potential
Cunningham and Homse (1982)	1) Create a portfolio for analyzing customers	Sales volume Technical interaction and assistance (Customer's importance as a "reference point) (Customer's ability to provide important commercial information)	Help understanding different customers' roles for developing customer structure
Canning (1982)	1) Creating a profit profile 2) Determining the source of profits 3) Assessing the value elements beyond profits: 4) Establish a value ranking 5) Set up a marketing program	Profit profile: Direct operating costs, sales order processing, field service costs Source of profits: Product mix, industry served, volume sold, order frequency/ size, share of Customers business, length of time served, competitiveness of purchase or location Value elements beyond profits: Growth, technological issues, customer as a referential source, share of customer volume	Do dedicated sales programs for customers with similar value and requirements
LaForge and Craven (1982)	1) Classify PCU for selling effort deployment	PCU (planning and control unit) opportunity : Size of account, sales growth rate of account, the intensity of competition / account Sales organization strength: Product distribution / the items stocked, shelf space and trade relations	Adjust sales resources to customers with different potential

Author	Steps	Dimensions and operationalisation	Managerial implications
Fiocca (1982)	1) Analyze all customers in general level 2) Analyze the key accounts separately	The importance of the customer: Volume of purchases, potential sales, prestige of the account, market leadership, overall account desirability Difficulty of managing each account: Product characteristics (<i>novelty and complexity</i>), account's characteristics, (customers needs, buying behavior, competencies, power, and competitiveness) competition for the account (number, strengths and weaknesses of competitors and competitors position vis-à-vis the customer) Customer's business attractiveness: Competition, market, technological, financial and economic, socio-political factors The relative stage of the present buyer/seller relationship: Length of the relationship, volume of purchases, importance of the customer, power, friendship, co-operation in development, managerial & geographical distance The monetary value of purchases for every product The account's market share for selling firm's each product	1) General level: understand customer structure 2) Detailed implications for the key customers: Improve/ hold/ withdraw position with a customer
Dickson (1983)	1) Distributor portfolio analysis 2) Channel dependence matrix	The growth rate of the distributors' sales the manufacturers share of distributors' sales of the product or product group Manufacturer's sales of the product per each distributor Gross profit and direct manufacturing costs Manufacturer's market share Distributor's market share	1) Trading tactics for different customers 2) Explicit plans for developing long-term Channel distribution mix (offensive investment, defensive entrenchment, strategic retreat, abandonment)

Author	Steps	Dimensions and operationalisation	Managerial implications
Campbell and Cunningham (1983)	1) Life cycle classification of customers "A general analysis of customers" 2) Customer competitor analysis by market segments "Introduces competition" 3a) Portfolio analysis of key customers 3b) Portfolio analysis of a single customer	Sales volume Use of strategic resources Age of the relationship Share of customer's purchases Profitability Customer's share in his market Growth rate of customer's demand for the product Volume of supplier's product purchased Competitors' shares of the product Competitive position of the seller Growth rate of customer's market Sales volume of each customer Browth rate of customer's purchases Life cycle classification of customer's different businesses: Tomorrow's, today's special, today's normal, yesterday's business Customer's volume	1) Short term: general help for allocating resources among customers 2) Long term: general help for understanding and Developing customer portfolio structure
Dubinsky and Ingram (1984) Dubinsky (1986)	1) Customer profitability portfolio 2) Make a customer composition	The customer's potential profit contribution: Net sales - (costs of goods sold + direct selling expenses of salesperson) now The present profit contribution of a customer Net sales - (costs of goods sold + direct selling expenses of salesperson) in future	1) Adjust sales resources to customer value and future potential 2) Develop needed customer relationship categories
Shapiro, Rangan, Moriarty and Ross (1987)	1) Customer profitability portfolio 2) Management: five-step action plan	Cost to serve: Presale costs, production costs, distribution costs, presale service costs Net price	1) Adjust marketing strategies for value of different customer groups 2) General help for understanding and developing customer profitability structure

Author	Steps	Dimensions and operationalisation	Managerial implications
Krapfel, Salmond and Spekman (1991)	1a) Relationship type matrix (typing) 1b) Relationship management mode matrix (typing) 2) Combine the relationship type and the management mode (mapping) 3) Management mode matching across the dyad 4) Signaling about relationship	Relationship value: Function of criticality, quantity, replaceability, slack ($RV=f(C, Q, R, S)$) Interest commonality: Actor's economic goals and their perception of partner's economic goals Perceived power position Interest commonality	1) Adjust, match, and signal interaction/ management style to different relationship types 2) Help understanding and developing customer structure
Rangan, Moriarty and Swartz (1992)	1) Segment industrial customers	Price Cost to serve (Power)	1) Adjust pricing and level of service to customer value 2) Help understanding and developing customer profitability structure
Pels (1992)	1) Analyse customers to divide the main and key customers	The possibility of increasing sales volume The customer's capacity to develop the seller's image The know-how which the client can transfer or help to create is the network effect	Tailor marketing teams for key clients

Author	Steps	Dimensions and operationalisation	Managerial implications
Yorke and Droussiotis (1994)	1) Developing a customer portfolio 2a) Analyze important customers in depth - profitability 2b) Analyze important customers in depth - perceived relationship strength 3) Compare an important customer's relationship strength and market share	The strategic importance of the account: Account potential, future capacity expansions, links to export markets, account prestige The difficulty in managing the customer: Competitor entrenchment, payment problems, claims put forward, buying behavior Customer profitability: Direct costs, pseudo-direct costs, indirect costs Perceived strength of relationship: Technical ability, experience, pricing, speed of response, frequency of contact, cooperation, trust + length of relationship, friendship, management distance Customers market share Strength of the relationship	Adjust resource allocation to customer value Plans which relationships should be developed stronger for long-term portfolio balance
Storbacka (1997)	To create an understanding of customer base and its profitability	Relationship revenue Relationship cost Volume Relationship volume Relationship profitability	1) Adjust customer strategies to customer costs / profitability 2) Help understanding and developing customer profitability structure
Turnbull and Zolkiewski (1997)	1) Analyze customers with a three dimensional portfolio 2) Monitor the migration of customer positions	Net price Cost to serve: Presale costs, production costs, distribution costs, presale service costs (Shapiro) Relationship value: Function of criticality, quantity, replaceability, slack ($RV=f(C, Q, R, S)$) (Krapfel)	Adjust customer strategies to customer costs (monitor migration patterns) Help understanding customer portfolio structure

Author	Steps	Dimensions and operationalisation	Managerial implications
Freytag and Mols (2001)	1) Ask five questions from main customers and divide customers to groups with regards of their importance now and in the future. 2) Combine questions with the Turnbull and Zolkiewski's (1997) model (note: relationship value understood differently)	Why the customer is important to the firm? Economy (<i>turnover, earnings, costs, demand</i>), know-how and learning (<i>processes, technologies, employees' know-how</i>), competition (<i>limits and advantages</i>), Other points (<i>reputation, ethics</i>) Major strengths and weaknesses of the customer? How does customer see selling firm and how it behaviors? In what direction are the customers developing? co-operation/ competition? Is the direction in which the customer is heading compatible with seller? Net price Cost to serve Relationship value: E.g. earnings, access to knowledge, access to certain markets, high turnover	1) Prioritization in resource allocation; how to act towards customers 2) Which relationships to develop, maintain, terminate
Zolkiewski and Turnbull (2002; 2003)		Customer profitability Relationship value Strategic importance of the account Customer, supplier and indirect portfolios	1) Adjust relationship management strategies to customer value (such as KAM, attention, sales, contracts, time, etc.) 2) Explicit plans for developing customer portfolio structure: which relationships to develop, maintain, broke, create new.
Ryals (2003)	Analysis for risk adjusted value of the firm's customer portfolio	Returns from customer portfolio Sum of individual customer lifetime values (revenue-costs) Risk from customer portfolio (How well managed, knowledge about customer, risk of being taken over, relationship strength)	Understand and develop customer portfolio profitability structure: try to reduce customer risk, acquire less risky customers

Author	Steps	Dimensions and operationalisation	Managerial implications
Dhar and Glazer (2003)	Determine a optimal combination of customers based on risk and reward	Risk-adjusted lifetime value of a customer Return and volatility of the customer returns	Try to form optimal customer portfolio: maximize risk-adjusted customer life-time value (at the calculated efficient frontier) Allocate funds correctly
Johnson and Selnes (2004)	Maximize the overall value of the customer portfolio CPLV	Determine customer relationship type Calculate CPLV based on customer type profits and costs in different situations	General help for understanding and developing customer structure (theoretical simulation)

Appendix 2 Screening the data: industries of the respondent and non-respondent companies

		Respondent	Non-respondent	Total
SIC	Mining and quarrying	1	1	2
	Manufacture of food products, beverages and tobacco	11	10	21
	Manufacture of textiles and textile products	2	2	4
	Manufacture of wood and wood products	6	3	9
	Manufacture of pulp, paper and paper products; publishing and printing	14	11	25
	Manufacture of coke, refined petroleum products and nuclear fuel	2	0	2
	Manufacture of chemicals, chemical products and man-made fibres	10	7	17
	Manufacture of rubber and plastic products	3	5	8
	Manufacture of other non-metallic mineral products	6	6	12
	Manufacture of basic metals and fabricated metal products	6	8	14
	Manufacture of machinery and equipment n.e.c.	8	16	24
	Manufacture of electrical and optical equipment	13	12	25
	Manufacture of transport equipment	2	4	6
	Manufacturing n.e.c.	3	3	6
	Electricity, gas and water supply	4	13	17
	Construction	12	7	19
	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	46	56	102
	Hotels and restaurants	3	1	4
	Transport, storage and communication	15	20	35
	Financial intermediation	7	8	15
	Real estate, renting and business activities	20	17	37
	Public administration and defence; compulsory social security	0	1	1
	Health and social work	3	0	3
Total		197	211	408

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	20.725(a)	22	.538
Likelihood Ratio	23.431	22	.378
Linear-by-Linear Association	.421	1	.516
N of Valid Cases	408		

a. 20 cells (43.5%) have an expected count of less than 5. The minimum expected count is .48.

