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Business Model Patterns of B2B Mass Customizers: The Case of German Textile SMEs

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Abstract

The mass customization (MC) business model has gained wide recognition in practice. In theory, the topic was considered on a rather general level or focused on the B2C segment. However, there is little research on business models in B2B markets. Particularly for specialized SMEs in high-wage countries, MC seems highly promising due to its efficiencies. The textile industry represents an example for narrow-specialized SMEs, especially focusing on the German market. The data we collected during 29 on-site visits through 33 interviews allowed us to map the three most common business model patterns of this industry regarding their characteristics in the B2B domain.

Keywords: Business Models, B2B, Mass Customization

1. INTRODUCTION

The business model of mass customization (MC), as it was described by [34], has gained wide recognition in practice and becomes increasingly popular for companies to provide products for individual customer needs [10].

Especially today these individual customer desires become more and more important due to rising customer expectations [22, 38] regarding the aesthetic design, functionality of products, and their related utility.

MC research focused so far on the Business-to-Customer (B2C) segment, but just a little research on the business model and its configuration in Business-to-Business (B2B) markets is available yet [18]. Especially, small- and medium-sized enterprises (SMEs) are facing much of complexity while designing, adapting and customizing products according to the technical requirements of their business customers.

Nevertheless, the advantages of MC for SMEs, particularly in high-wage countries, seem to be highly promising, wherefore the German textile industry with its narrow-specialized companies stands as an example. Hence, the following study

aims to understand the characteristics of the underlying business model of MC. Thereby, it is a target to identify differences among the SMEs and cluster them into types with similar characteristics. That seems to be an important contribution especially, to afterward investigate and tailor appropriate solutions for reducing complexity for these firms.

In order realize this, 29 companies in the textile industry in Germany were visited, whereby 33 semi-structured interviews with CEOs and employees from management level were conducted.

The interviews were transcribed and coded to derive our findings from the dataset.

The paper first shows an overview of the existing literature, followed by a detailed explanation of the methods used.

Afterward, a one-by-one analysis of the pattern-companies is shown in which the companies are summarized in three different types of MC business models [6, 26], followed by an overview of the different business model pattern. Finally, the results are discussed before concluding the study.

2. THEORETICAL UNDERPINNINGS

2.1 Business Models

The term “business model” occurred extensively in research just with the rapid development of information technology and the internet in particular, in the mid of the 1990s [40]. Still today there is no common definition of what business models are, which led to a large diversity of characterizations in literature. Following [29] in this study, “a business model describes the rationale of how an organization creates, delivers and captures value” (p.14). This means that this abstract conceptual model [28] contains a set of objects and concepts as well as relationships of the objects expressing the logic of a firm’s business [19, 30]. There are different terminologies for these sets and opinions about what these sets are. In general, they can be considered on an economic, an operational as well as a strategic level. The economic level contains the logic of profit generation of a company. Then, the operational level covers the value creation meaning internal process and the design of the infrastructure of a company. And finally, the strategic level comprises the overall direction of a corporation regarding the interactions with objects outside the organization, the market positioning as well as the growth opportunities [26, 36]. These levels are also in line with the definition of [2] who described a business to be depicting the “design of transaction content, structure, and governance so as to create value through the exploitation of business opportunities” (p.494-495).

However, business models are not always showing same characteristics. There are differences in the design of the levels even if the way value is created and profits are generated from the outside perspective seems to be the same. Therefore, business models are often described as patterns [6, 26]. Business model patterns are business models with comparable characteristics, similar behavior, and parallels in the arrangement of the building block the business model consists of [1, 6, 29].

2.2 Mass customization

The MC business models adopted by companies are not identical to each other even though they may have a number of similarities. A set of MC business models can therefore be perceived as a business model pattern in the way value is created for and by customers and which economic rules the company applying MC makes use of. First of all, the MC business model uses the effects of the economies of scale as well as of the economies of

scope [35]. This is achieved by minimizing costs while maximizing the customization of the products offered [34]. Nevertheless, some authors also refer to the capability of an MC company to produce their products down to lot-size one [33]. Therefore, modular components are created to receive a large variety of end products through the configurability of the components as well as their different combination. Thereby, the customer can design a large number of products during the customization process [35].

