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Bachelor's Thesis

International Business

**The role of communities in product customization**

**Yhteisöjen rooli tuoteräätälöinnissä**

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## **ABSTRACT**

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As customization services become more common, it becomes critical for companies to understand how the co-design process is experienced from the customer perspective, and how it can be further improved. This thesis examines the role of communities and social presence in the customization process. The aim is to study how communities influence users' customization experience and how communities can be integrated into product customization.

The study is based on qualitative research methods. A two-case method was adopted in order to gain a throughout understanding of the topic under interest. The research data was collected from secondary sources, such as company websites. In addition, four people were interviewed about their experiences of using a co-design toolkit.

There are numerous ways of integrating social factors into the customization process, including the integration of social software functions and providing socially rich content about other's creations. According to the interview data, other people act as a source of inspiration in the beginning of the design process. The results also indicate, that users are willing to share their product designs online but prefer sharing to their close circles. Companies offering mass customization should consider adding community-like aspects to the customization process. By providing easy ways of sharing customization related content, companies can help users to communicate about the product to their acquaintances. Furthermore, communities and social cues might support the individual user in making more accurate choices as well as lead to having a more enjoyable experience.

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Kustomointipalveluiden yleistyessä yritysten on yhä tärkeämpää ymmärtää, miten tuotteiden suunnitteluprosessi koetaan asiakkaiden näkökulmasta ja miten sitä voidaan parantaa. Tämä kandidaatintutkielma käsittelee yhteisöjen sekä sosiaalisen läsnäolon roolia tuoteräätälöintiprosessissa. Tutkimuksen tavoitteena on tutkia, miten sosiaaliset tekijät vaikuttavat käyttäjiin suunnitteluprosessin aikana ja miten yhteisöjä voidaan hyödyntää tuotteiden räätälöinnissä.

Tutkimus toteutettiin laadullisena tapaustutkimuksena. Tutkimuksen kohteeksi valittiin kaksi, aiheen syvällisen analysoinnin mahdollistavaa case-yritystä. Tutkimusaineistona hyödynnettiin julkisia tietolähteitä kuten yritysten internet-sivuilta löytyvää materiaalia. Lisäksi haastateltiin neljää henkilöä liittyen heidän kokemuksiinsa konfiguraattorin käytöstä.

Yhteisöt voidaan liittää räätälöintiprosessiin monin eri tavoin, kuten yhdistämällä niihin sosiaalisia sovellusohjelmia tai lisäämällä sisältöä muiden käyttäjien suunnittelemiin tuotteisiin liittyen. Haastatteluaineiston perusteella muut ihmiset vaikuttavat räätälöintiprosessiin etenkin tarjoamalla inspiraatiota suunnittelun alkuvaiheessa. Tulokset viittaavat siihen, että käyttäjät jakavat mielellään suunnittelemansa tuotteen verkossa, mutta ensisijaisesti vain läheisten piirien kanssa. Tuoteräätälöintiä tarjoavien yritysten kannattaisi harkita yhteisöllisten elementtien lisäämistä räätälöintiprosessiin. Tarjoamalla helppoja tapoja jakaa räätälöintiin liittyvää sisältöä, yritykset voivat kannustaa käyttäjiä jakamaan tuotteeseen liittyvää tietoa tuttavilleen. Yhteisöt voivat lisäksi auttaa käyttäjää tekemään parempia päätöksiä suunnitteluvaiheessa, sekä lisätä kokemuksen miellyttävyyttä.

# Table of contents

<b>1. Introduction</b>	<b>1</b>
1.1 Research questions and limitations	1
1.2 Conceptual framework	2
1.3 Literature review	3
1.4 Key concepts	4
1.5 Structure of the study	5
<b>2. Mass Customization</b>	<b>6</b>
2.1 Definition and development	6
2.2 Levels of mass customization	7
2.3 Co-design toolkits	9
2.4 Benefits of mass customization	10
2.5 Costs and challenges of mass customization	11
<b>3. Product Customization in a Social Context</b>	<b>13</b>
3.1 Social presence theory	13
3.2 Virtual communities	13
3.3 The shopping process: the EBM model	14
3.3.1 Social influence in the customization process	15
3.4 Social software applications	17
3.4.1 Integration of social software applications into configurators	17
<b>4. Methodology</b>	<b>19</b>
4.1 Case study research	19
4.2 Research data	19
4.3 Data analysis	21
4.4 Validity and reliability	21
<b>5. Case Study Findings</b>	<b>23</b>
5.1 Vans	23
5.1.1 Co-design toolkit	23
5.1.2 Social aspects	24
5.2 Suunto	26
5.2.1. Co-design toolkit	26
5.2.2 Social aspects	26
5.3 Analysis of interview data	28
5.3.1 Mass confusion	28
5.3.2 Offline and online communities	29
5.3.3 Social software	30
5.3.4 Design galleries as a source of inspiration	30
5.3.5 Critical stages	31
<b>6. Discussion and Conclusions</b>	<b>32</b>

6.1 Limitations of the study .....	34
6.2 Future research.....	34
<b>References .....</b>	<b>35</b>

## **APPENDICES**

Appendix 1. Interview frame

Appendix 2. Coding table

# 1. Introduction

Mass customization is a strategy increasingly utilized by companies to differentiate themselves in markets which become more and more fragmented. By reacting to the individual needs of customers and involving them as co-creators, firms are able to create an additional value proposition, which can lead to competitive advantage (Franke and Piller 2004b). Mass customization strategies have been adopted by many recognized companies such as Dell, Adidas, Nike, Proctor & Gamble, as well as smaller companies with customization at the center of their business model (e.g. *www.urbike.de* a German company selling individualized bicycles). Today, most mass customization activities are performed through an online configurator that lets customers design their own product. This process has been typically seen as an isolated interaction which involves the customer and retailer only. Accordingly, at first glance it may seem surprising to suggest that individualization and communities have something in common (Leckner 2003). However, some studies have suggested that by adding social features, the overall buying process could be enhanced (Piller, Schubert, Koch & Möslein 2005; Franke, Keinz & Schreier 2008; Wind and Rangaswamy 2001).

The topic of adding a social dimension to the customization process is still quite new, and its application in the real world isn't very extensive yet (Franke et al. 2008). For this reason, it would be beneficial to give a comprehensive view on this subject and to study how firms are currently approaching it in practice. Technology-wise, it is already possible to incorporate many kinds of additional web-applications to the customization process. However, more research on how users experience the self-design process is still needed, in addition to uncovering what kind of features are useful for the customer as well as beneficial for the company.

The aim of this research is to gain an understanding on the role of communities and other social aspects in the context of online product configurators. This study will focus on understanding the customization process from the point of view of the customer and explore the topic of mass customization with an emphasis on online toolkits that enable customers to co-design their own products.

## *1.1 Research questions and limitations*

The objective of this bachelor's thesis is to discover and give an overview on the role of social aspects in mass customization.

The research topic will be discussed through a main research question and two specifying sub-questions, which will create structure for the study.

The main research question is:

- *What is the role of communities for the user in a product customization process?*

In order to clarify the main research question, the sub-questions are directed at discovering the impact communities and other social aspects might have on the customer. The aim is to also identify practical ways in which companies can integrate social aspects into the customization process. The sub-questions are:

- *What kind of impact do communities (online & offline) have on users during the customization process?*
- *How can companies integrate and utilize communities and other social aspects (e.g. social networks) in their product customization process?*

Since the focus of this study is on the consumer's experience in the mass customization process, this study will not go deeper into the enabling structures of mass customization, such as manufacturing systems. Instead, mass customization will be covered from a strategic perspective. Additionally, discussion related to the technological layer of web configurators will not be included. This aspect is not necessary considering the objective set for this study, and is thus beyond the scope of this research.

## ***1.2 Conceptual framework***

This study is interested in the intersection of communities and product customization. These two main areas and their relation to one another create the conceptual framework for this study. The framework of the study is presented in Figure 1. As illustrated, this study is focused on addressing mass customization of consumer products. The context of B2C markets create a boundary context in which the phenomenon is studied.