Appendix 3 Screening the data: responses of the early and late respondents

		Sum of Squares	df	Mean Square	F	Sig.
Ana_eff	Between Groups	.880	1	.880	.887	.347
	Within Groups	208.201	210	.991		
	Total	209.080	211			
Ana_des	Between Groups	7.462	1	7.462	4.235	.041
	Within Groups	370.009	210	1.762		
	Total	377.471	211			
Resp_des	Between Groups	.747	1	.747	.532	.466
	Within Groups	294.758	210	1.404		
	Total	295.506	211			
Resp_eff	Between Groups	.460	1	.460	.544	.462
	Within Groups	177.735	210	.846		
	Total	178.195	211			
CPM_reflective	Between Groups	.978	1	.978	.897	.345
	Within Groups	228.935	210	1.090		
	Total	229.914	211			
Sum_cb_size	Between Groups	1.408	1	1.408	1.760	.186
	Within Groups	168.048	210	.800		
	Total	169.456	211			
Sum_heterog	Between Groups	.140	1	.140	.070	.792
	Within Groups	419.675	210	1.998		
	Total	419.815	211			
Cust_turnover	Between Groups	.299	1	.299	.217	.642
	Within Groups	290.213	210	1.382		
	Total	290.512	211			
Sum_concent	Between Groups	3.137	1	3.137	1.667	.198
	Within Groups	395.252	210	1.882		
	Total	398.389	211			
Sum_intercon	Between Groups	2.083	1	2.083	1.524	.218
	Within Groups	287.019	210	1.367		
	Total	289.101	211			
Sum_dynam	Between Groups	.459	1	.459	.333	.565
	Within Groups	290.039	210	1.381		
	Total	290.499	211			
Customer_perf	Between Groups	.878	1	.878	1.043	.308
	Within Groups	176.739	210	.842		
	Total	177.617	211			
Customer_profit	Between Groups	1.345	1	1.345	1.423	.234
	Within Groups	198.491	210	.945		
	Total	199.836	211			
Firm_perf	Between Groups	2.682	1	2.682	2.256	.135
	Within Groups	249.639	210	1.189		
	Total	252.321	211			
ROI	Between Groups	2.761	1	2.761	.531	.467
	Within Groups	878.864	169	5.200		
	Total	881.626	170			

Appendix 5 Formative measure formation – multicollinearity diagnostics: tolerance and VIF values

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	2.244	.642		3.496	.001		
analysiseffort1	.275	.088	.290	3.135	.002	.428	2.339
analysiseffort2	.055	.082	.055	.671	.503	.535	1.868
analysiseffort3	-.114	.090	-.110	-1.268	.206	.487	2.053
analysiseffort4	-.046	.101	-.043	-.454	.650	.399	2.504
analysiseffort5	.056	.073	.061	.766	.445	.583	1.715
analysiseffort6	.016	.076	.017	.209	.835	.572	1.747
analysiseffort7	.155	.079	.169	1.963	.051	.494	2.026
analysiseffort8	.059	.081	.057	.729	.467	.590	1.695
analysiseffort9	.095	.091	.088	1.047	.296	.522	1.915
analysiseffort10	-.082	.087	-.080	-.943	.347	.503	1.989
analysisdesign1	-.039	.110	-.041	-.359	.720	.276**	3.620
analysisdesign2	-.042	.103	-.044	-.413	.680	.325	3.079
analysisdesign3	-.082	.091	-.085	-.899	.370	.411	2.432
analysisdesign4	-.027	.094	-.030	-.292	.770	.337	2.964
analysisdesign5	.249	.092	.287	2.687	.008	.320	3.128
analysisdesign6	-.182	.105	-.201	-1.726	.086	.268**	3.732
manageffort1	.013	.078	.013	.174	.862	.612	1.633
manageffort2	-.008	.088	-.008	-.096	.924	.494	2.025
manageffort3	-.064	.093	-.061	-.685	.494	.458	2.181
manageffort4	.092	.110	.086	.837	.404	.343	2.917
manageffort5	.086	.084	.083	1.024	.307	.557	1.794
manageffort6	.199	.116	.148	1.709	.089	.489	2.046
manageffort7	-.106	.087	-.093	-1.226	.222	.630	1.587
manageffort8	-.156	.065	-.174	-2.423	.016	.711	1.407
manageffort9	.004	.091	.004	.047	.962	.596	1.679
managdesign1	-.042	.117	-.038	-.358	.721	.327	3.054
managdesign2	.247	.109	.239	2.274	.024	.331	3.021
managdesign3	-.175	.102	-.167	-1.728	.086	.391	2.560
managdesign4	.017	.105	.018	.163	.871	.308	3.243
managdesign5	.138	.081	.161	1.704	.090	.411	2.434
managdesign6	-.014	.102	-.013	-.134	.894	.385	2.598

** indicates removed items (condition index under 0.300)

Appendix 6 Formative measure formation – two-part process for approaching multicollinearity

		Collinearity Diagnostics [§]																								
Dim ensi Model	1	Eigen value	Condi on Index	Variance Proportions																						
				anal ysis effort ort1	anal ysis effort 2	anal ysis effort 5	anal ysis effort 7	anal ysis effort t9	anal ysis effort 10	anal ysis desi gn2	anal ysis desi gn3	anal ysis desi gn4	anal ysis desi gn5	ma nag effo rt1	ma nag effo rt2	man ageff ort4	man ageff ort5	man ageff ort6	man ageff ort8	man ageff ort9	man ageff sign 1	man ageff desi gn3	man ageff desi gn5	mana gdesi gn6		
1	1	21,558	1,000	,00	,00	,00	,00	,00	,00	,00	,00	,00	,00	,00	,00	,00	,00	,00	,00	,00	,00	,00	,00	,00	,00	
	2	,239	9,503	,00	,00	,00	,00	,01	,01	,04	,02	,01	,07	,01	,00	,00	,00	,00	,02	,01	,00	,01	,01	,01	,00	
	3	,134	12,683	,00	,00	,00	,00	,00	,00	,00	,03	,00	,03	,00	,00	,00	,00	,00	,06	,00	,01	,00	,00	,33	,02	
	4	,121	13,348	,01	,05	,07	,17	,00	,00	,01	,01	,04	,01	,01	,01	,00	,02	,00	,01	,01	,00	,01	,02	,00	,00	
	5	,113	13,835	,00	,01	,06	,08	,00	,00	,00	,00	,06	,06	,00	,01	,00	,01	,00	,13	,00	,00	,05	,02	,03	,00	
	6	,099	14,739	,00	,01	,19	,50	,00	,00	,01	,01	,01	,00	,01	,00	,00	,00	,00	,01	,00	,00	,02	,00	,00	,00	
	7	,089	15,580	,00	,00	,00	,00	,01	,02	,01	,00	,01	,00	,05	,03	,01	,01	,00	,38	,01	,02	,02	,01	,03	,02	
	8	,076	16,824	,00	,12	,01	,00	,07	,01	,04	,12	,01	,05	,03	,01	,01	,02	,00	,03	,01	,01	,02	,03	,02	,02	
	9	,067	17,941	,00	,00	,00	,00	,02	,00	,01	,04	,01	,04	,01	,32	,00	,00	,18	,00	,00	,02	,01	,03	,01	,03	
	10	,065	18,246	,00	,00	,03	,01	,11	,01	,19	,00	,00	,01	,04	,03	,00	,01	,19	,00	,00	,00	,10	,00	,04	,00	
	11	,057	19,445	,00	,03	,04	,01	,07	,02	,03	,01	,21	,01	,02	,09	,01	,05	,01	,02	,00	,09	,03	,00	,09	,01	
	12	,049	20,879	,01	,03	,03	,00	,03	,06	,09	,02	,00	,21	,01	,29	,00	,00	,00	,10	,06	,00	,00	,00	,06	,03	
	13	,043	22,297	,02	,19	,07	,05	,14	,00	,00	,04	,02	,03	,01	,04	,01	,03	,17	,06	,10	,05	,00	,00	,00	,01	
	14	,041	23,037	,00	,02	,00	,00	,08	,05	,01	,18	,27	,25	,32	,03	,03	,00	,01	,01	,01	,00	,00	,02	,02	,01	
	15	,040	23,293	,03	,10	,07	,05	,14	,11	,10	,08	,00	,10	,00	,00	,01	,03	,19	,00	,00	,08	,01	,00	,02	,07	
	16	,035	24,904	,00	,08	,13	,01	,12	,12	,06	,02	,05	,04	,01	,01	,04	,03	,00	,04	,00	,02	,02	,01	,11	,40	
	17	,032	25,902	,00	,02	,01	,00	,11	,05	,15	,16	,07	,10	,03	,17	,03	,01	,00	,00	,02	,03	,02	,10	,05	,16	
	18	,031	26,474	,05	,01	,00	,00	,15	,15	,04	,11	,01	,02	,02	,07	,18	,03	,00	,01	,01	,00	,09	,19	,05	,11	
	19	,028	27,651	,02	,19	,09	,00	,37	,05	,00	,03	,08	,00	,32	,16	,01	,04	,00	,00	,01	,02	,01	,05	,01	,06	
	20	,025	29,275	,05	,02	,02	,02	,01	,00	,03	,08	,00	,13	,01	,00	,13	,14	,00	,01	,02	,52	,10	,12	,05	,01	
	21	,023	30,482	,04	,07	,05	,02	,02	,00	,02	,00	,03	,00	,01	,01	,03	,28	,00	,00	,07	,00	,48	,08	,23	,06	
	22	,020	32,482	,22	,00	,02	,01	,03	,00	,01	,04	,02	,01	,00	,00	,09	,01	,17	,00	,21	,20	,34	,15	,00	,02	
	23	,015	38,299	,54	,04	,07	,03	,01	,00	,00	,01	,02	,01	,00	,00	,08	,06	,72	,01	,00	,00	,01	,07	,00	,00	