MC literature provides definitions characterizing MC in a narrow or broad perspective. The narrow definition states MC to be “a system using information technology, flexible processes, and organizational structure to deliver a wide range of products and services that meet specific needs of individual customers [...], at a cost near that of mass produced items” [10]. The broader definition relates MC to the provision of customized products and services taking the individual customer needs into account by using processes, which are highly flexible, agile and integrated [11]. Now, breaking these definitions down to general characteristics, there are four of them [33]:

- (1) differentiation advantages
- (2) cost position
- (3) stable solution space
- (4) customer integration.

These characteristics need to be fulfilled for being a mass customizer to deal with the following three aspects marking MC [32]:

- (1) control of supplier-sided complexity (e.g. modularization)
- (2) control of customer-sided complexity (e.g. toolkits, consulting, involvement of designers)
- (3) stringent orientation of value creation, solution space and yield creation regarding the central value components the customer requires in the context of user-centric approaches.

Refining the picture of MC, [15] described four different approaches in MC, which are collaborative customization (CC), adaptive customization (AC), cosmetic customization (CoC), and transparent customization (TC). TC grounds on observations of customers’ behavior which then is the base for the customization of products. In the end, the customer may not even know that the product was customized. CoC is used if just the form of a standard product would

be changed and customized. The product itself with all featured satisfies most of the company's customers. CC includes the possibility for the customer to actively participate in the design process to fully customize the product. In contrast, AC does not consider an active interaction with the customer and does not result in a fully customized product. AC bases the customized result on standard products or services, which are then modified [15]. AC describes best the MC approach of the companies chosen in this study.

Companies offering customized products or solutions in the B2B context are rather perceived to be engineer-to-order (ETO) companies or solution providers. Thereby, ETO shows similar elements in its characterization as MC. It is defined as the re-engineering of products after receiving an order before production starts [7]. Therefore, the decoupling point, which "separates the part of the supply chain that responds directly to the customer from the part [...] that uses forecast planning" [17] by involving standardized parts in the product composition, is set at the design stage [17]. This means that companies choose a modular design for the production of their products using standardized parts [20] and modifying their composition or even develop entirely new designs [17, 20, 21]. Realizing this efficiently, the company needs to be lean and agile in its processes and its overall strategy [8, 17, 27].

3. RESEARCH DESIGN

This study examines business model patterns in the context of MC regarding the four principles of MC and how they are integrated into the economic, operational and strategical level of the business models for SMEs in B2B markets. Given the aim of the study, an exploratory and descriptive approach was chosen [37] and a multiple case study was undertaken [39]. The collected data were analysed based on an inductive and deductive coding method [14, 39]. The case study approach has shown major benefits for the purpose of this work based on the variety of information gained from the interviews and the capability to answer the questions how and why things are done as they are done [12, 13, 24, 39].

3.1 Data collection

Data were collected during a research project within the East German textile industry, wherein different companies participated. The companies are doing their business in diverse parts of the textile chain. Characterizing the companies, four commonalities have to be taken into consideration,

while the company selection process in the study. First, all companies are small or medium-sized enterprises based on their headcount of not more than 250 [3]. Second, their products are modified and designed during a customer-manufacturer interaction process, which means that all offers are customized. Third, the companies benefit from MC efficiencies in at least one respect. Fourth, most customers of the companies visited during the project are locatable in the B2B market.

For identifying appropriate interviewees, the sampling criterion was to be able to give information about strategical, operational and economic aspects of the company. After the companies, for the interviews got identified, the appropriate interview partners got approached. Orientating by [31] CEOs and the managerial level got addressed for the interviews. These two functions appeared to be useful and sufficient because most of the companies are family businesses. Some of the successors are already involved in the business and due to the size of the enterprises; the CEO and managerial level functions are still able to keep the overview about operational aspects of the corporation, besides its strategic and economic parts.

Finally, during on-site visits in 29 companies 33 interviews as well as field notes were taken. The interviews were semi-structured and followed a guideline, which got based on the available literature on the topic of this study. The conversations were recorded, transcribed and analyzed. The database for this study reads as follows:

Table 1. Overview of interviews conducted

Industry	Textile industry
Focus Market	Germany
Interviewees	CEOs, Management Level
Companies	29
Interviews	33
Duration in total	32 h 18 min
Interview duration on average	59 min

3.2 Data analysis

The qualitative data got analyzed by using the coding procedure proposed by [9]. First, a list of codes was developed based on the interview guideline and by the literature. Afterward, the code list got continuously expanded and revised [9, 25] while using the QDA software Atlas.ti. Then, the patterns within the database got identified. By that means, while existing constructs were reflected based on the literature; also new patterns were

explored from the data at hand. Thereby, the approach uses aspects from qualitative research, which is of inductive as well as of deductive nature. An overview of the most important codes is shown in table 2.