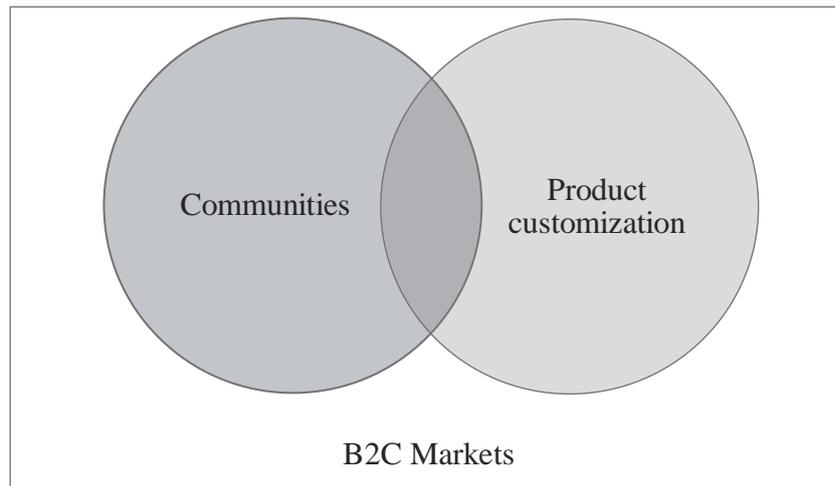


Figure 2. Conceptual framework of the study

### ***1.3 Literature review***

Since late 1980s, mass customization has gained a lot of attention in literature. The concept has been covered from multiple different viewpoints, including manufacturing, strategy, supply chain, marketing and information technology. However, there still seems to be a delay for adoption of mass customization technologies in business structure (Piller et. al 2005). “Mass customization is not there yet”, Piller (2004, 313) states, suggesting that the burdens and drawbacks customers face in the customization interaction process are one major explanatory factor for the lack of adoption.

Recently, researches have begun to address the customer’s perspective on mass customization more widely, specifically regarding online technologies that enable mass customization. In 2003, Franke and Piller defined the following questions as the key research issues in mass customization systems; *How do users interact with customization websites? Do customers experience complexity in the customization process?* and *What drives user satisfaction in this context?* These questions pointed the direction for further research related to user’s interaction with toolkits. According to Franke and Piller (2003), this subject area is still scarce in empirical findings.

A study by Jeppesen and Molin (2003), indicated that information from user communities is beneficial to individuals during the self-design process. Research has suggested that by adding peer/social feedback to the customization process the benefits derived both from the design

experience as well as the final product can be increased (Grosso Trentin & Forza 2014; Trentin, Perin, & Forza 2014; Merle, Chandon, Roux & Alizon 2010). Piller and Blazek (2014) suggest, that introducing social aspects to the customization process can foster customer perceived creative-achievement benefit. Creative-achievement refers to feeling of accomplishment, self-reward and pride for completing the creative task of customization, a phenomenon, which has been supported by empirical studies (e.g. Merle et al. 2010).

Blazek, Kolbm, Partlm, and Streichsbierc (2012) assessed company usage of social media and observed, that social networks (such as Facebook & Twitter), are used for supporting customers in the configuration process. Social network usage has been further studied in the context of online configurators by Grosso, Forza & Trentin (2017), who helped to define the connection modalities in which social networks can be integrated in customization process. Based on their study, Grosso et al. argue, that especially in certain industries, integrating social networks to the configuration process has already gained significant level of application. However, the phenomenon has manifested itself very recently and research on this topic is still very much in its infancy (Grosso et al. 2017).

## ***1.4 Key concepts***

### ***Mass customization (MC)***

Mass customization is a paradigm for industries aiming to provide products and services that best serve customer needs while maintaining near mass production efficiency (Jiao, Ma, & Tseng 2003). Mass customization provides customers with the ability to transfer their individual needs and desires into a concrete product specification (Piller et al. 2005).

### ***Mass customization toolkit***

MC toolkits refer to systems that enable users to innovate and develop their custom product via iterative trial-and-error process within a specified production system. The finished design created using the toolkit are produced and delivered to the customer according to the specification made during the customization process (von Hippel 2001). The term ***Configurator*** is often used as an alternative term for toolkit. Some authors use the term configurator when referring to the technological layer or perspective regarding (web-based) toolkits. However, in this study these terms are used interchangeably.

## **Community**

Community refers to “things which people have in common, which bind them together, and give them a sense of belonging with one another” (Day 2006, 1). According to Rheingold (1998, 5), **virtual communities** are social groups or groups with common interests that interact in an organized manner on the Internet. “Any virtual space where people come together with others to converse, exchange information or other resources, learn, play, or just be with others”, can be called an online community (Kraut & Resnick 2012, 1).

## **Social software applications**

Social software applications refer to a large number of online interaction services such as weblogs, instant messaging, photo sharing, online forums, social network tools and virtual worlds. Social software enables people to connect, collaborate and manage content in bottom-up fashion (Avram 2006).

### ***1.5 Structure of the study***

Followed by the introduction chapter, theoretical background for the study is presented. First, the concept of mass customization will be covered. This section also addresses online toolkits, as well as the benefits and challenges of MC. The third chapter of the study will discuss themes related to the social context of mass customization based on social presence theory. This section includes the topics of virtual communities, the EBM model (named after its developers Engel, Blackwell, and Miniard) and social software applications. Next, the chosen research methodology for this study will be justified and explained in more detail. Chapter five, the empirical section of this study, will take a closer look at two cases to get a better understanding of the research topic and to assist in answering the research questions. Finally, discussion and conclusions will be provided alongside suggestions for future research.

## 2. Mass Customization

This chapter provides a theoretical framework for the context of this study, by discussing customer co-design process within the mass customization industry. First, the concept of mass customization is illustrated, and its main characteristics are introduced. Co-design toolkits, the enablers of MC are discussed in more detail, with a focus on customer interaction. Finally, challenges and benefits related to mass customization and product configuration are discussed both from the perspectives of providers and customers.

### 2.1 Definition and development

Mass Customization (MC) is a strategy used for “producing goods and services to meet individual customer’s needs with near mass production efficiency” (Tseng and Jiao 2001). The term *Mass Customization* was first introduced by Davis (1987) in his book *Future Perfect*. Later the concept was developed by Pine (1993) and multiple other authors (e.g. Duray, Wind & Rangaswamy), who helped to coin MC as a new business approach born as a natural progression of industrial development. The objective of mass customization is to take advantage of flexible manufacturing to create highly valued products to customers. In more practical terms, MC can be seen as a system, that uses information technology, organizational structures and flexible processes in order to meet specific needs of customers (Kay 1993; Kotha 1995).

Since its surfacing in the 1980s, mass customization has gained popularity in academia, gathering multiple different definitions. MC is also often confused with concepts such as maximum product variant delivery, one-to-one marketing and personalization. For these reasons, mass customization as a concept has lacked a common understanding. In attempt to give MC a distinguishable definition, Piller (2004, 315) redefined mass customization as a

*‘Customer co-design process of products and services, which meet the needs of each individual customer with regard to certain product features. All operations are performed within a fixed solution space, characterized by stable but still flexible and responsive processes. As a result, the costs associated with customization allow for a price level that does not imply a switch in an upper market segment’.*

According to Piller (2004), the differentiating factor for MC in relation to other similar strategies (e.g. lean management or agile manufacturing), is the co-design activity performed by customers in relation to the company. At its core, mass customization is about the interaction

and cooperation between customer and company, since in the MC process, “customers are integrated into value creation by defining, configuring, matching, or modifying an individual solution” as Piller (2004, 315), states. This level of interaction has widely been made possible by technology developments and e-commerce. Prior to the recent technological developments, custom-tailored mass production has in fact sounded like a contradiction, and only a few companies were able to deliver mass customization (Kratochvíl & Carson 2005, 10).

According to Da Silveira, Borenstein & Fogliatto (2001) the development of MC is based on three driving factors: (1) new manufacturing and information technologies that enable production strategies to deliver higher variety at lower cost; (2) the increasing demand for product variety and customization; (3) the shortening product life cycles and expanding industrial competition. Firms in industries that are undergoing these kinds of transformations, are no longer able to compete on the basis of standardized products or services alone (Kotha 1995). As a result, companies are increasingly using product strategies focused on individual customers (Da Silveira et al. 2001). In these situations, mass customization has the potential to work as a fitting strategy by delivering customers exactly what they want, at reasonable prices.

## ***2.2 Levels of mass customization***

There is a variety of methods that can be used to achieve mass customization (Åhlström & Westbrook 1999). Each method can be categorized by two factors (Duray, Ward, Milligan & Berry 2000). First, by the degree of organizational transformation that is required, referring to the stage in which customers are involved. And secondly, by the mass customization approach or modularity type adopted.

Mintzberg (1998) and Lampel and Mintzberg (1996) developed the idea that the level of customer involvement plays a critical role in determining the degree of customization. The production cycle can be simplified into four points: design, fabrication, assembly and use. If customers are involved in the early design stages of product cycle, the product can be highly customized (Duray et al. 2000). Mintzberg classifies customization taking place in three different forms: (1) *Pure*, meaning products are designed and produced from scratch for each individual, resulting in highly customized products (e.g. a large-scale construction project). In this case, customers are included in the entire cycle; (2) *Tailored*, where basic design of product is altered to meet the specific needs of a particular customer (e.g. a tailor-made suit). Customer enters the cycle at the point of fabrication where standard products are modified; and (3)

*Standardized*, which means that the product is assembled from predetermined set of standard components (e.g. cars, IKEA's furniture). In this case, customer enters assembly and delivery process through the selection of features from a list of standard options.