a. Dependent Variable: infoaq1

Appendix 7 Purified CPM measure – measurement (outer) model results

Outer Weights for formative measures (Mean, STDEV, T-Values)

	Original Sample	Sample Mean	Standard Deviation	Standard Error	T Statistics
analysisdesign2 -> AD	0.241287	0.241426	0.097551	0.097551	2.473443
analysisdesign3 -> AD	0.273862	0.271864	0.07859	0.07859	3.484701
analysisdesign4 -> AD	0.381458	0.387391	0.092669	0.092669	4.116345
analysisdesign5 -> AD	0.317487	0.30725	0.087125	0.087125	3.644054
analysiseffort1 -> AE	0.165479	0.165173	0.096311	0.096311	1.71818
analysiseffort2 -> AE	0.117361	0.119287	0.094003	0.094003	1.248482
analysiseffort5 -> AE	0.229651	0.224798	0.092003	0.092003	2.496124
analysiseffort7 -> AE	0.413184	0.401938	0.099516	0.099516	4.151935
analysiseffort9 -> AE	0.192054	0.190243	0.105715	0.105715	1.81671
analysiseffort10 -> AE	0.300558	0.296502	0.096285	0.096285	3.121544
responsdesign1 -> RD	0.161415	0.163045	0.088959	0.088959	1.814489
responsdesign2 -> RD	0.317842	0.319164	0.09889	0.09889	3.214096
responsdesign3 -> RD	0.304312	0.298265	0.098554	0.098554	3.087771
responsdesign5 -> RD	0.187388	0.186104	0.095434	0.095434	1.963536
responsdesign6 -> RD	0.309047	0.303407	0.080895	0.080895	3.820338
responseffort1 -> RE	0.087318	0.094227	0.105132	0.105132	0.830555
responseffort2 -> RE	0.423235	0.413241	0.091614	0.091614	4.619744
responseffort4 -> RE	0.033413	0.036269	0.091118	0.091118	0.366705
responseffort5 -> RE	0.339979	0.333918	0.097392	0.097392	3.49083
responseffort6 -> RE	0.167615	0.162721	0.099958	0.099958	1.676852
responseffort8 -> RE	0.184543	0.182098	0.067227	0.067227	2.745077
responseffort9 -> RE	0.227016	0.219863	0.075396	0.075396	3.010982

Outer Loadings for reflective measures (Mean, STDEV, T-Values)

Ref1 <- Reflective_CPM	0.688895	0.684431	0.066836	0.066836	10.30726
Ref2 <- Reflective_CPM	0.673643	0.672416	0.062828	0.062828	10.72199
Ref3 <- Reflective_CPM	0.723115	0.720602	0.058913	0.058913	12.2742
Ref4 <- Reflective_CPM	0.733485	0.734545	0.048463	0.048463	15.13486

Reflective CPM measure:

Composite Reliability = 0.798, Cronbach's Alpha = 0.662, AVE = 0.497
(t-values >1.64= 10%; >1.96= 5% >2.54= 1% significance)

Appendix 8 GoF value, AVE and correlations of the purified CPM construct

Overview

	AVE	Composite Reliability	R Square	Cronbachs Alpha	Communality	Redundancy
AD					0.677325	
AE					0.465845	
RD					0.600314	
RE					0.430845	
Refl_CPM	0.497316	0.798084	0.776749	0.662411	0.497316	0.213069

Average: 0.777 0.534

GoF: 0.644

Latent Variable Correlations and squared AVE ()

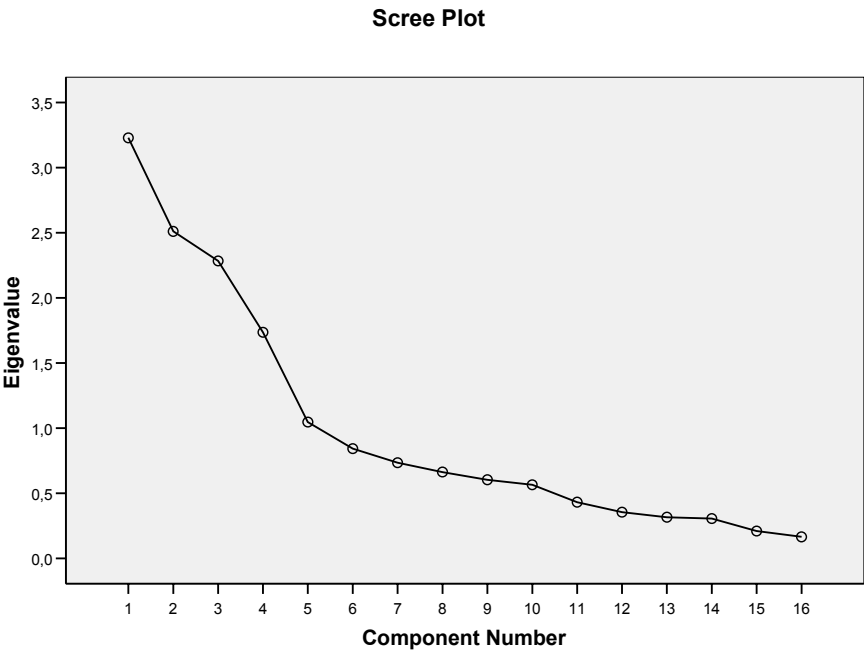
	AD	AE	RD	RE	Refl_CPM
AD	(0.823)				
AE	0.569174	(0.683)			
RD	0.668886	0.563904	(0.775)		
RE	0.480724	0.646745	0.571009	(0.656)	
Refl_CPM	0.768915	0.673049	0.774908	0.675001	(0.705)

$$\text{GoF: } \sqrt{(0.777 * 0.534)} = 0.644$$

The shared numbers in parenthesis in the diagonal row are the squared roots of the average variance extracted (AVE), which is the square root of the variance shared between the construct and its measure. When the AVE exceeds 0.5, the interpretation is that the variance shared between the construct and its measures is greater than an unexplained error. The off-diagonal values are correlations between constructs. To support discriminant validity the diagonal value should be larger than any other corresponding row or column.

However, AVE is based on the idea of internal consistency and is therefore not suited to formative measures. In fact, SmartPLS calculates AVE figures only for reflective measures. In the above calculations the identical communality figures are used for the AVE for the formative measures. In sum, bad AVE-based figures do not pose any kind of validity problem for formative measures. Still, the above figures can be used to examine the relationships between the constructs.