Table 2. Overview Coding

Value Proposition	[1, 28, 29, 30]
Differentiation	
Additional Services	
Customer Group	[28, 29, 30]
Contract Manufacturing	
Sale/Distribution	[28, 29, 30]

In line with the recommended practice in qualitative data analysis [16, 23], the data analysis was parallelized and executed by two researchers to ensure that the processes informed each other. Consistent with the literature, this approach meets the established criteria of credible qualitative research while providing opportunities to prove consistency with the underlying interpretations [25].

3.3 Case selection

In total, 33 interviews during 29 on-site visits have been conducted. The companies for the interview were chosen purposefully to be able to depict the entire textile chain and identify differences in their business models, which are representative of the entire industry.

The variances appeared on all levels – economic, operational and strategical and thereby also regarding the principles of MC. Interestingly, similarities were not necessarily found among companies being in the same position within the textile chain.

Therefore, the business models of the companies were grouped in patterns based on differences as in the degree of involvement of the customer into the customization process, the need for order-specific R&D performed inside or outside the company and the information about the case of application of the product with the final customer. Considering all the differences found, it was possible to identify three patterns.

These are well described by pattern-company A, pattern-company B and pattern-company C. To communicate the main findings of our one-by-one analysis and the overview of business model patterns while keeping the interest of the reader, in section 4 we present in detail each one of the three pattern-companies and in section 5 we

compare the three patterns to get an overall view of them.

4. ONE-BY-ONE ANALYSIS OF PATTERN-COMPANIES

Each one of the three pattern-companies is exemplary of a specific MC business model pattern we observed in the textile industry in Germany. By illustrating them, we describe the peculiarity of MC principles within the economic, operational and strategical levels in each specific business model pattern.

As mentioned earlier, the study is concentrating on the textile industry with a clear focus on Germany and East Germany in particular. Having their golden age in the 19th century, many companies got reacquired after the German reunification. While the industry employed 318,000 people in this region in 1989 [5], the number decreased down to 22,500 in 2000 [4], which is mainly due to the globalization. Nowadays, especially narrow-specialized companies are well developed but still, face strong competition. Accordingly, these companies have to innovate continuously to gain their position. This situation is considered typical for high-wage countries and thus also relevant for foreign and related industries.

4.1 Pattern-company A

Company A is a small corporation with up to 50 employees in the area of clothing textiles. These products are mainly sold to sports clubs as business customers, but to a particular extent also to the end-customer. Furthermore, business customers also are perceived as multipliers and intermediates - multipliers because individual club members may need additional sports clothes for other purposes and intermediates because they transmit one common design information to company A and not all the individual ideas of the team members. Customers can choose from a predefined range of textiles for jerseys and trunks. On the one hand, the customers are then able to send their own logo, the logos of their sponsors, information about their hierarchies as well as particular color constellations to company A by using a virtual tool. This already shows stable solution space as well as customer integration to some extent. An internal design department processes the given information and creates the jerseys and trunks according to the customer's request. Then, two to three drafts are sent to the customer from which he or she chooses from or which is the base for some minor adjustments. On the other hand, the customer can just provide their own logo and ask the company for its expertise to

design something completely new. In both scenarios, the case of use is always known for the company, which is important because depending on the sport and posture of the athlete during its execution logos need to be visible and clothes need to fit. This knowledge also makes it easier to create an appealing design. Thereby, the two described scenarios show the differentiation advantage of the products offered by company A. All the design work is still a source of cost from the economic perspective and just turns into a source of profit after the order is placed by including the costs into a mixed calculation. For company A, MC efficiencies are achieved by larger customers such as sports clubs aiming for a unique design and ordering the jerseys and trunks in larger order volumes. Thereby, also the cost position, as another principle of MC is fulfilled for company A. Furthermore, the value creation on the customer's side occurs also due to several aspects and services:

- perfect fit of the jerseys and trunks,
- customized design,
- quality,
- sustainability of the manufacturing process, which is particularly important for the perception of sponsors, and
- ability to additionally deliver in case another athlete joins the team.