When it comes to the nature of customization, Gilmore and Pine (1997) identify four distinct approaches based on empirical observation. These approaches refer to *how* customer value can be created, and are classified as follows:

- *Collaborative*. Customers take part in dialogue to help identify their precise needs in order to customize products for them.
- *Adaptive*. One standard product that customers can alter during use.
- *Cosmetic*. Standard product is presented (packaged) differently to different customers.
- *Transparent*. Customers are offered products that are adapted to their individual needs without letting them know.

These classifications are combined in Table 1, which shows that both typologies are related. The earlier customers are involved, the stronger the customization opportunity and ability to respond to customer's unique needs. However, customization does not necessarily have to happen at the earliest stage possible to be effective. Broekhuizen and Alsem (2002, 312) argue that if customers are satisfied with the products functioning, "but are less satisfied with the product's presentation, then cosmetic changes are likely to deliver value, as opposed to complicated product adaptations." Supporting this view, Kaplan and Haenlein (2006) suggest, that the more visionary view of MC – that customization should happen at the design stage, as well as the notion that customer integration can happen at later stages (i.e. fabrication or assembly), should both be included in the MC paradigm.

Table 1. Levels and approaches of MC (Adapted from Broekhuizen and Alsem, 2002 & Gilmore and Pine, 1997)

Stage	Level of customization	Approach
Design	Pure	Collaborative / Transparent
Fabrication	Tailored	Collaborative / Transparent
Assembly	Standardized	Cosmetic / Transparent
Use	Standardized	Adaptive

### 2.3 Co-design toolkits

According to Franke and Piller (2003), when the main part of the interaction takes place during the design of a product, it is appropriate to call the customer a co-designer. In mass customization, customers can participate in the design specification of their own products, even though they are not trained as professional designers. This process includes cooperative, collaborative interaction between the customer and provider, hence the ‘co’ in co-design.

Co-design toolkits (also *configurators*, *MC toolkits*) are a significant enabling technology for mass customization. Von Hippel (2001) defines these toolkits as a technology that allows users to design a product, by taking part in a trial-and-error experimentation processes, which delivers immediate simulated feedback on the potential outcome of proposed design ideas. After the customer is satisfied with their design, the product specifications can be transferred into the firm’s production system, and the product can be produced and delivered to the customer.

Traditionally, need specification and design was carried out in person, usually in a physical store with the assistance of a sales clerk. Since the development of information and communication technologies, this has not been the case anymore. Although MC toolkits do not theoretically have to be based on software, today most of these toolkits are internet-based. By enabling the close interconnectedness of mass customization and information technology, internet makes it possible for firms to turn their mass customization strengths into a commercial advantage (Dellaert and Dabholkar 2009). Web-based MC toolkits can be broken down to three main components (Franke and Piller 2003):

- The *core configuration software* which presents possible variations and options while guiding user through the configuration process.
- A *feedback tool*, that gives information (visualization of product, price information etc.) according to user’s selections.
- *Analyzing tools*, which transfer order information and further transmit it to manufacturing and other departments.

There is a variety of different kinds of toolkits and configurators offered. The spectrum encompasses both simple toolkits that offer color and size options, as well as ones that allow the user to actively *create* their own product, instead of just *choosing* between given options (Franke and Piller 2003). Toolkits can even turn users into innovators. This is possible when a

configurator functions as a space facilitating new product development by customers (Von Hippel 2001).

Franke and Piller (2003) undermine the crucial importance of the configurator interface, since the toolkit is in a major role between the customer and manufacturer in the MC process. The success of toolkits depends largely on the usability, design and features offered by web-configuration. In order for companies to benefit from mass customization strategy, the product configurator has to be able to deliver a positive experience and process satisfaction (Franke & Piller 2004a).

By means of configurator tools, companies can get access to up to date customer preferences and establish a closer relationship with customers. Integrating product configurators to the firms' Customer Relationship Management systems enables the collection of useful data about customer desires and behaviors. This information can improve planning and offer a comprehensive database for forecasting and business analysis (Blecker, Kaluza, Abdelkafi, Friedrich & Kreutler 2005, 36).

However, there are also challenges related to the use of co-design systems. The most prominent one relates to the challenge of elicitation of customer needs and defining a corresponding, error-free sales specification (Ross 1996). Providing the appropriate amount of customization options can also prove to be a difficult task for the supplier (Berman 2002). Another problem is the heterogeneity of customers that take part in the customization process. Kreutler and Jannach (2006, 28–29) argue, that since customers have different backgrounds in terms of experience and skill to express their need and requirements, a “one-style-fits-all” approach is not adequate. Instead, the configuration systems should be personalized, and the interaction of the website adapted accordingly (Kreutler and Jannach 2006, 28–29).

#### ***2.4 Benefits of mass customization***

On the supplier side, MC is generally seen as a strategy to achieve competitive advantage. Through customization, the supplier has potential for achieving greater efficiency through lower inventory levels. MC can decrease the amount of finished and work-in-progress goods, and as a result tie less capital compared to mass production (Pine 1993). Similarly, mass customized products are less subject to product obsolescence and fashion risk (Kotha 1995). By enabling a better fit with customer needs, MC can lead to better customer loyalty while

maintaining the ability to charge a higher price for the good (Berman 2002). Pine, Peppers, & Rogers (1995) argue that the effort spent in the customization process can become a switching cost for the customer. Further, being able to accumulate customer information and develop a deeper understanding of the needs of the customer, can also act as a great benefit (Pine et al. 1995; Berman 2002).

The main benefit of mass customization for the customer is a better product fit with individual needs (Pine 1993). If the customized product is able to closely meet customer's exact needs, it is also likely that the satisfaction in the final product is increased (Bardakci & Whitelock 2003). Additionally, customers may find it enjoyable to participate in the design and specification process (Huffman & Kahn 1998). Studies have found evidence on feelings of accomplishment that arise when customers participate in the self-design process, which has been termed as the "I designed it myself" effect (Franke, Schreier and Kaiser 2010).

### ***2.5 Costs and challenges of mass customization***

Blecker and Abdelkafi (2006) categorize the challenges of mass customization into internal and external aspects. Internal challenges refer to challenges faced by the company offering mass customization. These include mainly increased cost as a result of extensive product variety and slowing down the speed of manufacturing and distribution operations. MC strategy may also increase costs resulted from investments in advanced technology and information systems, as well as disproportionate amount of managerial time needed to implement the MC approach (Kohta 1995).

Difficulties encountered on the customer side are addressed as external complexity. According to Blecker & Abdelkafi (2006), the main source of challenges is related to the high variety of options and thus the complexity of the product selection process. The authors identify three main factors for this; the limited information capacity of humans, customers' lack of knowledge about the product, and customer's ignorance about her real individual needs. The term "mass confusion", (initially coined by Pine in 1994) refers to the drawbacks for the consumer in the customization interaction process. According to Piller et al. (2005) there are there main sources of mass confusion:

*Burden of choice.* Customers may become overwhelmed by the number options available for them. This problem, often quoted as a result of excess variety, has been widely discussed in literature as a limit for mass customization (e.g. Franke & Piller 2004a; Huffman

& Kahn 1998). Furthermore, customers sometimes fail to recognize the opportunities offered to them (Hill 2003), or altogether turn away from the freedom to choose, settling for the default solution offered by a toolkit (Hill 2003), or even quit the buying process completely (Piller et al. 2005).

*Matching needs with product specifications.* Even in the case of fairly standard products, customers often face difficulties in transferring their needs and desires into a concrete product. Customers do not necessarily have the skills or knowledge to specify appropriate product requirements. However, these capabilities are improved if customers are familiar with the product and the design process itself. (Piller et al. 2005; Blecker & Abdelkafi 2006)

*Information gap regarding the behaviour of the manufacturer.* Customers face uncertainty when buying customized products, due to lack of familiarity with the process (Franke & Piller 2004a). Customers suffer from asymmetrical information, which is a common problem for catalogue and online retailers. Customers have to usually pay for a product they have never seen and wait days or weeks to receive their order. With mass customized products, there is also a greater difficulty related to returning the product if customer does not like the final result after having received it. (Piller et al. 2005)

Furthermore, in addition to mass confusion, Piller et al. (2005) note another cost for the customer; the price premium a customer has to pay for the individualized product compared to a standard offering. This however might not be a significant problem, since research shows that consumers in many cases are willing to pay a high price premium for customized products (Franke & Piller 2004a). Some authors have questioned the MC strategy altogether, because it requires extensive participation from the customer (e.g. Fang 2008; Huffman and Kahn 1998). Not everyone is interested in investing time and effort into designing their own individualized product, “mass customization is not for everybody” as Zipkin (2001, 82) argues.