Appendix 9 Reflective measure development – scree plot



Appendix 10 Common Method Variance – Harman’s one-factor test

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.701	19.798	19.798	9.701	19.798	19.798
2	5.053	10.313	30.111	5.053	10.313	30.111
3	2.844	5.804	35.915	2.844	5.804	35.915
4	2.567	5.238	41.153	2.567	5.238	41.153
5	2.309	4.713	45.866	2.309	4.713	45.866
6	2.172	4.433	50.298	2.172	4.433	50.298
7	1.736	3.544	53.842	1.736	3.544	53.842
8	1.466	2.992	56.834	1.466	2.992	56.834
9	1.348	2.751	59.586	1.348	2.751	59.586
10	1.304	2.661	62.246	1.304	2.661	62.246
11	1.167	2.382	64.628	1.167	2.382	64.628
12	1.097	2.239	66.867	1.097	2.239	66.867
13	1.043	2.129	68.997	1.043	2.129	68.997
14	1.011	2.063	71.059	1.011	2.063	71.059
15	.885	1.806	72.865			
16	.827	1.688	74.553			
17	.813	1.660	76.213			
18	.763	1.557	77.770			
19	.742	1.515	79.285			
20	.681	1.389	80.674			
21	.645	1.316	81.990			
22	.600	1.224	83.214			
23	.577	1.178	84.393			
24	.552	1.127	85.519			
25	.536	1.094	86.614			
26	.512	1.045	87.659			
27	.481	.981	88.640			
28	.455	.930	89.570			
29	.427	.871	90.441			
30	.401	.818	91.259			
31	.380	.775	92.034			
32	.360	.735	92.770			
33	.357	.729	93.498			
34	.340	.693	94.192			
35	.296	.605	94.797			
36	.291	.594	95.391			
37	.269	.549	95.940			
38	.253	.517	96.457			
39	.242	.494	96.951			
40	.228	.465	97.416			
41	.218	.445	97.861			
42	.197	.402	98.263			
43	.182	.372	98.636			
44	.175	.356	98.992			
45	.163	.332	99.324			
46	.130	.265	99.589			
47	.113	.230	99.818			
48	.079	.160	99.979			
49	.011	.021	100.000			

Extraction Method: Principal Component Analysis.

Appendix 11 Correlations of the measures of the exchange-context dimension

		Sum cbsize	Customer turnover	Cum intercon	Sum dynam	Sum_ heteroge n	Relations hip index	Concentr index
Sum cb_size	Pearson	1	-.158(*)	.056	.024	.200(**)	.228(**)	.521(**)
	Correlation							
	Sig. (2-tailed)		.021	.419	.723	.003	.001	.000
Cust. turnover	N	212	212	212	212	212	212	212
	Pearson	-.158(*)	1	.048	.188(**)	-.013	-.189(**)	-.158(*)
	Correlation							
Sum intercon	Sig. (2-tailed)	.021		.485	.006	.848	.006	.022
	N	212	212	212	212	212	212	212
	Pearson	.056	.048	1	.178(**)	-.055	-.099	.030
Sum dynam	Correlation							
	Sig. (2-tailed)	.419	.485		.009	.426	.153	.669
	N	212	212	212	212	212	212	212
Sum Heterog	Pearson	.024	.188(**)	.178(**)	1	.027	.087	.030
	Correlation							
	Sig. (2-tailed)	.723	.006	.009		.701	.205	.661
Relat. index	N	212	212	212	212	212	212	212
	Pearson	.200(**)	-.013	-.055	.027	1	.154(*)	.267(**)
	Correlation							
Concentr index	Sig. (2-tailed)	.003	.848	.426	.701		.025	.000
	N	212	212	212	212	212	212	212
	Pearson	.228(**)	-.189(**)	-.099	.087	.154(*)	1	.354(**)
Concentr index	Correlation							
	Sig. (2-tailed)	.001	.006	.153	.205	.025		.000
	N	212	212	212	212	212	212	212
Concentr index	Pearson	.521(**)	-.158(*)	.030	.030	.267(**)	.354(**)	1
	Correlation							
	Sig. (2-tailed)	.000	.022	.669	.661	.000	.000	
Concentr index	N	212	212	212	212	212	212	212

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Appendix 12 Discriminant analysis – the exchange context and its dimensions

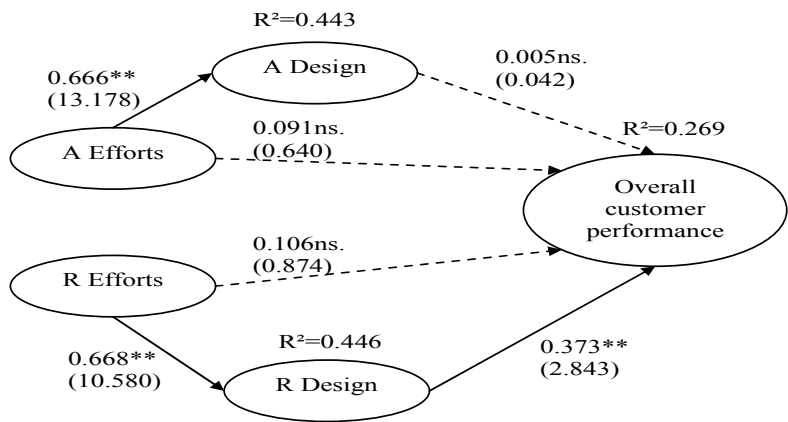
Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.305	246.505	5	.000

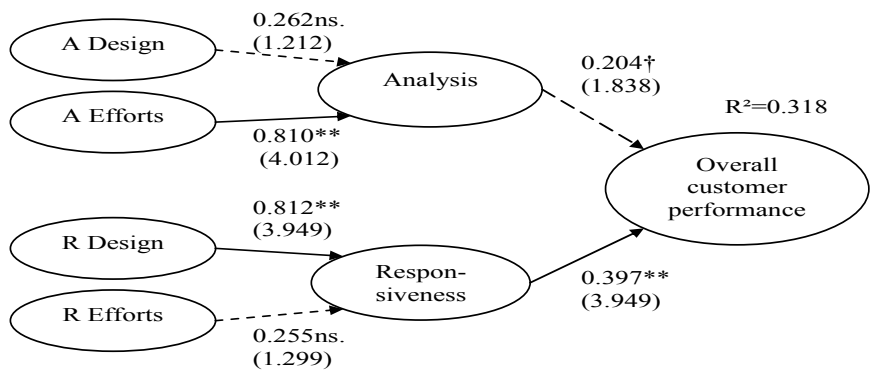
Standardized Canonical Discriminant Function Coefficients

	Function 1
sum_cbsize	.827
customer_turnover	-.142
sum_heterogen	.217
relationship_index	.081
concentration_index	.425

Appendix 13 Model 1: testing mediation and the alternative model



The mediator model with all the constructs included



An alternative second-order model, overall customer performance in a market-like exchange context

Appendix 14 The GoF value, AVE and correlations of Model 1

Overview

	AVE	Composite Reliability	R Square	Cronbachs Alpha	Communality	Redundancy
AE					0.370242	
RD					0.523109	
RE			0.446469		0.441808	0.199678
cust_perf	0.79407	0.885039	0.306811	0.747118	0.79407	0.147948

Average: 0.377 0.532

GoF: 0.448

Latent Variable Correlations and squared AVE ()

	AE	RD	RE	cust_perf
AE	(0.608)			
RD	0.584	(0.723)		
RE	0.557	0.668	(0.665)	
cust_perf	0.482	0.501	0.413	(0.891)

GoF: $\sqrt{(0.377 * 0.532)} = 0.448$

The shared numbers in parenthesis in the diagonal row are the squared roots of the average variance extracted (AVE), which is the square root of the variance shared between the construct and its measure. When the AVE exceeds 0.5, the interpretation is that the variance shared between the construct and its measures is greater than an unexplained error. The off-diagonal values are correlations between constructs. To support discriminant validity the diagonal value should be larger than any other corresponding row or column.

However, AVE is based on the idea of internal consistency and is therefore not suited to formative measures. In fact, SmartPLS calculates AVE figures only for reflective measures. In the above calculations the identical communality figures are used for the AVE for the formative measures. In sum, bad AVE-based figures do not pose any kind of validity problem for formative measures. Still, the above figures can be used to examine the relationships between the constructs.

