**Aalto-yliopisto
Kauppakorkeakoulu**

Electronic collaborative mass customization as a competitive strategy   Exploring the key success factors

*"Design is a plan for arranging elements in such a way
as best to accomplish a particular purpose."*

Charles Eames

ELECTRONIC COLLABORATIVE MASS CUSTOMIZATION AS A COMPETITIVE STRATEGY – Exploring the key success factors

OBJECTIVES OF THE STUDY

Electronic collaborative mass customization (ECMC) – online customer-centered product design – is an emerging discipline. The objective of the research is to examine ECMC as a competitive strategy through the identification of key success factors that have received inadequate attention previously. More specifically, the aim is to introduce a new framework for value co-creation.

METHODOLOGY

The data was collected through netnography and themed interviews. With regard to primary data, six (6) Finnish B2C companies' marketing managers were interviewed in order to obtain a strategic perspective to the phenomenon in question. Moreover, in order to produce triangulation and emphasize customer-centrism, netnography was employed as a secondary method. The collected data was analyzed via theory-bound approach.

FINDINGS

Based on data analysis, several conclusions and implications were contrived. From the results, it becomes evident that practitioners need to carefully analyze and implement four central elements – systemic (interface, logistics), organizational (culture, resources), customer (experience, commitment), and competitive understanding (offering, promotion) – in order to provide superior customer value and obtain competitive advantage through ECMC. With regard to academics, it is suggested that future research continues the investigation of this new form of competition from different foundations and perspectives.

KEYWORDS

Mass customization, design, virtual, value, collaboration, competitive advantage, strategy

ELEKTRONINEN MASSAKUSTOMOINTI KILPAILUSTRATEGIANA – Tutkimus keskeisistä menestystekijöistä

TUTKIMUKSEN TAVOITTEET

Elektroninen osallistava massakustomointi – verkkopohjainen asiakaskeskeinen tuotesuunnittelu – on kasvava tutkimuskohde ja markkinoinnin käytäntö. Tutkimuksen tavoitteena on selvittää elektronisen osallistavan massakustomoinnin keskeisiä menestystekijöitä, joita ei ole aiemmin tutkittu riittävän kattavasti. Tarkoituksena on esitellä uusi viitekehys elektronisen massakustomoinnin osallistavaan arvon luontiin.

TUTKIMUSMENETELMÄT JA AINEISTO

Tutkimuksen data kerättiin netnografian ja puolistrukturoitujen haastatteluiden avulla. Ensisijaisena datan lähteenä hyödynnettiin haastatteluja kuuden (6) suomalaisen B2C-yrityksen markkinointijohtajien kanssa, jotta ilmiölle saatiin strateginen lähestymistapa. Lisäksi netnografiaa hyödynnettiin toissijaisena lähteenä, jotta tutkimukseen saatiin moniulotteisempi näkökulma. Kerätty data analysoitiin teoriasidonnaisen analyysin keinoin.

TULOKSET

Tuloksista käy ilmi, että alan yritysten tulisi huomioida seuraavat neljä seikkaa päätöksenteossaan – systeeminen (käyttöliittymä, logistiikka), organisatorinen (kulttuuri, resurssit), asiakas- (kokemus, sitoutuminen) sekä kilpailuymmärrys (tarjooma, promootio) – sekä niiden taustalla olevat keskeiset prosessit, jotta voidaan tarjota ylivoimaista asiakasarvoa ja saada kilpailuetua. Tulevaisuuden akateeminen tutkimus voi puolestaan jatkaa tämän uuden kilpailumuodon tutkimista erilaisista lähtökohdista ja näkökulmista.

AVAINSANAT

Massakustomointi, design, virtuaalinen, arvo, yhteistyö, kilpailuetu, strategia

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1 INTRODUCTION

This introductory chapter discusses first the background of electronic collaborative mass customization (ECMC) as a competitive strategy by highlighting some of the recent trends in the contemporary business environment that speak for the use of ECMC strategies. Secondly, the research gap is being identified and described which justifies the research on ECMC. Next, research problems and objectives clarifying the area of research are stated. Then, the scope of the study is underlined in order to provide a well-defined and compact approach for the research. Finally, some key concepts and the structure of the study are presented in order to illustrate the outline of the study in more detail.

1.1 Background

Due to globalization the rules of the competition have changed and continuous innovation has become strategically relevant. Companies utilize value networks and concurrently focus on core competences. (Blomqvist et al. 2005) The emphasis of marketing has moved away from the exchange of tangible commodities towards the exchange of intangible commodities and specialized know-how, talent and processes (Vargo & Lusch 2004). Increasingly people acknowledge that the market value of companies is based on intangible assets (Srivastava et al. 1998), and resources, such as knowledge and organizational capabilities, have become important sources of competitive advantage as the turbulence of business environment increases (Grant 1996). The fields of business and art have converged to some extent (cf. McNicholas 2004). Design, which is moving to a more central role in the contemporary business world, can function as a source of competitive advantage (Joziasse 2000; Veryzer & Borja de Mozota 2005) or strategic resource (Verganti 2003) that is central to achieving success (Joziasse & Meijer 2006) since it provides corporations with many of benefits (Kotler & Rath 1984).

Moreover, a multitude of customers define their own perspective on the company and its brands (Bernoff & Li 2008). Consequently, companies increasingly enable customers to mass customize their own products (Dellaert & Stremersch 2004). In particular, the growing individualization of demand forces companies to integrate users in the design and production process (Franke & Piller 2003). Customers urging their individual needs to be met (Ulrich et al. 2003) get to decide (Schumann et al. 2001). The prior emphasis on designing whole products and product lines for customers has experienced a radical shift as today companies are designing feature portfolios that customers can choose from to design their own products (Liechty et al. 2001). Hence, there is a distinct need for interaction and configuration toolkits that acknowledge the value of customers as hidden resources (Kristensson et al. 2002) and enable users to design the desired products (Franke & Piller 2003) through co-design (Ulrich et al. 2003).

Under the above-mentioned circumstances, new technologies are critical as they integrate design better into its markets (Sisodia 1992). Indeed, it has been claimed that integrating Internet into traditional business would improve companies' ability to develop unique products and create competitive advantage (Porter 2001). Open source projects that have aspects from both design and Internet have become increasingly remarkable economic and social phenomena (Von Hippel & Von Krogh 2003). In these solutions, companies discard the traditional ways of understanding the consumer and outsource the need-based innovations to customers by giving them user-friendly design tools (Von Hippel & Katz 2002). Fundamentally, the emerging trend of ECMC has a fruitful ground and reasonable justifications for being planned and implemented by companies. In this context, it may be feasible to introduce and embrace ECMC – the engagement of customers into mass customization (MC) and electronic value co-creation (EVCC).

1.2 Research gap

The research gap of the study is multifaceted. First of all, recent surveys emphasize that mass customization strategies are becoming increasingly important in various industries (Piller & Müller 2004) but yet practitioners lack the capability to set and define an appropriate solution space (Piller 2004), and academic research has failed to sufficiently investigate the conceptual boundaries and most central success factors of this new form of competition (Duray et al. 2000). Due the emerging nature of mass customization, there is limited empirical research on the subject (Da Silveira et al. 2001; Kamali & Loker 2002).

Fist of all, in terms of MC, extant research has somewhat neglected the means and coherent frameworks while highlighting the benefits of mass customization (Kotha 1994; 1996). As it is, the empirical findings on mass customization, its content and processes, are rather scant (Franke & Piller 2003; MacCarthy et al. 2003; Piller et al. 2000), particularly in terms of empirically examining new e-business related mass customization strategies (Piller et al. 2000). Not enough attention has been paid on developing and proposing models for understanding how to mass customize (McCarthy 2004). Indeed, design capabilities have been neglected by practitioners for diverse reasons for a long time (Kotler & Rath 1984; Sisodia 1992) and even design research has not been able to provide comprehensive conceptualizations in terms of transformation of product use value into economic value (Aspara 2008). Research is needed in terms of understanding when customization constitutes a promising marketing strategy (Franke et al. 2009).

Furthermore, current mass customization literature is mostly concentrated on manufacturing operations of batch industries (Da Silveira et al. 2001). It is recommended that services could be added as a part of the mass customization model (Duray et al. 2000) as there is currently a relative dearth with regard to studies dealing with mass customization from a service operation point of view (Da Silveira et al. 2001). As ECMC combines products with customer service, it can be argued that this real-time computed-mediated customer engagement process is a service (cf. Kaplan

& Haenlein 2006). Thereby, the research on mass customization as a service (termed as solution business with a reference to both product and service aspects) is needed. As it is, physical objects and goods need to be marketed as part of overall services so that the process becomes the service that customers consume (Grönroos 2006). All business becomes that of service business (Vargo & Lusch 2008) wherein service can be regarded as a type of product (Jiao et al. 2003).

Secondly, with regard to EVCC, collaborative actions between companies and customers have not been fully explored. In particular, one has not been able to identify, categorize in a uniform or general way nor reveal the nature of value co-creation efforts (Schau et al. 2009). Present research knows relatively little about how to engage customers in the co-creation of value (Payne et al. 2008). Qualitative research related to the core value drivers of customer relationship management, such as customized products and services, is needed (Richards & Jones 2008). It is suggested that the processes of value co-creation are examined in more detail (Vargo et al. 2008). In this sense, new research may provide richer customer value theory as customer value-based competition is the new paradigm (Woodruff 1997).

Finally, in terms of ECMC, there is ambiguity and debate regarding appropriate network configurations for successful innovation (Pittaway et al. 2004), and lack of knowledge in terms of how to manage problems of e-business adoption and which factors contribute to successful e-business adoption (Dubelaar et al. 2005). Indeed, virtual environments that become new exciting products/services (van Raaij 1993) pose new challenges for researchers (Nambisan 2002). Contributing to this problem is the fact that virtual customer engagement together with collaboration design configurations is an under-researched area. In order words, the linkage between customer value and the success of mass customization is not entirely explored (Broekhuizen & Alsem 2002); a major potential for value creation by mass customization has not yet been fully utilized (Piller 2004). More specifically, research needs to examine the creation of virtual customer environments and, hereby, means by which companies can establish a holistic system that provides a coherent vision and manage value co-creation efforts (Nambisan 2002). This general framework could address when and why self-customization is effective (Valenzuela et al. 2009).

Research could address what exactly constitutes user value and how design can contribute to its creation (Boztepe 2007). As it is, co-design – especially, the role of customer within the co-design process and the related success factors, drivers, and enablers for communities of co-design – has not yet been fully explored (Piller et al. 2005; Ulrich et al. 2003). By examining the relationships of user-oriented design and product development process, clearer, more refined customer value enhancing models of product development may be introduced (Veryzer & Borja de Mozota 2005). As prior literature on user value has been largely conceptual, contemporary efforts should increasingly try to develop practical tools and methods for active value creation (Boztepe 2007). In this respect, research is needed on the effect of information on web-based customer customization configuration choices (Chang & Chen 2009) and the role of platform development and rapid

prototyping in a holistic front-end concept in order to achieve improved customer integration management (Gassmann et al. 2006). Ultimately, the research on electronic mass customization is to deserve a special attention in the field (Kaplan &Haenlein 2006).

1.3   Research problem and objectives

This research aims to answer the question of how to gain competitive advantage through electronic collaborative mass customization (ECMC). In other words, the objective of the research is to explore the key success factors of ECMC that strategy managers may take into consideration when pursuing company success and profits. The strategic perspective on ECMC implies that the utilization of mass customization can be regarded as competitive strategy. Hence, the main research problem can be stated as follows:

> *How can companies build effective electronic collaborative mass customization (ECMC) strategies?*

Simply put, this research discusses and analyzes the matter how companies can create competitive advantage through web-based collaborative configurations or co-design applications. From an academic perspective, the purpose of this descriptive study is to advance current understanding of the new concept of ECMC by identifying and analyzing the associated value creation processes. A process-based empirical framework is developed in order to improve extant understanding of promising EVCC strategies within the context of MC. More specifically, relevant factors (i.e. internal and external) that have an impact on competitive advantage are introduced.

From a practical point of view, I strive for giving directive guidelines about central ECMC aspects and suggest ways through which managers can coordinate and manage them in order to obtain efficient processes and promising outcomes. Nonetheless, the objective of this research is by no means to give straight answers that fit every circumstance. Herein, it is important to notice that ECMC is always somewhat context-specific; company-related factors can have a substantial impact on the successful implementation of a mass customization strategy.

1.4   Scope of the study

The scope of the study is two-fold. Firstly, this study concentrates on the mass customization of concrete B2C or consumer products that can be designed, or to be more exact, shaped by customers themselves in an electronic environment. In this sense, the mass customization process is a hybrid form of conducting business as it combines the product and services approaches. It is possible to talk about collaborative customization or design in the sense that the main focus is on the

customization process instead of actual product customization. Thus, attention is given to the process part of mass customization, namely MC as a strategic method – a means by which a strategy can be pursued (cf. Johnson et al. 2008, 356) – and the focal point of interest has to do with the implementation of ECMC rather than the final product.

My discussion and conceptualization focuses on mass customization systems, that is interfaces, which are Internet-based and integrated within a website. Thus, my research focuses on virtual environments wherein products are being designed and customers are being served through engagement and experience creation. In particular, this means that the study deals with customized standardization (Lampel & Mintzberg 1996) or, alternatively, involvers that involve customers in the design and fabrication phases and where modularity plays a part in the assembly and usage phases (Duray et al. 2000). In a narrow sense, the focus is mainly on virtual co-design platforms that are all accessible real-time through a web browser; this research focuses on virtually mediated mass customization that engages customers in product design via real-time applications.

In a broader context, it is feasible to talk about a complex strategy (where both technologies and markets are new and need to co-evolve) of technological business model innovation (i.e. new structure of product, service, and information flows and roles of the participating parties) that in a commercial sense converses new knowledge into new products (product innovation) and processes or services (process innovation) in order to manage for value – that is, maximize the long-term cash-generating capability of an organization (cf. Johnson et al. 2008, 325–329, 485–500). It deals with future-oriented value production – an emergent value system of radical changes – that opens new business opportunities (Möller et al. 2005).

1.5 Key concepts

Competitive advantage is a situation wherein a firm has distinctive competences corresponding to those of the critical success factors of the industry that permit outperformance of competitors via low costs and/or differentiation (American Marketing Association 2010).

Competitive strategy is a plan for defining a position for the business based on the competitive advantages over competitors (American Marketing Association 2010).

Key success factors (KSFs) are those particular features that certain customers value and company must excel at in order to outperform competition (Johnson et al 2008, 79).

Mass customization (MC) is a hybrid strategy combining cost leadership and differentiation that produces low-cost, high-quality, individually tailored solutions efficiently in (relatively) massive volume via flexible, responsive modular processes and organizational structures with the aim of

enhancing company profitability and superior customer value through interaction and lasting relationships.

Electronic value co-creation (EVCC) is an online, information technology-bound, meaningful two-way interaction exchange or shared, participatory online value creation process at the operations level of production with the aim of facilitating and achieving mutual goals, relationships, and value adding activities.

Electronic collaborative mass customization (ECMC) is an online built-to-order (BTO) customer-centered co-creation strategy emphasizing integration and reciprocal interaction of buyer and seller through cost-efficient, collaborative, user-friendly tools for co-design or configurations of mutual exchange that aim at increasing value-added for the customer and competitive advantage for the company.

1.6 Structure of the study

Firstly, I begin with the study's theoretical underpinnings and provide an overview of prior research on MC, EVCC and ECMC. I identify the associated characteristics and integrate them into a theoretical framework. In terms of research methodology, I utilize themed interviews and netnography to illustrate the broader application of the conceptual model. Then, I report the research results and implications. Finally, I conclude with a summary, evaluation of the research and an acknowledgment of the study's limitations, and provide some areas and directions for future research.

2 LITERATURE REVIEW

The literature review of this study consists of three main parts. First of all, mass customization (MC), that highlights the internal approach of competitive advantage, is explored. Secondly, electronic value co-creation (EVCC) with an external focus is discussed. Finally, the internal perspective of MC and the external viewpoint of EVCC are combined and the phenomenon of electronic collaborative mass customization (ECMC) is examined.

2.1 Mass customization (MC) as a source of competitive advantage

In today's increasingly competitive business environment, radical changes are happening that affect the success the companies operating in diverse fields. These changes include the following: the homogeneous mass-market becoming replaced by a heterogeneous niches or alternatively highly fragmented customer-base, customers seeking luxury instead of functionality, uncertain customer needs changing unexpectedly, and product life cycles shortening continuously due to mature demand and becoming now extremely short compared to the previous age of mass production (e.g. Bardakci & Whitelock 2003; Fralix 2001; Hart 1995; McCarthy 2004). Additionally, market globalization, rapid technological innovation and intense competition require companies to possess agility and quick responsiveness (Silvera et al. 2001). As today's industry faces these new requirements, the business environment moves towards emphasizing customized products and services (Fralix 2001) that are high quality and low cost by nature (Fitzgerald 1995). Thus, in order to achieve speed and flexibility, firms need to question the conventional production methods (Takeuchi & Nonaka 1986) and provide variety with reasonable price levels (Fatur & Dolinšek 2009).

Fundamentally, there has been a shift from mass production to a new era called mass customization (e.g. Fralix 2001). Many industries have undergone a profound transformation in terms of their dominant paradigm; the traditional mass production has been replaced by an emerging logic of mass customization that is argued to yield remarkable competitive advantage. This means that companies can no longer compete solely with standardized products or services. (Kotha 1995.) Rather, corporations need to adopt strategies that incorporate customers' needs into efficiency seeking behavior (Piller & Müller 2004). Ultimately, mass customization serves as a central manufacturing and competitive strategy for a multitude of companies (Silvera et al. 2001). Mass customization has indeed the potential to enhance overall firm performance (Duray et al. 2000) and it can be a crucial competitive strategy in contemporary destabilized and unpredictable markets (Hart 1995). This new frontier provides companies with strategic advantage in all five competitive dimensions – price, quality, flexibility, delivery and service – simultaneously which has not been found associated with other strategies (Kumar 2004).

2.1.1 Definition

Nowadays, mass customization is a buzzword – partly since no clear definition or common understanding of the term has evolved (Piller 2004). As it is, mass customization is not a straightforward concept to understand (Hart 1995) and it has been defined in many ways along the years. Each definition highlights central aspects of the phenomenon. Together they can produce a multifaceted and versatile definition of the whole. One categorization of different viewpoints can be found below in chronological order. In Table 1, different scholars have been listed and their definitions on mass customization have been stated.

TABLE 1: Definitions of MC

Scholar(s)	Definition
Toffler (1970, 176–177, 296)	MC is the consequence of super-industrial revolution where standardization ends and diversity blooms as technology becomes more sophisticated and the cost of introducing variations declines
Davis (1988, 143)	MC means that a great amount of customers can be reached similarly to industrial mass markets and simultaneously they can be addressed individually like in pre-industrial customized markets
Pine II (1993, 44)	MC creates variety and customization through flexibility and quick responsiveness
Pine et al. (1993)	MC is a method of providing low-cost, high-quality, customized goods and services
Hart (1995)	MC is the use of flexible processes and organizational structures to produce varied and often individually customized products and services at the low cost of a standardized, mass production system
Tseng & Jiao (1996)	MC aims to provide customer satisfaction with increasing variety and customization without a corresponding increase in cost and lead-time
Tseng & Jiao (1998)	MC identifies each customer as an individual and offers tailored solutions that customers can afford due to low production costs
Duray et al. (2000)	MC can be defined as building products to customer specifications using modular components to achieve economies of scale
Piller et al. (2000); Piller & Müller (2004)	MC delivers goods and services for a (relatively) large market that exactly meet the needs of every individual customer with regard to certain product characteristics (differentiation option) at costs roughly corresponding to those of standard mass-produced goods (cost option). The information collected during the process of individualization serves to build up a lasting individual relationship with each customer (relationship option)

Lee et al (2000)	MC is a business strategy that customizes goods for each individual customer in massive volume
Da Silveira et al. (2001)	MC relates to the ability to provide customized products or services through flexible processes in high volumes and at reasonably low costs. MC broadly encompasses the ability to provide individually designed products and services to customers in the mass-market economy
Tseng & Jiao (2001, 685)	MC produces goods and services to meet individual customer's needs with near mass production efficiency
Jiao et al. (2003)	MC enhances profitability through a synergy of increasing customer-perceived value and reducing the costs of production and logistics
Broekhuizen & Alsem (2002)	MC entails the ability to provide customized products and services and superior customer value to individual customers using technology (information) at optimal production efficiency and cost levels
Bardakci & Whitelock (2003)	MC produces the exact products required by customers
Blecker et al. (2004)	MC is a business strategy that aims at satisfying individual customer needs, nearly with mass production efficiency
McCarthy (2004)	MC is a capability to manufacture a relatively high volume of product options for a relatively large market (or collection of niche markets) that demands customization, without tradeoffs in cost, delivery and quality
Kaplan & Haenlein (2006)	Working definition: MC is a strategy that creates value by some form of company–customer interaction at the fabrication or assembly stage of the operations level to create customized products with production cost and monetary price similar to those of mass-produced products Visionary definition: MC is a strategy that creates value by some form of company–customer interaction at the design stage of the operations level to create customized products, following a hybrid strategy combining cost leadership and differentiation
Fatur & Dolinšek (2009)	MC develops, produces, markets and delivers affordable goods and service with variety and customization that nearly everyone find exactly what s/he wants

As shown, there are a multitude of attempts to conceptualize the phenomenon of MC varying from the pioneering definitions to the more modern ones. Yet, none of them has truly gained ground. By examining the various definitions, it becomes evident that all of the above-mentioned definitions share a common notion that there is strong product development emphasis in MC. Indeed, it is a product strategy for describing company-customer interaction at the operations level

of the value chain (Kaplan & Haenlein 2006). However, not only are efficiency and economies of scale pursued but customer involvement is also emphasized (Duray et al. 2000). Indeed, the concept of mass customization rests on two integral elements, namely mass production and customization. It integrates these two seemingly opposing production methods in order to create competitive advantage through costs and quality (Blecker et al. 2004). Hereby, MC allows for an enhanced compatibility between the producers' capabilities and customer needs (Jiao et al. 2003).

Since there are a multitude of definitions with regard to MC, it is only natural that a synthesizing view is derived. This new synthesizing definition is generated so that confusions with other equivalent concepts may be mitigated and the nature of MC may be better covered. The definition stresses first and foremost the viewpoints of Hart (1995), Piller et al. (2000), Piller and Müller (2004), and Pine et al. (1993) while increasingly shedding light on mutual benefits and strategic perspective. Consequently, in the context of this research, MC will be defined as follows:

> *Mass customization (MC) is a hybrid strategy combining cost leadership and differentiation that produces low-cost, high-quality, individually tailored solutions efficiently in (relatively) massive volume via flexible, responsive modular processes and organizational structures with the aim of enhancing company profitability and superior customer value through interaction and lasting relationships.*

2.1.2   Characteristics

As mentioned earlier, mass customization uses stable processes and structures to produce customized or flexible products (Piller & Müller 2004). Hence, MC entails two primary elements, namely cost efficiency that stems from mass production and differentiation that deals with customization. Together these aspects potentially create a paradox-breaking manufacturing reality as they combine efficient mass production manufacturing of modular components with unique craft manufacturing for customer involvement (Duray et al. 2000). They are connected by strong communication links and, thus, constitute an integrated whole wherein several elements have to function well individually and together in order for mass customization to become a focal business strategy (Zipkin 2001). Only when customer involvement is being combined with modularity types, mass customization can be completely fulfilled in practice (Duray et al. 2000). Now, let us consider these two integral components of MC in detail in order to gain a more profound understanding of the whole.

Mass production

The mass production perspective of mass customization emphasizes the cost efficiency focus. In MC, the part 'mass' refers to the notion that the concept is based on design platforms and

configurations. Modularity means that the product entails some components that are constant; the product is built by the means of an application or interface. The application platform is the physical foundation of the technical planning that enables the creation of product derivatives at incremental costs compared to initial products (Tseng & Jiao 1998). In other words, the product platform is a base product upon which product families with various designs can be built according to differing customer requirements (Jiao & Tseng 2004). It is a technical foundation for managing customization, variety and existing capabilities with the aim of maximizing reusability (Jiao et al. 2003).