### **3. Product Customization in a Social Context**

Offering additional online-services and social characteristics to support the MC process has gained limited attention in literature (Rust & Lemon 2001). However recently Piller et al. (2005) among other authors, have started to transfer established knowledge about the use of communities in e-business environments to the application area of communities of co-design. This chapter gives an overview on the state of research related to integrating communities and social aspects into the customization process. First, the theory of social presence will be introduced, as it lays the foundation for discussing social elements in mass customization. Next, to support the scope of this thesis, the concepts of virtual communities, the shopping process (The EBM model), and social software applications are discussed in more detail.

#### ***3.1 Social presence theory***

The theory of social presence introduced by Short, Williams & Christie (1976), has been widely studied and applied in the context of media communications and web, including e-shopping. In short, social presence refers to experiencing other people being present during an interaction (Fulk, Steinfield, Schmitz and Power 1987). According to Biocca (1997, 22) “the amount of social presence is the degree to which a user feels access to the intelligence, intentions, and sensory impressions of another”. Generally, the level of social presence is higher in traditional in-store-shopping, while e-commerce is more impersonal, anonymous and automated, and can be viewed as lacking human warmth and sociability (van der Heijden, Verhagen & Creemers 2003). Several studies indicate, that instilling social presence in online shopping environments can increase enjoyment, perceived usefulness and trust among customers. One example is a study by Hassanein and Head (2007), who found that social presence, in the form of socially rich text and pictures led to more positive online consumer attitudes. This indicates that even simulating the imagination of interacting with other humans can instill a sense of social presence to the process.

#### ***3.2 Virtual communities***

Potential benefits of virtual communities for business purposes are widely acknowledged in the literature (e.g. Hagel & Armstrong 1997; Williams & Cothrel 2000). The term ‘virtual community’ was first introduced by Howard Rheingold in 1993. He described virtual communities as “social aggregations that emerge from the net when enough people carry on those public discussions long enough, with sufficient human feeling, to form webs of personal

relationships in cyberspace” (Rheingold 1998, 5). Further describing the attributes of virtual communities, Leckner (2003) refers to the central characteristics of web-based communities, identified by Hagel & Armstrong in 1997, arguing that these same characteristics can also be used to support online configuration activities. The four aspects necessary for all functioning virtual communities are:

- 1) *Communication* – support of different ways of synchronous or asynchronous communication between the community members is needed for collaboration.
- 2) *Content* – members should be motivated to actively create content for the community.
- 3) *Relationships* – feedback, dialogue and establishment of virtual identities are necessary for members to build trust and reputation. This provides the feeling of social affiliation which is essential for communities.
- 4) *Loyalty* – an important goal for every community is to have loyal members.

The characteristics of virtual communities can be realized by various community functionalities such as online-chat, ratings, awareness-tools, reputation systems etc. (Leckner 2003). A related term on the subject of business and customers communities is *Social commerce*. Social commerce refers to word-of-mouth applied in e-commerce (Dennison, Bourdage-Braun & Chetuparambil 2009). Communities and social commerce have been mentioned in the literature as a promising way to help integrating customers into company activities (Schubert 2000). For instance, social influence has been found to support customers making more informed and accurate shopping decisions (Kim & Srivastava 2007). Additionally, research has shown that interaction in communities supports creative activities (e.g. Nemiro 2001).

### ***3.3 The shopping process: the EBM model***

Named after its developers, Engel, Blackwell, and Miniard (1995), the EBM model aims to understand consumer’s entire decision-making process and to explain and understand consumer behaviour. The model is based on five decision stages that consumers go through during their shopping experience:

1. *Problem recognition*: in the first stage consumer identifies a problem or need they want to satisfy.
2. *Information search*: customer begins gathering information on possible solutions. The information can be internal, such as consumer’s previous experiences, or gathered from external sources like friends or company representatives.

3. *Evaluation of alternatives*: based on the information search, consumer evaluates options and develops a set of criteria to compare these alternatives. Finally, consumer defines his/her own preferences.
4. *Purchase stage*: in this stage, the consumer decides whether to buy the preferred good, as well as where and how to buy it.
5. *Post-purchase evaluation*: lastly, based on the quality of the experience, consumer may provide positive feedback, or in the case of dissatisfaction, form negative attitudes towards the company or product.

The shopping experience involves a variety of social variables and interactions that impact the consumer's decision-making process (Engel et al. 1995). Shopping can also be based on social motives such as affiliating self with a group, following a trend or the pleasure of sharing an experience with others (Tauber 1972). The literature has also recognized that social influence (coming from friends and other peers), has an impact on consumers decision making (Solomon, Dahl, White, Zaichkowsky & Polegato 2014; Tauber 1972). Study by Lee, Shi, Cheung, Lim & Sia (2011) highlights how social influence can support consumers especially in circumstances of time constraints, limited knowledge or when consumers perceive high risk in shopping.

### **3.3.1 Social influence in the customization process**

Virtual communities provide an easy way to communicate with others. By providing access to the knowledge and experience of other customers, communities have the ability to aid knowledge transfer between customers (Leckner 2003). Empirical evidence provided by Jeppesen and Molin (2003) indicate that user communities can function as an external information source, which can be beneficial to the individual in the self-design process. Uncertainties are likely to occur while customizing a product with many degrees, and these uncertainties may be decreased with the help of community support or direct advice from other customers (Huffman & Kahn 1998). Further supporting this notion, Piller et al. (2003; 2005) state that involving customers in cooperative interaction is a promising way to reduce the mass confusion effect experienced by customers in the configuration process. Through word-of-mouth and collaborative customization, communities can build trust and reduce the perceived risk related to customization (Piller et al. 2005). Additional way to reduce perceived complexity is to offer a starting design model instead of asking users to start from scratch (Dellaert &

Stremersch 2005). This starting model can be another customer's finished product design, which can also add a sense of social presence and influence in the customization process.

Franke et al. (2008) describe the self-customization process through configurators as a problem-solving process that includes three stages; *the development of an initial idea, the generation of a preliminary design* and the *final design evaluation*. Phases, in which social feedback is particularly important are the first two: development of an initial idea, and the evaluation of a preliminary design solution (Franke et al. 2008). According to Franke and Hader (2014), a promising method for providing feedback, would be to include a function to the configurator that enables users to submit their designs and get rapid feedback from other users online. Similarly, Jeppesen (2005) shows that help from peers improves individual problem solving most notably in the phase, in which a user aims to build a preliminary design. Experienced toolkit users are willing to support others regarding efficient toolkit use, for example by advising how certain toolkit functions work. According to Jeppesen (2005), these kinds of functions are a promising way to create conditions for better toolkit use and to reduce the burden of support needed from firms.

Just like with traditional retail commerce, in the MC process customers are trying to identify the best solution for their needs. Grosso et al. (2017, 11) point out, that a potential customer in a configuration environment "may experience the need for interacting with others in order to find support in identifying the product solution that best fits his/her needs". Leckner (2003) suggests, that the integration of community should be regarded in a wider sense, not just involving the virtual communities online, but also ones in the real world because, "in most cases the customer will not use a product alone, but she will share it with others". When it comes to products that are likely to express customer's individual character, the consideration of what others think becomes even more important (Leckner 2003).

Additionally, the product configuration process has been found in itself be a potential source of value (Trentin et al. 2014; Merle et al. 2010). As previous research has shown, customers are willing to pay a considerable premium when they have had a positive experience of the configuration process (Franke & Piller 2004a). For these reasons, a benefit like social interaction in the customization process could be an important way to help increase satisfaction (Grosso et al. 2017). This argument is in line with a study by Gebauer, Füller, & Pezzeri (2013), who found that in a co-creation context, a sense of community affected positive word-of-mouth and willingness to pay.

### ***3.4 Social software applications***

According to Downes (2005), the Web has shifted from being a medium, in which information is transmitted and consumed, into a platform, in which content is created, shared, remixed and passed along. This new web has been defined as web 2.0 (O'Reilly). Web 2.0. can be seen as an umbrella term for a variety of new internet services (Warr 2008), including social software. Social software enables interaction among users who know each other as well as unknown individuals (Wang et al. 2012). Social software refers to tools used in online communication, that enable wide opportunities for collaboration and interaction. These include tools such as instant messaging, email systems, chat, weblogs, wikis, social network services and virtual worlds. (Avram 2006; Warr 2008).