Appendix 15 Measurement model 1

Outer Weights for formative measures (Mean, STDEV, T-Values)

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (O/STERR)
analysiseffort1 -> AE	0.160663	0.145635	0.213681	0.213681	0.751884
analysiseffort2 -> AE	0.381797	0.363822	0.182648	0.182648	2.090347
analysiseffort5 -> AE	0.436484	0.406562	0.181422	0.181422	2.405903
analysiseffort7 -> AE	-0.401944	-0.363291	0.192505	0.192505	2.087961
analysiseffort9 -> AE	0.330119	0.304852	0.21234	0.21234	1.554671
analysiseffort10 -> AE	0.258481	0.237294	0.181313	0.181313	1.425601
responsesign1 -> RD	0.531414	0.5261	0.169193	0.169193	3.140883
responsesign2 -> RD	0.274719	0.264844	0.162122	0.162122	1.694518
responsesign3 -> RD	-0.201621	-0.189485	0.142868	0.142868	1.411239
responsesign5 -> RD	0.312267	0.323465	0.179218	0.179218	1.742385
responsesign6 -> RD	0.214836	0.175183	0.145938	0.145938	1.472112
responseffort1 -> RE	0.310333	0.327536	0.14202	0.14202	2.185145
responseffort2 -> RE	0.307486	0.285428	0.18025	0.18025	1.705884
responseffort4 -> RE	0.359213	0.314753	0.201785	0.201785	1.780178
responseffort5 -> RE	-0.038169	-0.018437	0.162219	0.162219	0.235294
responseffort6 -> RE	0.060559	0.070953	0.17193	0.17193	0.352229
responseffort8 -> RE	0.099791	0.08495	0.141674	0.141674	0.704371
responseffort9 -> RE	0.30279	0.273713	0.165113	0.165113	1.833839

Outer Loadings for reflective measures (Mean, STDEV, T-Values)

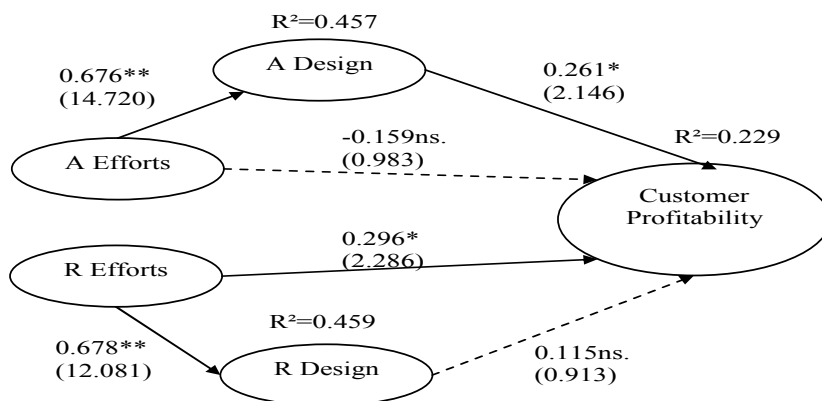
custperf1 <- cust_perf	0.927536	0.923146	0.01942	0.01942	47.761421
custperf2 <- cust_perf	0.853122	0.854705	0.044036	0.044036	19.373102

Overall customer performance measure:

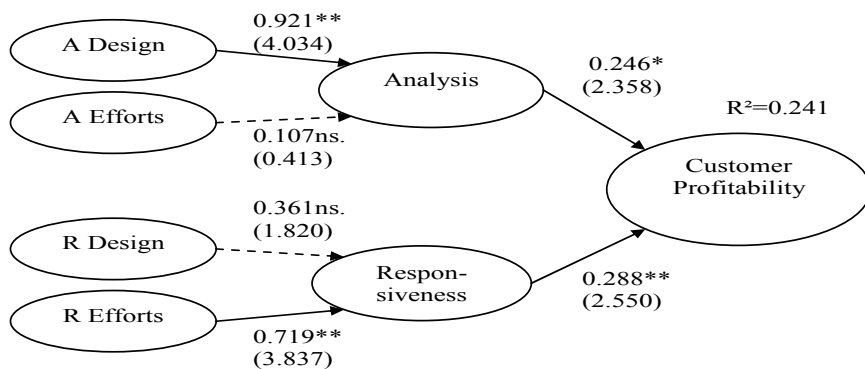
Composite Reliability = 0.885, Cronbach's Alpha = 0.747, AVE = 0.794

(t-values >1.64= 10%; >1.96= 5% >2.54= 1% significance)

Appendix 16 Model 2: testing mediation and the alternative model



The mediator model with all the constructs included



The alternative model, customer profitability in a market-like exchange context

Appendix 17 GoF value, AVE and correlations of Model 2

Overview

	AVE	Composite Reliability	R Square	Cronbachs Alpha	Communality	Redundancy
AD			0.456598		0.59837	0.276702
AE					0.465872	
RE					0.383925	
cust_prof	0.786186	0.880276	0.237776	0.728662	0.786186	0.12106

Average: 0.347 0.559

GoF: 0.440

Latent Variable Correlations and squared AVE ()

	AD	AE	RE	cust_prof
AD	(0.774)			
AE	0.675721	(0.683)		
RE	0.554793	0.595525	(0.620)	
cust_prof	0.41	0.297292	0.439483	(0.887)

$$\text{GoF: } \sqrt{(0.347 * 0.559)} = 0.440$$

The shared numbers in parenthesis in the diagonal row are the squared roots of the average variance extracted (AVE), which is the square root of the variance shared between the construct and its measure. When the AVE exceeds 0.5, the interpretation is that the variance shared between the construct and its measures is greater than an unexplained error. The off-diagonal values are correlations between constructs. To support discriminant validity the diagonal value should be larger than any other corresponding row or column.

However, AVE is based on the idea of internal consistency and is therefore not suited to formative measures. In fact, SmartPLS calculates AVE figures only for reflective measures. In the above calculations the identical communality figures are used for the AVE for the formative measures. In sum, bad AVE-based figures do not pose any kind of validity problem for formative measures. Still, the above figures can be used to examine the relationships between the constructs.

Appendix 18 Measurement model 2

Outer Weights for formative measures (Mean, STDEV, T-Values)

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (O/STERR)
analysisdesign2 -> AD	0.528741	0.522032	0.161772	0.161772	3.268428
analysisdesign3 -> AD	0.093165	0.088643	0.126017	0.126017	0.739306
analysisdesign4 -> AD	0.585375	0.578749	0.136348	0.136348	4.293256
analysisdesign5 -> AD	-0.13408	-0.14219	0.145868	0.145868	0.919176
analysiseffort1 -> AE	0.321072	0.300689	0.162299	0.162299	1.978273
analysiseffort2 -> AE	0.213924	0.221385	0.151524	0.151524	1.411818
analysiseffort5 -> AE	0.236404	0.220354	0.130617	0.130617	1.809908
analysiseffort7 -> AE	0.155839	0.145101	0.157323	0.157323	0.990571
analysiseffort9 -> AE	-0.00873	-0.00886	0.135281	0.135281	0.06455
analysiseffort10 -> AE	0.468536	0.45337	0.147971	0.147971	3.166413
responseffort1 -> RE	0.148957	0.139607	0.18486	0.18486	0.805781
responseffort2 -> RE	0.456086	0.410065	0.245992	0.245992	1.854069
responseffort4 -> RE	0.449673	0.404867	0.216328	0.216328	2.078666
responseffort5 -> RE	-0.15232	-0.13423	0.213825	0.213825	0.712357
responseffort6 -> RE	0.149296	0.135514	0.242546	0.242546	0.615537
responseffort8 -> RE	-0.31294	-0.30243	0.196986	0.196986	1.58862
responseffort9 -> RE	0.299008	0.264589	0.213766	0.213766	1.398767

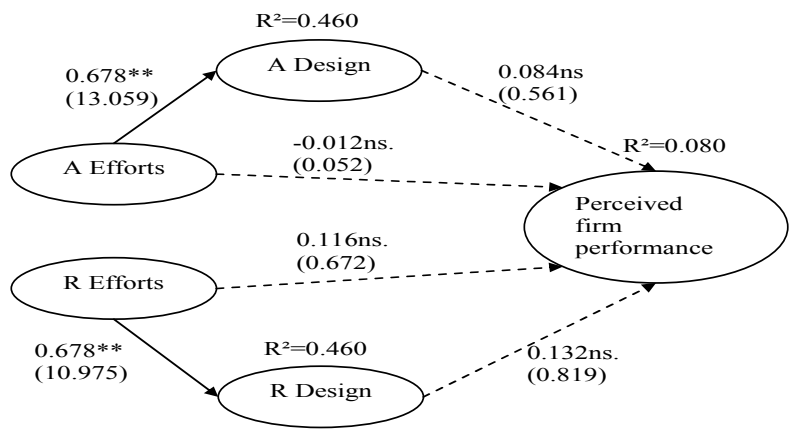
Outer Loadings for reflective measures (Mean, STDEV, T-Values)

custprofitab1 <- cust_prof	0.874589	0.871524	0.038935	0.038935	22.46269
custprofitab2 <- cust_prof	0.898591	0.899188	0.026493	0.026493	33.91771