This configuration is an outline or arrangement of diverse product components that differ in the number and levels of product modules that customers can customize (Dellaert & Stremersch 2004). It is a basic common module or an attribute of the product that allows for the mix and match of independent and interchangeable product building blocks with standardized interfaces in order to create product variants (Blecker & Abdelkafi 2006). Platform design or product family architecture (PFA) with its functional, technical and physical modularity, product line taxonomy, building blocks, configuration rules and economic justification provides a generic architecture for the decomposition of product structures and, thereby, enables the development of each new derivative product from the basic product designs by altering functional features, technical parameters and components/assemblies at an incremental cost to satisfy a spectrum of customer needs related to various market niches (Jiao et al. 2003). This product architecture is the arrangement of functional elements (Huang et al. 2005).

Successful platform strategies emphasize commonality, modularity, scalability and postponement (Huang et al. 2005). The process modules need to be instantaneous, costless, seamless and frictionless (Pine et al. 1993). If properly implemented, product family architecture approach can offer companies with a multitude of advantages. The modular product designs, for instance, make economies of scale possible (Duray et al. 2000). The product families and platform-based product development – that allow for the add, removal, or substitution of modules to the platform or scale of platform in dimensions – also enable for reduced development and production costs, increased variety, improved ability to upgrade products, shortened lead times, and reduced development time and system complexity (Simpson 2004). However, the associated costs of MC process deal with complexity – customer's perception of the complicatedness of the system (Dellaert & Dabholkar 2009).

Customization

The customization perspective of mass customization emphasizes the differentiation focus. There has already been a transformation in many sectors from sellers' markets into buyers' markets (Piller et al. 2004). Overcapacities, increasing international pressure (Piller et al. 2004) and highly segmented market require companies to differentiate through mass customization (Da Silveira et al.

2001). This differentiation means that companies obtain competitive advantage by offering customization (Piller & Müller 2004). Long-term success of any customization strategy depends on its capability to deliver positive value to the customer (Franke et al. 2009). Customer relationship management becomes a means to achieve desired strategic goals where customized products and services serve as one essential value driver and core benefit (cf. Richards & Jones 2008).

In customization, manufacturers co-operate with the customers; customers are integrated into value creation by defining, configuring, matching or modifying individual solutions which means that they transfer their needs and desires about fit, style and functionality into concrete product specifications (Piller 2004). Fundamentally, companies can achieve a better strategic fit with long-term customer needs if they strive for understanding and satisfying specific customer expectations (McCarthy 2004). This means developing markets of one that aim at meeting tailored needs of individual customers on a mass-basis (Bardakci & Whitelock 2003). Indeed, successful mass customization strategies highlight appropriate understanding of customer preferences (Blecker & Abdelkafi 2006). They aim at providing customization wherein the level of unique customer-specific product configuration is determined (Stump et al. 2002). As it is, customization determines the uniqueness of the products (Tseng et al. 1998) and creates higher benefits for customers (Franke et al. 2009). The customer benefits, in particular, deal with the product outcome; that is, total value of the product achieved by choosing product module levels according to individual specifications (Dellaert & Dabholkar 2009). Thus, in customization, companies would need to indeed obey a strategy that accounts for particular customer benefits and thereby, offers a value proposition (cf. Porter 2001). Eventually, the customization of product offerings may increase the value offered and, thus, bring about a competitive advantage over rivals (Stump et al. 2002).

Nonetheless, customization is not as straightforward or unequivocal as there are several challenges related to the use of it. Firstly, customization as a method carries related opportunity costs what means that business managers may experience a resource deficit in terms of resource availability for other purposes and, thereby, the company may suffer from a loss of agility or core rigidity in development and response to unexpected market opportunities and competitive threats (cf. Leonard-Barton 1992; Stump et al. 2002). Secondly, mass customization does not imply an all-inclusive customization but rather, due to the related cost option, it concentrates only on those attributes that customers perceive important or valuable (Fralix 2001; Piller & Müller 2004). Finally, questions can be posed whether customers are fundamentally willing to pay for customization and whether it is truly possible to build an elaborate system that elicits customer wills (cf. Zipkin 2001).

2.2 Electronic value co-creation (EVCC) as a source of competitive advantage

A new discipline of value creation, that relates to mass customization, is emerging; a radical shift is happening from the previous product- and firm-centric value creation and traditional segmentation

to novel customer-centric logic, as modern customers are less satisfied and companies face commoditization (Prahalad & Ramaswamy 2004a; 2004b). Active gaming enthusiasts (Steinkuehler 2006) increasingly replace the old largely passive consumers (Nambisan 2002). Indeed, consumer passivity is increasingly becoming replaced by collective value creation (Schau et al. 2009) and the boundaries between production and consumption blur and become mangled (cf. Steinkuehler 2006). Herein, overlapping, mutual and interdependent wills bring about a concurrent production and consumption of identities, meanings and practices (Kozinets et al. 2004) that results in reciprocal lock-in relationships due to related switching costs (Stump et al. 2002).

Managers can now develop personally meaningful brands for consumers' self-expression and self-actualization by understanding the emerging value systems and customer-company interactions profoundly (cf. Aaker 1999; Deuze 2006; Firat & Dholakia 2006; Holt 2002; Maslow 1943; Piller & Müller 2004; Prahalad & Ramaswamy 2004a; 2004b; van Raaij 1993); by understanding the utopian, socially fragmented, identity-crazed (van Raaij 1993) postmodern consumers who construct meanings (e.g. Cova & Cova 2002) and pursue experiential aspects of consumption , such as pleasures, dreams, desires, symbolism, hedonism, aesthetics, fantasies, feelings, fun, utility, social significance, and emotional/spiritual values (Boztepe 2007; Featherstone 1990; Holbrook &Hirschman 1982). Contemporary companies are faced with a new business landscape wherein success requires efficient, customer-centric activities. One way to do this can be found in EVCC, namely electronic value co-creation.

2.2.1 *Definition*

Electronic value co-creation (EVCC) is the combination of electronic channels and value co-creation. Let us consider the underlying concepts in order to provide a more in-depth description of the term. Table 2 highlights the essence and content of the underlying terms that have been coined with the phenomenon of EVCC. These terms are arranged in alphabetical order.

TABLE 2: Concepts underlying EVCC

Concept	Definition	Scholar(s)
Cocreation marketing	Customer-centric firms fully integrate customer-facing activities by better aligning all firm activities around customer value-adding activities	Sheth et al. (2000)
Customer-centric logic	Active, direct, two-way interaction that highlights personalized, meaningful, and reciprocal communication	Prahalad & Ramaswamy (2004a; 2004b)
Customer relationship	Way to identify, attract, and tie profitable customers to the products and/or services offered	Lakshmi & Elham (2007)

management (CRM)	by the companies through a process of managing relationships with the customers	
	A discipline in marketing combining database and computer technology with customer service and marketing communications in order to create more meaningful one-on-one communications with the customer by applying customer data to every communications vehicle	American Marketing Association (2010)
Customer value	Customer's perceived preference for and evaluation of those product attributes, attribute performances, and consequences arising from use that facilitate (or block) achieving the customer's goals and purposes in use situations	Woodruff (1997)
Digitizability	The extent to which functions relevant to customers can be fulfilled by using only information technology	Piller et al. (2000)
Electronic CRM (e-CRM)	Online customer interaction	Lakshmi & Elham (2007)
Interactive marketing	Interaction happens at operations level of the value chain not at later stages, i.e. marketing and sales level	Kaplan & Haelein (2006)
Social media	A category of sites that is based on user participation and user-generated content	Lazworld.com Inc (2010)
User value	Created as a result of the interaction between what the product provides and what the users bring in terms of their goals, needs, limitations, etc.	Boztepe (2007)
Value	The power of any good to command other goods in peaceful and voluntary exchange	American Marketing Association (2010)
Value creation	A value configuration logic incorporating active customer participation in product/service production	Sweet (2001)

From the table, it becomes evident there are various different concepts that together constitute a rather extensive depiction of value co-creation through electronic channels. They all share one basic premise; they stem from the ideology that customers need to be tightly incorporated into contemporary business. Accordingly, EVCC deals with customer or user value, namely CRM, in electronic channels. A synthesizing definition is derived in order to provide a more comprehensive

conceptualization of this new form of value-oriented exchange. The new definition is termed electronic value co-creation so that a conjunction of customer value co-creation and e-commerce may be highlighted; two terms inherent in the discussions of modern computer-mediated value co-creation efforts. The definition stresses first and foremost the viewpoints of Lakshmi and Elham (2006), Piller et al. (2009), and Prahalad & Ramaswamy (2004a; 2004b) while increasingly shedding light on mutual benefits and strategic perspective. Now, let us synthesize a proper definition for EVCC:

> *Electronic value co-creation (EVCC) is an online, information technology-bound, meaningful two-way interaction exchange or shared, participatory online value creation process at the operations level of production with the aim of facilitating and achieving mutual goals, relationships, and value adding activities.*

2.2.2 Characteristics

EVCC has two integral aspects to it – value co-creation and modern electronic channels. Together these components may create an efficient strategy as they highlight two important aspects of modern high-flyers, namely differentiation and cost efficiency. Eventually, it is not enough to astonish the consumers and delight them with outstanding offerings and experiences. Firms need to do this in an affordable way so that the efforts do not result in massive budget deficits. Contemporary competitive strategies may be built in a way that they account for especial customer treatment through inexpensive methods. Now, let us consider these two momentous modern age customer service characteristics in detail in order to obtain a more in-depth comprehension of the whole.

Electronic channels

One way to gain success and operate in a cost-efficient yet compelling manner is through electronic channels. The Internet and communication technologies have to a large extent improved the connectivity of companies and customers by allowing for the creation of virtual customer environments (Verona et al. 2006). Digitality enables companies to consider new dimensions of corporate success and highlight interactivity, mutuality and communality in marketing (Kozinets 1999). In this sense, companies can create worlds of consumer fantasy; persuading spaces (Kozinets et al. 2004) that function as means for consumer engagement and conception co-construction. Herein, determining the marketing-wise most appropriate virtual levels becomes essential (cf. Gilmore & Pine II 2002).

Fundamentally, the electronic encounters allow customers to experience personalized service. As it is, the Internet enables one-on-one interaction (Dewan et al. 2000) – a direct communication

between buyer and seller (Piller et al. 2000). Consequently, the nature of marketing must turn from traditional mechanical marketing thinking – that is, transactional or relational marketing with an emphasis on customer segmentation and heterogeneity – to more psychosocial tribal marketing that treats consumers as homogeneous groups (Cova & Cova 2002) and takes a more profound stance on one-to-one marketing by accounting for the strategic implications of virtual communities and community participation through virtual communal marketing (VCM) (Kozinets 1999). Indeed, active, participative, resistant, activist, loquacious, social, and communitarian (Kozinets 1999) tribes of cyber-enthusiasts (Cova & Cova 2002) have now more control over the process (Kahn 1998) and companies lose their supremacy as the balance of power/control and knowledge shifts from marketers to customers (Bernoff & Li 2008; Cova & Cova 2002; Kozinets 1999). Actually, in the present networking environment it may exactly be the nature of the relationships that is critical in terms of creating and maintaining competitive advantage (Lavie 2005); loyal and mutually beneficial relationships need to be pursued with online consumers (Kozinets 1999).

It is also possible to talk about a social web – a shift from World Wide Web to Web 2.0 – wherein social collaborative technologies build virtual communities of communicating, information sharing and connecting (Feng et al. 2008) in a creative, collective, and interactive way (Richards 2009). This phenomenon, termed as Web 2.0, the second coming of the web (cf. Baumann 2006; Bulik 2006) or social media, refers to collective media (cf. Hanlon & Hawkins 2008; Phillips 2007) wherein success lies in listening to customers and their critique (Wright 2008). Alternatively, there has been talk about new economy (Sweet 2001), Enterprise 2.0 (Martin et al. 2009), Web 3.0 or Semantic Web that further highlight the network effect in terms of user created content of the link space (Hendler & Golbeck 2008). In this new virtual environment, the former Schumpeterian creative destruction with an emphasis on destroying the old and creating new (Schumpeter 1987, 83) does not apply anymore as the more established innovations become in the economy, the more value is derived from their usage (Hendler & Golbeck 2008).

Value co-creation

Since customers offer a new competitive advantage for organizations (Prahalad & Ramaswamy 2000), providing superior customer value can be regarded as being a vital means for corporate success (i.e. value creation – value capture logic) (Aspara 2008). As a matter of fact, marketing myopia may be prevented by buying customers (Levitt 2004), adopting customer-centric marketing (Sheth et al. 2000), and investing in customer retention (Srivastava et al. 1998). In the end, it is a matter of a one-to-one (Peppers & Rogers 1995) or alliance-like relationship between buyer and seller (Deshpandé & Farley 2003). The former one-way communication is being replaced by customized interactive communication (Wind & Rangaswamy 2001) or, alternatively, reciprocal relationships (e.g. Keller 2007; Oberhelman 2007). Now, marketing emphasizes consumer empowerment and partnership (Firat & Dholakia 2006); collaboration and dynamic learning (Vargo

& Lusch 2004) where companies embrace service-dominant (S-D) logic (Payne et al. 2008), engage into market observation (Ramaswami et al. 2004) and become market oriented (Slater & Narver 1998) by highlighting the role of customer experiences, customization, and long-term customer relationships (cf. Gilmore & Pine II 2002; Ramaswami et al. 2004; Srivastava et al. 1999).

Networking can produce capabilities that enlarge the value of individual companies (Kogut 2000). Networked companies can, thus, provide customers with more value than industry loners (Nielsen 2006). The network relationships affect innovation performance and productivity due to several related benefits that include: risk sharing, obtaining access to new markets and technologies, speeding products to market, pooling complementary skills, safeguarding property rights when complete or contingent contracts are not possible, and acting as a key vehicle for obtaining access to external knowledge (Pittaway et al. 2004). Networked firms that emphasize collaboration, information sharing and trust are argued to succeed due to quick responsiveness instead of companies with superb products (Srivastava et al. 1999). Integrating customers in the value creation process may produce economies of integration that go beyond differentiation advantages as postponement of certain activities, accuracy of market demands, and direct interaction with individual customers occur (Piller et al. 2004). Actually, the advantages of integrating customers into the innovation process – such as stronger relationship with the partner, better understanding of market needs, fewer errors in the early development process, and better product quality - are widely recognized (Enkel & Gassmann 2005).

2.3 Electronic collaborative mass customization (ECMC) as a source of competitive advantage

In this world of constant change where continuous innovation is a necessity (Takeuchi & Nonaka 1986), it is feasible for firms to stay finesse and flexible (Wind & Rangaswamy 2001), and build strategic partnerships or entire value creation systems with their customers so that increased value-added can be provided for the customers (cf. Möller et al. 2005). A second generation of MC companies acknowledges customer interaction as the main cost driver of customization (Piller 2004). Today, we are dealing with democratization of innovations what means that the users of products and services (especially lead users) can increasingly innovate themselves (Von Hippel 2001; 2005, 1) and can become co-producers (Payne et al. 2008), co-designers or co-innovators for the company (Franke & Piller 2003). As configurators replace physical stores, it is the toolkits that now aim at providing experiences and meeting high customer expectations (Franke & Piller 2003).

Indeed, when creating spectacular customer experiences, companies can utilize customer-centered activities wherein customers are activated as value co-creators (cf. Prahalad & Ramaswamy 2000) and involved as active participants in the process of solution creation (Wind & Rangaswamy 2001) characterized by differentiation and cost efficiency (cf. Aspara 2008). Customers have been transforming from observers into the networks themselves (Kozinets 2006)

resulting in the convergence of the virtual and physical world (Ward 1999). It is exactly the new market-driven product development that allows for the production of technically superior products that enable customers to experience maximum value and utility from the use of the product (Srivastava et al. 1999). Increasing customer expectations have brought about a proliferation of companies conducting e-commerce, competing on the benefits sought (Liechty et al. 2000) and building value through networks (Kozinets 1999). MC companies have become design-inspired meaning that emotional bonds are being created with customers through customer-driven activities (cf. Lojacono & Zaccai 2004).

New technologies have been central as they integrate design better into its markets (Sisodia 1992), enhance the connectivity of consumers and companies (Nambisan 2002) and allow individual mass customization (Simonson 2009). In particular, IT and automation play a central role in customization as they create a connection between consumer preferences and the capabilities of the production team (Fralix 2001). Consequently, modern firms can involve customers in the value creation process (Vargo & Lusch 2004) through computer-aided design (CAD) (Istook 2002; Rothwell 1994; Ulrich et al. 2003; Von Hippel & Katz 2002), computer integrated manufacturing (CIM), and/or computer-aided manufacturing (CAM) (Broekhuizen & Alsem 2002) that allow continuous style customization without time-consuming preparation activities (Istook 2002). Consumption of information in the modern ICT environment converges with production (Kozinets et al. 2008); customers as prosumers (e.g. Tapscott & Williams 2007, 126; Toffler 1980, 283) can function as knowledge brokers and, thus, support the company processes (cf. Verona et al. 2006; Verganti 2003).

Fundamentally, besides flexible manufacturing technologies, also Internet can be seen as the main enabler of contemporary mass customization (Kaplan & Haenlein 2006; Piller et al. 2000; Piller et al. 2004). Internet has been a main driver of broad user integration (Piller & Walcher 2006) and it has influenced collaborative innovation and value co-creation (Shawhney et al. 2005) by allowing companies to gain valuable, rapid, and inexpensive input from customers (Dahan & Hauser 2002; Füller & Matzler 2007). Advanced IT has made MC a viable and acceptable contemporary business solution (Bardakci & Whitelock 2003; Istook 2002) since it has enabled companies to successfully turn MC strengths into commercial advantage (Dellaert & Dabholkar 2009). This social media, which involves customers (Hempel 2006), can facilitate customization by allowing consumers to refine the desired product attributes (cf. Schau 2009) better and faster in powerful online three-dimensional (3D) environments (Füller & Matzler 2007).

2.3.1 Definition

However new the phenomenon of ECMC may be, its basic principles and logic can be found originating from a number of other, perhaps much more common, concepts and viewpoints. Indeed, there are a multitude of other terms underlying the concept of ECMC. Table 3 highlights some

operations models that can be seen as building up the term ECMC. The concepts are arranged in alphabetical order.

TABLE 3: Concepts underlying ECMC

Concept	Definition	Scholar(s)
Collective intelligence	Ability of a group to solve more problems than its individual members	Heylighen (1999)
Crowdsourcing	Everyday people using their spare cycles to create content, solve problems, even do corporate R&D	Howe (2006)
	A process of posing a question or problem to a large group of people to try to get to the best answer quickly	American Marketing Association (2010)
Customer integration	A way for increasing efficiency and cost-saving potentials of a firm by integrating the customer into value creation during the course of configuration, product specification and co-design	Piller et al. (2004)
Customerization	A win-win strategy dealing with a customer-driven corporate strategy that combines mass customization with customized marketing; it begins with customers and offers them more control in the exchange process through built-to-order (BTO) logic where the product is being sold before it is being produced	Wind & Rangaswamy (2001)
E-commerce	Internet-based business model that typically incorporates various elements of the marketing mix to drive users to a website for the purpose of purchasing a product or service	American Marketing Association (2010)
Electronic mass customization (eMC)	A strategy for value creation through company-customer interaction at the fabrication or assembly stage in order to produce customized products at same cost and price as mass-produced products, where at least one of the market dimensions (i.e. player, product, process) is digital	Kaplan & Haenlein (2006)
Human-computer interaction	A method where interaction interprets user actions and either changes the viewing parameters or generates logical events for simulation and manipulation	Tseng et al. (1998)
MC toolkits	Set of user-friendly design tools that allow trial-and-error experimentation processes and deliver immediate simulated feedback on the outcome of design ideas	Franke et al. (2008)

Open source (software)	Innovation development, production, distribution and consumption networks that are distributed horizontally across many software users	Von Hippel (2002)
Open innovation	A concept for placing external ideas and external paths to market on the same level of importance as that reserved for internal ideas and paths to market during the closed innovation era	Chesbrough (2003, 43)
Participatory design	A design and development process in which end-users are invited to participate and contribute as co-designers so that users can be understood better	Buur & Matthews (2008)
Self-customization	A process by which customers seek to customize offerings to their own preferences which enhances customer relationships and reduces competitive threats	Valenzuela et al. (2009)
Service systems	Interactive configurations of mutual exchange where value is created collaboratively	Vargo et al. (2008)
	Value co-creation configurations of people, technology, value propositions connecting internal and external service systems, and shared information (e.g. language, laws, measures, and methods)	Maglio & Spohrer (2008)
Toolkits for user innovation	An emerging alternative approach in which manufacturers actually abandon the attempt to understand user needs in detail in favor of transferring need-related aspects of product and service development to users	Von Hippel (2001); Von Hippel & Katz (2002)
Toolkits for user innovation and design	A method of integrating customers into new product development and design, and allowing customers to create their own product which, in turn, is produced by the manufacturer	Franke & Piller (2004)
User design	A way for exploiting the interactivity of the web to enable users to design their own virtual products thus enabling the product development team to understand complex feature interactions and enabling customers to learn their own preferences for new products	Dahan & Hauser (2002)
User-friendly tools	A way for enabling users to develop new product innovations for themselves	Von Hippel & Katz (2002)
	The deployment of new technologies like computer	Thomke & Von

	simulation and rapid prototyping to make product development faster and less expensive	Hippel (2004)
User-oriented design (UOD)	A means for providing an orientation that fosters a deeper appreciation of user needs and what delivers value to customers	Veryzer & Borja de Mozota (2005)
User innovation	Innovation where users have performed a substantial part of the problem-solving process leading to a solution	Piller & Walcher (2006)
	A situation in which a customer develops a product that may subsequently be produced and commercialized by a company for the mass market	Kaplan & Haenlein (2006)
Virtual customer relationship management (vCRM)	A way to enable companies to design physical products and services that have been co-created with customers	Lakshmi & Elham (2007)
Virtual prototyping-aided design (environment) (VPDE)	The integration of computer supported modeling, simulation and the presentation of the target products and the related production	Tseng et al. (1998)
Web-based customization	A method where the software allows customers to create custom products via the web by providing guided product selection and configuration, automated product and process selection and generation, and integration with enterprise business systems	Simpson (2004)
(Web) user interfaces	A means to enable customers to select interactively those features that they prefer in their ideal product	Dahan & Hauser (2002)
Wikinomics	Weapons of mass collaboration or peer production that allow co-creation of products, access to markets, and customer delight through openness, peering, sharing and acting globally	Tapscott & Williams (2007, 11, 30)
Wisdom of crowds	Group intelligence winning over individual intelligence	Surowiecki (2004, 3)
5G electronic toolkit	An electrified innovation that accesses external know-how and uses of electronics-based design and information systems in the involvement of leading-edge users in design and development activities	Rothwell (1994)

As clarified by the figure, several terms have been coined with the Internet-driven user innovation. Indeed, in prior literature, there are a multitude of divergent attempts to conceptualize this new form of web-based collaboration – yet none of them has truly gained ground or wide acceptance. These and several other terms used show that the phenomenon is by no means clearly defined nor is the definition universally agreed upon. The other terms still include:

- Choice boards (Franke & Piller 2003; Piller 2004; Piller et al. 2005)
- Choice menus for mass customization (Liechty et al. 2001).
- Co-design-platforms (Franke & Piller 2003; Piller 2004; Piller et al. 2005)
- Collaborative customer co-design in online communities / collaborative co-design (Piller et al. 2005)
- Configurators (Franke & Piller 2003; Piller 2004; Piller et al. 2005)
- Customer co-design (Piller 2004)
- Customer value-oriented marketing information systems (CVOMIS) (Woodruff 1997)
- Design for mass customization (DFMC) (Jiao et al. 2003; Tseng & Jiao 1996)
- Design systems (Franke & Piller 2003; Piller 2004; Piller et al. 2005)
- E-product development (ePD) for mass customization (Helander & Jiao 2002)
- Human-centered design, customer-centric design, user-centered design (UCD) (Veryzer & Borja de Mozota 2005)
- Innovation-oriented online consumer communities (IOCC) (Kozinets et al. 2008)
- Internet-enabled customer collaboration in product innovation / co-creation in virtual environments (Shawhney et al. 2005)
- Internet-based toolkits (Piller & Walcher 2006)
- Mass-customized e-commerce (Dahan & Hauser 2002)
- Online consumer involvement in product design (Kamali & Loker 2002)
- Online mass customization (Dellaert & Dabholkar 2009)
- Solution space (Von Hippel 2001; Von Hippel & Katz 2002)
- Virtual customer environments (VCE) (Nambisan & Baron 2007)
- Virtual design toolkits (Nambisan & Baron 2007)
- Virtual customer integration (Füller & Matzler 2007)
- Virtual value (Rayport & Sviokla 1995)
- Web-based mass customization systems (Chen et al. 2001)
- Web-based mass customization toolkits (Franke et al. 2008).

