Mass Customization

Customer Relationship Management Seminar SS 08

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ABSTRACT

In Western companies, Customer Relationship Management has been acknowledged as an important success factor for quite some time. Yet, many of these companies still struggle in their attempt to implement adequate tools for Customer Relationship Management, as well as in their attempt to create the corporate awareness necessary for this paradigm. Consequently, the full potential of Customer Relationship Management has yet to be exploited. One attempt to do so is Mass Customization. Thanks to the growing possibilities provided by the ICT, some companies have started to offer individualized goods or services to conditions similar to those of mass production. Customers may configure products such as clothes, shoes, watches, food, computers, etc. online, using so called configurators. More complicated products are often configured according to the needs of a customer by a specially trained salesperson. Many companies substantially profit from their customers inputs on how to enhance existing goods or services, or how to create new ones. Companies offering Mass Customization often create configurators that allow clients to place such propositions. Thus, they create an environment that allows Open Innovation, a concept that in its core contributes to customer retention. In this sense, Customer Relationship Management, Mass Customization and Open Innovation are complementary.

Keywords: customer satisfaction, customer retention, customer relationship management, CRM, customization, personalization, individualization, mass customization, configurator, innovation, open innovation, B2B, B2C.
# TABLE OF CONTENTS

Abstract .................................................................................................................................................. II

Table of Contents .................................................................................................................................. III

Table of Illustrations .............................................................................................................................. IV

1 Introduction ............................................................................................................................................. 1

1.1 Problem definition ............................................................................................................................ 1

1.2 Objective ........................................................................................................................................... 2

1.3 Proceed ............................................................................................................................................ 2

2 CRM – Introduction and Definition .................................................................................................... 3

2.1 Definition of CRM ............................................................................................................................ 3

2.2 Main Objectives of CRM .................................................................................................................. 4

2.3 The relevance of CRM ..................................................................................................................... 5

2.4 CRM and MC .................................................................................................................................... 6

3 Mass Customization ............................................................................................................................ 7

3.1 Introduction ....................................................................................................................................... 7

3.1.1 The Logic of MC ............................................................................................................................ 7

3.1.2 MC Concepts ................................................................................................................................ 8

3.2 Configurators .................................................................................................................................... 10

3.2.1 Definition .................................................................................................................................... 10

3.2.2 Tasks ............................................................................................................................................ 10

3.2.3 Requirements ............................................................................................................................... 12

3.2.4 Components ............................................................................................................................... 13

3.3 Advantages and Challenges of MC ................................................................................................. 14

3.3.1 Advantages ................................................................................................................................. 14

3.3.2 Challenges ................................................................................................................................... 15

3.4 Business Applications ..................................................................................................................... 15

3.4.1 MC in the B2B markets - Examples ............................................................................................. 16

3.4.2 MC in the B2C markets - Examples ............................................................................................. 16

3.5 Options similar to MC ...................................................................................................................... 17

4 Open Innovation ................................................................................................................................ 18

4.1 Definition of OI ............................................................................................................................... 18

4.2 Involving intermediaries ................................................................................................................... 19

4.3 Involving customers ......................................................................................................................... 19

4.4 Relevance of OI ............................................................................................................................... 19

5 Practical Experiences .......................................................................................................................... 20

6 Conclusion .......................................................................................................................................... 21

References .............................................................................................................................................. 22

Annex ..................................................................................................................................................... 28
### TABLE OF ILLUSTRATIONS

<table>
<thead>
<tr>
<th>Illustration</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illustration 1</td>
<td>The Customer Relationship Continuum</td>
<td>3</td>
</tr>
<tr>
<td>Illustration 2</td>
<td>The chain of impact of customer retention</td>
<td>5</td>
</tr>
<tr>
<td>Illustration 3</td>
<td>The six options of MC</td>
<td>9</td>
</tr>
<tr>
<td>Illustration 4</td>
<td>Quotation-Cycle</td>
<td>11</td>
</tr>
<tr>
<td>Illustration 5</td>
<td>The If-Then-Else loop</td>
<td>12</td>
</tr>
</tbody>
</table>
1 INTRODUCTION

Information is an imperative to today’s companies. More than ever, the availability of information is crucial to firms searching to gain and maintain competitive advantages. The continuous evolution of Information- and Communication-Technologies (ICT) provides them with increasingly sophisticated means of gathering, saving, processing, organizing, and communicating data [Schweizer 2007], [Piller 2006], and [Payne and Frow 2005].

1.1 Problem definition

Until recently, companies searching to market their goods mainly focused on the needs of a specific market segment rather than on the requirements of individual customers. These companies largely ignored individuality, therefore standardizing production in order to profit from economies of scale instead. However, the industrial- and consumer goods markets have become subject to fundamental changes. They are increasingly characterised by heterogeneity of demand. Consequently, ignoring the customer’s needs may well become a serious threat to the success of a company. Customer Relationship Management tries to encounter these challenges and provides the company with information on the preferences of individual clients [Sebor 2008], [Schweizer 2007], [Greve 2006], [Piller 2006], [Meier/Stormer 2005], [Buttle 2004] and [Hippner 2004].