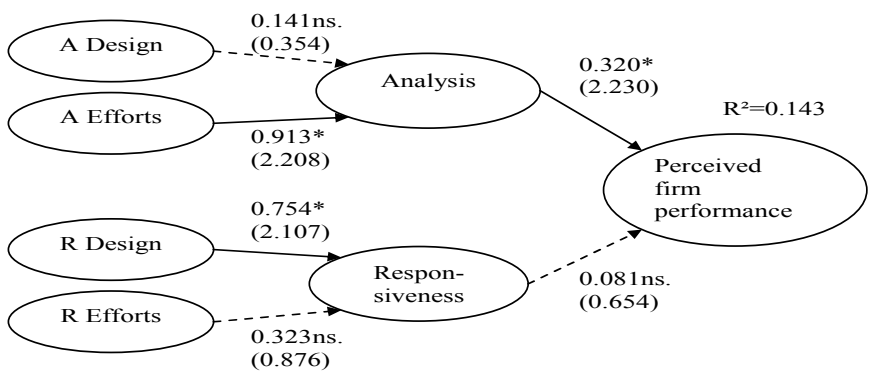
Customer-profitability measure:

Composite Reliability = 0.880, Cronbach's Alpha = 0.729, AVE = 0.786
(t-values >1.64= 10%; >1.96=5% >2.54= 1% significance)

Appendix 19 Model 3: testing mediation and the alternative model



The mediator model with all the constructs included



The alternative model, firm performance in a market-like exchange context

Appendix 20 GoF value, AVE and correlations of Model 3

Overview

	AVE	Composite Reliability	R Square	Cronbachs Alpha	Communality	Redundancy
AE					0.237918	
RE					0.276774	
firm_perf	0.807774	0.893661	0.183104	0.762288	0.807774	0.115503

Average: 0.183 0.441

GoF: 0.284

Latent Variable Correlations and squared AVE ()

	AE	RE	firm_perf
AE	(0.488)		
RE	0.230706	(0.526)	
firm_perf	0.382148	0.275497	(0.899)

GoF: $\sqrt{(0.183 * 0.441)} = 0.284$

The shared numbers in parenthesis in the diagonal row are the squared roots of the average variance extracted (AVE), which is the square root of the variance shared between the construct and its measure. When the AVE exceeds 0.5, the interpretation is that the variance shared between the construct and its measures is greater than an unexplained error. The off-diagonal values are correlations between constructs. To support discriminant validity the diagonal value should be larger than any other corresponding row or column.

However, AVE is based on the idea of internal consistency and is therefore not suited to formative measures. In fact, SmartPLS calculates AVE figures only for reflective measures. In the above calculations the identical communality figures are used for the AVE for the formative measures. In sum, bad AVE-based figures do not pose any kind of validity problem for formative measures. Still, the above figures can be used to examine the relationships between the constructs.

Appendix 21 Measurement model 3

Outer Weights for formative measures (Mean, STDEV, T-Values)

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (O/STERR)
analyseffort1 -> AE	0.072352	0.068593	0.267264	0.267264	0.270714
analyseffort2 -> AE	0.1685	0.150751	0.249677	0.249677	0.674871
analyseffort5 -> AE	0.763903	0.660233	0.176031	0.176031	4.339586
analyseffort7 -> AE	-0.579759	-0.502878	0.209649	0.209649	2.765381
analyseffort9 -> AE	0.379972	0.360232	0.268155	0.268155	1.416988
analyseffort10 -> AE	-0.009203	0.005247	0.260577	0.260577	0.035317
responseffort1 -> RE	0.604205	0.446746	0.302021	0.302021	2.000541
responseffort2 -> RE	0.5303	0.420987	0.310461	0.310461	1.708104
responseffort4 -> RE	-0.120026	-0.082614	0.389834	0.389834	0.307891
responseffort5 -> RE	-0.077003	-0.04774	0.32889	0.32889	0.234129
responseffort6 -> RE	0.027764	0.020532	0.32598	0.32598	0.085172
responseffort8 -> RE	-0.367456	-0.301848	0.236714	0.236714	1.55232
responseffort9 -> RE	0.313234	0.248526	0.357458	0.357458	0.876283

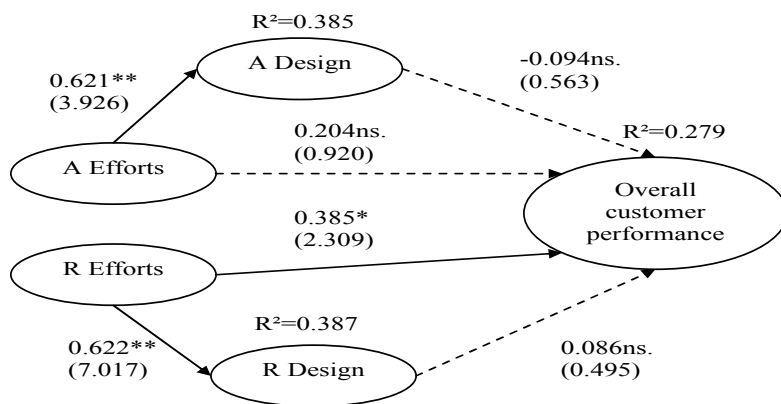
Outer Loadings for reflective measures (Mean, STDEV, T-Values)

gen_perf_comp <- firm_perf	0.891485	0.898379	0.043683	0.043683	20.408067
gen_perf_goal <- firm_perf	0.905982	0.895544	0.038117	0.038117	23.768423

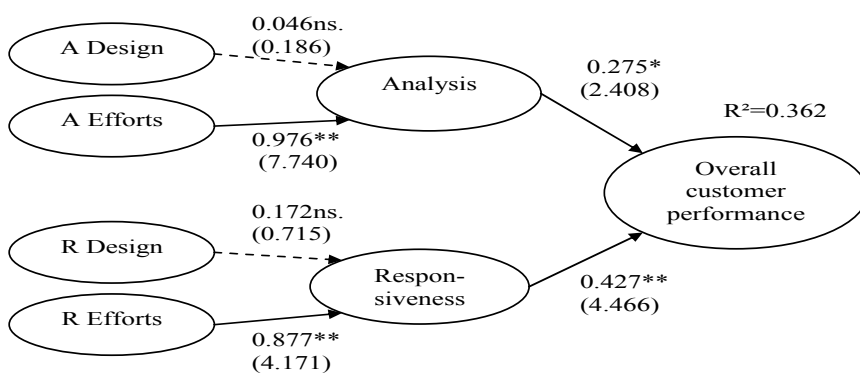
Firm-performance measure:

Composite Reliability = 0.894, Cronbach's Alpha = 0.762, AVE = 0.808
(t-values >1.64= 10%; >1.96= 5% >2.54= 1% significance)

Appendix 22 Model 5: testing mediation and the alternative model



The mediator model with all the constructs included



The alternative model, overall customer performance in a network-like exchange context

Appendix 23 GoF value, AVE and correlations of Model 5

Overview

	AVE	Composite Reliability	R Square	Cronbachs Alpha	Communality	Redundancy
AE					0.301821	
RE					0.338377	
cust_perf	0.747117	0.855056	0.338644	0.665832	0.747117	0.14224

Average:

0.339

0.462

GoF:

0.396

Latent Variable Correlations and squared AVE ()

	AE	RE	cust_perf
AE	(0.549)		
RE	0.387882	(0.582)	
cust_perf	0.459986	0.506964	(0.864)

GoF: $\sqrt{(0.339 * 0.462)} = 0.396$

The shared numbers in parenthesis in the diagonal row are the squared roots of the average variance extracted (AVE), which is the square root of the variance shared between the construct and its measure. When the AVE exceeds 0.5, the interpretation is that the variance shared between the construct and its measures is greater than an unexplained error. The off-diagonal values are correlations between constructs. To support discriminant validity the diagonal value should be larger than any other corresponding row or column.

However, AVE is based on the idea of internal consistency and is therefore not suited to formative measures. In fact, SmartPLS calculates AVE figures only for reflective measures. In the above calculations the identical communality figures are used for the AVE for the formative measures. In sum, bad AVE-based figures do not pose any kind of validity problem for formative measures. Still, the above figures can be used to examine the relationships between the constructs.