From the list, it becomes evident that the emerging phenomenon of Internet-driven customer-centered mass customization is multifaceted and somewhat confusing. It is, actually, possible to think that ECMC would consist of all of the mentioned concepts at some level. Thus, in the context

of this research, it is seen that the above-mentioned definitions can be integrated in order to obtain a more elaborative depiction of the phenomenon. Selecting one single term or definition would give a rather narrow outlook on the subject. In particular, not all of the above-mentioned terms appropriately and to an adequate extent highlight the conjunction of e-commerce, mass customization and value co-creation. Hence, as there is a ambiguity in terms of the exact name and nature of the phenomenon, this research takes an integrative stance on the subject and attempts to clarify, uniform, and summarize ECMC by drawing on the above-mentioned academic standpoints.

Indeed, it is worthwhile to develop a synthesizing term or definition of the concept. This new overarching viewpoint stresses B2C electronic platforms as the new emerging servicescape; it emphasizes an even more holistic customer service approach instead of considering ECMC as a tool. The new perspective stresses a strategic perspective and mutual benefits more when it considers the virtual solutions as enablers for individual customization of products that not only provide value to customers (cf. Franke & Piller 2004) but also enable competitive advantage for the firm. It increasingly emphasizes the aspect of collaborative, transparent MC or co-creation[1] (Broekhuizen & Alsem 2002; Gilmore & Pine II 1997) with the aims at creating and sustaining sales and relationships. It not only combines the complementary, synergetic strategies of electronic commerce and mass customization (cf. Lee et al. 2000; Kaplan & Haenlein 2006) but also aims at producing a win-win situation (cf. Wind & Rangaswamy 2001). Moreover, the view particularly combines the perspectives of Lakshmi and Elham (2007) and Piller et al. (2004) on customer collaboration with the perspectives of Kaplam & Haenlein (2006), Valenzuela et al. (2009), and Wind and Rangaswamy (2001) on modern customization in order to further highlight the role of customer integration and co-operation in the process and production of feasible solutions. Ultimately, this view can be termed as electronic collaborative mass customization (ECMC) – implying the conjunction of MC and EVCC – and it may be defined as follows:

> *Electronic collaborative mass customization (ECMC) is an online built-to-order (BTO) customer-centered co-creation strategy emphasizing innovation, intelligence, integration and reciprocal interaction of buyer and seller through cost-efficient, collaborative, user-friendly tools for co-design or configurations of mutual exchange that aim at increasing value-added for the customer and competitive advantage for the company.*

2.3.2 Characteristics

ECMC can be seen as entailing certain momentous features to it. Together these different key components highlight the essentials of constituting a promising ECMC strategy; together they may enable the pursuit of competitive advantage. The most essential characteristics of ECMC can be

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[1] Yet, this collaboration is seen as a continuum. Its extent and amount may vary from truly engaging collaborative actions to much more adaptive and cosmetic operations (cf. Gilmore & Pine II 1997).

adopted and adapted from Hart's (1995) conceptualization of the key success factors of mass customization. The derived categorization presented herein identifies four central elements – system, organization, customers, and competitors – as the foundation of strategy creation. Let us consider and examine each of the central components more profoundly in the light of virtual interactions in order to broaden the original theory and extend our understanding on the key success factors of ECMC. Now, let us consider the classification of these value-enhancing characteristics in detail in order to obtain a more in-depth comprehension of the whole. A careful identification and analysis of the central aspects of ECMC is necessary so that effective competitive strategies may be built.

System

System, an electronic platform for customer engagement, is essential so that appropriate design mechanisms may be provided. In particular, a careful examination and contemplation of the different systemic aspects may mitigate problems, such as expense, delivery delay, low customer design input (cf. Bardakci & Whitelock 2003), disturbance of internal processes (cf. Füller & Matzler 2007), and major e-commerce impediments like operational issues, technological challenges, and ineffective solution design (Dubelaar et al. 2005). In order to have successful virtual customer integration, virtual interaction design needs to be developed (Füller & Matzler 2007) so that is accounts for several customer-driven requirements. These requisites of ECMC systems are being discussed next.

First of all, it is argued that companies should help customers in learning their preferences by presenting product information in an attribute-based manner (Huffman & Kahn 1998). The technology would need to link these features together into a simple, coherent and compelling interface so that it would require minimal amount of new learning and few changes in the consumer behavior and, thereby, be easy to use (Burke 2002). The toolkits would need to be user-friendly enabling users to use the skills they already have, undergo a trial-and-error learning, create the designs they want, and work in a customary, well practiced and error-free design language or skills. In this sense, it is also suggested that platforms could provide libraries of standard or commonly used modules that users can integrate into their own designs. (Von Hippel 2001; Von Hippel & Katz 2002.) Additionally, companies need to ensure that the custom designs can be produced with the manufacturer production equipment (Von Hippel 2001) with the help of flexible production technology and strong direct-to-customer logistics systems (Zipkin 2001).

On the other hand, the system would need to provide online shoppers convenient and secure payment and logistics procedures. In particular, it would be feasible to notify customer by email of sale items, offer a secure website for credit card payments, send an e-mail message for confirming order receipt or shipping, allow the saving of shipping and billing information, enable the saving of a list of prior purchases for proof of purchase and warranty repairs, and offer a possibly for tracking

the shipment online. Additionally, the products would need to be shipped in a timely and reliable manner, and customers could be allowed to have a return policy for unsatisfactory or defective products. (Burke 2002.) It also possible to provide customers with the option of altering their products or replacing them free of charge in case they fail to meet expectations (Dellaert & Dabholkar 2009).

Organization

The organizational know-how is important so that there is adequate talent behind ECMC solutions. Especially, a careful exploration and consideration of the different organizational aspects may mitigate potential disadvantages, such as narrow variety of ideas, insufficient expertise, scant decision basis (cf. Füller & Matzler 2007) and leadership issues (Dubelaar et al. 2005). As it is, relationship management skills are another central element that may be considered in an appropriate manner (Stump et al. 2002).

Firstly, the organization would need to persistently learn and interact with the customer in the form of collaborative dialogue (e.g. Ballantyne & Varey 2006; Kahn 1998; Payne et al. 2008; Shawhney et al. 2005; Verona et al. 2006). Interactive dialogue allows the company representatives not only to learn more about the customer needs and ways of meeting them (Peppers & Rogers 1995) but also to embed customer-centric logic into the service delivery system (Jiao et al. 2003). These important learning relationships (Broekhuizen & Alsem 2002) may be used for strengthening the benefits of MC (Bardakci & Whitelock 2003) and cross-selling other products or services (Kahn 1998). However, although in-depth relationships indicate good service, they may also cause discomfort as they restrict freedom of choice (Simonson 2009).

Secondly, firm needs to match customer requirements with product specifications (Piller et al. 2005). In this sense, besides using co-design toolkits for individualizing and selling, they can be used as a market research method for introducing new product designs (Franke & Piller 2004; Ulrich et al. 2003). Data mining – analytical processes of discovering trends, connections, and patterns of intelligence (i.e. new and possibly useful knowledge from data) in order to inform and improve competitive performance (American Marketing Association 2010; Johnson et al. 2008, 484) – might turn out to be useful (cf. Wind & Rangaswamy 2001) but the toolkits may also be improved by responding to the overt customer requests for improvement (Von Hippel 2001).

Finally, companies may want to build trust and reduce the perception of risk (e.g. Dubelaar et al. 2005; Piller et al. 2005) by building privacy guidelines and incentive structures carefully and facilitating knowledge exchange (Wind & Rangaswamy 2001). This may be done not only through secure logistics, as discussed previously, but also through an emphasis on the personal selling aspect of ECMC solutions. Indeed, it would be feasible to offer customers with the possibility of calling a toll-free telephone number, communicating via e-mail (Burke 2002), or interacting online directly with the company representative about the product they are designing (Dellaert &

Dabholkar 2009). Moreover, combining the virtual customer environments with appropriate offline product-related activities and interactions may enhance the overall customer experience (Nambisan & Baron 2007).

Customers

Customers are momentous so that the products are perceived as providing a better fit (cf. Simonson 2009). Since knowledge about user needs is essential (cf. Verganti 2003), customers would need to have an impact on company policies and strategies (cf. Wind & Rangaswamy 2001). Especially, a detailed investigation and analysis of the customer orientation may mitigate potential drawbacks, such as ignorance of future needs, low customer retention, and an inadequate contact to new potential customers (cf. Füller & Matzler 2007).

First of all, it is essential to understand that some customers are likely to rely on cues when considering the fit of a customized product (Simonson 2009). These cues may deal with the entire customization process that determines whether the customized offer is approved (Valenzuela et al. 2009). Hence, companies can invest in signaling activities to ensure worthwhile and adequately rewarded customer efforts (Piller 2004). One way to do this is through the creation of virtual communities that support the use of the platform. Herein, customers' sense of belonging and personal contacts may be utilized (Shawhney et al. 2005). Indeed, companies can combine virtual worlds with open innovation in order to facilitate capitalization on users' innovative potential and knowledge (Kohler 2009). This means executing consumer toolkits in conjunction with user communities (Franke et al. 2008) – groups of customers who use the Internet for performing online purchasing transactions and cooperating in the process of product purchases. The activation of customers as value creators with regard to toolkits can be especially crucial for company success. (Piller et al. 2005.)

Finally, consumers largely consider the reviews of other community members, particularly expert judgments of insiders and devotees (Kozinets 1999). In other words, they want expert ratings of product quality (Burke 2002). These rank-ordered recommendations such as summary evaluations, testimonials, and guidance on decision strategies, favorably affect the customer perceptions of offer attractiveness and fit, and can help in achieving a satisfying customization process (Simonson 2009; Valenzuela et al. 2009). Consequently, companies might introduce Wiki-style collaboration (Richards 2009) and follow the examples of Amazon and eBay by employing rating systems of peer feedback information (Franke et al. 2008).

Competitors

Competitors may be considered with regard to obtaining competitive advantage. In particular, a profound identification and evaluation of the different aspects of the competitive environment may

mitigate possible detriments, such as market uncertainties, intellectual property problems, and lack of secrecy (cf. Füller & Matzler 2007).

First of all, with regard to products, superior product design may be an essential competitive resource for the company. In this sense, providing product creativity through desirable, relevant/critical, rare/infrequent and pleasing design characteristics is essential in order to affect the level of satisfaction and willingness to purchase (Horn & Salvendy 2009). This means using different aspects of design, such as form, color, texture, materials, affordances, symbols, and metaphors, to communicate value (Boztepe 2007), and offering customers adequate product specifications, usage instructions, warranty information, and discount information (Burke 2002). Indeed, besides stressing visualization, companies may also provide customers with greater and more useful information about the designed products (Dellaert & Dabholkar 2009).

Secondly, most academics argue that consumers often perceive vast selections and choice possibilities as a negative issue as they increase complexity (e.g. Franke & Piller 2003). Consequently, companies should offer customers a specific range of options instead of providing unlimited assortment (Kaplan & Haenlein 2006). Following this reasoning, firms are better off identifying a limited range of basic styles wherein the assortment of detail and color needs to be considered carefully (Ulrich et al. 2003). More variety in product line allows for increased customization (Kahn 1998) and higher product utility (Dellaert & Stremersch 2004) but, at the same time, adding design feature options for MC might not affect customer satisfaction (Kamali & Loker 2002) and, actually, large assortments might seem monumental and frustrating rather than offer possibilities and choice (Kahn 1998). Providing too many options may lead to burden of choice (Piller et al. 2005) and psychological shutdown (Wind & Rangaswamy 2001).

Finally, it is essential to pay attention to the role of pricing in terms of competitive advantage. In this sense, consumers want to know not only the prices of the online products but also a comparison to store prices (Burke 2002). Additionally, the notion that pricing becomes more fluid and dynamic may allow for quantity discounts also. On the other hand, price becomes a less important factor since value and relationships are enhanced. (Wind & Rangaswamy 2001.)

3 THEORETICAL FRAMEWORK

The theoretical framework, in this research, is a depiction of how companies can obtain competitive advantage[2] though ECMC; it strives for identifying the key success factors[3] and guiding the development of competitive strategies[4]. It is particularly important to develop such a model since a true commitment to mass customization necessitates an explicit MC strategy (Hart 1995) and the adoption of e-business requires a consideration of a long-term perspective (Dubelaar et al. 2005). Indeed, since competitive advantage is said to emerge when companies implement their MC strategies efficiently (Kotha 1995), companies may need an efficient strategic framework for developing and executing the right applications (cf. Bernoff & Li 3008).

The underlying idea behind the development of the conceptual framework is to highlight ECMC as an efficient focus/hybrid strategy that utilizes low price/costs and differentiation (cf. Johnson et al 2008, 230; Kaplan & Haenlein 2006; Porter 1980, 39; Porter 2001) and central internal/company and external/industry factors (cf. Grant 2008, 4; Jiao et al. 2003; Johnson et al 2008, 103–104; Lamberg et al. 2008; Lindroos & Lohivesi 2004, 20; Peña 2002; Porter 1998; Sisodia 1992; Veryzer & Borja de Mozota 2005; Woodruff 1997) as sources of competitive advantage when pursuing particular positions leading to financial outcomes and profit maximization (cf. Day & Wensley 1998). The theoretical framework founds on the idea that MC and EVCC with the related key value and cost drivers – that is, factors that may have the most monumental impact on the cash generation capability of an organization (cf. Johnson et al. 2008, 491) – function as antecedents for ECMC and, thereby, define and create value. In the implementation phase, appropriate strategy process requires the consideration of both company- and industry-level factors.

Management process, for one, deals with corporate processes that are undertaken in order to deliver especial customer value. The successful execution of these elements, termed the key success factors of ECMC, is to lead to value extraction and financial performance – to competitiveness, marketing position, marketing performance and resourcing. This marketing performance can occur in a multitude of ways; it can, for instance, be witnessed with regard to return on investment, return on sales, profit margin and market share (cf. Duray et al. 2000). Particularly in an e-business environment, it can manifest in satisfied customers, improved process effectiveness, increased company growth in terms of income, increased learning by customers, and enhanced value generation (Dubelaar et al. 2005). Thus, the outcomes of ECMC can deal with market share as well as profitability (cf. Kumar 2004).

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[2] A situation wherein a firm has distinctive competences corresponding to those of the critical success factors of the industry that permit outperformance of competitors via low costs and/or differentiation (American Marketing Association 2010).
[3] Particular features that certain customers appreciate and company must excel at in order to outperform competition (Johnson et al 2008, 79).
[4] A plan for defining a position for the business based on the competitive advantages over competitors (American Marketing Association 2010).

Now, that the underlying logic of the framework has been explored, the structure of the step-by-step process chart highlighting importance of felicitous process understanding (cf. Piercy 2009) may be introduced. Figure 1 depicts the theoretical framework. Based on theoretical notions, the conceptual model identifies relevant antecedents, processes and outcomes, and highlights how companies may develop competitive ECMC strategies.
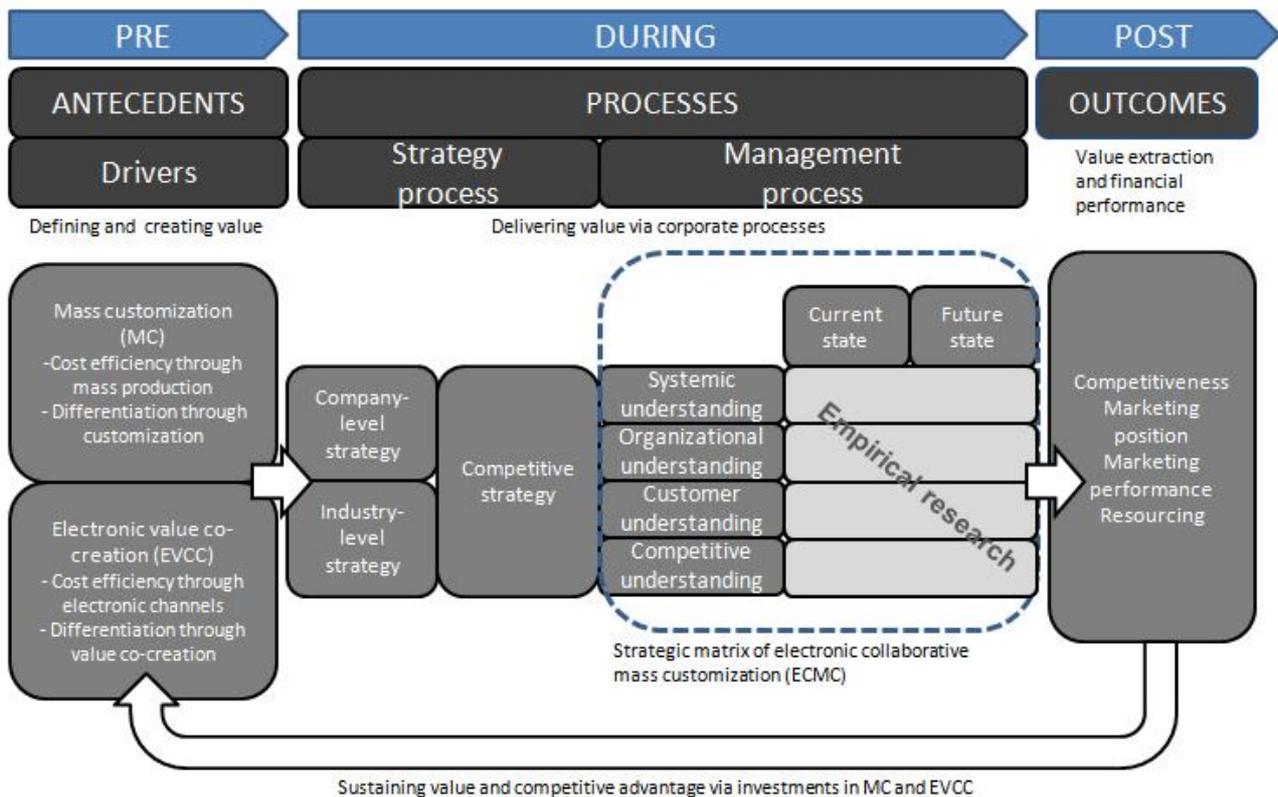
FIGURE 1: Theoretical framework

This research – given that it aims at exploring the key success factors of ECMC – focuses on the management process part of the figure with the intention of exploring means by which companies can build effective electronic collaborative mass customization (ECMC) strategies. The sub-questions for the study, in turn, deal with four distinct areas:

- *What are the key success factors behind systemic understanding?*
- *What are the key success factors behind organizational understanding?*
- *What are the key success factors behind customer understanding?*
- *What are the key success factors behind competitive understanding?*

As clarified by the questions, the research framework is founded on two theories. These theories are the theory of SWOT (e.g. Lindroos & Lohivesi 2004, 218) for emphasizing strategic decision-

making and the theory of Hart (1995)[5] for highlighting sources of competitive advantage. More specifically, using SWOT in the context of MC is logical since the success of MC depends on the alignment of internal capabilities and external opportunities (Broekhuizen & Alsem 2002; Da Silveira et al. 2001). The combination of these two distinct theories into one single framework, especially in the presence of electronic commerce, is to provide new insights to managers that former research has not adequately accounted for. The framework, in particular, increasingly acknowledges knowledge management as a competitive tool in global markets (cf. Slater & Narver 1998). Founding on the idea of data warehousing (DW), knowledge management (KM), and business intelligence (BI) integration, we are dealing with business performance management (BPM) or business intelligence intensive knowledge management (BIKM) that emphasizes continuous gathering, storage and management of internal and external knowledge in a process-oriented enterprise in order to understand business processes and their relationships, and, thereby, deliver superior customer value and obtain competitive advantage (cf. Cody et al. 2002; Golfarelli et al. 2004; Negash 2004; Slater & Narver 2000).

The long-term approach of the model supports e-business adoption so that it would be appropriate, relevant, value adding, and operationally and strategically viable (cf. Dubelaar et al. 2005). Nonetheless, however useful the presented framework, certain limitations need to be stated related to its use. First of all, the role of the model is to solely give gentle suggestions for managers with regard to strategy development – not to normatively guide corporate decision-making. The intention of this research is not to oblige managers to follow strict norms in decision-making but, rather, to offer interesting and potentially useful insights that need to be tailored according to company-specific contexts. Having said this, it becomes evident that strategy development should always be somewhat intuitive. Secondly, the role of the service logic behind the model is to guarantee customer-centrism in strategy development – not to suggest abandonment of goods-based models (cf. Grönroos 2006). Moreover, this service logic does not imply that all customers wish to have long-lasting relationships with the company. On the contrary, albeit it puts remarkable weight on intensive customer relationships, it leaves room for single transactions (cf. Payne et al. 2008). Hence, the model is to be understood so that it first and foremost stresses a longer time frame in CRM but contrives to acknowledge occasional commerce too.

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[5] The central ideas introduced by Hart (1995) are acknowledged by several other scholars too (cf. Broekhuizen & Alsem 2002; Da Silveira et al. 2001; Dubelaar et al. 2005; Fralix 2001; Hax & Wilde 2001, 10; Kaplan & Norton 1996; Kotha 1995; Porter 1990, 71; Treacy & Wiersema 1993).

4   METHODOLOGY

This chapter clarifies how the empirical research was conducted. It explains the empirical choices, methods and analysis (Silverman 2006, 15). In other words, some underlying research principles behind the empirical question of how to obtain competitive advantage through ECMC are contemplated. The chapter begins by outlining the research sample. Thereafter, data collection is described. Finally, data analysis is assessed.

4.1   Research sample

With regard to the sample of the interviews, the target population was chosen for the study based on certain determining factors that can be named as the target group criteria. These criteria of judgmental non-probability sampling wherein population elements are purposely selected based on the personal judgment of the researcher (Malhotra & Birks 2007, 410–412) include: firm prominence, company's business field, and geographical location. Only companies that were key players within the B2C field of ECMC solution business in Finland were selected to attend the study. Representation was sought from organizations in different industries that were keen on exploring how to better engage customers in value co-creation in virtual environments. Moreover, I concentrated on firms that have been successfully carrying out ECMC operations for some a while; all of the chosen companies showed a rather long record of successful ECMC solution implementations (average of 3.3 years) – considering that the phenomenon is only emergent.

Altogether six (6) companies were chosen to attend the study. The study participants were, consequently, drawn from these SMEs and large-scale enterprises (turnover from 2.5 to 1300 million). The firms included ECMC service providers and manufacturers from different industries. Four of the six organizations (4/6) were large global firms and the remaining two (2/6) were major regional or national companies. All were remarkable players within their sector. Due to confidentiality agreements, the comments, opinions and ideas of the interviewees are presented in this research so that the chosen companies may not be identified as such (Company 1, 2, 3, 4, 5, 6). As we are dealing with sensitive issues (i.e. matters related to competitive advantage) it is only natural to strictly protect the privacy of the key informants (cf. Eskola & Suoranta 2005, 57).