Due to a saturation of most markets, and due to the rapidly increasing global competition, no company can today be certain of its competitive advantage for long. Competition for growth has largely been replaced by an even harder cutthroat competition. Clinging to traditional mass production has therefore become a threat, especially to Western companies. Many of them feel that differentiation through variation might guide them out of their current misery. However, the increase in variation is often accompanied by a decrease in economies of scale, and by prices that no one will be ready to pay. Consequently, companies face the challenge of simultaneously offering variety as well as assuming price leadership. Mass Customization is one strategy that can combine both targets [Piller 2006], [Kreuzer 2005], [Müller 2005], and [Anderson 2004].
1.2 Objective

This paper's objective is first of all to give a short overview of Customer Relationship Management, its objectives, and its main elements. The authors then explain the concept of Mass Customization, showing the advantages and the difficulties of this concept, and presenting exemplary cases of companies applying it. Finally, the notion of Open Innovation is addressed.

1.3 Proceed

The first part of this thesis contains a review of Customer Relationship Management, and an explanation of how companies and their stakeholders could benefit from the use of this strategy. The second part is concerned with the topic of Mass Customization. It contains an introduction to the topic, an explanation of configurators, a debate of advantages and challenges to Mass customization, and a presentation of business applications. The authors then consider the topic of Open Innovation, one possible extension to the above-mentioned concepts. The paper ends with a chapter on a survey conducted on Swiss companies applying Mass Customization.

The findings presented are based on the study of relevant literature, on information drawn from the WorldWideWeb, and on telephone interviews conducted with representatives of respective companies.
2 CRM – INTRODUCTION AND DEFINITION

Amongst others, [Roche 2008], [Schweizer 2007], [Greve 2006], [Payne and Frow 2005], and [Hippner 2004] point at the fact that there is no commonly acknowledged definition of what CRM stands for.

2.1 Definition of CRM

As depicted in illustration 1, CRM may be described from at least three different perspectives: narrowly and tactically as a technology-based customer solution, as a range of customer-oriented IT solutions, or from a strategic and holistic point of view. However, [Payne/Frow 2005, p. 168] propose that CRM should always be looked at from the third perspective: “The importance of how CRM is defined is not merely semantic. Its definition significantly affects the way an entire organization accepts and practices CRM. From a strategic viewpoint, CRM is not simply an IT solution that is used to acquire and grow a customer base; it involves a profound syntheses of strategic vision; a corporate understanding of the nature of customer value in a multichannel environment; the utilization of the appropriate information management and CRM applications; and high-quality operations, fulfilment, and service.”


In his study of different definitions, [Greve 2006] identifies four dimensions of CRM: The strategic dimension aligns all corporate activity towards the needs of the customer. The process-related dimension describes a systematic and individualized customer development using different activities and multiple channels throughout the whole customer life cycle. The organizational dimension includes all organizational changes resulting from the alignment of corporate activity towards the needs of the customer. The technological dimension...
incorporates the systematic and continuous gathering, saving, processing, organizing and communicating of market- and customer data by means ICT.

2.2 Main Objectives of CRM

The rational for CRM is to improve business performance by sustaining and enhancing customer satisfaction, customer loyalty, and customer retention throughout the customer life cycle [Schweizer 2007], [Greve 2006], [Homburg/Bruhn 2005], [Meier/Stormer 2005], [Bromberger 2004], [Buttle 2004], and [Hippner 2004].

Simply put, customer relation passes through several interrelated stages before customer retention and positive economic effects can be obtained. As shown in illustration 2, a model of five phases serves as a basis for structured analysis and for derivation of measures adequate to enhance customer relation. The initial phase is represented by the first contact between customer and producer, usually leading the customer to buying a product or a service [Bruhn 2005], [Homburg/Bruhn 2005], and [Hippner 2004].

Throughout the second phase, the client cognitively and affectively evaluates his aggregate experience with the producer, his goods, or his services [Homburg/Bruhn 2005], and [Homburg et al. 2005]. Customer satisfaction is generated either by the confirmation, or the positive disconfirmation of the customer’s expectations. A negative disconfirmation of the purchaser’s expectations leads to dissatisfaction, and possibly to his defection, usually accompanied by complaints and negative word of mouth [Homburg/Krohmer 2006], and [Homburg et al. 2005]. Only if the client’s overall evaluation is positive, phase three can be reached [Homburg/Bruhn 2005], [Bruhn 2005], and [Hippner 2004].

In the third phase, the loyal client’s level of trust in the producer, his reduced preference for change, and his positive attitude towards the company lead him to plan further transactions with the company [Homburg/Bruhn 2005], [Buttle 2004], and [Hippner 2004].

In phase four, the client buys products or services of the producer anew and recommends him to others [Homburg/Bruhn 2005], and [Hippner 2004]. Hence, customer retention – the priority objective of CRM – is accomplished [Schweizer 2007], [Homburg et al. 2005], [Müller 2005], [Bruhn 2005], and [Buttle 2004].
The final phase is characterized by an improved business performance based on the aggregate positive effects of the whole chain [Homburg/Krohmer 2006], [Homburg et al. 2005], [Homburg/Brühn 2005], [Bromberger 2004], and [Buttle 2004]. As can be seen in the following illustration, the processes of this chain of effects are either being positively or negatively affected by internal and external factors. However, to further comment on these factors would go beyond the scope of this thesis.