Kaplan and Haenlein (2010, 61) define social media (SM) as “a group of internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user generated content”. This definition reveals the overlapping nature of the terms of social media and social software applications. However, social software is usually regarded to entail different forms of chat and instant messaging unlike social media (Kaplan & Haenlein 2010).

#### **3.4.1 Integration of social software applications into configurators**

In 2012 Blazek et al. analyzed the integration of Facebook and Twitter in 412 product configuration offering websites. They detected four possibilities of connecting social networks into configurators. Building further on this study, Grosso et al. (2017) extended the analysis to also cover other social software. They found four additional modalities beyond those that corresponded with the ones identified by Blazek et al. The eight modalities identified by Grosso et al. (2017) are presented below, along with brief descriptions on the type of social interaction they enable.

- 1. Icons** on the company website that enable configurator users to connect with the company SM profiles – supports consumer in information search and evaluation of alternatives.
- 2. Icons** in the configurator that enable users to connect with their SM profiles – customer can share a link to the website and interact with their online circles. Alternatively, the

customer can share incomplete/complete configuration on their own social media profile.

3. **Direct browsing/uploading of files** shared in the user's SM profiles to the configurator – Although this modality doesn't involve direct interaction, the user can, for example, select to use items that have previously received positive feedback on social media.
4. **Simplified configurator** embedded in the company SM profiles – simplified configurator acts as demo configurator helping users to understand how the configuration works.
5. **Weblog (blog)** enabling configurator users to connect with peers and company representatives – the blog can be a general company blog or provide specific information related to product configurator. It can act as a space in which users can interact with peers and company representatives.
6. **Company discussion** forum enabling configurator users to connect with peers and company representatives – in this case, the website provides a link to a discussion forum from which a user can get support. The amount of feedback and information attainable from the discussion forum depends on the type and activity of the forum.
7. **Email service** enabling configurator users to connect with online circles/company representatives – offering an email service at the end of the configurator helps users to interact with their online circles.
8. **Instant messaging service** enabling configurator users to connect with the company's customer service – placed either inside or outside the configurator, real-time messaging functions as a form of customer service.

Grosso et al. (2017) also discuss how these different modalities can support the customer in different stages of the shopping process. According to the authors, most of the modalities support customers in the stages of information search and evaluation of alternatives. However, for instance email and company instant messaging service (modalities 7 and 8), support customers at each stage of decision-making process. Blazek et al. (2012) argue, that integrating social media to the customization process has a lot of potential, since customers want to engage and express themselves. Integrating social software applications to the customization process is a prominent way of increasing social presence. They allow actual interaction with other humans, and thus instill a sense of human warmth and sociality (Hassanein and Head (2007)).

## **4. Methodology**

A qualitative research method was adopted for this study. Qualitative research method is a suitable approach when the interest is to study a matter thoroughly and gain a holistic understanding on a certain phenomenon (Eriksson & Kovalainen 2008, 5). The objective of this study is to discover different ways in which communities are related to product customization. Thus, the research can also be categorized to be explorative in nature. According to Saunders, Lewis and Thornhill (2016, 176), explanatory research approach is implemented when there is a need to explain relationships between variables or prior insights of the phenomenon are modest. More specifically, this study was conducted by following the case study method with using multiple data collection techniques.

### ***4.1 Case study research***

Case study is an appropriate research method when the focus is on contemporary phenomenon within real life context (Yin 2009, 18). Case method focuses understanding the dynamics that are present within single settings (Eisenhardt 1989). The objective of this study is to evaluate the role of communities in customers' co-design process, which makes the case study method a reasonable choice. Consideration of contextual conditions is necessary for a deep understanding of the research topic. Case studies can involve either single or multiple cases and numerous levels of analysis (Yin 2009, 19). For this study, a multiple case study method was adopted through the analysis of two presentative cases. Findings based on just two cases will be more powerful, in comparison to making conclusions from a single case alone (Yin 2009, 61). Secondly, two cases allow for cross-case comparison, which can help to derive more robust findings.

The selected case companies for this study are Vans and Suunto. Two cases provided enough data to be studied in detail within the scope of this research, while also allowing variation. Both of the case companies employ mass customization strategy as a part of their offering. The cases were selected based on an initial screening that suggested that both of the companies already have some social aspects integrated into their customer co-design process.

### ***4.2 Research data***

Case studies typically combine multiple data collection methods such as archives, interviews and observations (Eisenhardt 1989). For the purposes of this study, data was collected from

both secondary and primary sources. Details about the case companies and their customization systems were derived from secondary sources, such as from the companies' websites, social media and other public resources. Primary data was collected in the form of interviews to support finding answers to the research questions. Interview can be used as a data collection method, when the goal is to get access to participants authentic experiences (Eriksson and Kovalainen 2016, 92). In this study, interviews were conducted to discover how users of co-design toolkits experience communities and social presence in their customization process. The interviews were performed as semi-structured interviews, which outlined the themes of discussion but left room for varying the wording and order of questions. According to Eriksson and Kovalainen (2016, 94), the major advantage of semi-structured interviews is that the collected material is somewhat systematic and comprehensive, while the tone of the interview can be kept fairly conversational and informal. The interview outline, presented in Appendix 1, was designed based on insight that arose from the literature review.

Before the interview, the interviewees were asked to test the toolkits offered by the case companies. The interviews were conducted within two days after the respondents had used the toolkits. The selection of interviewees was based on convenience-based sampling. The interviewees were selected regardless of their prior experience of using customization tools. In total, four persons were interviewed for the purposes of this study. The interviewees included one male and three females. The selected respondents were young adults, (aged 22-23) and previously known for the researcher. Familiarity with interviewees can create trust in the interview situation but also increase socially desirable responding. To mitigate this risk, the interviews were conducted in a neutral manner, with the interviewer avoiding expressing personal views or preferences.

The respondents were informed about the general purpose of the study beforehand. Recording of the interviews, data processing and publicity of results were also communicated. All of the interviews were conducted in person. A semi-structured interview guide allowed the researcher to ask specifying questions when necessary and resulted in more in-depth answers from the respondents. The interviews were conducted in Finnish and translated into English before analysis. All of the interviews were tape-recorded and later transcribed into text to allow systematic and comprehensive analysis of the collected data.

### ***4.3 Data analysis***

The analysis of empirical data is based on content analysis methods. Data collected through interviews was analyzed using strategies such as categorization, memo writing, close reading and direct interpretation. A summarization of the themes that arose from the interview data is provided in Appendix 2. According to Eriksson and Kovalainen (2016, 120), the purpose of content analysis is to produce a factual description which provides the ‘big picture’ about the phenomenon under study. Another objective of qualitative content analysis is to provide a rich and nuanced interpretation of the contextual meanings of the data (Eriksson and Kovalainen 2016, 120).

In presenting the analysis results, this study follows a strategy described by Eisenhardt (1989). First, the cases are examined based on secondary data sources and observation of the co-design environment. The objective is to provide detailed descriptions of the cases in a clear and compact form. Next, the data collected from interviews is combined to analyze different dimensions and patterns found across the cases. These dimensions aim to categorize and clarify the insights, similarities, as well as intergroup differences based on the findings made from the research data.

### ***4.4 Validity and reliability***

Reliability refers to demonstrating that the operations of a study can be repeated by another researcher with the same results (Yin 2009, 40). To improve the reliability, the research procedures of the study - such as data collection – should be clearly documented for external reviewers. The goal of reliability is to minimize the errors and biases (Yin 2009, 45). Another way for improving reliability is to establish a chain of evidence. It should be evident where the conclusions of a study are derived from. Moreover, the links from the initial research questions to the final conclusions should be traceable. This study strives to achieve a chain of evidence by providing a description of the research procedures related to data collection and analysis, as well as by presenting the used interview frame.

There are two dimensions of research validity that apply to exploratory and descriptive case studies (Yin 2009, 40). The first one is *construct validity*, which refers to setting the correct operational measures for the studied concepts (Yin 2009, 40). The concepts under study should be clearly defined, and the operational measures that match those concepts should preferably be identified by citing published studies. Construct validity can be improved by using multiple

sources of evidence as well as establishing a chain of evidence. *External validity* deals with knowing whether the study's findings are generalizable beyond the immediate case study (Yin 2009, 40). Case studies generally rely on analytical generalization, which means generalizing a particular set of results to a broader theory instead of making statistical generalizations (Yin 2009, 43-44). To increase the quality of this study, the empirical results will be compared with previous studies and developed theories.