The research was carried out over an eleven-month (11) period in Northern Europe, Finland. For each case, interviewees were selected based on their position within the firm and experience with the planning and implementation of ECMC solutions. In this study, marketing managers were interviewed in order to obtain a strategic perspective. Overall, six (6) interviewees provided data for the research. Most had, besides ECMC knowledge, a rather long history and know-how in terms of MC or other design-related solutions. The chosen companies' representatives were in each case contacted via telephone and e-mail. The research information, questions, and structure were pretested with two testees – as suggested by academics (Eskola & Suoranta 2005, 88; Hirsjärvi &

Hurme 1980, 71; 2010, 72) – and sent in electronic format beforehand to the interviewees in order to guarantee a proper familiarity with the research subject and conversation themes. This PDF file explained the background, reasons, aims, methods, themes, sub-categories, and progress of the interview (see Appendix 1). The appropriate interviewing dates were settled via e-mail thereafter.

The interviews were semi-structured interviews and were conducted by the means of an individual, personal, one-on-one encounter in Aalto University's or, alternatively, company-specific facilities in Finland. The interviews were conducted during September 2010 - October 2010. They took approximately two hours (average of 2.4 hours), were conducted in Finnish language, and were tape-recorded as preferred (Silverman 2006, 204), and transcribed systematically. During interviews, standard-shaped field notes (e.g. Malhotra & Birks 2007, 237) or notepads were written in order to highlight the most integral aspects of the discussion and ease the latter data analysis (e.g. Hirsjärvi & Hurme 1980, 103). Afterwards, in terms of data verification, participant (e.g. Malhotra & Birks 2007, 247) or respondent validation was utilized which means that the transcripts were sent to the interviewees for revision in order to mitigate the possibility of misunderstandings (e.g. Silverman 2006, 292) or other response errors (e.g. Malhotra & Birks 2007, 84–85). Some minor corrections were made on the behalf of the informants due to the data entailing too detailed information about the nature of competitive advantage or speculation about competitors and retailers.

Netnography was used as a secondary information source and research method in order to produce triangulation, and an up-to-date, multidimensional view on the subject. As ECMC is a web phenomenon, it was presumed that essential information could be found in the Internet too. The netnographic research was conducted during February 2010 – September 2010. Approximately 70 websites and discussion forums were studied in order to obtain sufficient and versatile data for the study. Especially and primarily, English speaking, international company websites and web discussions were targeted so that the research could be broadened to include ECMC practices from several geographic locations and other global players.

4.2   Data collection

This study is cross-sectional by nature what means that the collected data gives us a snapshot of the changing phenomenon. This means that the data is collected only once (Malhotra & Birks 2007, 74) – in one point of time in the present day. Consequently, the research does not entail a temporal dimension – that is, is a depiction of development or change – but, rather, is descriptive by nature (cf. Alasuutari 1994, 122–123). Nor is the purpose to measure effects of systematic changes within a certain timeframe (cf. Galtung 1967, 65).

In the acquisition of this synchronic data, two supplementary methods, namely themed interviews and netnography, are being utilized. Methods are particular research techniques (Silverman 2006, 15). In this research, two qualitative methods are used. The data is gathered from

primary and secondary sources (cf. Malhotra & Birks 2007, 94) as themed interviews and netnography are being utilized. Qualitative methods, in particular, are used in order to gain in-depth comprehension of the phenomenon; a deeper insight (e.g. Silverman 2006, 25, 56) that allows for a holistic, interpretative outlook on the sensitive issues of this complex phenomenon and enables the development of new theories (Malhotra & Birks 2007, 154-155). The interviews are conducted with marketing managers whereas the explored netnographic material can be categorized as follows:

- Company websites / ECMC solutions (e.g. CafePress 2010; Bluecotton 2010; INKtastic Inc. 2010; Instashirt.com 2010; Nike 2010; SonicShack 2010; Wordans.com 2010; Zazzle Inc. 2010; Spreadshirt 2010)

- Discussions (e.g. Basso 2009; Hollrr 2010; Runffm.com 2009; Stara.fi 2009; Yuku 2010).

The aim is to reach a saturation point where the data starts repeating itself as the informants no longer provide new information for the research problem (Eskola & Suoranta 2005, 62; Hirsjärvi & Hurme 2010, 60; Tuomi 2007, 142; Tuomi & Sarajärvi 2009, 87–88). Moreover, the purpose is to produce methodological triangulation in order to come up with a more versatile, comprehensive and valid approach for the subject (Tuomi & Sarajärvi 2009, 143–144; Silverman 2006, 291). Through triangulation, the data is being verified by using alternative explanations from other data sources (Malhotra & Birks 2007, 247) that is to enhance the reliability of a research (Alasuutari 1994, 153; Eskola & Suoranta 2005, 68; Hirsjärvi & Hurme 2010, 38) and highlight different aspects of the phenomenon (Hirsjärvi & Hurme 2010, 38; Silverman 2006, 9). Actually, it is feasible to enhance the value of the empirical research by utilizing both traditional and modern research methods in the same research – especially, when examining web-based consuming and exchange systems (Simpson 2006). Let us now consider these methods in more detail since the use of research methods needs to be justified (cf. Hirsjärvi &Hurme 1980, 27).

4.2.1 Themed interviews

Interviewing as a technique is utilized since this research deals with a relatively unexplored field entailing multifaceted and sensitive information that needs to be clarified and deepened (cf. Hirsjärvi & Hurme 2010, 35). In particular, themed, semi-structured or semi-standardized interviewing – a two-way discussion centering on pre-defined themes with a predetermined aim – is exploited since in-depth information is needed from a relatively small amount of informants (Hirsjärvi & Hurme 1980, 39, 49–52). The themes, yet based on the theoretical framework of the research (Tuomi & Sarajärvi 2009, 75), may be augmented and deepened with additional questions as far as the research requires and the qualifications and interest of the interviewee allow (Hirsjärvi & Hurme 1980, 55–56, 103; 2010, 67).

As the strict pre-construction of research questions is not common to themed interviewing, it is feasible to solely outline the main ideas and leave questions open (Hirsjärvi & Hurme 1980, 58). Indeed, since the questions do not need to follow a clear form or order (Eskola & Suoranta 2005, 86), it is possible to be flexible with regard to the implementation. One might actually name the interviews as soft, informal conversations that allow not only for the discovery of few versatile, sensitive experiences in the past that people are vaguely conscious of but also for natural conclusions and multifaceted interpretations of the reality. (Hirsjärvi & Hurme 1980, 45–55, 142.) From a phenomenological perspective, it is feasible to talk about an open, natural and conversation-like approach (Aaltola & Valli 2001, 35) – a direct, personal one-on-one interview that aims at exploring motivations, attitudes, and feelings (Malhotra & Birks 2007, 207).

In this sense, the research needs to be based on unbiased samples (Galtung 1967, 52). The sample size is not a central factor in qualitative research since neither representativeness nor generalization is pursued (Alasuutari 1994, 142). Rather, quality (Eskola & Suoranta 2005, 18) purpose (Hirsjärvi & Hurme 2010, 58) or authenticity, are important since the purpose is to obtain sincere understanding of experiences through open-ended questions (Silverman 2006, 20). Thus, a discretionarily selected research group or discretionary sample (Eskola & Suoranta 2005, 18; Hirsjärvi & Hurme 2010, 59; Tuomi & Sarajärvi 2009, 87) is selected through purposive sampling wherein key informants are chosen based on certain parameters (i.e. features or processes of interest) (Silverman 2006, 306).

The most prominent benefit of interviewing is flexibility since the researcher may: obtain naturally occurring, contextually sensitive data for discovering sequences and meanings (Silverman 2006, 44), get people to participate as respondents (Hirsjärvi & Hurme 1980, 30), consider unmentioned issues or non-verbal messages (e.g. position, gestures, additional moves, look, pitch), select appropriate interviewees, repeat questions or leave room for silence, ask the questions in the most suitable order, correct possible misunderstandings, clarify phrasing of expressions, observe the interviewee, and converse with the informant which decreases unresponsiveness (Hirsjärvi & Hurme 1980, 64, 103–114; Jyrinki 1977, 11–12; Tuomi & Sarajärvi 2009, 73–74). On the other hand, interviews entail certain risks too, such as irrelevant information, high costs (e.g. tape transcribing, variable formations, analysis and reporting phases), lack of resources, plausibility of the research (reliability and validity with regard to concepts, content, interviewer, interviewees, transfer, variables, and conclusions) (Hirsjärvi & Hurme 1980, 30–35, 143–144; Hirsjärvi & Hurme 2010, 35; Jyrinki 1977, 16; Silverman 2006, 46–47; Tuomi & Sarajärvi 2009, 74), space- (e.g. artifacts), interviewer- (e.g. tension, presence, argumentation, forcing) or interviewee-related (e.g. mood, social desirability effect or perversion of the truth) bias (Hirsjärvi & Hurme 1980, 118–119; Hirsjärvi & Hurme 2010, 35, 125–127; Jyrinki 1977, 13–14, 123–126), and language issues (e.g. differing vocabulary) (Hirsjärvi & Hurme 1980, 62).

4.2.2 *Netnography*

Internet plays an increasingly central role (Dholakia & Zhang 2004) in qualitative research (Nancarrow et al. 2001) since it offers essential information on customer preferences, symbols, and decision-making (Kozinets 2002). The contemporary computer-mediated business environment allows for the use of netnography, in particular, which is the exploration of Internet-mediated web communities (Gloor 2007; Kozinets 2002). Netnography is an adapted version of mystery shopping (cf. Wilson 1998) and ethnography; it is a web marketing method or web practice of anthropology that studies web cultures and communities formed via computer-mediated communications and aims to explain consumer insight and conceptions behind decision-making by utilizing public information of forums (Kozinets 2002; Kozinets 2006). This webnography (Puri 2007) is based on the introspection of the researcher – on participation and observation in certain cultural arenas (Kozinets 2002) with the focus on the innermost social and cultural interactions between consumers, and consumers and products/brands (Lee & Broderick 2007). It is an interpretative method for understanding the behavior of cyber communities (Kozinets 1998) where the collected, mainly textual, data consists of researcher's own field notes and artifacts of the culture/community, such as downloaded files, news groups posts, real-time interaction, bulletin board information, and e-mail interaction (cf. Beckmann & Langer 2005; Kozinets 1998; Nancarrow et al. 2001).

There are several benefits to netnography. It allows for an access to consumers' world or contemporary virtual consumption (Simpson 2006), entails novelty value since two ethnographic studies have never been conducted in a similar manner (Kozinets 2002), is faster, easier and cheaper than traditional ethnography and much more realistic and less obtrusive than, for instance, interviews (Kozinets 2002; Kozinets 2006), and deals with natural, collective interaction between consumers allowing for the uncovering of consumer conceptions, impressions, motivations, symbols (Kozinets 2002), wishes, hopes and dreams (Kozinets 2006). However, netnography entails particular risks too, such publishing publicly stated comments against informants' wills (cf. Kozinets 2002), complying with ethical rules of communication and media research (Langer & Beckman 2005) (e.g. obtaining content, honoring human worth and interests of the community, and supporting individuality and confidentiality) (Kozinets 1998), and acquiring information that is problematic by nature (i.e. richness of information and sincerity/reliability of the informants) (Kozinets 1998; Kozinets 2006; Langer & Beckman 2005). Consequently, researchers must be careful when applying the netnographic conclusions into broader contexts (Kozinets 1998).

4.3 Data analysis

Analysis is an on-going activity during the research project (Malhotra & Birks 2007, 236) and it provides a pathway for reaching the conclusions from the gathered data. In terms of the employed methods, namely interviews and netnography, the analysis is conducted manually without the use of

computer-assisted qualitative data analysis (cf. Malhotra & Birks 2007, 257) and the results are compared in order to generate multifaceted yet compact data. In this sense, also memo writing, namely the combination of notes with original data and interpretations, is utilized (Malhotra & Birks 2007, 249).

More specifically, qualitative analysis – text or document analysis with the aim of exploring meanings and content literally – is used (cf. Tuomi & Sarajärvi 2009, 104–106). Dealing with units of analysis, dimensions and values (cf. Galtung 1967, 67-68) it aims at setting categories for instances (cf. Silverman 2006, 159) by selecting certain variables for investigation (cf. Hirsjärvi & Hurme 1980, 129). This is method for structuring collected data through notes (cf. Tuomi & Sarajärvi 2009, 92) and categorizing the data by specifying alternative categories into which the obtained data is placed (cf. American Marketing Association 2010). Thus, it breaks down the data and attaches references by forming mutually exclusive and collectively exhaustive category codes (Malhotra & Birks 2007, 240, 484–485). Consequently, the data is thematized (Eskola & Suoranta 2005, 174; Tuomi & Sarajärvi 2009, 93) and condensed to the most relevant issues and meanings (Aaltola & Valli 2001, 53; Eskola & Suoranta 2005, 174).

In particular, the analysis is theory-guided meaning that categories are defined according to prior information and content to these categories is searched from the collected data. Hence, a theory and/or system of concepts that are formed from prior knowledge guide the data analysis. (Tuomi & Sarajärvi 2009, 115.) The idea of the data being verified by using alternative explanations from theories (Malhotra & Birks 2007, 247) means that theories help in the analysis but the analysis is not founded on particular theories in straightforward manner (Alasuutari 1994, 130). Indeed, prior theory – an assumption, theoretical finding or summary – helps or guides the progression of the analysis, abductive thinking, and research results (cf. Alasuutari 1994, 109; Tuomi & Sarajärvi 2009, 96–97). Fundamentally, the research aims at producing a theory by clarifying the concepts and their relationships (Alasuutari 1994, 113; Galtung 1967, 169), and simplifying and reducing the data (Malhotra & Birks 2007, 251). Through preplanning and structuring (Malhotra & Birks 2007, 73) it describes the qualitative features of a phenomenon (Alasuutari 1994, 126).

5   EMPIRICAL RESULTS

This chapter explores empirically the phenomenon of electronic collaborative mass customization (ECMC). The chapter discusses and analyzes the processes behind ECMC aiming at producing knowledge that is central to the acquisition of competitive advantage and delivery of superior customer value. Basically, the chapter aims to deepen our extant understanding of the integral elements behind strategy creation; it offers insights on the different internal and external knowledge aspects of ECMC. The most salient strategic and managerial processes behind ECMC deal with the four central blocks of the phenomenon, namely system, organization, competitors, and customers. Let us go through the key success factors in more detail in order to understand the strategy creation process better.

5.1   Systemic understanding

First of all, findings concerning the essential elements of the system are addressed. This means determining key success factors with regard to the systemic understanding of the company. With the term 'system', I refer to the virtual platform and the associated technological, production, and logistic choices. In this sense, I talk about systemic understanding what means profound configurator/toolkit comprehension and utilization. In this sense, interface and logistics are considered as two central components of strategy creation.

5.1.1   Interface

The interface design can be a demanding task to accomplish. As it can take up nearly one million euros, it is clearly not possible for everyone, not even every single subsidiary in a consolidated corporation. On the other hand, a general threat exists that not enough is invested in the tool, even if this would be possible[6]. Consequently, it may be a difficult task to provide the required decent electronic interaction design for virtual customer integration (cf. Füller & Matzler 2007).

Access

As the platform needs to be extremely accessible[7], it is wise that no usability barriers exist. For instance, it could be reasonable to state the supported browser types[8] and computer requirements[9] on the website. Indeed, if customer cannot enter the solution, reasons for this need to be provided[10].

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[6] Company 2
[7] Company 3 and 6
[8] Mitsubishi Motors North America 2010; Muurame Oy 2010; Tulikivi 2009
[9] Company 3; Mitsubishi Motors North America 2010
[10] Company 6

Additionally, firms would need to allow for alternative ways of interacting with the company's products (e.g. prices in PDF format)[11]. Due to lags, bugs, and errors, that make downloading and usage slow[12], speed and maintenance are to be considered as well[13]. Alternatively, it may be feasible not to ask for a person's contact information (e.g. e-mail address) immediately as a prerequisite for using the solution[14]. Moreover, it is wise not to have unnecessary and too heavy plug-ins that the customer would need to download on the computer but, rather, the ECMC solutions may be built upon some of the most commonly used and latest/advanced plug-ins (e.g. Flash, HTML, Acrobat Reader, Shockwave, QuickTime, Viewpoint Media Player) that function in different computers and browsers[15]. They would need to be general and light minimizing the extra effort. The technological aspects become evident in the literature too where new technologies are seen as central means for integrating design better into its markets (Sisodia 1992). In the interviews, the discussion about access is prominent as well:

> "People download players more easily than entire programs -- Our solution functions over the web making updating much more convenient and faster -- possibility to keep it up-to-date all the time" (Company 1)
>
> "Mac users may not as such use flash-based solutions; rather, the solution would need to be based on html coding" (Company 2)
>
> "Web-based, new technology -- maybe some day flash will be preinstalled" (Company 3)

Usability

Companies may consider usability as well. Following the logic of Simonson (2009), Piller (2004) and Valenzuela et al. (2009), it is feasible to provide customers with appropriate cues and signals. These cues can be both visual and verbal. Indeed, the platform needs to allow for a full screen[16], visually and technically rich, dynamic and realistic product depiction so that customers may experience the product as if it was real[17] instead of primitive or unsophisticated solutions[18]. Moreover, it is possible to provide user guidance (end user and retailer) through tutorial videos (even with voices)[19], guide files/quick guides[20], pop-up windows and/or a learning/help centers for

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[11] Company 5; Etella Oy 2010
[12] Bluecotton 2010
[13] Company 3
[14] CafePress.com 2010; Harvia 2007; Pikicentral 2008; Toyota Motor Sales 2010
[15] e.g. Buster 2010; Company 3; 5; 6; Etella Oy 2010; SonicShack 2010
[16] e.g. AG 2010
[17] Company 3 and 6
[18] Company 5
[19] e.g. Company 3; 6; CustomInk 2010; INKtastic Inc. 2010; Nike 2010; Pikicentral 2008; SonicShack 2010
[20] Audi AG 2010; Spreadshirt 2010; Zazzle Inc. 2010

tips or tutorials[21]. Finally, firms might consider having general design instructions and other relevant information behind help or frequently asked questions (FAQ) section[22].

Moreover, active testing and benchmarking becomes important but companies need to be also capable of changing the utilized technology if needed and, thereby, provide a platform that renews and is up-to-date[23]. This means using large-scale Beta testing when there are major changes to the toolkit[24]. On the other hand, the database needs to be flexible enough for local needs too so that small local adjustments can be made real-time to the web solution[25]. Like scholars, also the interviewees see flexibility (Zipkin 2001) and use of lead users as important issues (Rothwell 1994; Von Hippel 2001):

> *"It was first in closed space -- for four months we collected data from lead users which allowed for the elimination of biggest mistakes and acquisition of feedback." (Company 1)*
> *"There are two types of testing: there is centralized testing for bigger things and local, collegial testing for smaller ones" (Company 2)*
> *"Everything needs to be tested" (Company 3)*

Scope

In terms of scope, both geographic and technological options may be considered. First of all, concept may be extended abroad. In this sense, it might be fruitful to operate internationally by translating the language and prices[26]. Herein, firms may, for instance, build a global or pan-European site wherein customers can choose the appropriate language and, thereby, be guided to the right, land-specific toolkit or configurator[27]. Nonetheless, as this would require more resources due to doubled maintenance, it would be feasible to have an automated data input – that is, a common product data base – that would feed the configurator. At the same time, the whole company website might function as a configurator instead of a pop-up so that customers would not even realize that they are customizing.[28] Secondly, in terms of augmenting the concept even more, technologies

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[21] adidas 2010; BoardPusher 2010; CafePress.com 2010; CustomInk 2010; Dinscooter Sverige 2010; DressByDesign 2010; Instashirt.com 2010; Itella 2010; Mitsubishi Motors North America 2010; Volvo 2008

[22] American Honda Motor Co. 2010; BoardPusher 2010; CafePress.com 2010; Dinscooter Sverige 2010; DressByDesign 2010; Etella Oy 2010; indiDenim 2010; INKtastic Inc. 2010; Instashirt.com 2010; Nike 2010; Pistol Clothing 2010; Republic Bike Inc. 2010; Spreadshirt 2010; Timbuk2 2010; Toyota Motor Sales 2010; Tulikivi 2009; Vans 2010; Volvo Car Corporation 2008; Wordans.com 2010; Zazzle Inc. 2010. Some companies have even automatized the maintenance of FAQ by building a system that turns the list of frequently asked questions into a powerful self-service database (LivePerson 2010). Also, customers may be allowed to rank the usefulness of tips and browse relateed entries (CafePress.com 2010).

[23] Company 3. Moreover, there is a threat of getting stuck on current technologies or fully customized solutions (e.g. certain environment and version) (Company 3). At the same time, the threat of being stuck in flash technology, in particular, enables the development of flash-free solutions (Company 2).

[24] Company 1; 2; 3; Spreadshirt Blog 2010

[25] Company 2

[26] CafePress.com 2010; Company 1; Nike 2010; Wordans.com 2010; Zazzle Inc. 2010

[27] Buster 2010; CafePress.com 2010; Nike 2010; Oakley 2010; Spreadshirt 2010; Wordans.com 2010; Zazzle Inc. 2010

[28] Company 2

might entail new prospects not yet explored. For example, capacities may be increased in future allowing for more data exchange[29], companies may obtain fast and easy 3D coding assets and improved visual images[30], or it might be possible to introduce a seamless, yet expensive, customization process through photorealism[31]. The option is photorealism, in particular, seems of interest:

> *"A broader perspective, a photorealistic space -- picture-like space allowing for 3D spaces and enabling customers to become convinced about the fit -- you may also photograph own space and determine colors" (Company 1)*
> *"Bringing more options, such as artificial reality (AR), which is the combination of product and space. It enables realistic products" (Company 3)*

Yet despite the obvious possibilities, nobody knows how technology, Internet in particular, is going to evolve. For instance, servers might crash and different versions of servers might be developed.[32] In order to prevent detrimental effects of technical problems, such as customer switching[33], too much complexity, or outdated systems, firms need to be alert in tracking and reacting to the changes in the technological business environment[34]. Also external consultants may be used in this assessment [35].

5.1.2 Logistics

In terms of logistics, several viewpoints are to be highlighted. First of all, companies have divergent policies in terms of online purchasing and delivery. As it is, some companies do not offer their customers with the possibility of conducting e-commerce[36], some companies offer it but to a limited range[37], and yet some companies offer it to everyone through international shipping[38]. Many companies acknowledge that the logistics part is inadequately handled at the time being[39] as the platform cannot be utilized for closing sales. In this sense, it might be worthwhile to introduce e-

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[29] Company 1
[30] Company 2 and 5
[31] Company 1; 2
[32] Company 1; Sihvola 2010
[33] Company 2
[34] Company 4; 5; 6
[35] Company 4
[36] e.g. Muurame Oy 2010; Toyota Motor Sales 2010
[37] adidas 2010; Converse Inc. 2010; SonicShack 2010
[38] e.g. Bluecotton 2010; BoardPusher 2010; CafePress.com 2010; Dinscooter Sverige 2010; indiDenim 2010; Nike 2010; Pistol Clothing 2010; Republic Bike Inc. 2010; Wordans.com 2010; Zazzle Inc. 2010
[39] Company 1, 2; 4; 6

commerce or, alternatively, data integration[40] so that process-related opportunities, such as decreased lead times, may be pursued[41].

E-commerce

With regard to the emergent trend of e-commerce[42], a structured sales process may be utilized wherein customers can add and remove items to a shopping cart or basket (preferably with a cart reference ID and without minimum orders)[43], check the availability of items (e.g. information about stock and average waiting time)[44], and check out with or without signing in[45]. Companies may also provide customers with a wish list wherein they can keep track of not only their previous purchases but also desired shopping items[46].