Appendix 24 Measurement model 5

Outer Weights for formative measures (Mean, STDEV, T-Values)

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (O/STERR)
analysiseffort1 -> AE	0.322286	0.295943	0.256271	0.256271	1.257599
analysiseffort2 -> AE	0.471661	0.403512	0.217229	0.217229	2.171264
analysiseffort5 -> AE	-0.326188	-0.288083	0.221716	0.221716	1.471201
analysiseffort7 -> AE	0.161127	0.149886	0.246624	0.246624	0.65333
analysiseffort9 -> AE	0.710832	0.645174	0.249517	0.249517	2.848831
analysiseffort10 -> AE	-0.334152	-0.309602	0.275261	0.275261	1.213945
responseffort1 -> RE	-0.19393	-0.158282	0.24147	0.24147	0.803122
responseffort2 -> RE	0.712133	0.637409	0.207901	0.207901	3.42535
responseffort4 -> RE	-0.093916	-0.073858	0.208108	0.208108	0.451286
responseffort5 -> RE	0.342467	0.31871	0.180149	0.180149	1.901016
responseffort6 -> RE	0.245869	0.209905	0.247684	0.247684	0.992671
responseffort8 -> RE	0.233676	0.228384	0.188984	0.188984	1.23649
responseffort9 -> RE	0.07287	0.043097	0.242979	0.242979	0.299901

Outer Loadings for reflective measures (Mean, STDEV, T-Values)

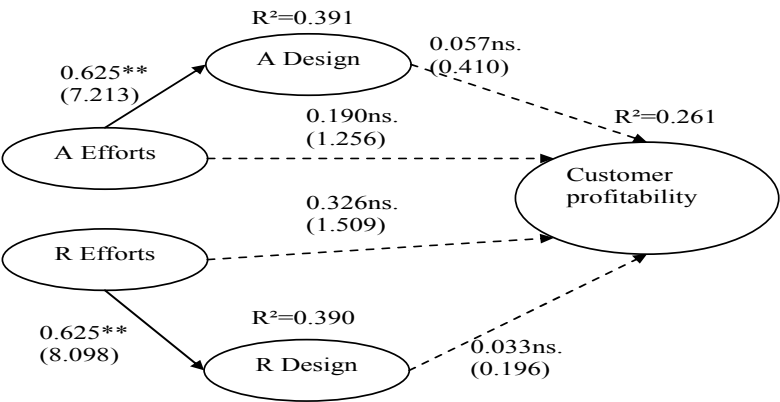
Custperf1 <- cust_perf	0.898468	0.889244	0.037015	0.037015	24.273221
Custperf2 <- cust_perf	0.828848	0.833943	0.070075	0.070075	11.827948

Overall-customer-performance measure:

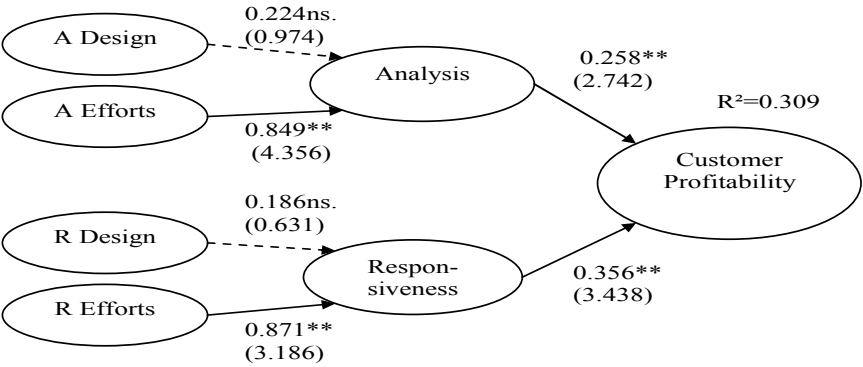
Composite Reliability = 0.855, Cronbach's Alpha = 0.666, AVE = 0.747

(t-values >1.64= 10%; >1.96= 5% >2.54= 1% significance)

Appendix 25 Model 6: testing mediation and the alternative model



The mediator model with all the constructs included



The alternative model, customer profitability in a network-like exchange context

Appendix 26 GoF value, AVE and correlations of Model 6

Overview

	AVE	Composite Reliability	R Square	Cronbachs Alpha	Communality	Redundancy
AE					0.414829	
RE					0.349587	
cust_prof	0.808556	0.894098	0.294527	0.76524	0.808557	0.14367

Average:

0.295

0.524

GoF:

0.393

Latent Variable Correlations

	AE	RE	cust_prof
AE	(0.644)		
RE	0.529309	(0.591)	
cust_prof	0.459718	0.488037	(0.899)

$$\text{GoF: } \sqrt{(0.294 * 0.524)} = 0.393$$

The shared numbers in parenthesis in the diagonal row are the squared roots of the average variance extracted (AVE), which is the square root of the variance shared between the construct and its measure. When the AVE exceeds 0.5, the interpretation is that the variance shared between the construct and its measures is greater than an unexplained error. The off-diagonal values are correlations between constructs. To support discriminant validity the diagonal value should be larger than any other corresponding row or column.

However, AVE is based on the idea of internal consistency and is therefore not suited to formative measures. In fact, SmartPLS calculates AVE figures only for reflective measures. In the above calculations the identical communality figures are used for the AVE for the formative measures. In sum, bad AVE-based figures do not pose any kind of validity problem for formative measures. Still, the above figures can be used to examine the relationships between the constructs.

Appendix 27 Measurement model 6

Outer Weights for formative measures (Mean, STDEV, T-Values)

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (O/STERR)
analyseffort1 -> AE	0.299693	0.269354	0.255546	0.255546	1.172757
analyseffort2 -> AE	0.135795	0.145412	0.264048	0.264048	0.514282
analyseffort5 -> AE	-0.06378	-0.06148	0.22505	0.22505	0.283407
analyseffort7 -> AE	0.074274	0.053889	0.266129	0.266129	0.279091
analyseffort9 -> AE	0.618472	0.586699	0.25003	0.25003	2.473592
analyseffort10 -> AE	0.213203	0.158184	0.24376	0.24376	0.874645
responseffort1 -> RE	-0.13604	-0.10473	0.329497	0.329497	0.412861
responseffort2 -> RE	0.643976	0.574285	0.190681	0.190681	3.377235
responseffort4 -> RE	-0.15307	-0.14424	0.220441	0.220441	0.694393
responseffort5 -> RE	0.354672	0.326953	0.197254	0.197254	1.798047
responseffort6 -> RE	0.190261	0.176944	0.24271	0.24271	0.783904
responseffort8 -> RE	0.279856	0.24032	0.181861	0.181861	1.538849
responseffort9 -> RE	0.209682	0.174037	0.245746	0.245746	0.853247

Outer Loadings for reflective measures (Mean, STDEV, T-Values)

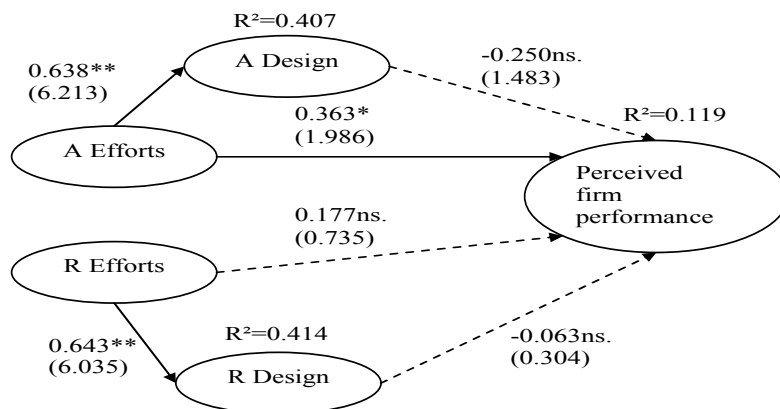
custprofitab1 <- cust_prof	0.919076	0.911117	0.029396	0.029396	31.26539
custprofitab2 <- cust_prof	0.878869	0.883096	0.034729	0.034729	25.3065

Customer-profitability measure:

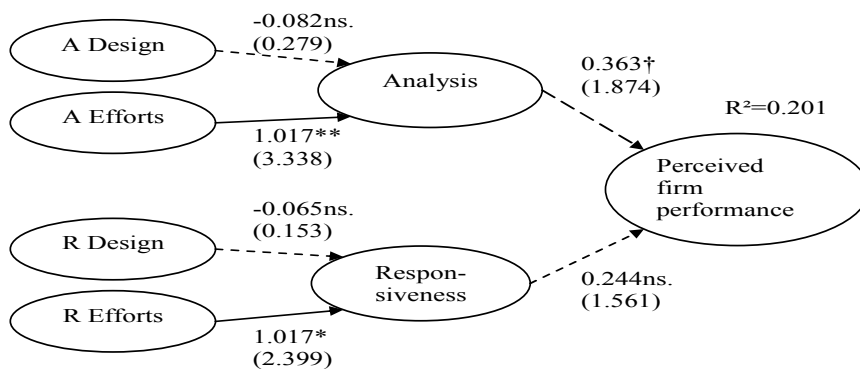
Composite Reliability = 0.894, Cronbach's Alpha = 0.765, AVE = 0.809

(t-values >1.64= 10%; >1.96= 5% >2.54= 1% significance)

Appendix 28 Model 7: testing mediation and the alternative model



The mediator model with all the constructs included



The alternative model, firm performance in a network-like exchange context

Appendix 29 GoF value, AVE and correlations of Model 7

Overview

	AVE	Composite Reliability	R Square	Cronbachs Alpha	Communality	Redundancy
AE					0.247449	
RE					0.202768	
firm_perf	0.852393	0.92031	0.186016	0.827289	0.852393	0.118799

Average: 0.186 0.434

GoF: 0.284

Latent Variable Correlations

	AE	RE	firm_perf
AE	(0.497)		
RE	0.17112	(0.450)	
firm_perf	0.373781	0.275972	(0.923)

GoF: $\sqrt{(0.186 * 0.434)} = 0.284$

The shared numbers in parenthesis in the diagonal row are the squared roots of the average variance extracted (AVE), which is the square root of the variance shared between the construct and its measure. When the AVE exceeds 0.5, the interpretation is that the variance shared between the construct and its measures is greater than an unexplained error. The off-diagonal values are correlations between constructs. To support discriminant validity the diagonal value should be larger than any other corresponding row or column.