## 5. Case Study Findings

This chapter discusses the empirical findings of the selected cases based on the collected data. First, the backgrounds of the case companies will be introduced along with explanations of the social aspects related to the toolkit environments. The first two sections are focused on characterizing the customer co-design processes and their basic elements. Section 5.3 summarizes the findings that arose from the user interviews and analyzes these insights in the context of the respective cases.

### 5.1 Vans

The Vans brand is one of the world's largest youth culture brands. The company was founded in 1966, in Anaheim California, by brothers Paul Van Doren and Jim Van Doren along with partners Gordon Lee and Serge Delia. The company started as a skateboarding company that sold shoes which it also manufactured itself. Since the very beginning, Vans has allowed their customers to engage in the creation of their shoes. When the store was first opened, customers were able to individually choose the fabrics and fit of their shoes. In 2004, Vans became a fully owned subsidiary of VF Corporation, a global, US based apparel company with a portfolio of more than 30 brands (SGB Media 2004). Today, Vans is known for producing footwear, apparel and accessories inspired by action sports and street culture. The brand's products are sold globally across multiple different channels including chain stores, independent distributors and online stores. (Vans 2019; VF Corporation Annual Report 2017; VF Corporation 2019)

#### 5.1.1 Co-design toolkit

Link to customization main page: [www.vans.com](http://www.vans.com)

Currently, the brand offers customization through *Vans Customs*, a toolkit that allows customers design their own products and purchase them directly online. Vans Customs was initially launched in 2004. The Customs website allows “would be fashion designers to create their own classic slip-ons utilizing hundreds of different color and pattern combinations” (Vans 2019). The platform enables customization of backpacks and a range of footwear models. The customizable products are priced between 70 and 100 euros. The toolkit offers customers the freedom of choosing between a large number of colours, materials and pattern options. The system goes as far as letting users upload any picture they want and use it as the base for their design. In this process, user generated content is converted and applied into the final product.

Vans Customs can be categorized as an example of tailored customization. By using the co-design toolkit, customers are able to modify the basic design of the product according to their needs and preferences. Vans Customs also enables true creativity and a high level of personalization by offering a chance for customers to use their own pictures in the creation of their products. This function opens endless amount of variations for the final product. A user is able to upload their own artwork or photograph and incorporate it into their product.

Visually, the Vans co-design toolkit has a simplified look with minimal amount of distractions. The co-design toolkit is displayed in Figure 2. The toolkit view entails a model of the shoe which the user is able to rotate and inspect form various different angles in an interactive manner. Customization options located at the bottom of the page.

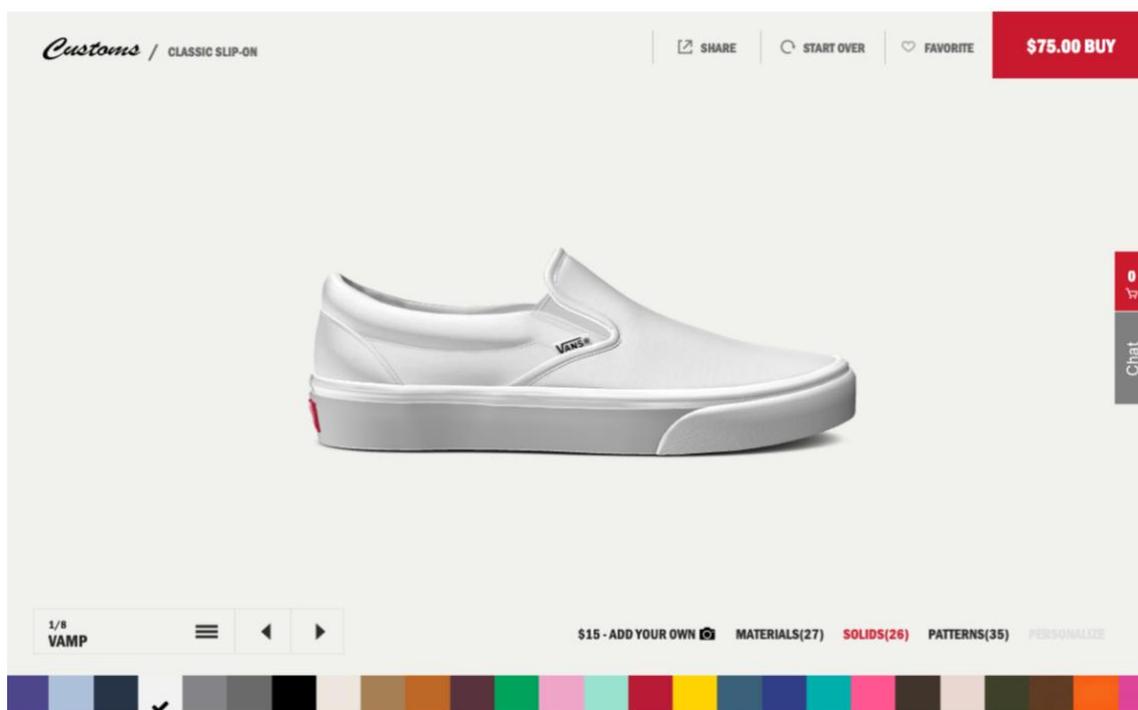


Figure 2. Vans toolkit view

### 5.1.2 Social aspects

During the actual customization process, few social cues are present. Apart from the sharing and chat functions that are featured in the toolkit view, the user is very much alone during the customization. The chatbot (which is also available during regular browsing of Vans online store) allows users to receive answers to their possible concerns. The chat provides automated answers, so no real sales representative can be contacted through it. The chatbot includes suggestions of some of the frequently asked questions related to shipping and ordering, in

addition to a couple of questions directly related to customization; “*How long do customs take?*” and “*How can I get my own image on shoes?*”.

The configuration view also includes a share button, which opens up two options: copying the unique link to be shared on a social network or sending it directly through email. The email option encourages users to share their design with family and friends. Recipients of the email are able to access the design, as well as change sizes and the appearance of the product. “Check it out! I designed some Vans Customs for us. Pick your size, order them, and we’re good to go” the site suggests in the email message box.

The Vans Customs page (main page of customization) has a lot of pictures of people, which creates a sense of social presence. People and their unique stories and styles are emphasized instead of a pure focus on the product itself. The page includes several pictures of people wearing Vans shoes as well as pictures of models representing the colorful style of the brand. When scrolling through the page, users are also introduced to pictures and stories of professional designers who have designed special prints for the brand. Additionally, the main page of Vans Customs exhibits customers’ designs by featuring pictures that customers have shared on social media. The site showcases recent pictures picked from posts that have been tagged using the hashtag #vanscustoms on social networks. These photos, taken by real customers, showcase examples of the finished customs shoes in real life and provide an authentic source of inspiration. Over 8000 photos on Instagram have been tagged using the #VansCustoms hashtag.

Vans Customs also allows customers use original prints created by artist as the preliminary designs for their own product. More information about this option is provided behind a link on the main page of customization, which brings users to a blog-like page. The page introduces six artists and designers and describes their creative process. Their stories are told mainly in the form of videos, along with short introductions covering each person.

The main page of customization also features a visible mention of *the company’s brand community, Vans Family*, (only available for US customers). By joining in and completing certain tasks in the program, members are able to receive different kind of rewards, including benefits related to customization. For example, there is a possibility of gaining access to exclusive artist-designed patterns and prints. However, Vans Family is not really a community based on customer-to-customer interaction. Vans Family relies more on the relationship

between single customers in relation to the brand. The program is based on earning points through shopping and sharing content in order to receive redeemable rewards.

## **5.2 Suunto**

Suunto, a company based in Vantaa, Finland is a subsidiary of Amer Sports Corporation. Amer Sports is a Finnish sporting goods company and the owner of seven other internationally recognized brands such as Salomon and Wilson. Suunto is known for its design and manufacturing of sport watches, dive computers and sports instruments. The company's history traces back to 1936, when a Finnish orienteer and engineer Tuomas Vohlonen invented the mass production method for the liquid-filled compass. Today, Suunto employs more than 400 people worldwide and its products are available in over 100 countries. (Suunto 2019; Amer Sports Annual Review 2018)

### **5.2.1. Co-design toolkit**

Link to configurator [www.suunto.com](http://www.suunto.com)

In 2015, Suunto introduced the Customizer, an online toolkit that allows consumers to create unique, personalized sports watches. At the present moment, customers are able to choose between 7 customizable watch models. The prices of the watches vary between 500 and 800 euros. The toolkit allows the design of practically every part visible on the watch, choosing between an array of color and material options which enable thousands of unique combinations. Each custom watch is built according to customer's design and is delivered in two weeks. (Knowit 2015; Amer Sports 2015)

The level of customization of Suunto watches can be classified as tailored, since a standard product is being modified at the fabrication stage. Customers are only able to alter the cosmetic features of the watch - although in a very collaborative manner. The toolkit allows consumers to personalize their device with case colors, strap designs, different materials, bezels and buttons. There is also a possibility of adding a custom inscription –a name or a player number for instance, on the back of the watch.