Additionally, customers might be allowed to have an order summary (i.e. detailed list of current purchases)[47], check the delivery calendar[48], check the order status and history, receive confirmation mails (e.g. new, in production, wait, sent, sent and paid, cancellation, return)[49], see store locator and even a store that sells a particular design[50], change their shipping fees[51] (i.e. free standard order, rush order, super rush / pick-up / tax / standard, priority, express, international order with extra cost)[52], track orders online[53], change the method of delivery, add orders to the cart in the middle of delivery[54], and choose partial shipments in order to assure timely delivery[55]. Finally, approximate delivery times would need to be brief and clearly stated on the company website so that customers

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[40] Company 1; 2; 3

[41] Company 3

[42] Company 3

[43] adidas 2010; Bluecotton 2010; BoardPusher 2010; CafePress.com 2010; Converse Inc. 2010; CustomInk 2010; Dinscooter Sverige 2010; DressByDesign 2010; indiDenim 2010; INKtastic Inc. 2010; Nike 2010; Oakley 2010; Pikicentral 2008; Pikistore 2008; Pistol Clothing 2010; Republic Bike Inc. 2010; SonicShack 2010; Spreadshirt 2010; Timbuk2 2010; Vans 2010; Wordans.com 2010; Zazzle Inc. 2010

[44] BoardPusher 2010; CafePress.com 2010; Company 3; Converse Inc. 2010; Nike 2010; Republic Bike Inc. 2010; SonicShack 2010; Vans 2010; Zazzle Inc. 2010

[45] e.g. Vans 2010

[46] e.g. Converse Inc. 2010; Vans 2010

[47] adidas 2010; American Honda Motor Co. 2010; Audi AG 2010; Bluecotton 2010; BoardPusher 2010; Buster 2010; INKtastic Inc. 2010; Mercedes-Benz USA 2010; Nike 2010; Oakley 2010; Opel 2010; Pistol Clothing 2010; SonicShack 2010; Timbuk2 2010; Toyota Motor Sales 2010; Tulikivi 2009; Vans 2010; Volvo 2008; Wordans.com 2010

[48] Company 2; CustomInk 2010

[49] Bluecotton 2010; BoardPusher 2010; Converse Inc. 2010; Instashirt.com 2010; Nike 2010; Oakley 2010; Pistol Clothing 2010; Republic Bike Inc. 2010; Spreadshirt 2010; Vans 2010

[50] e.g. adidas 2010; Buster 2010; Company 5; DressByDesign 2010; Nike 2010; Oakley 2010; Vans 2010; Volvo Car Corporation 2008

[51] Companies may also provide free shipping for items that surmount a specific monetary sum (CafePress.com 2010; Oakley 2010; Timbuk2 2010; Wordans.com 2010; Zazzle Inc. 2010).

[52] Bluecotton 2010; BoardPusher 2010; CustomInk 2010; DressByDesign 2010; INKtastic Inc. 2010; Instashirt.com 2010; Pistol Clothing 2010; SonicShack 2010, Vans 2010

[53] adidas 2010; Bluecotton 2010; CafePress.com 2010; CustomInk 2010; Pikistore 2008; Wordans.com 2010; Zazzle Inc. 2010

[54] Bluecotton 2010

[55] Bluecotton 2010; Vans 2010

are knowledgeable and satisfied about the length of the customization process[56]. Also, having the delivery outsourced (e.g. partnerships with FedEx or DB Schenker/GLS)[57] and using bulk inventories may be feasible so that customer expectations of fast delivery are met on a timely basis[58]. Indeed, providing efficient e-commerce is essential since customers seem to value appropriate and fast delivery:

> *"This was amazing. And it arrived before I even thought it would!! -- Wow, that's what I call service! I just requested the shirt and poster on Thursday and they landed on my doorstep this morning, -- I am impressed with the speed with which my orders are completed and arrive. -- I absolutely cannot believe how quickly I received our personalized purchase!"*
> *(Zazzle Inc. 2010)*

On the other hand, companies can provide secure e-commerce. As academics claim, firms may build trust and reduce the perception of risk by building privacy guidelines (Dubelaar et al. 2005; Piller e al. 2005; Wind & Rangaswamy 2001). Consequently, the fear of phishing in terms of web purchases and viruses on unknown websites needs to be minimized so that customers feel safe in the virtual environment. As it is, many ECMC companies are already being accredited as reliable actors in the field. They have references from different virus companies (e.g. McAfee Secure)[59] and authentication service providers (e.g. Better Business Bureaus, Digicert, BizRate Research, VeriSign, Entrust, Comodo, RapidSSL, thawte, Trustwave, Authorize.Net)[60] in order to assure proper data encryption. Moreover, companies may introduce themselves on the websites in 'about us' section through information and even photos of personnel[61], highlight the positive press or media image of the company[62], and provide proper user agreements (i.e. terms and conditions), guarantees, warranties, content disclaimers, intellectual property policies and privacy policies[63]. Finally, companies might consider return policies. It is reasonable to offer customers with the possibility of returning an unused (especially defective) item like in stores, either for free or, for

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[56] e.g. Nike 2010, Converse Inc. 2010

[57] Company 1; Company 3; Dinscooter Sverige 2010

[58] Company 2

[59] Bluecotton 2010; BoardPusher 2010; CafePress.com 2010; CustomInk 2010

[60] adidas 2010; Bluecotton 2010; BoardPusher 2010; DressByDesign 2010; INKtastic Inc. 2010; Nike 2010; Spreadshirt 2010; Pikistore 2008; Pistol Clothing 2010; Republic Bike Inc. 2010; Timbuk2 2010; Zazzle Inc. 2010

[61] Bluecotton 2010; CafePress.com 2010; CustomInk 2010; DressByDesign 2010; indiDenim 2010; INKtastic Inc. 2010; Instashirt.com 2010; Oakley 2010; Pikistore 2008; Pistol Clothing 2010; Republic Bike Inc. 2010; Timbuk2 2010; Zazzle Inc. 2010

[62] Dinscooter Sverige 2010; indiDenim 2010; Republic Bike Inc. 2010

[63] adidas 2010; American Honda Motor Co. 2010; Bluecotton 2010; BoardPusher 2010; CafePress.com 2010; Converse Inc. 2010; Dinscooter Sverige 2010; DressByDesign 2010; indiDenim 2010; INKtastic Inc. 2010; Instashirt.com 2010; Mitsubishi Motors North America 2010; Nike 2010; Pikistore 2008; Pistol Clothing 2010; Republic Bike Inc. 2010; SonicShack 2010; Timbuk2 2010; Vans 2010; Volvo Car Corporation 2008; Wordans.com 2010; Zazzle Inc. 2010. Also, customers may fear that companies profile and sell their information out (Company 5).

instance, by covering the postal costs (i.e. money-back guarantee)[64]. Ultimately, many options dealing with structured, convenient, reliable online shopping, like scholars suggest (Burke 2002; Dellaert & Dabholkar 2009), exist for enhancing companies' trustworthiness and increasing customers' willingness to purchase.

Data integration

It is of relevance to understand that not all customers want to shop online – especially, when the product costs a lot or when there is, due to traditional habits, a possibility to bargain from the product or get a refund[65] for an old product in the store[66]. Alternatively, not all companies seem interested in e-commerce due to a variety of reasons, such as misunderstandings, clauses, established retailing networks[67] and inadequate preparedness (i.e. manual, old or outsourced company database)[68]. As it is, many of the present ECMC solutions are not directly integrated to the CRM system of the retailers due to associated costs and difficulties[69]. Yet, data integration could be especially useful since retailers would automatically get the appropriate sales information beforehand[70] and manufacturers would get clearer manufacturing and logistical instructions (e.g. electronic order items of what and where)[71]. This comes evident in the interviews:

> *" It is possible to integrate the data to ordering and delivery systems" (Company 1)*
>
> *"Retailer customer management system would directly get the configurations -- sales people can be prepared better -- integrated solutions have been made but every country's system differs so there is no patent solution" (Company 2)*
>
> *"Integrating to the production allows for clearer instructions and image -- order confirmation may entail logistic instructions" (Company 3)*
>
> *"Integration allows for utilization of data -- information for the organization and marketing" (Company 4)*
>
> *"Sending the draft electronically to the sales side" (Company 5)*
>
> *"Transferring straight to the seller, not in a text file. Retailer systems – interfaces – can see the design immediately" (Company 6)*

When talking about internal logistics, it would also be possible to offer tailor-made toolkits for the retailers. This is uncovered in the interviews:

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[64] e.g. adidas 2010; Bluecotton 2010; BoardPusher 2010; CustomInk 2010; indiDenim 2010; INKtastic Inc. 2010; Mooney 2005; Nike 2010; Republic Bike Inc. 2010; SonicShack 2010; Zazzle Inc. 2010
[65] However, there are web programs too that roughly evaluate the refund prices of used items (Company 5).
[66] Company 1; 2; 4; 5; 6
[67] Company 5 and 6
[68] Company 3
[69] Company 1 and 2
[70] Company 2
[71] Company 3

"Retailers could enter the program directly and feed their orders in our system whereas now they send it in PDF or via fax -- it is possible to integrate the data" (Company 1)

"There is a configurator in the seller's world too through which orders are being made -- it is a closed sales system" (Company 2)

"The dealer system is similar -- it is possible to integrate the web solution to dealer management interfaces" (Company 5)

Indeed, internal logistics need to be structured in a straightforward manner. Also academic research highlights efficiency and economies of scale as essential components (Duray et al. 2000). Much emphasis is put on creating an instant, costless, seamless and frictionless process (Pine et al. 1993) where electrification, IT and automation are seen as central factors behind successful design and mass customization (Bardakci & Whitelock 2003; Dallaert & Dabholkar 2009; Fralix 2001; Istook 2002; Kaplan & Haenlein 2006; Piller et al. 2004; Piller et al. 2000; Piller & Walcher 2006; Rothwell 1994; Sisodia 1992). Accordingly, companies would need to have adequate communications with the chain members in order to avoid slow implementation and spot the reasons for failures (e.g. situations where the information should already be in or be removed from the configurator)[72]. Excessive dependability on the manufacturing firm could be reduced and procurement could be increasingly centralized in order to improve inventory management[73].

Additionally, it is wise to have established ways of doing daily business. Companies can agree on the data sources and ways of behavior so that everyone knows when and where the information is being collected[74]. As it is, there can be real-time product databases[75] or a 'single source of data' meaning that corrections are made to a one single place only and it is updated immediately everywhere[76]. This logic could reduce the probability of wrong information and improve update rates[77]. Companies would also need to guarantee not only adequate and flexible production and logistic capacities[78] for improving update rates and meeting demand (even sudden peaks) but also highly electrified systems (i.e. as little paper and manual work as possible) so that error rates and delays may be reduced[79]. Ultimately, companies may obtain efficiency, orderliness, and a steadier production[80].

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[72] Company 2 and 5
[73] Company 2 and 4
[74] Company 2
[75] Company 4
[76] Company 5
[77] Company 4 and 6
[78] Company 2; 3; 5
[79] Company 3; 4; 5; 6
[80] Company 4

5.2 Organizational understanding

In this section, findings concerning the most salient factors of organization are discussed. This means determining key success factors with regard to the capabilities of the company. With the term 'organization', I refer to the know-how and organizational structure of the company providing the web configurator. In this sense, I talk about organizational understanding that is the capability of an organization to adopt viable decision-making, learning, evaluation and consulting procedures in the pursuit of favorable outcomes (cf. March 1999, 1–3, 11, 73, 223, 305). It can be regarded as being the learning and growth part (cf. Kaplan & Norton 1996) of the ECMC solution. In this sense, organization culture and resources are seen as the two pivotal components of strategy creation.

5.2.1 Culture

It is essential that the organization or corporate cultures support the development of ECMC solutions. Hence, the patterns and norms (e.g. shared assumptions, values, beliefs and customs) that unconsciously govern and define the behavior of members in an organization (American Marketing Association 2010; Johnson et al. 2008, 189) need to be carefully assessed.

Principles

With regard to underlying principles, companies may have in-built design thinking and the history or ownership may enhance this capability[81]. The firm may be built upon internalization, goodwill, interaction (e.g. cross-functionality and down-top communications), and a low level of hierarchy (i.e. local empowerment)[82]. In this sense, companies can have appropriate functional organization processes (e.g. HR-policies) and corporate values for guiding work, allowing for mistakes, and enabling the participation of everyone – that is, customers, retailers, and company personnel. It is possible to seek consensus and a common process allowing for shared content and process planning, execution and standardization. Indeed, it might to wise to allow for enough latitude with regard to national subsidiaries so that local development does not have to slavishly comply with the rules of the highest administration (exclusive for branding guidelines that create a uniform corporate profile). In this sense, communication may flow from down to top and this may be assured through semiannual best practice seminars.[83]

Actually, the company should have a clear vision about its direction (i.e. utilization of electronic media, and vision/knowledge about aims and milestones)[84]. The strategy needs to be supported by retailers and higher corporate levels, and the culture needs to embrace empowerment, sense of

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[81] Company 1
[82] Company 1 and 5
[83] Company 2
[84] Company 4 and 6

responsibility, appropriate know-how, customer orientation, open-mindedness and favorable attitudes[85]. In particular, attention must be paid on recruiting right type of people and on adequate persuasion (e.g. naming benefits), training, relationship development, committing, and communications so that negative attitudes or transition opposition may be prevented[86]. Members of an organization need to have same level of knowledge and share success or failure with others. Moreover, firms may have external aspects, such as artifacts, to support this sense of belonging.[87]

Routines

In terms of routines, companies may use internal archives[88] or ticket systems for prioritizing, maintaining and addressing the different needs of development. Indeed, the practices may emphasize a common culture of continuous improvement and learning. It is possible to stress small developments at a month level wherein an individual's own active effort in content creation and error detection (e.g. prices, availability, production) is valued; improving one's own work may be obliged and empowered. Herein, it is essential to understand that proper planning, partly through peer evaluation and spot checks, reduces production time and enhances the outcome.[89] The interviewees highlight the necessity of an open and flexible organization culture in a straightforward way:

> *"Willingness to actively develop content" (Company 2)*
> *"Conscious to understand. Exploring intelligence about customer behavior and changes in exchange -- innovative and willing to develop" (Company 3)*
> *"Holistic change in thinking -- learning-by-doing approach -- may become a learning organization: ameba-like organization with flexible structure -- wrecks old workings and established, safe practices as control disappears or changes" (Company 4)*
> *"Internal communication – understanding what others do and communicating about importance, priorities and visions -- authentic development discussion and management communication -- implementation of learning organization might be a good remedy -- improving working in tandem"(Company 5)*

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[85] Company 3; 4; 5
[86] Company 1; 4; 5; 6
[87] Company 4
[88] Company 1
[89] Company 2

5.2.2   Resources

Companies need to have adequate organizational resources for ECMC in order to succeed. Herein, findings center on two critical resources, namely financial and human resources[90].

Monetary

First of all, budgeting and resource allocation that manifest through daily work, meetings and yearly plans are essential[91] and need to be disciplined, systematic and continuous[92]. In the interviews, the importance of investments in ECMC becomes evident:

> *"This has been utilized increasingly as a marketing tool and it has been adopted as a central element in budget -- all the money, that has been poured into this, has rarely aroused resistance but, rather, is seen as necessary" (Company 1)*
>
> *"It may depend on money. Firms are willing to invest but realism does not meet costs -- understanding technologies, entirety and effects, not thinking only about money" (Company 3)*
>
> *"Budgets have not been cut down but, rather, increased" (Company 5)*

Companies may increasingly invest in the tool yet, at the same time, grasping that these resource allocations are away from something else[93]. These investments in ECMC can bring about beneficial outcomes. For instance, labor work is reduced as online shopping allows for 24/7 shopping[94] and companies gain more visibility and cost savings[95]. Firms also get more warm leads in their brick-and-mortar stores as customer's pre-preparations have already been done in the electronic space[96]. Yet, despite the potential glory, it is possible to prioritize wrong. Indeed, companies can invest in completely wrong issues that are not interesting or do not create value-added for the customer[97].

Human

When striving for organizational excellence, human resources are to be considered. The role of a manager is to grant resources, coordinate, support, manage by objectives, clarify/dismount strategy, and maintain involvement/effervescence, and create an atmosphere of success[98]. The personnel, on the other hand, would need to be polymorphic, committed, experienced, multiply skilled, and have

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[90] Company 3
[91] Company 1 and 2
[92] Company 4
[93] Company 2
[94] e.g. CustomInk 2010; Vans 2010
[95] Company 3
[96] Company 2 and 5
[97] Company 2
[98] Company 2 and 4

adequate product/system knowledge and appropriate motivators and incentives[99]. The staff would also need to have a clear roles (yet enabling flexibility/task rotation[100]) and one person in charge[101], so that the quality of content may be constantly improved[102]. They may be associated with supplementary services or visitor feedback options, such as call centers[103] (even toll-free) or click-to-call solutions, e-mail and live chat for instant messaging (IM)[104]. Herein, companies may try to build trust through human aspects; emphatic phrases may be used too to highlight the role of personal service. The netnographic findings demonstrate this:

> "Talk to a real person -- Real people. Real service. 7 days a week. -- Chat with a real person" (CustomInk 2010)
> "Friendly customer service -- real people" (Pistol Clothing 2010)
> "Call us, we are human!" (Wordans.com 2010)

Also customers seem to value communications with the staff members:

> "They answered all my questions quickly and assured that my shirt would turn out great" (Bluecotton 2010)
> "Judy and Stephanie were quick to respond and very helpful!" (CustomInk 2010)
> " I spoke with a man (Tony? Eric?) and he was so helpful and rectified the situation immediately even though it was kinda my fault. -- What excellent customer service. I so appreciate this level of support. -- I had to make a phone call to clarify and was extremely pleased with the service, the agent was able to access my file and help me fix the problem immediately! -- Your Professional approach to this matter gives me confidence in shopping with you again because you have shown that you do care about your customers." (Zazzle Inc. 2010)

These human resource and customer service aspects of ECMC have been acknowledged in previous studies too. As it is, specialized know-how, ideas, expertise, talent, organizational capabilities and management/leadership skills are being acknowledged as important factors (Dubelaar et al. 2005; Füller & Matzler 2007; Grant 1996; Srivastava et al. 1998; Stump et al.

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[99] Company 3; 4; 5; 6. Staff may have an incentive to sell other than customized products based on salary bonus or stock availability) (Company 4; 5).

[100] Rotation ensures that key personnel is not missing at any point of time (cf. Company 6).

[101] Company 2; 3; 4; 5

[102] Company 5

[103] In this sense, it is feasible to provide customers with appropriate instructions, country-specific numbers, and opening hours (CafePress.com 2010; CustomInk 2010; indiDenim 2010; Pistol Clothing 2010; Republic Bike Inc. 2010; Spreadshirt 2010).

[104] adidas 2010; Bluecotton 2010; CafePress.com 2010; CustomInk 2010; DressByDesign 2010; indiDenim 2010; INKtastic Inc. 2010; Instashirt.com 2010; LivePerson 2010; Oakley 2010; Pistol Clothing 2010; SonicShack 2010; Spreadshirt 2010; Timbuk2 2010; Vans 2010; Wordans.com 2010; Zazzle Inc. 2010

2002). Additionally, engaging in a collaborative, interactive dialogue with customers, building learning relationships (Broekhuizen & Alsem 2002) through personal selling (Burke 2002; Dellaert & Dabholkar 2009; Nambisan & Baron 2007), and incorporating the voice of the customer into the system are seen as essential tasks (e.g. Ballantyne & Varey 2006; Dahan & Hauser 2002; Jiao et al. 2003; Kahn 1998; Payne et al. 2008; Verona et al. 2005; Peppers & Rogers 1995).

In terms of the future prospects of human resources, certain possibilities were stated. Especially, the customer dialogue[105] or personal selling dimension of the solutions may be leveraged even further. Companies may, for instance, offer design help for customers. This means having a design consult or expert go through the design process with the customer face-to-face via an appointment[106]. Moreover, the involvement of personnel and retailers was seen as a crucial aspect[107] and a great possibility was seen in job descriptions transforming from print to electronic form[108]. The arguments made in the interviews clarify the latter:

> *"World changes and digital teams get more resources as usage and customer traffic increases. More emphasis on digital marketing"* (Company 2)
> *"Job descriptions change to support sales and customers. Focusing on the development of organizational selling -- different contents in work – improving and supporting post-sales deliveries."* (Company 3)
> *"New job descriptions emerge -- possibility to do diverse tasks and fixed tasks disappear -- more resources are needed"* (Company 4)
> *"It is increasingly possible to utilize people in other channels too"* (Company 5)

However, some potential problems and future threats could be identified. In particular, prior literature recognizes a danger of losing relevant know-how (Enkel & Gassmann 2005) and flexibility (Leonard-Barton 1992; Stump et al. 2002). For instance, the change in job descriptions may lead to a decrease in personnel since not as much resources are needed[109]. Alternatively, there is a risk of losing central know-how if the key staff leaves the company's service[110]. Finally, too much work and too long employments were seen as risky; while being a source of motivation, they might lead to rigidity and narrowness[111]. Companies may proactively account for these issues.

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[105] Company 5
[106] e.g. indiDenim 2010; Piller 2006; Pistol Clothing 2010; YouTube 2007
[107] Company 1 and 3
[108] Company 2 and 3
[109] Company 3. In order to avoid this, employees might, for example, be obliged to familiarize company novices with central ECMC-related information and tasks (Company 1; 2).
[110] Company 2 and 5
[111] Company 2

Tangibles

When it comes to monitoring ECMC tasks and processes, tangible metrics may be utilized and emphasized as important assets. Indeed, the sales space may be controlled and observed[112]. Customer tracking can be utilized in order to understand the sales data properly – that is, what items and components constitute the turnover, what type of people visit the platform, and what people ask about[113]. In this sense, it is possible to extend the logic of long tail business into ECMC (cf. Franke et al. 2008). This means that companies may track customers' online shopping behavior and tailor offers accordingly based on a pre-assessment of customer preferences or, alternatively, offer the option of entering the site with a Facebook profile.

Actually, configurators may be used for data mining (cf. Wind & Rangaswamy 2001) and, thereby, as a market research tool (Dubelaar et al. 2005; Franke & Piller 2004). Market observation (Vargo & Lusch 2004) and demand forecasting (Prahalad & Ramaswamy 2004a; 2004b) may hence be embraced. Key performance indicators (KPIs) may be utilized extensively in order to obtain flexibility, responsiveness, and data for inventory management, new product development, and sales. For example, firms can check performance dashboards every month and track the hit rates in the toolkits (i.e. how many times a single customer chooses a certain option). Ultimately, adequate attention needs to be paid on a careful screening and proportioning so that revelatory trends may be detected.[114] This would enable consumption forecasts and production guidance based on trends and customer preferences[115].

5.3 Customer understanding

In this section, findings concerning the integral aspects of customers are presented. This means determining key success factors with regard to the customer focus of the company. With the term 'customer', I refer to the user of the electronic collaborative platform – that is, the actual or potential buyer of products (cf. American Marketing Association 2010). In this sense, I talk about customer understanding that is the ability to continuously learn from customers (cf. Ulrich & Lake 1991). Dealing with profound internalized customer orientation – an approach that places customer needs and interest in the heart of selling (cf. American Marketing Association 2010) – it can be regarded as being the customer-centric part (cf. Kaplan & Norton 1996) of the ECMC solution. According to the interviews, this factor was named as the single most important element of the all[116]. More specifically, customer experience and commitment are seen as the two focal components of strategy creation.

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[112] Company 3
[113] Company 1; 4; 5
[114] Company 2 and 4
[115] Company 5 and 6
[116] Company 1; 2; 3; 4; 6

5.3.1 Experience

Customers want to have a better position in sales encounters[117] and appealing experiences customized according to their preferences[118] instead of push selling[119]. This also becomes evident in the EVCC literature where customers are seen as defining their own perspectives (Bernoff & Li 2008) when actively gaining more control and taking part in experience and value creation (Keller 2007; Nambisan 2002; Oberhelman 2007; Prahalad & Ramaswamy 2004a; 2004b; Shau et al. 2009; Wind & Rangaswamy 2000). Indeed, direct, electronic, reciprocal one-on-one relationships and interaction need to be created (cf. Dewan et al. 2000; Piller 2004; Piller et al. 2000; Wind & Rangaswamy 2001), and customer retention through an alliance-like approach is needs to be pursued (Deshpandé & Farley 2003; Srivastava et al. 1998) while forceful selling is to be avoided (cf. Levitt 2004).