Illustration 2: The chain of impact of customer retention, according to [Homburg/Brühn 2005]

### 2.3 The relevance of CRM

Some authors point out that in many companies, the cost-benefit equations of CRM are poor due to the fact that several organizational and technical hurdles hinder them from capitalizing on their efforts [Finlay 2008], [Vesanen/Raulas 2006], [Müller 2005], [Verhoef/Langerak 2002]. Nevertheless, the majority of the authors claim that CRM has in fact only gained in its importance to companies and will do so furthermore [Ojala/Tyrväinen 2008], [Roche 2008], [Sebor 2008], [Schweizer 2007], [Capgemini 2006], and [Greve 2006].
In practice, CRM has been accepted as a strategy to improve performance for quite some time. But even if many companies still seem to have a long way to go before they have implemented and incorporated their corresponding visions and strategies, it is no big surprise that quite a few of them start looking for ways in which they might be able to even better attain customer retention. In times of individualisation, growing competition, and diminishing profits, Mass Customization (MC) promises to be such a way [Franke/Schreier 2008], [Jackson 2007], [Novshek/Thoman 2006], and [Vesanen/Raulas 2006]. Individualisation and CRM are complementary to each other. “The challenge is to incorporate personalisation with CRM to maximise the benefits [for the customers and the company]” [Jackson 2007].

2.4 CRM and MC

There can be no doubt about the fact that if they do so, companies should implement MC as part of their CRM strategy. After all, MC potentially leads to enhanced customer retention due to increased consumer satisfaction, a satisfaction grounded in “(1) the functional benefit (better fit between individual needs and product characteristics), (2) the perceived uniqueness of the self-designed product, (3) the process benefit (meeting hedonic or experiential needs by ‘doing it oneself’), and (4) the ‘pride of authorship’ effect” [Schreier 2006, p. 325]. At the same time, MC encourages customers to reveal personal information in order to be able to configure and acquire individualized products. This again leads to a better understanding of the customers needs, thus enabling the company to even better serve its client [Jackson 2007], [Schaller et al. 2007], [Piller 2006], and [Kreuzer 2005].
3 MASS CUSTOMIZATION

3.1 Introduction

Mass Customization (MC) is a product concept that helps on one hand to economise one's business while on the other hand it helps to fulfil individual customer needs. Therefore, MC is the combination of the advantages of low costs due to mass production as well as the individualization of products especially designed to meet the customer's needs [Wikipedia 2008a], [Grasmugg 2006], [Kreuzer 2005], and [Anderson 2004]. According to [Tseng/Jiao 2001, p. 685], MC is commonly defined as: "producing goods and services to meet individual customer's needs with near mass production efficiency". Similar definitions can be found in [Configurator Database 2008a], [Freund 2008], and [Wikipedia 2008b].

The term Mass Customization was first found in the context of the textile industry [Piller 2006a]. But today, MC is present in almost any industry. Well-known examples of big companies having implemented MC are Nike, Dell, Levis, or BMW. However, MC also exists in the beauty industry, the music industry, the watch industry or in markets for luxurious products [Wikipedia 2008b], and [Anderson 2004]. The most eccentric example may be that of a Canadian Company in Ontario, offering customers to blend wine according to their individual taste [Elite Vintners, 2008].

MC has only been made available through using modern information and communication technology [Schreier 2006], [Vesanen/Raulas 2006] and [Kreuzer 2005]. There are basically two ways of applying MC: either via Internet – the customer can create his product at home – or via a sales person who either serves customers in a shop or visits them personally. In both cases, one needs computer programs in order to illustrate the products as they are being created. These computer programs are so-called configurators, which will be looked at later in this paper [Wikipedia 2008b], and [Anderson 2004].

3.1.1 The Logic of MC

In order to understand why MC has increasingly become an option for many businesses, the logic of MC has to be looked at. Due to a higher interaction between buyer and supplier, there is an increase of the acquiring potential. Furthermore, the individual contact between the company and the customer potentially leads to higher customer retention. These two effects
lead again to an increase in sales. The simple equation saying that profit is the difference of turnover and costs reveals why MC has become so popular [Piller 2006a].

On the other hand, MC also leads to higher costs that have to be weighed up against the above-mentioned potentials. Increasing costs are caused by the variation of the products and the corresponding rise of the complexity of the processes involved. However, there are also several factors that lead to a cut of costs. First, there are economies of scale and scope that are caused by offering many variations in mass markets. Second, due to the higher interaction between buyer and supplier, there are also economies of interaction through better information on suppliers [Piller 2006a] and [Kreuzer 2005].

MC can therefore be considered as a simultaneous hybrid competitive strategy. This is because it realises on the one hand the competitive advantages on the basis of differentiation advantages through the greatest possible variety. On the other hand, it has relatively good possibilities of balancing the costs [Piller 2006a] and [Piller/Schoder 1999].

3.1.2 MC Concepts
To successfully implement and use MC as a business strategy, a company has to choose from different concepts and their sub-options. These different concepts combine individualisation and standardisation in various ways and thus, have to be carefully chosen in order to best serve the intended needs [Piller 2006a] and [Kreuzer 2005].

As it is, two main concepts can be found. The primary difference between these two concepts is the difference of the moment of integrating the customer in the production and value chain. The first concept is called Soft Customization or Open Individualisation. Here the individualisation happens outside the company. Within this concept, there are again three different types: explicit or implicit personalisation like with the RSS-Newsreader my Yahoo!, individual final manufacturing in the distribution as it is the case with Smart, and last but not least individualisation of services like offering different music and TV programmes for passengers on flights. [Wikipedia 2008b], [Piller 2006a] and [Piller 2002].