### **5.2.2 Social aspects**

During the actual configuration, the Suunto Customizer offers the possibility to share the created design directly to Facebook and Twitter with a pre-formulated message. There is also a

share button in the toolkit view, located in the upper right corner of the configurator page. By clicking this button, customers can easily share the configuration link to over a 180 different social networks and applications, including email, Pinterest, WhatsApp, Blogger, Trello and Telegram and more.

Suunto Customizer includes a separate Design Gallery page, which features designs created and saved by other customers. The gallery is, as the site suggests, a place “where you can get inspired before customizing your own watch” (Suunto 2019). In addition, anyone can decide to purchase one of the showcased designs or use it as a starting point in their own customization process. As depicted in Figure 3, when publishing to the gallery, users are able to name their product and add short descriptions related to their design. There is also a possibility to add a background picture for the watch. All of these features add a more personal touch and create more context around the products displayed in the gallery. The published designs can also be shared directly to Facebook or Twitter using the buttons on the upper right corner. Further, the Suunto Design Gallery allows voting (liking) of the designs. The most liked designs are listed on a separate page. Altogether, over 3400 designs have been saved to the gallery.

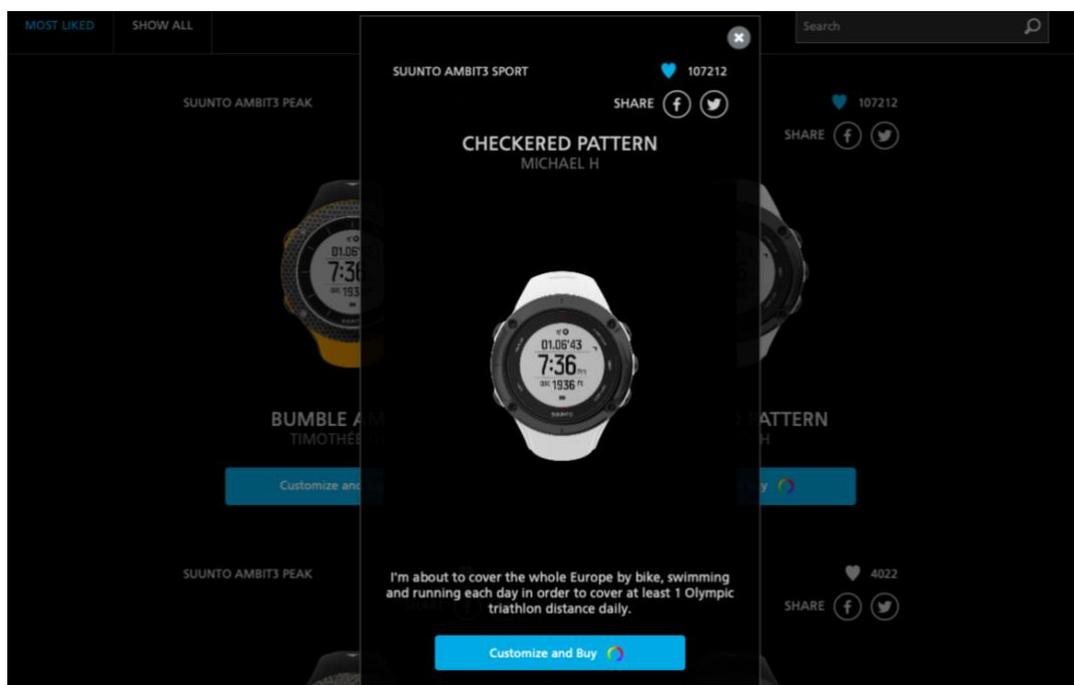


Figure 3. Suunto Design Gallery

Users can access the design gallery through the main page of customization. There is also a link back to the gallery in the toolkit view, which users can press in case they feel the need to review

other's creations before fully committing to their design choices. The main page of Suunto Customization also features Ambassador Collections, which includes the designs made by the brand's ambassadors. Each month, a new seasoned adventurer, athlete or explorer shares their unique watch design. The page tells short stories about the ambassadors and their product designs. These watches are also available for everyone to modify and order.

Suunto encourages users to share their designs on social media using #SuuntoCustomizd hashtag. However, posts have not been shared very actively on social media. On Instagram, a little over hundred posts have been shared with that tag. Even less interaction can be found on other social media sites like Facebook and Twitter, with most of the posts being entries for a contest held in late 2017.

### ***5.3 Analysis of interview data***

The following section focuses on analyzing the empirical findings of the semi-structured interviews. The explored themes will be grounded in data by appropriate quotes from the interviewees. Two of the participants familiarized themselves with the Vans customizer, and two participants used the toolkit offered by Suunto. Apart from comments related to company specific features, no big differences were detected in the interview answers related to communities between the different case companies.

#### **5.3.1 Mass confusion**

In the literature, mass confusion has been argued as one of the major reasons for the need of community features in the customization process. Communities are regarded as a way to help the customer make more informed decisions and to decrease the level of uncertainty experienced in the co-design process. In this study however, mass confusion seemed not to be an issue. The interviewees expressed that the customization process was easy. None of the interviewees faced difficulties or frustrations related to the process, even though only one of them had prior experience of using an online toolkit for designing a product. Even a respondent, who expressed that they have a difficulty of making decisions, described the design process to being surprisingly easy.

*“I was able to come with the final design quite quickly. As soon as I saw the available options, I knew what I wanted to do.”*

Additionally, both of the interviewees that used the Vans customizer, expressed being disappointed by the amount of options available. The respondents particularly hoped for more color options to choose from. A user of the Suunto toolkit also said that the customization experience would have been significantly less enjoyable, if there had been less options available. These observations indicate, that the users in the studied cases did not experience the need for external support in the form of communities. In regard to the actual co-design process of the product, the interviewees felt comfortable using the toolkit by themselves and did not for example need help with its functions.

In general, the respondents seemed to have a relatively positive attitude towards customization and described the customization process as fun and easy. The respondents expressed that they enjoyed the customization process; *“I liked it, it was fun, I could definitely do more of these in the future”* as one of the respondents put it. Only one interviewee showcased more of a neutral view on the co-design concept, stating that they would not normally use this kind of service, and probably wouldn't in the future either, due to a lack of interest.

### **5.3.2 Offline and online communities**

The influence of offline communities was rather small among the respondents. All of the interviewees reported to having gone through the design process alone. None of them were in the company of other people and thus, for instance, no one discussed their design or got advice from other people during the process. Therefore, social presence in the physical environment did not have an influence the respondent's customization process.

Similarly, very little interaction was detected in the interaction with online communities related to the customization experience. However, when discussing this topic, most of the respondents stated that they would likely share their final design with the people they know and are close with, whether digitally or in person. Overall, the respondents were more interested in sharing their designs in a more private manner to their close circles. For example, when asked about the option of sharing a picture of the design on social media, one of the interviewees responded; *“No, I would rather share my design to just my family or close friends”*. The respondents were not really attracted to the idea of sharing their design publicly online for everyone to see.

### 5.3.3 Social software

Although both of the case companies had several social software applications (e.g. social media icons, email service, chat) integrated to their customization experience, the interviewees that took part in this study used them very little. When inquired about the most probable social software of choice in a real purchase situation, the function that evoked the most interest was email. However, email was not a natural choice for everyone. As one interviewee put it *“I didn’t send my design using email. That didn’t even cross my mind. If I were to send my design to a couple of people, I would just take a screenshot and send that as a message.”* Similarly, when it came to interacting with other people during the configuration process, the respondents mentioned instant messaging tools more often instead of email. For example, Snapchat and WhatsApp were both mentioned by two interviewees. In this case, the aim of using these tools would be get feedback before making an order or to showcase the final self-designed product to close circles.

Social media applications (Instagram and Snapchat) were also mentioned, but mainly in the context of sharing a photo of the final product after receiving it. The notion of taking a picture of the finished product was brought up by all of the respondents. Sharing a picture of the physical product online appeared to be a fairly likely scenario among the interviews. Many of the comments on this matter also reflect a sense of pride in the self-designed product.

*“After all, if I have designed it myself, it would be nice to post a picture on social media to show; hey, I made these.”*

At the same time, publicly sharing one’s design also brought up hesitation. One of the responders explained, that unless they had come up with a new, truly creative idea they would not share their design publicly on social media. The reason given for this, was the fear of judgment from others.