Facility

In order to provide customers with handy toolkits, adequate attention needs to be paid on effort. In particular, the use could be free for all and the toolkits could be fast, flawless and visually appealing so that they would involve customers in the most optimal way[120]. In order to prevent complex usage, the toolkits need to be easy to use[121] and the information needs to be presented in a simple manner[122]. The academic arguments support the notion of easiness as they recommend easy learning and simple platforms utilizing known skills and customer language (Huffman & Kahn 1998; Burke 2002; Von Hippel 2001; Von Hippel & Katz 2002). Indeed, it is feasible to provide customers with effortless and straightforward problem-solving processes (cf. Piller & Walcher 2006), rather than complicated systems (Dellaert & Dabholkar 2009). The empirical findings highlight the aspect of facility well:

> *"Easiest website I've used for a LONG time. Great navigation" (Bluecotton 2010)*
> *"Easy -- no hassle, peaceful, engaging -- sales immediately" (Company 1)*
> *"Own time at home, Peacefulness -- questions aside – customers search and discover themselves" (Company 2)*
> *"Easy -- supports buying decision and enables display -- taking sales situations home -- more aware purchasing" (Company 3)*
> *"You can experience the purchase decision beforehand: sit, watch, ponder without sales pressure -- in peace" (Company 4)*

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[117] Company 2
[118] Company 5
[119] Company 4
[120] Company 1
[121] Company 1; 3; 6
[122] Company 2

"A very simple process, and the website design allows for a very smooth experience" (Davis 2010)

"Simple (and affordable) solutions to finding perfect style and fit -- without any hassle -- I certainly won't waste time trying on pair after pair in department stores again" (indiDenim 2010)

"Without wandering all those shifty outlets for hours" (Nike 2010)

" In just three easy steps and a few clicks your custom t-shirt is ready. With a few clicks you can customize your shirt" (SonicShack 2010).

"Simple website...easily to navigate and use...great job" (Zazzle Inc. 2010)

Indeed, customers seem to value easy design processes[123]. Consequently, many companies have tried to make the platform as familiar as possible to new customers by emphasizing user-friendliness as a central factor[124]. This means using logic common to the customer, such as Photoshop-like features[125], customer-oriented language (i.e. not only clarifying the field-specific jargon for the users[126] but also offering more multimedia and graphics instead of technicalities or price-based data[127]), and commonly known hotkeys[128]. Herein, it is possible to let customers use the toolkits so that they feel comfortable using it. For instance, customers may be also allowed to change the background color of the toolkit[129] and use different special fonts, like ë or ä[130]. Moreover, as stated in prior literature (Von Hippel 2001; Von Hippel & Katz 2002), it might be wise to let the customers start the design process either from scratch or let them use ready-made templates as a help (e.g. solutions by company's own designers or other consumers)[131].

In terms of platform structuring, it would be feasible to have a clear process chart for indicating required online product customization phases. This means allowing customers to move in the design process step-wise[132]. Related to this is also the possibility of lettings customers start the process all over again or revert/delete customizations in the middle of process[133]. Even further, customers may be allowed to do all of this while listening to music or sound effects[134]. Finally, the platform could provide a dynamic, multidimensional product view with sufficient angles (i.e.

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[123] e.g. Zazzle Inc. 2010
[124] Company 5 and 6
[125] e.g. Bluecotton 2010; Converse Inc. 2010; Nike 2010
[126] Company 6; DressByDesign 2010; indiDenim 2010; Mitsubishi Motors North America 2010; Muurame Oy 2010
[127] Company 4; 5; 6
[128] Bluecotton 2010
[129] adidas 2010
[130] Bluecotton 2010
[131] e.g. Aito Säästöpankki 2010; Aktia 2009; Bluecotton 2010; Buster 2010; CafePress.com 2010; Company 1; 2; CustomInk 2010; Dinscooter Sverige 2010; Nike 2010; Vans 2010
[132] American Honda Motor Co. 2010; Audi AG 2010; Company 6; Converse Inc. 2010; indiDenim 2010; Nike 2010; Opel 2010; Pistol Clothing 2010; Timbuk2 2010; Vans 2010; Volvo 2008; Toyota Motor Sales 2010; Mercedes-Benz USA 2010; Mitsubishi Motors North America 2010; Muurame Oy 2010
[133] adidas 2010; American Honda Motor Co. 2010; Audi AG 2010; Etella Oy 2010; Muurame Oy 2010; Toyota Motor Sales 2010; Tulikivi 2009; Vans 2010; Zazzle Inc. 2010
[134] IDO 2005; Nike 2010

preferably 3D 360 degrees with gaming-like graphics but at least 2D and zooming options)[135] instead of mechanic forms[136] or one-dimensional solutions with insufficient product visualization[137]. As it is, the modern Nintendo generation (Stenkuehler 2006) expects nothing less than powerful online 3D environments (Füller & Matzler 2007).

However, it may be quite tricky to provide usable platforms since the navigation and the presentation format in the present sites is not that straightforward[138]. Actually, there are weaknesses in terms of demanding and complex usage[139] that could be improved through better design. In particular, a positive experience may be created through well-structured site searches[140] and understandable terminology. Companies may have well planned browsing or search options; word-for-word searches, predictive text, and categories or menus for specifying the searched items (e.g. certain fit/model/style, color, name, price, size, age group, gender, feature, area, occasion, popularity, relevance, category, newness, shipping availability)[141].

Originality

As customers become more active and powerful (Bernoff & Li 2008; Cova & Cova 20002; Kahn 1998; Kozinets 1999), it is recommendable to pander the inherent curiosity in customers. As it is, my netnographic findings indicate high customer willingness to participate in ECMC practices; customers are exhilarated by the opportunity to customize products. In the Internet discussions, customers tend to use positively oriented words to emphasize their enthusiasm:

> *"Cool -- cute -- punny -- makes me happy -- funny" (Bluecotton 2010)*
> *"This sounds awesome! I can see this becoming a hit. -- You gotta love being able to customize" (Hollrr 2010)*
> *"LOVE I can't wait to build and order my next pair! -- Are indeed perfect. Great work -- I will definitely be ordering -- again" (indiDenim 2010)*
> *"Has anyone ever ordered – Maybe I will venture to order from there too" (Koripallo.com 2007)*
> *"Just as I wanted them – I am still extremely satisfied" (Jatkoaika.com 2010)*
> *"Truly special, and, dare I say, almost precious" (Mooney 2005)*

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[135] adidas 2010; American Honda Motor Co. 2010; CafePress.com 2010; Company 3, 5; Converse Inc. 2010; CustomInk 2010; Kamenev 2006; Nike 2010; Oakley 2010; Opel 2010; Timbuk2 2010; Toyota Motor Sales 2010; Tulikivi 2009; Vans 2010; Zazzle Inc. 2010
[136] Konecranes 2006
[137] DressByDesign 2010; INKtastic Inc. 2010; Pistol Clothing 2010
[138] Company 5
[139] Company 1
[140] Company 5
[141] Bluecotton 2010; CustomInk 2010; indiDenim 2010; INKtastic Inc. 2010; Instashirt.com 2010; Nike 2010; Oakley 2010; Pistol Clothing 2010; Spreadshirt 2010; Vans 2010; Volvo Car Corporation 2008; Wordans.com 2010; Zazzle Inc. 2010

"The truth was I hadn't tried to make any myself. But I was definitely curious." (Mooney 2005)

"Cool – comfortable -- I love -- 5 stars -- Amazing -- Best -- favorite – perfect -- Wish to see more soon" (Nike 2010)

"Handy idea. :D I have also thought about that service -- Sounds funny, I need to try." (Paintblog.fi 2009)

"Let me go try" (TREND HUNTER Inc. 2007)

" I absolutely love -- They will look amazing. -- I absolutely love them, they turned out great and I plan on ordering more -- more business with you in the future -- they are gorgeous! Such great quality! I LOVE THEM -- EXCELLENT quality" (Zazzle Inc. 2010)

"Not the least bit disappointed and will do -- again for sure. -- I wasn't disappointed at all. Will most def. do it again sometime -- man am I happy with them" (Yuku 2010)

If companies want to tap this reservoir of customer activity and motivation, they need to increasingly account for originality. This means considering aspects of self-expression in order to create evocative ECMC solutions and corporate brands. Customers need to be considered as valuable individuals and essential assets who can become influential and momentous in the virtual spaces. It is possible to courage this thinking by stressing that customers can become designers themselves − by emphasizing that they can create products that reflect themselves. Hence, as general marketing literature suggests, the aim is to sell the product so symbolically and metaphorically (Boztepe 2007) that it actually becomes part of the customer's own identity and personality (Holt 2002; Piller & Müller 2004) and enables customer's own self-expressive self-actualization process (Aaker 1999; Maslow 1943) through the re-engineering of mediated reality (Deuze 2006). It is about selling worlds of consumer fantasy; selling identities, meanings, practices (Kozinets et al. 2004), symbolism, hedonism, aesthetics (Holbrook & Hirschman 1982), values, utility, social significance (Boztepe 2007), pleasures, dreams and desires (Featherstone 1990). Products become the means for human goals (van Raaij 1993). This manifests in the findings:

"You get a product that suits your purpose of use -- supporting one's own identity -- 'macho' shopping" (Company 4)

"Good canvas for you to put your expression on" (Dinscooter Sverige 2010)

"Seeing your own (or your creative director's) creation is a bit of a thrill" (Mooney 2005)

"I love to be my self and let my mind take over my self when I draw or design – I'm skating with my underwear and these shoes -- I'm still gonna know that I'm the best skater in Chicago" (Nike 2010)

Versatility

With regard to versatility, companies may provide customers with appropriate extended offline activities that allow for more profound experience creation. As it is, customers still want to touch the products[142] in concept/flagship stores[143] and many other places. Findings indicate rather favorable attitudes towards the idea of offline services:

> *"Stand-alone simulators -- customer can sit in a chair and see the design process more visually – Also extending the concept to reality, e.g. shopping centers, but this requires demand too. Might be good to implement in a game format so that it entails some sort of catch to it" (Company 2)*
> *"Touch screen monitor at stores for customers" (Company 3)*
> *"Released an iPhone App -- It's slick, a great interface and has a whole bunch of cool features like point-n-shoot, so when you take a photo, the app will transfer the key color palate from that image straight onto sets of shoes for you to start customizing" (Digital Buzz Blog 2009)*
> *"Using now a larger flat-screen configurator to alter the details -- by simply pointing a finger to the screen -- laser and infrared technologies interpret their gestures, converting them to commands." (Kamenev 2006; Piller 2006)*
> *"New is also a virtual mirror where users can see their personalized shoe on their own foot without even removing ones shoes! - - A three-dimensional virtual mirror, he can "try on" his own creations, checking out the shape, color, and cut from every angle" (Kamenev 2006; Piller 2006)*
> *"An interactive billboard that allowed consumers to design -- through their mobile phones, live on the billboard in New York's Times Square." (Mobile Marketing Association 2010)*

In future, companies may increasingly invest in customer engagement and experience creation. As it is, they can invest more in the tool since the self-service trend is likely to continue[144]. The current trend of customer empowerment can be witnessed in prior literature too where discussions emphasize DYI culture (Campbell 2005), customer-centered marketing/orientation (Sheth et al. 2000; Woodruff 1997), individualization (Franke & Piller 2003), partnership (Firat & Dholakia 2006) and prosumption (cf. Tapscott & Williams 2007; Toffler 1980, 283). The creation of compelling experience places becomes central (Gilmore & Pine II 1993) as virtual and physical worlds converge (Ward 1999); the future direction is about bridging the gap between reality and artificial reality. Indeed, online and offline shopping experiences would increasingly need to resemble each other. In this sense, it might be wise to add, for instance, size instructions or a sizing

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[142] Company 5
[143] e.g. Kamenev 2006
[144] Company 2

chart on the web too[145]. Moreover, more information about when, why, and where products were manufactured[146] and what materials they contain or for what occasions they are made, needs to be provided. This information may be presented in the technical information box[147]. This convergence of reality and virtual reality becomes explicit in the interviews:

> *" DIY culture increasing and so is commitment to these tools. It is a must have thing. Same things as in physical store -- challenges lie in companies being able to provide customers with what they want as customers often do not know this even themselves" (Company 2)*
> *"In stores, people get familiar and safe feeling and a distinct concept for behaving -- something like this to the website too" (Company 5)*

5.3.2 Commitment

Ultimately, it is not enough to astonish the customers but proper action needs to be also taken with regard to involving the customers so that they become committed. Actually, many companies have already been in the forefront of locking customers in their solutions and, thus, reducing the bounce rate (i.e. quick exit) of the ECMC site. Academics claim that this kind of lock-in activity through customer involvement and switching costs is important (Duray et al. 2000; Stump et al. 2002).

Personality

With regard to personal attachment, companies may offer customers with the possibility of logging in to a private profile/account which can be used for posting pictures/videos, writing personal information/notes, checking and rating other users' profiles, sending internal mails, and joining fan clubs[148]. If the customer wants, this account may be deleted as well[149]. Customers may be also encouraged into saving designs[150], sending/receiving gift cards/certificates/vouchers with personal messages attached[151], and branding their own designs by product name[152], location[153] and designer

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[145] adidas 2010; Bluecotton 2010; CafePress.com 2010; Converse Inc. 2010; CustomInk 2010; DressByDesign 2010; Instashirt.com 2010; Pikistore 2008; Republic Bike Inc. 2010; Zazzle Inc. 2010

[146] Company 1

[147] American Honda Motor Co. 2010; Audi AG 2010; Buster 2010; Converse Inc. 2010; CustomInk 2010; indiDenim 2010; INKtastic Inc. 2010; Mitsubishi Motors North America 2010; Nike 2010; Oakley 2010; Republic Bike Inc. 2010; SonicShack 2010; Vans 2010; Zazzle Inc. 2010

[148] e.g. Bluecotton 2010; BoardPusher 2010; CafePress 2010; Converse Inc. 2010; CustomInk 2010; Dinscooter Sverige 2010; indiDenim 2010; Nike 2010; Oakley 2010; Pikistore 2008; Pistol Clothing 2010; SonicShack 2010; Spreadshirt 2010; Timbuk2 2010; Vans 2010; Zazzle Inc. 2010

[149] e.g. Spreadshirt 2010

[150] adidas 2010; Bluecotton 2010; Buster 2010; Company 6; Converse Inc. 2010; CustomInk 2010; Mercedes-Benz USA 2010; Nike 2010; Volvo 2008; Zazzle Inc. 2010

[151] BoardPusher 2010; Converse Inc. 2010; DressByDesign 2010; indiDenim 2010; Nike 2010; Pistol Clothing 2010; Timbuk2 2010; Vans 2010; Zazzle Inc. 2010

[152] Converse Inc. 2010; CustomInk 2010; indiDenim 2010; Nike 2010; Zazzle Inc. 2010

[153] Nike 2010

name[154]. Additionally, it is possible to allow customers to collect artifacts from the virtual space that function as concrete memories of the experiences. More specifically, one potential way to do this is through letting customers download the customized item as a desktop background or wallpaper[155]. Alternatively, customers may be allowed to print designs out of the system[156] or bookmark the configuration page[157].

Furthermore, in terms of technological customer lock-in, some firms have wanted to secure the design process by warning customers in case they press wrong keys and accidently leave the configurator; a pop-up window emerges and warns that the individualized customization will be destroyed unless saved[158]. In this sense, it would also be wise to have reminders for saving[159] or automatic saving[160] in case of accidents, such a bugs, power failures or slowness, that would restore the session. Finally, the personal design choices may be accounted for by stating whether something is possible or not, as interviews and netnographic findings suggest:

> *"You cannot choose colors or finishing for this boat model" (Buster 2010)*
>
> *"Customer cannot go wrong" (Company 1)*
>
> *"Reciprocal behavior rules and dependencies enable the product to behave properly -- guidance: restricted material handling and classification -- relates to quality: in massive volumes one cannot wrong and make mistakes -- strength would be if the customization were made according to product terms and conditions." (Company 3)*
>
> *"In the tool it has been considered what components go together and what not" (Company 4)*
>
> *"Forbidden combinations due to rules. Yet, misunderstandings are hard to control" (Company 6)*
>
> *"Changing lens will results in different lens color options" (Oakley 2010)*
>
> *"You have selected a design area that is not compatible with your existing design." (Zazzle Inc. 2010)*

Communality

Customer empowerment may be increasingly utilized[161] in the form of virtual communal/tribal marketing (Cova & Cova 2002; Kozinets 1999). Companies may involve their customers in virtual

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[154] Nike 2010; Zazzle Inc. 2010
[155] Nike 2010; Volvo 2008b
[156] adidas 2010; Audi AG 2010; CustomInk 2010; Mercedes-Benz 2010; Muurame Oy 2010; Nike 2010; Oakley 2010; Opel 2010; Toyota Motor Sales 2010; Vans 2010; Volvo 2008a
[157] e.g. Audi AG 2010
[158] adidas 2010; Audi AG 2010; Bluecotton 2010; Buster 2010; Converse Inc. 2010; CustomInk 2010; Instashirt.com 2010; Nike 2010
[159] CafePress.com 2010
[160] Getting a message "Your session has expired" is not convenient (cf. CafePress.com 2010; Spreadshirt 2010).
[161] Company 2

value co-creation by offering effervescent insider communities. The consumer comments reveal that customers actually want to know other users' opinions and share their own:

> *"What's up? Has anyone tuned? – Watcha think about the whole system: good, bad sides and experiences." (Basso 2010)*
> *"Would recommend these to anyone! -- I seriously recommend" (Nike 2010)*
> *"I was quite impressed with the outcome and quality. Highly recommended! -- So I would say my experience has been nearly perfect. So I would highly recommend" (Yuku 2010)*
> *"I will let others know of your services -- I have already let a lot of people know about your site. -- I will definitely recommend you to everyone." (Zazzle Inc. 2010)*
> *"Any reviews or info is greatly appreciated" (Yuku 2010)*

When building an ECMC-related community of users[162], commitment maximization through loyal, beneficial relationships (cf. Lavie 2005; Kozinets 1999) needs to be considered so that the hook factor is strong enough. For instance, companies may utilize the power of C2C communication and interaction. They may utilize customers' sense of belonging and personal contacts (Verona et al. 2005) with regard to user communities (Franke et al. 2008; Piller et al. 2005). In this sense, firms may provide customers with the option of submitting testimonials[163], submitting, ranking (e.g. helpful, not helpful) or flagging reviews on designs[164], faving (i.e. choosing favorite items from) the designs of other users[165], evaluating designed products through parameters (e.g. performance, durability, overall experience, adjectives, pros, cons, best uses, order again/recommend)[166] and opening their own stores (i.e. free basic store or premium store with monthly payment after free trial) for selling out items and earning money[167].

Yet, it might be feasible to have discussion forums on the sites so that customers could ponder interesting and topical design issues together[168] or even chat online with other users real-time[169]. This might be an integral matter since customers seem favorable towards electronic word-of-mouth marketing, as pointed out earlier. Also, company representatives could take part in the discussions or, at least, monitor the conversations since customers may offer valuable insights[170]. Also academics see value propositions (Porter 2001) of fit, style, functionality, performance, quality and appearance as a central factor (Kotler & Rath 1984; Piller 2004). Likewise, expert, ranked

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[162] e.g. CafePress.com 2010; Nike 2010; Zazzle Inc. 2010

[163] Bluecotton 2010; CustomInk 2010; indiDenim 2010; INKtastic Inc. 2010; Instashirt.com 2010; SonicShack 2010; Zazzle Inc. 2010. It can me stated that the reviews are uncensored and the most recent ones may be appearing on the side (CustomInk 2010).

[164] indiDenim 2010; Nike 2010; Timbuk2 2010; Zazzle Inc. 2010

[165] Spreadshirt 2010

[166] CustomInk 2010; Nike 2010; Timbuk2 2010

[167] BoardPusher 2010; CafePress.com 2010; Spreadshirt 2010; Pikistore 2008; Pistol Clothing 2010; Wordans.com 2010; Zazzle Inc. 2010

[168] e.g. Bluecotton 2010; CafePress 2010; Spreadshirt 2010; Timbuk2 2010; Zazzle Inc. 2010

[169] Vans 2010

[170] Bluecotton 2010; Spreadshirt Blog 2010; Timbuk2 2010

reviews/ratings/testimonials are acknowledged to affect customer perceptions and satisfaction positively (Burke 2002; Kozinets 1999; Simonson 2005; Valenzuela et al. 2005).

Eventually, it would be possible to link the ECMC configurators to social media and other modern channels better. Firms might increasingly embed the notions of interactive Web 2.0 (second coming of web), Web 3.0, social/collective media, new economy, and other content co-creation (Bauman 2006; Bulik 2006; Feng et al. 2008; Hanlon & Hawkins 2008; Phillips 2007; Richards 2009) in their current businesses. Customers may be seen as hidden resources (Kristensson et al. 2002) whose overt requests (Von Hippel 2001) need to be considered by may embracing openness, peering, sharing and universality (Tapscott & Williams 2007, 30). First of all, the notion of communality may be increasingly extended. In this sense, it is possible to consider ECMC communities as virtual worlds. For instance, an internal hierarchy may be built inside the ECMC website allowing for novices to advance and become esteemed members of the culture. For example, VIP or premium members might have a personal code or entry-level costs that allow them to experience special advantages[171]. Alternatively, as pointed out by academics (Piller 2004), consumers might be rewarded for being active in the community (e.g. today's best design reward, vouchers, free gifts, discounts, previous winners list, special events)[172].

Moreover, borrowing the co-innovative and co-productive logic of wikis as a collaboration form (Richards 2009; Tapscott & Williams 2007, 11, 20), companies may utilize customers are knowledge brokers (Verganti 2003; Verona et al. 2006). Firms might allow for the adding and ranking of tags and tag clouds (e.g. hot design topics)[173]. On the other hand, firms might allow customers to share their creations in other mediums too, such as Facebook[174], Twitter, Delicious, Digg, MyWeb, Furl, Messenger, StumbleUpon, Myspace, Blogs[175], Youtube[176], Google.[177]. Alternatively, it might be possible to link the toolkits to still other communication devices[178]; customers could, for example, share and send their designs via e-mail or mobile to their friends[179].

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[171] Company 5; Spreadshirt 2010

[172] Company 5; CustomInk 2010; Republic Bike Inc. 2010; Wordans.com 2010; Zazzle Inc. 2010. Companies may, for instance, allow customers to participate in and influence the on-site customization at the premises of the manufacturing firm (Company 4).

[173] CafePress.com 2010; CustomInk 2010; Nike 2010; Oakley 2010; Pistol Clothing 2010; SonicShack 2010; Spreadshirt 2010; Vans 2010; Wordans.com 2010; Zazzle Inc. 2010

[174] Customer may also become fans (i.e. like) of the website in Facebook and this data may show in the ECMC solutions (e.g. 92 people like this) (Bluecotton 2010; CafePress.com 2010; CustomInk 2010; Dinscooter Sverige 2010; INKtastic Inc. 2010; Mercedes-Benz USA 2010; Republic Bike Inc. 2010; Timbuk 2 2010; Wordans.com 2010).

[175] The ECMC website may also have an own blog (Bluecotton 2010; CafePress 2010; CustomInk 2010; DressByDesign 2010; indiDenim 2010; SonicShack 2010; Spreadshirt 2010; Zazzle Inc. 2010).

[176] Companies can also have their own channel for acknowledging and supporting the upload of user videos as customers seem willing to share their designs and design processes with other users (Basso 2009; Ericson 2009; Youtube 2008a, 2008b, 2008c, 2008d).