The other concept within MC is the so-called Hard Customization or Closed Individualisation. The difference between Soft and Hard Customization is that in the latter case, the individualisation already happens during manufacturing. There are again three different
options within the *Hard Customization* concept: either one produces standardized products which get a final individual manufacturing – also called Make-to-Stock production – or there is an individual combination of standardised modules – also called Build-to-Order production as it is in the case of Dell Computers, or last the production consists of a mass production of unique products. A well-known example for the last case is the production of medicines [Wikipedia 2008b], [Piller 2006a], [Kreuzer 2005], and [Piller 2002]. According to [Anderson 2004], these three options are also referred to as modular, adjustable, and dimensional customization.

In the following chart, the six different options within the two main concepts are displayed to easier see the differences.

<table>
<thead>
<tr>
<th>MC Concepts</th>
<th>Soft Customization</th>
<th>Hard Customization</th>
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<tbody>
<tr>
<td><strong>Individualisation happens outside of the company</strong></td>
<td>Manufacturing of standardized products with built-in flexibility</td>
<td>Individualisation happens within the company</td>
</tr>
<tr>
<td><strong>Explicit/Implicit Personalization</strong></td>
<td>Standardized products get a final individual manufacturing</td>
<td>The last steps in manufacturing are tailor-made according to the customer's wishes.</td>
</tr>
<tr>
<td><strong>Individual final manufacturing in the distribution</strong></td>
<td>Delivery of a basic product which gets the final manufacturing in the distribution</td>
<td>Individual combination of standardised modules</td>
</tr>
<tr>
<td><strong>Individualisation of services</strong></td>
<td>Manufacturing of customer-specific products through assembly of standardised modules</td>
<td>Mass production of unique products</td>
</tr>
<tr>
<td><strong>Addition of individual secondary services to standard products</strong></td>
<td>Individual products through standardised processes</td>
<td></td>
</tr>
</tbody>
</table>

Illustration 3: The six options of MC, adapted from [Piller 2002]
3.2 Configurators

3.2.1 Definition
Configurators consist of a software that can often be used online, sometimes offline to customize a product according to the needs of a client. Therefore, a configurator can be defined as "a software tool to create, maintain, and use electronic product models that completely define the allowable options and variations of a product – without predefining all possible combinations with unique part numbers and bills of material" [Bourke 2008]. Similar definitions can also be found in [Configurator Database 2008b], [Anderson 2004], and [Bourke 2000].

3.2.2 Tasks
There are various tasks a configurator has to meet and fulfil. Robust configurators should go through the complete cycle of quotation. This cycle not only includes the configuration process but it should also go through the integration with CAD (Computer Aided Design) software and preparation of bills of material or shipment [Bourke 2008] and [Anderson 2004]. Therefore, it not only needs to guide a customer through the ordering cycle but it also needs to provide the necessary information to the company so that the right product can be produced according to the customer's needs [Piller 2002], and [Rogoll/Piller 2002].

As can be seen in illustration 4, a first task in the quotation cycle can be considered the presentation of the company/business as well as the company skills and capabilities because a customer needs to know what the company does and what extra options and services the company can offer [Piller 2002], and [Rogoll/Piller 2002].

Then as a task step in this cycle, it must present the offer and choice of a basic product so that a customer can choose the right product from the product range. During this step, the corresponding choice of options also needs to be displayed. Furthermore, a configurator has to provide support and advise in case the customer is experiencing problems [Piller 2002], and [Rogoll/Piller 2002].

Following this second task, the configurator must guide the customers through the whole configuration process. This also includes the storing and saving of the current product design. To do so, the configuration process must be easy to follow, and if it takes too long to finish the process, there should be an option to save the settings as far as the process has gone through. At the end of this task, a configurator should also be able to calculate a price for the
customized product. As an extra task during this third step, a customer should experience a sale experience just as if the customer was buying a product in a store. This is mainly done by visualizing the designed product because this helps the customer to find the right product which will satisfy his needs in the end [Piller 2002], and [Rogoll/Piller 2002].

A fourth task in the quotation cycle is also one of the basic requirements a configurator has to fulfil in order to work successfully. It is to check for consistency and completeness of a customized product. If these two requirements are not checked for, the concept of MC becomes too expensive and it cannot easily be implemented [Piller 2002], and [Rogoll/Piller 2002].

Towards the end of the cycle, it is important for a configurator to support the elevation of customer data. Here it is not only possible to gain individual customer data. If the configurator is sophisticated enough, it is also possible to gain aggregated customer knowledge at the same time. If this is being done during the configuration process, quite a reasonable amount of market research can be saved. It also helps the company to improve the products according to the customers' needs [Piller 2002], and [Rogoll/Piller 2002].

Illustration 4: Quotation-Cycle, adapted from [Piller 2002]

An important task at the end of the quotation cycle is to provide a product surrogate with the occurred order as well as allowing order tracking. Especially order tracking helps to stay updated which again ensures that orders are done in time and according to the customer's design [Piller 2002], and [Rogoll/Piller 2002].
This shows, that configurators are not only an interface between the company and the customer. They also handle various other tasks in order to make the implementation of MC successful [Piller 2006a], and [Rogoll/Piller 2002].