However, AVE is based on the idea of internal consistency and is therefore not suited to formative measures. In fact, SmartPLS calculates AVE figures only for reflective measures. In the above calculations the identical communality figures are used for the AVE for the formative measures. In sum, bad AVE-based figures do not pose any kind of validity problem for formative measures. Still, the above figures can be used to examine the relationships between the constructs.

Appendix 30 Measurement model 7

Outer Weights for formative measures (Mean, STDEV, T-Values)

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (O/STERR)
analysiseffort1 -> AE	-0.077086	-0.085877	0.359474	0.359474	0.214442
analysiseffort2 -> AE	0.515258	0.434088	0.291269	0.291269	1.769011
analysiseffort5 -> AE	-0.298815	-0.231104	0.297208	0.297208	1.005408
analysiseffort7 -> AE	0.603953	0.548537	0.280794	0.280794	2.150877
analysiseffort9 -> AE	0.599892	0.496053	0.300736	0.300736	1.994748
analysiseffort10 -> AE	-0.479951	-0.421958	0.31874	0.31874	1.505779
responseffort1 -> RE	-0.178067	-0.091259	0.498237	0.498237	0.357395
responseffort2 -> RE	1.038874	0.709905	0.374071	0.374071	2.777207
responseffort4 -> RE	-0.253095	-0.140378	0.333058	0.333058	0.759912
responseffort5 -> RE	0.207219	0.150079	0.321285	0.321285	0.64497
responseffort6 -> RE	-0.188785	-0.133653	0.334862	0.334862	0.563768
responseffort8 -> RE	0.316178	0.244525	0.292429	0.292429	1.081211
responseffort9 -> RE	0.021495	-0.021158	0.384456	0.384456	0.05591

Outer Loadings for reflective measures (Mean, STDEV, T-Values)

gen_perf_comp <- firm_perf	0.914892	0.906715	0.065692	0.065692	13.926996
gen_perf_goal <- firm_perf	0.931536	0.926078	0.029572	0.029572	31.500765

Firm-performance measure:

Composite Reliability = 0.920, Cronbach's Alpha = 0.827, AVE = 0.852

(t-values >1.64= 10%; >1.96= 5% >2.54= 1% significance)

Appendix 31 Questionnaire

(* = removed item)

The following statements deal with the strategic management of the customer base and customer relationships. Please indicate to what extent you agree or disagree with the statements in terms of the practices of your business unit (company)? 1- strongly disagree, 7- strongly agree

Analysis efforts (AE):

- AE1 We analyze the value of all customer relationships in our customer base
- AE2 We analyze the costs of all customer relationships in our customer base
- AE3 *We evaluate the expected value of our customer relationships (*)*
- AE4 *In our customer base we look for customers with high future value potential (*)*
- AE5 In our customer base we look for diverse customer groups that represent different value for our company
- AE6 *We make comparisons of our customers based on their value (*)*
- AE7 We segment our customers based on their value
- AE8 *We analyze the roles different customers have in our company over the long term (*)*
- AE9 We analyze the development of different customer groups in our customer base
- AE10 We analyze the health of our customer base in the long term

Analysis design (AD):

- AD1 *We have carefully thought out the essential criteria for analyzing our customer relationships (*)*
- AD2 We evaluate the quality of our customer-base-analysis practices
- AD3 We tend to discuss how to develop our customer-base-analysis practices
- AD4 We have tailored the criteria of our customer-base analysis to match the special characteristics of our business
- AD5 We have invested in developing our customer-base-analysis methods
- AD6 *We adapt our customer-base-analysis practices based on our experiences of current practices (*)*

Response efforts (RE):

- RE1 We tailor different product and service entities to customers based on their value
- RE2 We have created different operation models for treating customers of different value (e.g., service channels, level of service)
- RE3 *We allocate our sales resources to customers in relation to their value to our company (*)*
- RE4 We systematically direct resources to customers that have high future value potential
- RE5 With our actions we aim at converting low-value relationships to more valuable ones
- RE6 We systematically develop our most valuable customer relationships
- RE7 *We try to retain customer relationships that do not have development potential, but are careful about overly investing in them (*)*
- RE8 We ignore or aim at terminating certain unprofitable customer relationships
- RE9 We put effort into finding new customers that have potential value to our company

Response design (RD):

- RD1 We have carefully considered the central aspects of our customer-base-management practices
- RD2 We evaluate the quality of our customer-base-management practices
- RD3 We try to find means of improving our customer-base-management practices
- RD4 *We put a lot of effort into applying the principles of our customer-base management to our everyday business (*)*
- RD5 We have created concrete instructions concerning our customer management principles for our personnel working at the customer interface
- RD6 We adapt our customer-base-management practices based on the experiences received from our practices

Reflective CPM measure (1-strongly disagree, 7- strongly agree)

- RF1 We seek to develop our customer-base-analysis practice
- RF2 We analyze the current and future value of our customer relationships extensively
- RF3 We seek to develop our customer-base-management practices
- RF4 Customer value is a central factor in our customer-base-management practice

The following statements relate to the operational environment formed by customer relationships. Please indicate to what extent you agree or disagree with the statements. (1-Strongly disagree, 7- Strongly agree)

Customer-base size

- RS1 In our business we concentrate on a few customer relationships
- RS2 We aim at developing relatively few but strong customer relationships
- RS3 In order to succeed in our business we aim at serving as large a customer base as possible (Reverse scale)
- RS4 A central aspect of the efficiency of our business is the large number of customers (Reverse scale)

Interconnectedness in customer relationships

- IC1 Third parties are often involved in our customer relationships
- IC2 The actions of our customers' customers easily affect our customer relationships
- IC3 We often have to pay attention to our other customer relationships when dealing with a customer
- IC4 We often have to pay attention to third parties when dealing with our customers

Dynamism in customer relationships

- DY1 Our customers tend to look for new products and solutions all the time
- DY2 Our customers' product preferences tend to change quite a lot over time
- DY3 Forecasting the acts of our customers is relatively easy (*)*
- DY4 The nature of our customer relationships is constantly changing

Customer turnover

- TU1 We have a high customer-base turnover (a large number of new/ lost customers)

Heterogeneity of customers

Please indicate how different or similar you think your customers are (1- very different, 7- very similar)

- HE1 The nature and size of our customers' businesses are ...
- HE2 Our customers' needs are ...
- HE3 Our customers' payment systems are ... (*)*
- HE4 Our customers' ways of acting with us are...
- HE5 Our customers' service requirements are ...

The overall strength of customer relationships

Please approximate the composition of different customer relationships in your customer base (total 100%):

Relationship type 1: Both parties aim at maximizing their own interests. The time span is short and switching partners is easy. Price is a crucial element in exchange. (Choose %)

Relationship type 2: There is trust in the relationship and both parties are active. The time span is long, yet switching partners is relatively easy. Price is a result of mutual negotiations. (Choose %)

Relationship type 3: Both parties are committed to the relationship. The parties have devoted tailored resources to the relationship. Activities are largely coordinated and commonly planned. The time span is long and switching partners is no longer easy. There are common strategic goals in the relationship. (Choose %)

Concentration of customers

What is the percentage number of sales coming from the following sets of customers? 1= less than 1%, 2= 1-5%, 3= 5-10%, 4= 10-20%, 5= 20-35%, 6= 35-50% 7= over 50%

CO1 Our largest customer: (Choose %)

CO2 Our five largest customers: (Choose %)

CO3 Our ten largest customers: (Choose %)

The final questions relate to the performance of your business unit (company). Please note that all individual answers are strictly confidential and they will only be used for statistical purposes.

Firm performance

How would you evaluate the performance of your business unit (company) during the last three years? 1- Bad, 7- Excellent

Overall performance in relation to your goals

Overall performance in relation to your competitors

ROI

Please evaluate the average return on investment (ROI) percentage during the last three years: (1=0-4%; 2= 5-9%; 3= 10-14%; 4= 15-19%; 5=20-24%; 6= 25-29%; 7=30-35%; 8= 35-39%; 9= over 40%)

ROI: (Choose %)

Overall customer performance and Customer profitability

How would you evaluate the performance of your business unit (company) a) in relation to your goals during the last three years? b) Compared to your competitors during the last three years? 1- Bad, 7- Excellent

Overall customer performance:

Achieving customer profitability:

Attaining desired growth in sales: (not used)

Creating value for customers: (not used)

Achieving customer satisfaction: (not used)

Keeping current, desired customers: (not used)

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