[177] e.g. Bluecotton 2010; CafePress.com 2010; Company 1; CustomInk 2010; Dinscooter Sverige 2010; DressByDesign 2010; indiDenim 2010; INKtastic Inc. 2010; Instashirt.com 2010; Mercedes-Benz USA 2010; Mitsubishi Motors North America 2010; Oakley 2010; Opel 2010; Pistol Clothing 2010; Spreadshirt 2010; Timbuk2 2010; Toyota Motor Sales 2010; Vans 2010; Volvo Car Corporation 2008; Wordans.com 2010; Zazzle Inc. 2010

[178] Company 1; 2; 4; 6

[179] adidas 2010; Audi AG 2010; Buster 2010; Converse Inc. 2010; Muurame Oy 2010; Toyota Motor Sales 2010; Vans 2010; Volvo Car Corporation 2008; Zazzle Inc. 2010

5.4 Competitive understanding

In this section, findings concerning the central aspects of competitors are presented. This means determining key success factors with regard to the competitive arsenal of the company. With the term 'competitive', I refer to competitors and competitive product-, price- and promotion-related options in terms of toolkits. Herein, I talk about competitive understanding in its narrow sense meaning the systematic collection of data and information about competitive activities in order to construct plans and strategies and make decisions (cf. American Marketing Association 2010). It is more than competitor focus (i.e. the ability to continuously examine and learn from competitors) (cf. Ulrich & Lake 1991); it is about determining and assessing the competitive environment (i.e. the competing solutions in the market) and aiming at producing differential advantage – uniqueness over other products in the product category (cf. American Marketing Association 2010). It can be regarded as being the financial part (cf. Kaplan & Norton 1996) of the ECMC solution. In this sense, competitive offering and promotion are seen as the two central components of strategy creation.

5.4.1 Offering

When discussing the means by which companies may understand the modern competitive environment, it is of relevance to understand that firms need to carefully monitor the changes of the field. In particular, adequate attention needs to be paid on how to construct competitive offerings – namely, appealing product and price combinations. Companies, that do not invest in the development of appealing ECMC solutions, are likely to lose market share and competitive advantage[180] since superior products enable customers to experience maximum value and utility (Srivastava et al. 1999).

Product

With regard to providing superior products (particularly consumables, such as clothes), the quality of the product needs to be good both online and offline (e.g. not blurry or pixelated[181], no fading colors when washed, and virtual colors matching the reality)[182]. In particular, the final outcome would need to be high quality, comfortable, professional, durable, and fashionable[183]. The products may be timeless yet still adjustable and individual[184]. The strengths of the different products may

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[180] Company 3 and 5
[181] The picture quality needs to be considered (Company 1).
[182] Bluecotton 2010; Yuku 2010. In case there are certain differences (e.g. resolution or colors), customers need to be notified (Company 6).
[183] Bluecotton 2010; Nike 2010
[184] Company 1

vary while brand-level statements and expectations connect them[185]. Indeed, intriguing feature portfolios (Liechty et al. 2000) of individual style or fit[186] need to be provided since contemporary consumers in the buyer's market (Piller et al 2004) increasingly require extraordinary design (Sisodia 1992; Veryzer & Borja de Mozota 2005) and positive value (Franke et al. 2009).

Since present offerings are quite scant and narrow[187], companies would need to enlarge the current offerings and add more freedom of choice[188]. Especially, it is not enough to let customers choose a certain model and color for an item[189]. Rather, companies may introduce many/all products and features in their product portfolios to the ECMC solutions[190] and add more design options. Firms may introduce more customizable options and extend their offerings to include augmented products and services in a SharePoint-like manner[191]. They may democratize innovations even further (Von Hippel 2005, 1) by allowing customers to truly co-innovate (Franke & Piller 2003) through desirable, relevant/critical, rare/infrequent and pleasing form, color, texture, and materials (Boztepe 2007; Horn & Salvendy 2009).

Consequently, companies may introduce new options. These options may deal with choosing appropriate product model, size, quantity, gender or age group (i.e. young/kid, adult/man/woman, infant/baby), colors[192] (i.e. base colors or color shuffle/scramble for random colors), fabric, embroidery (uploading images/logos/shapes/graphics/text from pre-selected categories, ClipArt or own computer in multiple formats like JPG/PNG/GIF/TIF with color/font/outline/shape/shadow/ effect/gradient/warp/stroke and precision controls of move/flip/align/position/size/rotation/width/ height/rotation/position/resizing/transparency)[193]. However, firms need to be careful not to allow customers to customize product aspects that are relevant for brand identity[194].

On the other hand, companies might introduce a collaborative quick response area that allows customers increasingly to take part in the design operations[195]. They may customize the design process even further by offering customers the option of submitting special orders or special instructions[196] so that highly original products may be produced and delivered. This means tailoring

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[185] Company 2
[186] e.g. adidas 2010; Nike 2010
[187] e.g. Basso 2009; Company 1
[188] Basso 2010; Ericson 2009; Runffm.com 2009; Soccer Cleats 101 2010
[189] e.g. Aktia 2009; IDO 2005; Itella 2010; Nordea 2010
[190] Bluecotton 2010; CafePress.com 2010; Company 3; 4; 5; CustomInk 2010; Nike 2010; Oakley 2010; Pistol Clothing 2010; SonicShack 2010; Spreadshirt 2010; Timbuk2 2010; Zazzle Inc. 2010. In general, all products are feasible for ECMC solutions (Company 3). Firms could also increasingly introduce their latest products online (Company 6).
[191] Company 4
[192] Firms may specify the name of the color too (e.g. selected color: light orange) (adidas 2010).
[193] adidas 2010; American Honda Motor Co. 2010; Audi AG 2010; BoardPusher 2010; CafePress.com 2010; Converse Inc. 2010; CustomInk 2010; Dinscooter Sverige 2010; Dinscooter Sverige 2010; DressByDesign 2010; INKtastic Inc. 2010; Instashirt.com 2010; Mercedes-Benz USA 2010; Mitsubishi Motors North America 2010; Nike 2010; Opel 2010; Pikicentral 2008; Pikistore 2008; Pistol Clothing 2010; Republic Bike Inc. 2010; SonicShack 2010; Spreadshirt 2010; Toyota Motor Sales 2010; Vans 2010; Wordans.com 2010; Zazzle Inc. 2010
[194] Company 4
[195] Company 4
[196] Bluecotton 2010; Pistol Clothing 2010

products according to the most wild customer ideas, such as printing text around an item[197]. In addition, firms may allow customers to determine their own measures for products[198] or obtain unique barcodes[199] or IDs/labels[200]. Finally, it might be possible to customize the entire configurator according to product models and customer preferences. This means emphasizing different messages, tone of voice, and colors with regard to different customers what would enable the configurator to become a presentation of the product model and more customer-centric from its present seller-oriented stance.[201] In this sense, the configurator would become more than just a sales channel; it would provide tailored information to a person's everyday life[202]. Increasingly, customers might be also allowed to take part in the creation of this tailor-made configurator (e.g. change pieces, materials or prices how they like)[203].

In sum, companies may extend their present offerings. These findings are not entirely in line with academic research that argues primarily for the diminishing of options. In prior literature, companies are actually quite exclusively warned with the dangers of adding too many options as this may result in complexity, frustration and denial (e.g. Franke & Piller 2003; Kahn 1998; Piller et al. 2005; Wind & Rangaswamy 2001). The academic discussions rather unanimously suggest that products need to be tailored on a mass-basis by restricting the amount of choices (Bardakci & Whitelock 2003; Fralix 2001; Kaplan & Haenlein 2006; Piller & Müller 2004; Ulrich et al. 2003). Also, some interviewees and customers proved unfavorable with regard to producing and manufacturing truly unique products and increasing the amount of options:

> *"At many times not possible since demand is fragmented and, thus, prices balloon. Also production lines do not support this" (Company 2)*
> *"Customizing for the large mass -- abundance of choice is also a potential detriment: no willingness to use time" (Company 4)*
> *"Too many options should not be at display" (Company 5)*
> *"Problem: I cannot decide the final outcome. So many options that it creates problem of choosing" (Stara.fi 2009)*

Hence, in order to adjust my propositions accordingly, it might be feasible for companies to broaden their offerings from the present progressively so that an optimum level may be reached. This suitable level may be company-specific and depend on the nature of product and line of business. Ultimately, firms need to determine their own appropriate level of configuration (cf.

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[197] Bluecotton 2010
[198] Company 1; 3; indiDenim 2010
[199] (indiDenim 2010
[200] e.g. Nike 2010
[201] Company 2
[202] Company 5
[203] Company 3

Gilmore & Pine II 2002; Stump et al. 2002) based on customers' need-related aspects (Von Hippel 2001; Von Hippel & Katz 2002; Veryzer & Borja de Mozota 2005).

Price

With regard to the price of the product, a multitude of options may be considered. First of all, pricing may be dynamic so that the price changes constantly in a fast and customized manner during the design process according to customer preferences[204]. In this sense, the option wherein customers need to separately order the final price for the product is not necessarily optimal[205]. Rather, a dynamic price may be shown in the sidebar[206]. Furthermore, this price may be an up-to-date local price[207] and it needs not contain complex setup/reorder fees[208]. Yet still, like academics suggest (Burke 2002), companies could also introduce various, secure payment methods[209], such as credit (Visa), MasterCard, Amex, Discover, Diners Club, check, Paypal, American Express, and eWAY or Google checkout[210]. In this sense, the price-quality relation would need to be proper[211]; the brand image would need to endure the somewhat high prices[212] and the price or, monetary customer effort, would need to correspond to that of customer benefit.

Finally, short-term campaigns (i.e. price offerings or local/seasonal campaigns) may be launched in the solution increasingly too[213]. This means marketing and selling different discount items through the ECMC channel (Burke 2002). For instance, customers may be allowed to start the design process with sale items or items that contain a discount, promotional or coupon code[214]. Alternatively, customers might obtain bulk discounts for their purchases[215].

As pointed out, price is an essential factor of competitive ECMC solutions. This is explicit in the discussions where both customer and companies consider prices in their decision-making:

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[204] Company 1 and 4

[205] e.g. Tulikivi 2009

[206] Buster 2010; Mercedes-Benz USA 2010; Mitsubishi Motors North America 2010; Nike 2010; Oakley 2010; Opel 2010; Pistol Clothing 2010; SonicShack 2010; Timbuk2 2010; Toyota Motor Sales 2010; Vans, 2010; Volvo 2008; Wordans.com 2010; Zazzle Inc. 2010. The price is customer-oriented meaning that customers can choose exactly those features that they are willing to pay for which brings monetary gains (Company 4).

[207] CafePress.com 2010; Company 1. If so, currency rates need to be updated daily as they may fluctuate (CafePress.com 2010).

[208] cf. Bluecotton 2010; Pistol Clothing 2010; SonicShack 2010; Zazzle Inc. 2010

[209] Provided that customer's age is verified at some stage (e.g. adidas 2010; Converse Inc. 2010; DressByDesign 2010).

[210] Bluecotton 2010; BoardPusher 2010; CafePress.com 2010; Dinscooter Sverige 2010; DressByDesign 2010; INKtastic Inc. 2010; Instashirt.com 2010; Nike 2010; SonicShack 2010; Spreadshirt 2010; Pikistore 2008; Pistol Clothing 2010; Republic Bike Inc. 2010; Wordans.com 2010; Zazzle Inc. 2010

[211] Company 2 and 4

[212] Company 2

[213] CafePress.com 2010; Company 4; 6; Converse Inc. 2010; Instashirt.com 2010; Mitsubishi Motors North America 2010; Nike 2010; Spreadshirt 2010; Wordans.com 2010; Zazzle Inc. 2010

[214] adidas 2010; BoardPusher 2010; DressByDesign 2010; INKtastic Inc. 2010; Nike 2010; Pistol Clothing 2010; SonicShack 2010; Spreadshirt 2010; Timbuk2 2010; Wordans.com 2010

[215] BoardPusher 2010; CustomInk 2010; INKtastic Inc. 2010; Instashirt.com 2010; Pistol Clothing 2010; Spreadshirt 2010; Wordans.com 2010; Zazzle Inc. 2010

"Expensive stuff. I have not thought about ordering anything. It might be too expensive for me" (Basso 2010)
"Price is always a determining factor" (Company 4)
"Prices are in my opinion reasonable" (Stara.fi 2009)

Ultimately, my findings in terms of pricing are somewhat in line and somewhat contradictory to what previous literature has discovered. Whereas prior research acknowledges the importance of fluid, dynamic pricing that allows for quantity discounts, it fails to understand the unceasing importance of price (cf. Wind & Rangaswamy 2001). Differing from what has previously been considered valid, my findings now indicate the necessity and significance of price as a central factor in creation of competitive offerings.

5.4.2 Promotion

Firms need to promote their competitive offerings through marketing messages in a discreet and refined manner. Both internal and external promotion means need to be assessed with regard to developing compelling ECMC solutions. Yet, the promotion of ECMC solutions needs not to be aggressive but subtle so that the right message is conveyed:

"Emphasizing that we are doing digital marketing for real and right: visibility but no aggressive means since if we push it with money, we get false leads and conclusions" (Company 2)
"Visibility: we must stay at hand" (Company 3)
"If we didn't have this configurator, customers would think that we are old-fashioned and weak -- this would become an image problem" (Company 5)
"With regard to brands, it is essential that we are involved -- so that competitors do not outperform us" (Company 6)

External

External promotion can be seen as dealing with marketing that occurs outside the company website. In this sense, both traditional and modern methods may be exploited. As it is, companies may utilize magazines[216], announcements, and Internet[217] for gaining popularity. Foremost, Google AdWords may be utilized for improving the visibility of the ECMC solution[218]. Additionally, companies might try to attract website visitors by building partnerships with advertising agencies[219]

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[216] Company 1 and 3
[217] Company 1
[218] Company 1 and 2
[219] Company 5

or launching affiliate programs[220]. These may turn out to be a fruitful way to obtain more visibility and potential customers.

Indeed, companies might contemplate the issue of competitive offerings from the viewpoint of collaboration in particular. Firms might have common standardized yet flexible practices and databases[221]. They might increasingly turn away from subjective evaluations and develop outsourced benchmarking or measuring systems with common competitor database for obtaining objective information[222]. This strategic alliance type of solution would allow for detailed comparisons and product development plans in the field. Moreover, it may be wise to outsource[223] the solution development to companies who know this best and, instead, focus on core competences[224]. The notion of networking being a central value-enhancing element (Kogut 2000; Nielsen 2006; Srivastava et al. 1999) that brings competitive advantage (e.g. Blomqvist et al. 2005) is highlighted in the interviews more elaborately:

> *"A good collaboration relationship with other firms is a strength and possibility -- Theoretically, integration with competitors is possible since internal needs for the customer are the same"* (Company 2)
>
> *"Partnerships: outsourcing certain parts to the partner -- In future, even tighter relationships"* (Company 3)
>
> *"Tendency towards questioning what is done inside and what outside; it is not possible to do everything self -- network thinking, how network is being utilized"* (Company 4)
>
> *"We have got extremely good relations -- Collaboration has enabled us many things"* (Company 5)
>
> *"Network-orientation -- Right spirit and communication, understanding and allowing the role of the network -- time, communications, dialogue"* (Company 6)

Additionally, in terms of differentiation, it is worthwhile to understand that competition increases[225] and brands extend continuously[226] in the field. Competitors can develop a superior – that is, an overwhelmingly tempting and interesting – way for presenting the service what may be extremely detrimental for the company (e.g. running out of business)[227]. Hence, it is reasonable to hold on to the obtained uniqueness by safeguarding intellectual property (cf. Füller & Matzler 2007; Pittaway et al. 2004). Firms may, for example, avoid too generic solutions that allow for excessive

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[220] Bluecotton 2010; CustomInk 2010; Spreadshirt 2010; Vans 2010; Wordans.com 2010
[221] Company 5
[222] Company 2
[223] Most companies have not developed the solutions themselves but, rather, the virtual spaces for customer engagement are bought from a service developer/licensor (e.g. Company 1; 2; 3; 4; 5; 6).
[224] Company 1 and 3
[225] Company 1 and 2
[226] Company 2
[227] Company 2; 3; 6

user interface copying[228]. Moreover, even if it may not be possible to patent the solution[229] except for appearance-related aspects[230], companies may consummate an agreement with the service developer/licensor in terms of the rights and policies of use, buy the whole software from the service provider, or, at an extreme, foster hard-to-copy learning trajectories[231] by obtaining the requisite know-how and building an own solution[232].

Internal

On the other hand, with regard to internal promotion means – that is, marketing occurring inside the company website – it is essential to consider branding as a means for stressing and conveying brand stories[233]. Branding is outstandingly important[234] – it is everything[235] – since ECMC solutions are largely based on mental impressions[236]. Thus, ECMC solutions need to be branded intriguing. For example, an interesting brand name or slogan might be developed and the service might be sold as a unique and fun experience. The netnographic findings clarify what is meant by skilful ECMC branding:

> *"miadidas" (adidas 2010)*
> *"Your Audi" (Audi AG 2010)*
> *"DesignStudio" (Bluecotton 2010)*
> *"NikeID" (Nike 2010)*
> *"MyMoney" (Nordea 2010)*
> *"Express yourself!"(CafePress.com 2010)*
> *"Easy, useful and fun" (Company 1)*
> *"You think it, we ink it -- Create it yourself. Fun and easy online design" (CustomInk 2010)*
> *"Bike by Me, the bike you like" (Dinscooter Sverige 2010)*
> *"Think It, Make It, Wear It" (INKtastic Inc. 2010)*
> *"We Make It Happen" (Instashirt.com 2010)*
> *"Picture your life" (Pikicentral 2008)*
> *"Built by us & you" (Republic Bike Inc. 2010)*
> *"Think about your life – Do it, see it, experience it here" (Volvo Car Corporation 2008)*
> *"We make quality custom products designed by you" (Zazzle Inc. 2010)*

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[228] Company 1 and 2
[229] Company 1; 2; 4. Usually legislation restricts (e.g. standards, documentation, prices, taxes) rather than enables issues (Company 4; 6).
[230] Company 2
[231] Company 4
[232] Company 1
[233] Company 3
[234] Company 1 and 5
[235] Company 4
[236] Company 2 and 4

On the other hand, firms need to pay attention to adequate functional linkages so that customers find the configurator inside the website[237]. As it is, companies may give the toolkit a bigger role by, for instance, highlighting relevant buttons[238]. Moreover, like academics suggest (Kahn 1998), customers may be approached via cross-selling (e.g. buy more by this designer/design, you might also like, buy related items, create similar products, update quantity, buy extra services)[239].

Finally, companies may approach customers through one-to-one communications and direct marketing messages (Peppers and Rogers 1995), yet attending that the tailored marketing messages are not considered as spamming from the customer's point of view[240]. Firms may, for example, send special campaigns and offers via e-mail to those consumers who have saved their personal information online[241]. Particularly, customers may be approached with newsletters that provide information about exclusive offers (e.g. a coupon to a free item), updates or ECMC-related news and events[242].

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[237] Company 1
[238] Company 6
[239] adidas 2010; BoardPusher 2010; Company 4; 5; INKtastic Inc. 2010; Nike 2010
[240] Company 2
[241] CafePress.com 2010; Company 2; Timbuk 2 2010
[242] adidas 2010; Bluecotton 2010; CustomInk 2010; DressByDesign 2010; indiDenim 2010; Nike 2010; Oakley 2010; Pistol Clothing 2010; Spreadshirt 2010; Timbuk2; Zazzle Inc. 2010

6 SUMMARY

This chapter summarizes the central findings of the study. The purpose is to help managers in the planning and execution of competitive strategies by outlining some of the most integral elements, namely key success factors, behind ECMC that ought to be carefully assessed and managed. At best, the pursuit of these factors can be mutually beneficial for companies can customers and, thereby, create a win-win situation wherein synergy advantages are being produced. It is possible to categorize the empirical results as follows:

_____

SYSTEMIC UNDERSTANDING

Interface

- Access
    - o Requirements (browser, computer, alternative ways)
    - o Software (maintenance, customer information, lightness, progressiveness)
- Usability
    - o Cues (tutorials, guide files, learning centers, FAQ)
    - o Testing (beta, local)
- Scope
    - o Internationality (global/pan-European website)
    - o Technology (photorealism)

Logistics

- E-commerce
    - o Process (cart, availability, check out, wish list, order summary, delivery calendar, order status/history, confirmation mails, store locator, shipping fees, tracking, changes, delivery time, outsourcing)
    - o Security (accreditation/references, 'about us', media image, user agreements/guarantees/warranties/content disclaimers/IP and privacy policies, return policies)
- Data integration
    - o Retailer toolkits (communications, independence, centralized procurement)
    - o Daily habits (single source of data, flexibility, electrified systems)

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ORGANIZATIONAL UNDERSTANDING

Culture

- Principles
    - o Ideology (history, internalization, goodwill, interaction, low hierarchy, functionality, values, consensus, latitude, vision, support, empowerment, know-how, openness, recruitment, training, artifacts)

- Routines
  - Methods (archives/ticket systems, improvement)

Resources

- Monetary
  - Importance, continuity
- Human
  - Manager (resources, coordination, support, objectives, strategy, involvement, atmosphere)
  - Personnel (diversity, commitment, experience, skills, know-how, motivators, roles, supplementary services, consultancy, problem detection)
- Tangibles
  - Metrics (customer tracking/long tail, data mining/KPIs)

CUSTOMER UNDERSTANDING

Experience

- Facility
  - User-friendliness (design process, site searches)
- Originality
  - Self-expression (identity, fantasy)
- Versatility
  - Augmentation (offline activities, realism)

Commitment

- Personality
  - Tasks (profile/account, saving/branding designs, gift cards, artifacts, mistakes)
- Communality
  - Communication (testimonials, reviews, favorites, evaluations, stores, discussion forum/chat, social media)

COMPETITIVE UNDERSTANDING

Offering

- Product
  - Characteristics (high quality, comfortable, professional, durable, fashionable, individual)
  - Range (model, size, quantity, gender, age group, colors, fabric, embroidery, shapes, graphics, precision controls, images/logos)
  - Specialty (measures, barcode, ID, whole configurator)
- Price
  - Flexibility (dynamics, local/fees)

    o Payment (methods, campaigns/discounts)

Promotion

  • External

    o Methods (magazines, announcements, Internet, collaboration)

  • Internal

    o Methods (branding, linkages, cross-selling, e-mail/newsletter)

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Now that the findings have been stated, a synthesis of conceptual framework and empirical results is presented. The outcome is an empirical model or, alternatively, model of competitive advantage that aims at supporting corporate decision-making at a strategic level. Figure 2 outlines this empirical framework and depicts how competitive advantage may be pursued through ECMC.
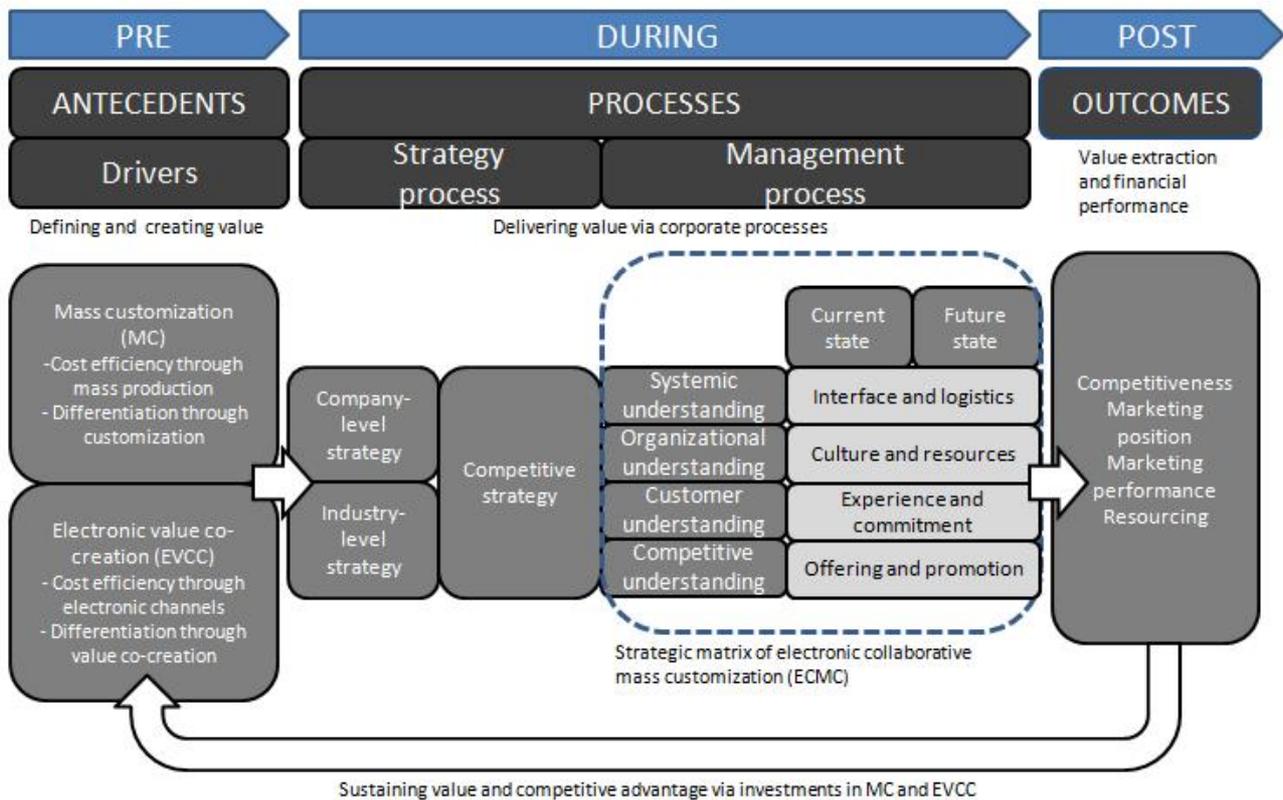

FIGURE 2: Empirical framework

Since this research focuses on mutually beneficial value-enhancing processes, the fundamental idea is that companies can obtain competitive advantage by providing superior value to customers. This means focusing efforts on MC and EVCC. When combined and simultaneously pursued, these elements may form ECMC. The central tasks of ECMC, in turn, form a strategic matrix highlighting the key success factors. In this managerial action field, strategic and mass customization approaches are incorporated in order to create a coherent framework for pursuing

success. The matrix clearly addresses the areas that need critical attention; it provides essential information about the means by which competitive edge may be exploited.