3.2.3 Requirements
Configurators are based on logical methods designed to guide the users. In an interactive environment, it is important that the configurator can assist the users to meet their specific needs. At the same time, they should be able to identify conflicting selections. The simplest logic-based methods are rules based, that is, they apply the IF-THEN-ELSE loop. As can be seen in Illustration 5, this loop requires the configurator to first check on a pre-defined characteristic. This check allows the configurator to choose from two different options in the simplest case. If the characteristic chosen by the customer is not conforming to the defined characteristic, the configurator has to move to the next characteristic. If it is conform, then the configurator can move to the next step [Bourke 2008] and [Anderson 2004].

Illustration 5: The If-Then-Else loop

There are many different types of configurators depending on the industry in which they are used. Consequently, the use of configurators is not just limited to the B2C markets, they are also used in the B2B markets [Configurator Database 2008c], [Blecker/Friedrich 2007], and [Rogoll/Piller 2002].

There are two types of people who need to be able to handle configurators. In the case of B2C markets, configurators are often used to allow the customers to "co-design" their own products. Therefore, these configurators need to be easy to understand and to operate so that the customers do not have problems using them. In the case of more complex products, there are configurators that need to be operated by trained staff who go to see their customers. This way of helping a customer is also called CAS – Computer Aided Selling [Configurator Database 2008c], [Blecker/Friedrich 2007], and [Rogoll/Piller 2002].
B2B configurators are mainly used to assist the customers in decision-making as well as raising production efficiency. The production efficiency can be raised because the customer is directly involved in the customization process. Therefore, the customer can detect any wrong configurations faster and earlier before the product is being produced. This prevents the company from having to produce several products until one finally satisfies the customer's needs [Configurator Database 2008c], [Blecker/Friedrich 2007], and [Rogoll/Piller 2002].

As mentioned before, a configurator needs to check two important requirements before a product can be produced according to the customer's choice. First of all, a configurator needs to check if a configuration is complete, that is, if all the necessary selections are made. And second, it needs to check the configuration for consistency and make sure that no rules are violated [Blecker/Friedrich 2007].

These two requirements are the basis for a successful application of MC via a configurator. But a configurator must also support the user in specifying a product, create and manage the configuration models and the configuration knowledge embedded in them [Blecker/Friedrich 2007].

3.2.4 Components

Presently, configurators can consist of so far 85 known different attributes like showing a company logo, offering safe buttons for later change and redesign, providing a product visualization or calculating the price during the configuration, etc. How many of the attributes are used in a configurator depends again on various factors like for example on the complexity of the product, on the type of user of the configurator, or on the intentions of the producer [Configurator Database 2008d] and [Piller 2006a].

Even though there are many different options in designing a configurator, they typically consists of three components:

1. A configuration component handles the processes which lead to the definition of an individual product. It also guides the user towards an optimal variation. Last, it checks for the consistency of the configuration.
2. A presentation component provides a valid product configuration. Usually, it also visualizes the configurated product. This is normally dependent on the target group.
3. Analysing tools finally convert the optimal variation into bills of material, construction drawings, working plans and so on. These tools also send the necessary information to corresponding firm departements. If the prices for the individual products vary, the configurator needs to be able to use the different product specifications to calculate differentiated prices [Piller 2006a].

3.3 Advantages and Challenges of MC

3.3.1 Advantages
Due to the basic logic of the concept, there are many advantages to MC. Even if they are different for the B2B and the B2C markets, the differences are not so big. The authors will therefore not address them separately. The following benefits and advantages of applying MC refer to all of the three relevant groups included in the process: the company staff, the customers, and the suppliers. The main advantages are:

- Lower distribution costs: due to shorter lead-times and increased on-time delivery.
- Quicker reaction to customer inquiries: using configurators makes customer inquiries less dependent on staff involvement, thus making the ordering process quicker.
- Reduced capital commitment and less overproduction: this is due to a change from a Make-to-Stock to a Build-to-Order strategy, as well as a reduction in inventories.
- Error elimination throughout the ordering and production process: the configurator is automatically checking the configuration for consistency and completeness.
- Quality improvements in customer-service: it is easier to look after every single customer without having an increase in costs. Sales people can devote more time to the customer.
- Worldwide access to up-to-date product information.
- Differentiation through individuality: Enlargement of potential customers
- Better knowledge of customer's needs: helps to prevent the company from inventing the wrong products as well as reducing product model obsolescence.
- Higher customer loyalty: if the customers know where to get exactly what they need, they will not easily change to another producer.
- Less market research efforts: due to reduced design effort. Also less R&D needed.
- Shopping as experience: customers participate actively in the specification and design process [Configurator Database 2008b], [Blecker/Friedrich 2007], [Anderson 2004], and [Kreuzer 2005].
3.3.2 Challenges
The authors will not talk about disadvantages in the case of applying MC. The reason is that there are no real disadvantages to MC. This is because the introduction of MC does not cause a significant rise of costs or any other inconveniences. It is only the improper implementation that can lead to certain risks and failure. The MC concept itself is only putting challenges to the users. Therefore, there are only challenges that will have to be handled. Again, the authors will not distinguish between B2B and B2C markets.