### 3.5.4 Design galleries as a source of inspiration

Two of the respondents told that they looked at product designs made by others before beginning their actual customization process. They mainly eyed the main pages of the customization and looked at the example designs made by other people. The models created by brand ambassadors were also noticed. An interviewee testing the Suunto customizer told that they published their product design to the gallery at the end of the process, in order to save the

design. They also gave a name for their design and added a short description for the sports watch.

When making design decisions about their own products, the respondents reported to mostly trusting their own voice and sense of style. The respondents did not feel the need to actively search for ideas and support from others. One interviewee expressed that in a real buying situation, they would have searched for design inspiration more widely online. By using services such as Pinterest, (an image-based social network), they would searched for designs made by other people to find example designs and to discover what kinds of things are in style. Another interviewee pondered how their end result might have been significantly different, had they more actively browsed through other's creations, "*Most likely I would have incorporated some little – or even big, cool details from others into my own design*".

### **3.5.5 Critical stages**

Based on the interview data, communities and social interactions played the biggest role in the information search phase, where users were still considering different options. Other people and their influence affected the participants mainly by providing inspiration. In terms of stages of the self-customization process, this would translate as the stage of the development of an initial idea. The interviewees didn't express a need for social interaction during the actual design phase. However, the possibility of involving other people in evaluating the preliminary design was noted in one of the interviews. One of the respondents told that before making a purchase, they would most likely send a message with the tone of "*hey, does this look nice, what do you think?*" to family or friends in order to ask for their opinion. All of the interviewees showcased some level of interest in sharing their design with their close circles in the post-purchase stage. The answers given by the participants also indicate feeling a of pride for having designed the product themselves. This supports the findings made in the literature related to feelings of accomplishment arising from self-designed products.

## 6. Discussion and Conclusions

The aim of this research was to provide an understanding of the role communities and other social aspects for the customer in the product customization process. Focus was placed on discovering the ways in which firms can integrate social functions into their customization processes and how social factors influence users. The exploration of these questions was conducted through theoretical evaluation and a study of two case companies that use mass customization strategy alongside the production of standard products.

Customizing one's own product with the help of an online toolkit can be regarded as a highly individualistic act, during which a person merely turns their personal preferences into product specifications. Through this study however, it became evident that communities and a sense of social presence can affect the user in the customization process in multiple ways. As with any other type of shopping, the act of co-designing a product takes place within a social environment in which social variables may influence the user's decision-making process. What makes the product customization process interesting from the customer's point of view, is the combination of a buying process and a creative design process. Previous studies have found that communities can support the individual user in making more accurate choices regarding their product design. Including community members in the shopping process can also be a way to allow users connect with other people and share experiences. Integration of social cues to the customization process might lead to a more enjoyable experience. Furthermore, communities provide inspiration in the design process, which was revealed by empirical findings of this study as well as by the previous literature.

There are various ways for companies to integrate communities and increase the level of social presence in their offered customization process. For instance, Vans, a company offering customization of shoes and backpacks, utilizes customers' pictures, icons for easy social media and email sharing as well as a chat option for receiving information from the company. In addition to many of the similar functions, Suunto, a manufacturer of sport watches, has a special design gallery which allows users to vote, modify, and buy designs created by other people. Both of these companies also offer blog-like content about influential people's stories and product designs. Other ways of integrating social features to customization experience include feedback tools, providing live information about others customizing at the same time and a providing a specified discussion forum.

The users interviewed for this study used the integrated social software functions of the case companies relatively little. Nevertheless, design galleries and email systems were regarded as the most attractive social functions. Outside of social software directly integrated to the toolkit environments, messaging apps were the most popular channel of communication for interaction related to the customization. Social media channels were also mentioned in relation to sharing a picture of the self-designed product. Based on the empirical findings of the study, users seem to want to include close friends and family in the process, at least in order to share the final result.

The interview data did not reveal a need for communities for the purpose of receiving support and help during the configuration. This might be the result of a well-designed process and easy-to-use toolkit interface. Perhaps this finding is also connected to the type of products that were customized. When customization is focused mainly on aesthetic features, it can be expected that personal fashion sense has a significant influence on design decisions. Alternatively, the main pages of the customization sites could have included just the right amount of example designs from others, in order to provide needed guidance and social presence in the process.

The findings of this study suggest, that mass confusion effect does not necessarily occur with today's advanced toolkits when the customizable product is fairly simple. This finding might be tied to the personal characteristics and capabilities of the subjects that took part in this study. However, even if this is the case, communities can provide an inspirational value in the co-design process. Peer input in the form of sample designs seemed to support the users in coming up with a preliminary design. This is in line with a study made by Franke et al. (2008), which showed that offering peer input in the different stages of the design process, ultimately leads to a product that more effectively meets the preferences of the customer. Therefore, companies with MC toolkits should consider including some form of customer-generated sample solutions or forms of peer feedback. People also seem to want to share their design result with others, as suggested by Blazek. et al. (2012). This drive should be utilized by companies by integrating easy ways of sharing the product designs through social software applications. By providing tools for sharing and encouraging users to communicate about their creations, companies can increase awareness for their offering.

### ***6.1 Limitations of the study***

The empirical findings of this study are tied to the two case companies under interest. The type of products studied also creates a limitation. The results might have been different with different, more expensive or complex products. Even though the data is successful in providing some explanations to the research questions, the level of generalizations that can be made is restricted. The interview data was collected from a relatively small and homogeneous group of people. The results of this study would have been more reliable, if the interview data had been more comprehensive and included respondents from different regions, ages and other socioeconomic backgrounds. Under-representation of subgroups can lead to bias, which is common limitation of convenience sampling. Respondents were also familiar to with the interviewer which increases the potential of bias. The fact that the participants did not use the toolkits in an actual buying situation but merely tested them, hinders the overall quality of the results. For instance, the level of uncertainty experienced in the process is most likely higher in a situation, where the user is actually going to buy the product.

### ***6.2 Future research***

In general, the majority of research related to mass customization is still focused on examining matters from the company side. To comprehensively understand the success factors related to this online toolkits and customization, more research on the customer perspective is still needed. This study showcased that users are willing to spend additional time to post their designs to a company gallery or share pictures about their self-design products on social media. What are the factors that encourage customers to invest in these activities even beyond the immediate need specification? The prevalence of mass confusion could also be examined in a more large-scale study. Another topic that would be interesting to study further, is whether involvement of communities increases enjoyment in the customization process, and if so, to what extent.

Developments related to production and information technologies substantially affect the implementation of mass customization. Therefore, it would be relevant to investigate how probable developments might influence the manufacturers and consumers of customized products in the future. Additionally, the use of co-design toolkits within the B2B environment could be further investigated.

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# Appendices

## Appendix 1. Interview frame

### Background

- age
- sex

### General

1. Do you have previous experience with customization and co-design toolkits?
2. How likely would you take part in co-design activities in the future?
3. Can you describe your overall design experience?
4. How did you come up with your design idea?
5. Did you face any difficulties in the customization process?

### Social presence offline

6. Did you complete the design process alone, or were other people present?
7. How did other people in the real life affect your design process?
8. In what stage did other people affect you in the customization process?

### Social presence online

9. How did other people online affect your design process?
10. Which of the following features did you use during your customization experience?  
Why? At what point?
  - a) browsing through design gallery
  - b) voting for other's product designs
  - c) email to connect with online circles or company representatives
  - d) sharing content related to customization on social media/other social networks
  - e) chat
11. Which of these features would you likely use in a real purchase situation?
12. Anything else you would like to share about the experience?

## Appendix 2. Coding table

Code	Description	Example
Lack of mass confusion	Mass confusion = difficulties experienced in the interaction process due to excess variety, burden of choice and information gap (Piller et al. 2005).	<p>“It was easy to design it.”</p> <p>“I was able to actually come up with the final result surprisingly fast.”</p> <p>“I would have liked to have more color options to choose from.”</p>
Inspiration source	Social aspects provide ideas and direction in the self-design process.	“Of course, I would create my own design, but I would use them (what other people have designed) as inspiration. In the beginning.”
Positive attitude	Showcasing enjoyment in the process, openness to using co-design toolkits in the future.	“... it was fun, I truly enjoyed it.”
Pride	Creative-achievement benefit (Merle et al. 2010) / “I designed it myself effect” (Franke et al. 2010) = feeling of accomplishment, self-reward and pride for completing the creative task of customization	<p>“... I would definitely take a picture, after all, I have designed them myself.”</p> <p>“I really like how the final design came out.”</p>
Willingness to share	Wanting to discuss or share the design results with other people offline / online.	<p>“... I would have sent it to my friends or family members to ask for their opinion...”</p> <p>“I would take a picture of it after I had received the product and share that.”</p>