The model of competitive advantage bears some implications that need to be discussed. In order to prevent confusions, certain underlying principles must be emphasized and explained. First of all, since the model assumes managers as responsible/legitimate (i.e. entitled to rationally create, adjust and evaluate competitive process-based strategies in a networking environment) and functionality regardless of particular technology, the model can be treated as a feasible ECMC strategy creation and development tool for any computer-mediated communications (CMC) system that involves collaborative design in terms of active, empowered managers in contemporary dynamic B2C business environment. Hence, the managerial applicability of the empirical framework is rather extensive.

Secondly, it is crucial to note that the proposed resource allocations are context-specific and, thus, depend rather exclusively on the company's current development plans and requirements. Indeed, if companies wish to balance the development of capabilities against the maintenance of immediate cash flows (cf. Hart 1995), the strength of the resourcing arrow depends of the company's prospects and is to be balanced against company's cash reservoirs. Thirdly, however justified or strong the relationship between investments and company performance may seem, there always exists a possibility for this relationship not to hold in every single context (e.g. rapid, unexpected changes or no spontaneity or intuition in execution). Although it is possible to generate competitive advantage, this may not be the case in every instance; competitive advantage may not occur for all companies at any given time and location.

Having said this, it becomes evident that the model is to be treated as a directive and normative guideline for corporate decision-making and strategic planning of ECMC projects. The introduced model, however promising, is only a potential and descriptive tool, scenario, blueprint, benchmark or framework for ECMC strategies. Indeed, the implications of the model are primarily to be held as suggestions; instead of being understood as generic strategic patterns, they need to be considered as notions where successful ECMC concept execution may begin and as additional steps in the direction of better understanding the nature of the concept. In fact, since there is no guaranteed way or one-size-fits-all solution for success (cf. Campbell & Cooper 1995; Füller & Matzler 2007), ECMC is not a standard strategy (Da Silveira et al. 2001; Hart 1995; Piller & Müller 2004) nor every company's best strategy (cf. Da Silveira et al. 2001; Zipkin 2001).

7 DISCUSSION

This chapter proportions the empirical observations of the research to the research problem and prior research so that discussion can center not only on summarizing and evaluating the research but also on contemplating the contribution, managerial implications, limitations, and future research. The chapter integrates the theoretical and empirical parts of the research in a meaningful way and offers further considerations.

7.1 Summary

Companies need to pay attention to both manufacturing practices and customer satisfaction. In today's highly competitive and turbulent business environment it is no longer a panacea to concentrate on efficient production mechanisms. The traditional market push approach with an emphasis on delivering products or services is outdated and ought to be replaced with a more in-depth, customer-oriented approach of market pull. Consequently, firms need to adopt a completely new mindset in terms of their future strategies. The traditional mass production method needs to be complemented with a more customer-driven aspect of customization and the functional electronic channels need to be complemented with a more customer-centric perspective of value co-creation, in order to create not only cost-efficient but also differentiated products. This novel logic emphasizes the synergetic use of mass customization (MC) and electronic value co-creation (EVCC) that together form the emerging yet insufficiently studied buzz phenomenon of electronic collaborative mass customization (ECMC).

This research contemplated the role of ECMC as competitive B2C strategy from the process perspective and shed light on the associated key success factors. In particular, my research discussed and analyzed the matter creating competitive advantage through web-based collaborative configurations or co-design applications – new type of competitive strategies that aim at satisfying customer needs via customer immersion in artificial web environments and collaborative joint efforts. Through themed interviews and netnography, this descriptive research explored the key success factors behind profitability and offered insights to managers in terms of profit generation. It conceptualized the phenomenon of ECMC and uncovered a process for pursuing success in today's competitive, networked business environment. The purpose was not only to uncover the central elements (i.e. hard/explicit, soft/tacit, internal/company-level, external/industry-level) that managers need take into consideration in their strategic decision-making but also to increase our understanding of the ECMC concept by discovering and determining specific value co-creation processes.

Ultimately, an empirical framework with a strategic matrix was introduced for enhancing EVCC within the context of MC. The framework suggests management to properly understand and utilize

knowledge management in order to obtain appropriate business knowledge. This ECMC understanding, termed as key success factors of ECMC, can be categorized as follows:

- Systemic understanding: interface and logistics
- Organizational understanding: culture and resources
- Customer understanding: experience and commitment
- Competitive understanding: offering and promotion.

All in all, the ultimate determinate of success is the adaptive adoption of the presented competitive framework characterized by differentiation and cost efficiency. In this sense, success is a matter of rational yet somewhat intuitive managerial effort where aim is to reap desired benefits in the most appropriate and effective manner so that competitive advantage may be pursued and maintained. Fundamentally, the research results are to be considered as suggestive action recommendations that conditionally guide strategy development.

7.2 Evaluation

In terms of evaluation, one may pose questions about the validity of research process and applied methods. Herein, it is possible to discuss the ethicality and trustworthiness of the research by considering issues of reliability, impartiality, credibility, transferability, dependability, stableness, and conformability of the research (e.g. Alasuutari 1994, 150; Tuomi & Sarajärvi 2009, 134–139, 158).

First of all, in terms of used literature, the research bears relatively high credence. The used literature was mainly less than 10 years old (except for certain classic theories and methodological viewpoints) what can be regarded as being a rule of thumb (cf. Tuomi & Sarajärvi 2009, 159). This means that the theoretical discussion and argumentation is up-to-date. Moreover, extensive amount of prior research (approximately 200 academic papers) was examined in order to variedly cover differing viewpoints, assure proper understanding of argumentation, and guarantee sufficiency and pertinence of academic literature. In particular, adequate attention was paid on the quality of literature as journals, reviews, and other valued academic research were used as a starting point for the discussions; a proper censorious attitude was evident in this study.

Secondly, it is possible to consider the empirical research process. In terms of interview sample, the research was somewhat complicated as there were only a few firms operating in the researched field at the time being. Indeed, since large-scale MC solutions are sill limited to few examples (Piller 2004), it was burdensome to find decent research candidates (i.e. a suitable sample) for the research who could offer versatile arguments and viewpoints for the purpose of my research. Due to scarcity of potential key informants, it may be possible that the selected firms may not have been

the most ideal candidates. This may influence the plausibility of the arguments. Nevertheless, the fact that ECMC initiatives, in general, are emergent by nature mitigates the problem somewhat.

Furthermore, there is a slight possibility that the interviewees may not have been extremely knowledgeable about the ECMC solution business as a whole but, rather, had a narrow, marketing-oriented outlook on the subject. With regard to obtaining more in-depth data and further validating the presented arguments, it would have been interesting to explore ECMC matters more profoundly and cross-functionally inside a given company – for instance, by interviewing a multitude of company representatives (e.g. IT-managers) from one single organization during this research. In addition, it is possible that the interviewees may have wanted to stress positive sides instead of negative ones in order to give a more favorable impression of company's current and future prospects. Thus, as the company representatives may have wanted to give an ideal depiction rather than a truly realistic one, there is a risk of embellishment.

On the positive side, research ethics and confidentiality were respected in this study since interviewees were informed about the purpose, methods and voluntariness of participation, and the obtained results were handled with care; the identities of the participants were secured, and the data was not handed in to third parties nor was the information utilized in other than the promised purpose (cf. Alasuutari 1994, 76, 145–146; Silverman 2006, 319–323). In particular, each participant understood that the research objective was to develop a strategic framework for ECMC and they wished to participate in the research in order to obtain more know-how on the different topical strategic options. This enhances the depth and validity of the interpretations (cf. Eskola & Suoranta 2005, 66–67) and mitigates the common problem of participant motivation (cf. Hirsjärvi & Hurme 1980, 60).

With respect to the process of interviewing and data analysis, it is essential to note that the themed interviews bore a relatively in-depth orientation what is to improve the richness of the data. The discussions, yet focusing on certain pre-defined themes, did not, in any case, form into highly structured or formalized interactions but, rather, held an appropriate flow of conversation that enabled profound contemplation. Furthermore, utilized versatile equipment (i.e. paper documents to guide the interview process, field notes/memos to highlight central ideas, and a tape recorder to capture small details and nuances in the conversation), high average length, respondent validation, and preliminary testing of the research agenda played a central role in enabling reliable and multifaceted information. Additionally, conclusions and interpretations were made more transparent and plausible by having some authentic quotes to verify the stated (cf. Aaltola & Valli 2001, 62). On the negative side, the fact that the interview was recorded and took quite long may have influenced the given answers so that some matters were intentionally left unmentioned. Besides, reliability could have been further improved by allowing other researchers to analyze the same data (Eskola & Suoranta 2005, 68; Silverman 2006, 288).

The issue of trustworthiness needs to be considered in terms of netnography too. When it comes to websites and discussion forums, adequate attention had to be paid on selecting credible sources;

all encountered issues needed be handled with extraordinary circumspection. Regardless, researcher bias could occur in case certain statements were understood incorrectly. Since one cannot ask the other party to correct what is being said, there is a risk of misinterpretation. Secondly, it is possible that some online comments were not stated by genuine, motivated consumers, but, rather, by company representatives or pseudo customers, such as C2C buzz-marketers. Alternatively, web commentators may not represent mainstream users but speak for the minority of users – such as, innovative early adopters adopting successful technology-based innovations first (cf. Rogers 2003, 36; Slater & Narver 1998) – with the intention of promoting or vilifying a certain brand due to personal reasons. Thus, instead of portraying authentic consumer needs, wants, and feelings, the web comments may entail instrumental value. This kind of information may bias the results, if included in the study.

7.3 Contribution

Herein, the theoretical and practical relevance of the study is discussed. First of all, this research contributes to prior research by examining MC as a competitive asset. Particularly, it highlights the previously neglected means and frameworks by exploring the content and processes behind MC and offering an extensive outlook on the implementation of such strategies. Moreover, this study supplements the traditional MC literature by adding a service element, namely EVCC, into the picture. Indeed, this research investigates the nature and processes of EVCC efforts that have previously been overlooked. Light is shed on virtual customer engagement – that is, the core value drivers of electronic customer relationship management or, alternatively, online value co-creation processes. Hence, a richer customer value theory from the company's perspective is being created. Finally, when the production perspective of MC is being combined with the customer perspective of EVCC, customer value conversion into economical value is being enabled and the previous insufficient empirical examination and implementation of MC in e-business strategies is being addressed. It is possible to speak about an even more holistic value co-creation logic or conceptualization of an electronic MC environment, namely ECMC.

Not only has this research emphasized the theoretical importance of combining the concepts of MC and EVCC in order to better understand the phenomenon of ECMC, but also a practical link between customer value and mass customization is explored. Accordingly, this study extends the extant understanding of the means by which companies may develop ECMC solutions in a modern networked e-business environment. Based on literature review and empirical research, this study introduces a framework for the identification and management of ECMC-related antecedents, processes, and outcomes. The presented model highlights the recognition of key success factors behind customer-centered production and reveals strategic possibilities in managing online value co-creation. Thus, while implications for contemporary product/service development and customer relationship management are offered, the current understanding of platform-based product

development and customization strategies is broadened. Fundamentally, by stressing the importance of e-strategies, this study provides useful academic and practical insights on customer-driven virtual solutions; it widens the present comprehension of efficient customer collaboration processes in e-business contexts and provides managers with potential tools for improving ECMC business planning and implementation.

7.4 Managerial implications

My research encompasses several noteworthy managerial implications. Indeed, this study offers practical recommendations for managers and marketers employing ECMC projects in different fields (e.g. B2C, B2B & B2G), not necessarily solely in the studied B2C context. Instead of seeing ECMC as a marketing gimmickry, my research introduces ECMC as a competitive means for planning, executing, and evaluating MC and EVCC practices. ECMC is seen as a differentiating yet cost-efficient value co-creation effort in an electronic MC environment with the aim of pursuing superior company profits and customer value. Given the lucrative outcomes, ECMC processes ought to be better managed and nurtured. Managers need to offer and maintain virtual stages for customers' self-actualization processes; they need to provide the technical system and embrace sufficient customer understanding, organizational capability and competitive know-how. These four factors need to be properly analyzed and implemented in order to create extraordinary value for customers and competitive advantage for the company.

From an even more practical perspective, my research provides managers with a strategic, empirical framework for managing the process of EVCC within the context of MC. The issues captured in this research indicate important considerations for the development of value co-creation activities and solutions, particularly the way that virtual co-design solutions are accounted for from the behalf of manufacturing companies. Especially, the introduced framework has pragmatic value for managers since they can use the model to systematically identify, assess and implement internal and external success factors. For them, the framework represents a knowledge management tool that supports corporate decision-making; it can facilitate structured discussions and aid in the creation and maintenance of business intelligence. Fundamentally, the underlying idea is that firms may adaptively adopt the presented model – they may continuously customize the model according to context-specific requirements.

7.5 Limitations

This research bears a variety of limitations. The first set of limitations deals with nature of the research. More specifically, this research provides only a one-time snapshot of ECMC practices due to its cross-sectional nature. As my study highlights competitive actions only in certain time and

space, some noteworthy aspects may not have been discovered during this research; it was not possible to obtain an all-embracing description of the phenomenon. Thereby, this research is to provide insights on ECMC solution business within a certain context. The presented managerial implications may not apply to all settings – for example, business environments that differ from the western model greatly.

The second set of limitations deal with the sample, namely studied key informants and field. Particularly, the interview sample was quite small and heterogeneous since the research was based merely on a few interviews. This may have an impact on the results. The chosen companies were also rather experienced with the concept. Differing results could have been obtained if the sample consisted of much less advanced companies, such as ECMC start-ups. Moreover, the fact that researched companies were located only in B2C field means that provided suggestions may not necessarily, or in an oversimplified way, apply to all other possible fields, despite the potential for this. Finally, it is also possible that some key informants of the netnographic research may not have had actual hands-on experience with ECMC what may skew the obtained data.

Thirdly, there are limitations related to research approaches and data collection too. This research, while focusing on the process perspective of competitive advantage, treats managerial awareness and rationality as basic defaults. Thereby, my study largely neglects other management techniques, such as incremental development, emergent strategies (cf. Mintzberg et al. 2005, 33) or temporary problem-solving methods (Winter 2003). On the other hand, also the networking perspective of the study limits the applicability of the presented arguments due to neglecting market- and hierarchy-like conditions. Additionally, the data analysis was made with a conceptual framework in mind. This framework guided data collection and subsequent interpretations to a great extent. Finally, the research was conducted entirely from the perspective of one single researcher and only one company representative was selected from each firm to answer research questions. Ultimately, having a different research approach, data collection framework, researcher, and interviewees may have resulted in divergent research results.

Fourth, the introduced empirical model entails limitations that need to be discussed. The framework is an ideal description of strategy development activities and the implications are to be understood descriptively, not normatively. Indeed, when too strictly top-down implemented without any sense of intuition, the model may lead to adverse effects too. In this sense, however strong the relationship between competitive assets and economic profit, it may not always hold and it should not be taken as granted. Thus, the model is not to be treated as a tool that provides a surefire recipe to success but, rather, as a means for extending current understanding on the subject. Likewise, the model may not as such fit companies but needs to be tailored according to different situations.

7.6 Future research

My research extends the current understanding of ECMC. Yet, my findings and the related limitations generate a need for further verification and testing. First of all, due to the cross-sectional and descriptive nature of this research, empirical examination may be prolonged in order to validate the strength of the positioned linkages and the degree to which a single key success factor is an indicator for success (i.e. relative importance through weighing). Consequently, future research could take a longitudinal/diachronic and/or quantitative approach in determining actual length and strength of competitive advantage. In terms of investigating this magnitude, the introduced empirical model could be tested in real-world contexts or company performances in and across fields could be compared. Until greater research is undertaken on the nature of ECMC over time, the full implications of the phenomenon will not be entirely understood.

Secondly, despite the possibility of my findings bearing validity in other contexts, future research could empirically investigate whether the outcomes hold in divergent contexts by developing a number of studies on how different firms organize their ECMC processes. In this sense, further research could contribute by attempting to replicate the findings of this research using another sample. Especially, an international replication of the study or in-depth case studies could yield new, interesting insights and enable a more elaborate depiction. Also, companies from a variety of business operation areas (e.g. electronics) and geographical locations (e.g. Asia) could be included in the study, and interviewees could be selected to attend the study based on different attributes than strategic knowledge (e.g. operational task-related know-how). Chosen companies could, additionally, show an even more consistent, clear and proven record of successful ECMC implementations. Alternatively, research might center on the still largely untapped area of unsuccessful ECMC executions.

Future research might have a different approach too. Besides emphasizing networking and rationality in managerial planning, insights are needed on impetuous, dynamic decision-making (e.g. ad-hoc) in market- and hierarchy-like conditions. Moreover, as my primary focus been on company and process perspective of competitive advantage, future research could address the phenomenon from consumers' perspective (e.g. industry experts) and concentrate mainly on antecedents and outcomes. On the other hand, it could also be worthwhile to explore the causalities between these elements. Studies concentrating on measurement and operationalization are recommended.

All in all, I intended to provide useful insights on ECMC. I hope that my work stimulates managers to experiment with and researchers to further investigate this interesting and emerging topic. In particular, I anticipate that the presented empirical framework will provide a fertile ground for future research. Researchers may, thus, proceed with further investigation of antecedents, processes and outcomes with greater assurance and understanding of what constitutes a promising strategy and how to implement it an optimal way.

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APPENDICES

APPENDIX 1: Outline of the interview

1. **INFORMATION ABOUT THE RESEARCH**

Final thesis: Electronic collaborative mass customization (ECMC) as a competitive strategy

I am Krista Palmu from Aalto University School of Economics (Department of Marketing and Management) and I am conducting my final thesis on electronic collaborative mass customization (ECMC) as a competitive strategy. In my research, I am interviewing organizations and service providers about the use and utilization of virtual customer co-design platforms as competitive tools. As a secondary research source, I use netnography in order to gain a multifaceted view on the subject and guarantee customer-centrism.

The interview will be a themed interview meaning that it entails open discussion around certain pre-defined themes. The interview is conducted in Finnish language, it will be recorded, and it will last approximately two to three (2–3) hours. The purpose of the research is to collect information about the way electronic collaborative mass customization may be utilized as a competitive weapon which means that information will be gathered in terms of the concept's strengths, weaknesses, opportunities, and threats from four different perspectives – namely, customers, competitors, organization, and system. The research questions are sent beforehand to participants (see Part 2). The aim is to collect data according to the following field:

	Current state – Strengths and weaknesses	Future state – Opportunities and threats
Customers		
Competitors		
Organization		
System		

Only the researcher (the researcher being me) will utilize the collected data and the data will be analyzed according to the principles of content analysis what means that broader themes guiding operations are being sought. The data will be transcribed and sent to the participants for correcting. Ultimately, the final report will be will be stored in Helecon's electronic database and sent to the interviewees as a sign of gratitude for the collaboration.

2. <u>STRUCTURE OF THE STUDY</u>

The interview entails two aspects – the current state (strengths and weaknesses) and the future state (possibilities and threats). Inside each of these scenarios, four different mass customization elements are being discussed. The fundamental idea is to collect information about the following:

1. **What are the key success factors (strengths, weaknesses, opportunities and threats) behind customer understanding and how can they be managed/developed? (*)**
2. **What are the key success factors (strengths, weaknesses, opportunities and threats) behind competitive understanding and how can they be managed/developed? (**)**
3. **What are the key success factors (strengths, weaknesses, opportunities and threats) behind organizational understanding and how can they be managed/developed? (***)**
4. **What are the key success factors (strengths, weaknesses, opportunities and threats) behind systems understanding and how can they be managed/developed? (****)**

(*) For example, needs, requirements, preferences…

(**) For example, market situation, competitors, competitive means such as marketing, product design, price…

(***) For example, attitudes, cultures, resources, management, know-how of employees…

(****) For example, technological processes, manufacturing, delivery…

It is possible to prepare oneself for the interview by considering answers the above-mentioned questions beforehand. The interview aims at being very generic meaning that company-specific solutions are not the main focus of discussion but, rather, the interview emphasizes electronic collaborative mass customization as a general strategic tool or solution for companies. Thereby, the answers may be primarily provided from this viewpoint.

3. PROGRESSION OF THE INTERVIEW

It is possible to proceed as follows:

GENERAL INFORMATION:

Name:

Title:

Organization:

Turnover:

Line of business:

Length of career:

Experience of similar concepts or other fields:

Possibility to publish company name:

Evaluation of the concept's success:

Prioritization of key success factors:

RESEARCH QUESTIONS:

CUSTOMERS – what are the related key success factors and how can they be better utilized?

Current state

1. What strengths does the concept have with regard to customers currently and how can they be utilized/developed?
2. What weaknesses does the concept have with regard to customers currently and how can they be utilized/developed?

Future state

3. What opportunities does the concept have with regard to customers in future and how can they be utilized/developed?
4. What threats does the concept have with regard to customers in future and how can they be utilized/developed?

COMPETITORS – what are the related key success factors and how can they be better utilized?

Current state

1. What strengths does the concept have with regard to competition currently and how can they be utilized/developed?

2. What weaknesses does the concept have with regard to competition currently and how can they be utilized/developed?

Future state

3. What opportunities does the concept have with regard to competition in future and how can they be utilized/developed?
4. What threats does the concept have with regard to competition in future and how can they be utilized/developed?

ORGANIZATION – what are the related key success factors and how can they be better utilized?

Current state

1. What strengths does the concept have with regard to organization currently and how can they be utilized/developed?
2. What weaknesses does the concept have with regard to organization currently and how can they be utilized/developed?

Future state

3. What opportunities does the concept have with regard to organization in future and how can they be utilized/developed?
4. What threats does the concept have with regard to organization in future and how can they be utilized/developed?

SYSTEM – what are the related key success factors and how can they be better utilized?

Current state

1. What strengths does the concept have with regard to system currently and how can they be utilized/developed?
2. What weaknesses does the concept have with regard to system currently and how can they be utilized/developed?

Future state

3. What opportunities does the concept have with regard to system in future and how can they be utilized/developed?
4. What threats does the concept have with regard to system in future and how can they be utilized/developed?