The main challenges for both markets are:
- Making complex systems easy to use: if the customer does not understand how to use the systems, they will not use it and it will not be successful.
- Balancing the right amount of differentiation and the costs: too much differentiation causes too many costs.
- Increased information management: using configurators’ means adapting the existent systems to comply with the new system.
- Rather large degree of operational, organizational and cultural changes: the new strategy needs to be prepared, accepted and implemented.
- Time and effort spent for designing and specifying the product: if the customer has to spend too much time to get the desired product, chances are that they will not do it.
- Risk of becoming over-dependent of configurator and knowledge: chances are that the company puts too much effort into the MC strategy and that this strategy might not work out.
- Obtaining and understanding real customer needs: if a company just relies on the customer to tell them what they want, the company might just lose touch and might not be able to adapt their product range with the changing customer needs.
- Keeping the configurator up-to-date: a lot of problems can arise if the configurator becomes too old or the information stored becomes inaccurate [Configurator Database 2008b] and [Blecker/Friedrich 2007].

3.4 Business Applications
As mentioned in the section about the MC concepts, there are differences concerning the markets in which the concepts are used for. Thus, the authors will distinguish between the B2B markets and the B2C markets for naming examples of business applications.
3.4.1 MC in the B2B markets - Examples
A rather prominent example for MC in a B2B market is SAP. SAP provides business software solutions, applications and services. Because it consists of different modules, the software can be adapted to the specific needs of the purchaser [SAP 2008].

Another example is a company based in Derendingen, Switzerland, called Montech AG. Amongst other products, Montech also produces conveyor belts. The company has introduced a configurator to assist their customers (mainly companies) in configuring a suitable conveyor belt [Montech AG 2008].

True examples for MC in the B2B markets are rather hard to find. This is due on one hand to the authors not being part of that particular business environment and on the other hand, many of the examples for MC in the B2B markets are also for the B2C markets.

3.4.2 MC in the B2C markets - Examples
In the B2C markets, there are an ever-increasing number of companies offering MC via configurators. Therefore, the authors will only name some of the more interesting examples.

The first is from the food industry, a market where MC appears to become popular. With M&M's, one can choose the colour of and the writing on the chocolate tablets. Unfortunately, this service is only available in the US [Mars Inc. 2008].

The second example concerns a company developed by three students in Germany. On their homepage, the customer can put together his individual organic cereals from a wide selection of ingredients. It is a rather famous example because quite a few documentaries have been written about it and because the students won several prices in Germany [My Muesli GmbH 2008].

A last example for MC via configurators is about the customization of houses. This is not a typical example for MC because houses usually get customized. But the authors chose it as an example because it is now possible to design a house via configurators instead of involving architects [Mass Custom Home 2008].

The above-mentioned examples only represent a tiny fraction of MC via configurators. There are homepages like http://www.customize-your-life.com where one can find numerous links
to companies offering customizable products. Looking at web pages like the one just cited, it is possible to almost completely customize one's life.

3.5 Options similar to MC

As shown in the two preceding chapters, the market for standardized products is becoming more and more competitive. In order to gain advantages over rivals, many producers heavily invest into CRM. Within this concept, MC is but one of a range of strategic options open to companies wanting to generate added value for their customers in order to extract an economical profit [Novshek/Thoman 2006]. “Reflecting an increasingly participative approach to customer relationships, [sales, marketing, and R&D] are moving towards customer involvement and co-creation of value rather than innovation mainly generated by head office” [Maklan/Knox/Ryals 2007]. Thus, another strategic option – quite often closely linked to Mass Customization – gains in importance: it is the notion of Open Innovation (OI).
4 OPEN INNOVATION

Parallel to the Open Access movement – a global trend promoting the publication of scientific knowledge – other initiators have lately come to propagate the production of Open Content such as Open Source Software, etc. Easily manageable communication tools like Wikis, Weblogs, Forums, etc. enhance the possibilities of collaboratively allocating knowledge, and allow people all over the world to contribute to and to profit of collective information [Gwynne 2007], [Maklan/Knox/Ryals 2007], [Drossou/Krempl/Poltermann 2006], and [Kuhlen 2006].

4.1 Definition of OI

According to [Hotz-Hart 2008], innovations are new and useful ideas that can be transcribed into a marketable product or service. Besides, [Grashoff 2008] points out that innovations are also technological-scientific developments. However, according to [Grashoff 2008], and [Drossou/Krempl/Poltermann 2006], one has to take into consideration, that most innovations happen through small and slow processes, ameliorating already existing goods and services.

Many companies still think of innovation as something that happens in a closed company environment, disconnected from outside influences. Yet, a growing number of firms has come to accept that valuable information is widely disposed, and that it is imperative to identify, to contact, and to leverage these sources of knowledge [Becker/Zirpoli 2007], [Chesbrough 2006], [Kuhlen 2006], [Piller 2006b], and [Schreier 2006]. Thus, “Open Innovation is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as they look to advance their technology” [Chesbrough 2006, p. 2].

Within the studied literature, the authors have identified two separate understandings of OI: the first involves the services of so-called intermediaries; the second understanding involves the creativity of the stakeholders of a company.
4.2 Involving intermediaries

According to [Drossou/Krempl/Poltermann 2006], innovation is based on a broad and active knowledge exchange between companies, startups, universities and other research facilities, as well as governments. Innovation intermediaries systematically search their corporate databases and other sources of information for innovative experts all over the world in order to connect them with their clients. However, so far their success rates have been relatively limited [Lichtenthaler/Ernst 2008], and [Gwynne 2007]. At the same time, many companies start to extend their search for new ideas to those whom they sell their products and services to – their customers.

4.3 Involving customers

Customers are often initiators or developers of prototypes, products, and processes, which – at a later stage – become profitable to a company [Schreier 2006]. “Es existiert heute eine Vielzahl an empirischer Forschung, die die Bedeutung und teilweise auch die Dominanz von User Innovation als Quelle neuer Produkte in vielen Branchen zeigt” [Piller 2006b, p. 87]. Even big companies like Audi, Adidas, IBM, Procter & Gamble, and Intel have implemented OI in some form or other [Gwynne 2007], [Chesbrough 2006], and [Piller 2006b]. This comes as no big surprise, knowing that Alan G. Lafley, Procter & Gamble’s CEO announced in 2003, that up to “50 percent of all P&G discovery and invention could come from outside the company” [Markides/Geroski 2004, p. 2].

4.4 Relevance of OI

As mentioned above, companies slowly but gradually come to understand that users can be highly innovative. A company offering its customers to assemble products according to their own requirements may well draw information from these individual needs in order to adjust its mass production [Kaplan/Haenlein 2006], [Schreier 2006], and [Piller 2006b]. But a company's understanding of OI should not end there. [Maklan/Knox/Ryals 2007, p. 221] state, “co-creation involves working participatively with customers to enhance the value they get when buying and using goods and services.” OI can therefore be seen as an important aspect of a corporate CRM strategy.
5 PRACTICAL EXPERIENCES

To be able to better understand the practical aspects of MC, but most of all to understand the reasons for implementing MC and the advantages, dangers and challenges involved, the authors of this thesis decided to interview Swiss companies who offer MC to their clients. Unfortunately, few such companies seem to exist. The study of relevant literature, a thorough search of the Internet, and even contacting a leading scientist in the respective field did not provide a lot of useful information. However, the few contacts proved to be very interesting.

It appears, that the MC-hype has either never really reached Swiss companies or has come to a halt in the meantime. Companies who appear to have offered MC only a few years ago do not do so any longer or have ceased to exist altogether. Examples of this category are alferano.com, and swisstex.net. Other companies, such as usmshop.com or freitag.ch refused to answer our questions. With others again, like lista.ch, or extrafilm.ch, the responsible person seemed to be unavailable.

However, none of these firms offers real MC. In fact, all of their products are either unique to begin with, as in the case of freitag.ch and extrafilm.ch, or there is no real customization available as in the case of usmshop.com or lista.ch. Even the two firms that could finally be interviewed – 121time.com and hess-sattlerei.ch – offer by no means MC in the sense of the definition given above. Nevertheless, the interviews proved to be an interesting source of information.

Our experience seems to confirm that at least in Switzerland, real MC is rare and that the concept has not yet convinced many producers or service providers. There are many firms that offer customization but not to a degree that one could consider it to be MC. Thus, even though the founders of 121time.com are convinced that within 20 years, customers will be able to individualize all products and services offered on the Internet, this seems questionable to the authors of this thesis.

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1 See annex for the e-mail of Frank T. Piller and Christian Lüthje.
2 See annex for information on the two interviews – their content will be addressed more thoroughly in the authors’ presentation.
6 CONCLUSION

Mass production has been one of the dominant issues of last century’s industrialization. Yet, in certain businesses, customer demand for individualized products has been growing for quite a while. Combined with increasing customer flexibility, this has lead to rapidly decreasing customer loyalty for many companies.

In response to these developments, and in order to maintain and even enhance customer retention, some of the firms affected have tried to profit of the fast developing ICT. Applying the logic of CRM, they have started to offer customized products to their clients at near mass production costs. So-called configurators – software platforms accessible on the Internet or through a company’s employee – allow customers to configure certain products or services according to personal preferences.

In the meantime, one may probably personalize and buy most products one needs via the Internet. In the B2C market, the goods offered range from individualized foods, clothes and accessories, to bikes, cars, and even houses. However, in the B2B market, real MC is a rare occurrence. Although a growing number of companies starts using configurators in order to co-design machinery etc. with their customers, those products have nothing in common with mass products whatsoever.

In their attempt to retain their customers, some companies have started to use their configurators as a source of information. On one hand, they carefully evaluate the preferences of those who personalize their products, in order to incorporate this information into the design of their mass products. On the other hand, they design configurators specifically in ways that allow customers to propose complete new designs, new compositions, and even new products. Thus, the concept of OI becomes a complement to MC and an additional way in which a company may attempt to retain its customers.

MC and OI have yet to prove their potential. First, the understanding of MC and OI is often not in the true sense of the concepts. Second, the implementation is usually difficult so that many companies never do or stop applying the concepts. However, the bid for customer’s satisfaction is far from over yet. Next to getting CRM, MC and/or OI up to speed, the next step in CRM is proposed to be crowdsourcing [crowdspirit 2008].
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Annex

Microsoft Outlook Web Access 23.04.08 09:40

Sie haben am 22.04.2008 um 20:18 geantwortet.
Von:  Frank Piller [piller@tim.rwth-aachen.de]
An:  JAKOB Stefan
CC:
Betreff:  RE: Mass Customization in der Schweiz
Anlagen:

### Fragen Sie mal die ff. Herren, die sollten Ihnen weiterhelfen können!
Besten Gruss,
Frank Piller

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> -----Original Message-----
> From:  JAKOB Stefan [mailto:stefan.jakob@usif.ch]
> Sent:  Tuesday, April 22, 2008 07:37
> To:  piller@mass-customization.de
> Subject:  Mass Customization in der Schweiz
> >
> > Sehr geehrter Herr Piller,
> >
> > Im Namen eines CRM-Seminars befinde ich mich derzeit mit dem
> > Thema MC. Nun bin ich auf der Suche nach Schweizer Beispiele
> > Customizer... gefunden habe ich 121factory, Freitag,
> > Cattlecall Hess und Montech. Andere, z.B. auch Jobs, die in
> > Ihren Buch Mass Customization (2006) aufgeführt sind, sind
> > meines Wissens z.T. nicht mehr existent oder haben ihre
> > MC-strategie aufgegeben. Könnten Sie mir allenfalls noch
> > weitere Hinweise geben – z.B. auf weitere Schweizer
> > Unternehmen oder auch auf Personen, die mir in der Sache
> > weiterhelfen können?
> >
> https://mail.usif.ch/Exchange/
Hallo Stefan,

Unser jetzt also noch das Mail von Löhne mit den Adressen, die er mir noch gegeben hat.

Im Attachment die PP-Presentation mit den Quellen für die Definitionen und Graphiken.

lg

anja.

-------------------

From: Christian Lüthje [mailto:Christian.Luethje@imu.unibe.ch]
Sent: Tue 11/03/2008 9:01 AM
To: MEIER Anja
Subject: AW: Mass Customization

Hallo Frau Meier,

... ein paar mögliche Suchrichtungen für MO Firmen:

Daniel Morf
Co-Founder und Leiter Marketing
Factory121 Morf & Polli SNC
Postfach 798, Av. de la Gare 46b
1920 Martigny
Switzerland
0041 27 72369 00, mobile +41 (0)78 709 91 30 dmorf@factory121.com
Dürfen wir Sie um Ihre Hilfe bitten? Eine kurze Antwort (max. drei Sätze) ist super!

1. Name des Unternehmens: http://www.hess-sattlerlei.ch

2. Wann wurde Mass Customization (MC) in Ihren Unternehmen eingeführt?
   - Vor ca. 5 Jahren

3. Welches waren die 2 Hauptgründe für die Einführung von MC?
   1. Konkurrenzvorteil
   2. damit man weiterhin in der CH produzieren kann, da Kunden bereit sind, einen höheren Preis zu bezahlen.

4. Welche/n direkten Nutzen zieht Ihr Unternehmen aus MC?
   - monetärer Nutzen/Steigerung des Verkaufs
   - positives Image/Marketing
   - generiert individuelle Daten für Customer Relationship Management
   - gibt Hinweise auf allgemeine Kundenbedürfnisse
   - gibt Hinweise auf mögliche Innovationen

5. Welche Chance, welche Gefahr birgt MC Ihrer Erfahrung nach hauptsächlich?
   Chance: Produktionssstandort CH kann erhalten bleiben
   Gefahr: man geht zu fest auf Kunden ein, wird dadurch unprofitabel - Gratwanderung

   Herausforderung:

6. Wie könnte sich MC in Ihrem Unternehmen weiterentwickeln?
   - Nach individuellere Produktion, grösseres Angebot
   - gar nicht

7. Wie relevant ist der Anteil der von Kunden initiierten Innovation?
   - gering

8. Können Sie uns andere Schweizer Unternehmen nennen, die mit MC arbeiten?
   - Nein.
Dürfen wir Sie um Ihre Hilfe bitten? Eine kurze Antwort (max. drei Sätze) ist super!

1. Name des Unternehmens:  
   [URL](http://www.121time.com)

2. Wann wurde Mass Customization (MC) in Ihrem Unternehmen eingeführt?
   • 2002

3. Welche waren die 2 Hauptgründe für die Einführung von MC?
   • direkter Kundenkontakt (kein Zwischenhandel)
   • wettbewerbsintensiver Markt

4. Welchen direkten Nutzen zieht Ihr Unternehmen aus MC?
   ✓ monetärer Nutzen/Steigerung des Verkaufs
   ✓ positives Image/Marketing
   ✓ generiert individuelle Daten für Customer Relationship Management
   ✓ gibt Hinweise auf allgemeine Kundenbedürfnisse
   ✓ gibt Hinweise auf mögliche Innovationen
   □

5. Welche Chance, welche Gefahr birgt MC Ihrer Erfahrung nach hauptsächlich?
   Chance: neuer Markt – in 20 Jahren wird auf dem Netz alles individualisiert sein
   Gefahr: keine

   Herausforderung: Das Vertrauen des Kunden gewinnen – kein Face-to-Face Kontakt.

6. Wie könnte sich MC in Ihrem Unternehmen weiterentwickeln?
   • Data-mining könnte eine Goldgrube sein – wäre die Zeit zur Auswertung vorhanden!
   □ gar nicht

7. Wie relevant ist der Anteil der von Kunden initiierten Innovation?
   • Wir kriegen täglich zwischen 50 und 50 Mails mit Inputs – auch hier reicht die Zeit für eine seriöse Auswertung nicht.

8. Können Sie uns andere Schweizer Unternehmen nennen, die mit MC arbeiten?
   • Nein