Additionally, the company offers an entire collection fulfillment, which makes it more convenient for large customers as sponsors are to handle different events and its related clothes they support. Finally, also event marketing is offered. Therefore, company A announces and attends sport events, takes photos meanwhile, and provides the teams with content for their social media accounts. This service is adjusted for every customer group accordingly. By doing so, there is achieved a high convenience for the teams. Additionally, company A itself has a wider reach with their products. Interestingly, besides the products themselves, company A provides many customized services, which are essential for the customers and the decision to order at company A. This shows that company A is selling services, which are at least as important as the customized product itself. Especially this is pretty much unusual for classical mass customizers, which shows a key difference in the set-up of business. This shows that there are not just advantages of differentiation on the product side but also created

by services offered by the company, which is related to their products.

Besides event marketing, company A disposes of a large set of own marketing activities to increase also brand awareness and to stay up to date about current events and latest trends, which is key from a strategic perspective. Namely these are different newsletters provided to customer groups of different sport disciplines, video chats are offered about the importance and the correct fit of sports clothes in order to sensitize customers for the decision and purchasing process later on. Furthermore, testimonials are used for campaigns in specialist journals and on trade fairs and a large variety of social media activities. All these activities are necessary to stay in customer's mind, to stay competitive especially with larger corporations, to develop the advantage of the personal contact and consulting together with the customized design of products further and to embrace growth opportunities on the market.

Considering the principles and characteristics of MC regarding this business model pattern, the company shows clear evidence for the definition of being a MC company. First, the products and aspects to be customized are modularized to deal with the supply-side complexity, which addresses the principles of differentiation advantages as well as a stable solution space. Second, the company uses designers to control the customer-sided complexity, which again refers to the advantages of differentiation, but also tries to keep down costs in the individualization process due to too much iteration. This refers again to the principle of cost position. Third, the central value components, which are of interest for customers are considered in the customization process for a stringent value creation by customer integration.

4.2 Pattern company B

Company B is a medium-sized company specialized on textile finishing. As part of the textile value chain, the corporation has solely business customers, mainly in the field of technical textiles. On the one hand, the order placed by these customers are either contract work orders for modified finishing processes or orders with a high level of customization. Modified finishing processes need less effort in consulting for the company, because one particular textile, delivered by the customer, taken as a base with one or two standard finishing characteristics just needs relatively few adjustments. The adjustments only occur in the intensity the characteristic finally needs to have. Examples are fire resistance, water permeability, and water resistance.

Much more efforts have to be invested into customized orders. Thereby, the common problem is that company B does not know the final application of the textile. Typically, customers do not want to disclose that information for the reason of competition. Furthermore, these orders are related to high expenditures for R&D. Often customers approach the company with a particular need, which cannot be easily satisfied by company B with an extant offer. But customers rely on that finishing company since there are only a few, in general, having that kind of expertise. Being aware of this, business customers often approach company B with a large catalog of requirements. Now the R&D process starts, which, in extreme cases, can last up to three years and cause numerous iterations with the customer until a prototype is accepted. The contact during this time is often of personal nature in order to discuss the prototypes. This personal contact is essential for the success of the project due to the complexity of the product, which is the finishing process in this case. The R&D process itself is either realized internally or in cooperation with the customer or external research institutes. The latter is depending on the extent of the non-disclosure agreements demanded by the ordering company. All the previously mentioned aspects show that there are differentiation advantages as well as customer integration but no stable solution space. Depending on the customer, the R&D costs are carried by the customer itself at the time when they occur, or company B needs to take the burden of R&D costs, which afterward amortize over time after the order was placed. Which case applies is depending on the probability the customer places the order in the end, the predicted order volume or if it is a regular customer already. Right after the R&D phase, MC efficiencies apply due to the high volumes ordered by business customers as the automotive industry, although development costs precede MC efficiencies. Thereby, the principle of cost position still holds true for company B. Furthermore, the company can be considered a soft-customizer in process with its customized finishing, which is explained in the following.

The company has the capability to offer a completely customized high-quality finishing process to its customers, which can be highly innovative. Furthermore, company B then also applies for and provides the necessary certificates, which are especially important for customers from the public sector. With the developed know-how the company creates value for the customer due to a unique fit and high quality. Additionally, customers need to reorder their customized

products at company B, because no competitor would be able just to copy the know-how in a short time perspective. Here again, the company can be sure to generate at least over time large order volumes by its customers, which ensures efficiencies in the sense of economies of scale. We suggest considering company B more like a soft customizer, which is receiving the textiles from its customers, add a finishing and send it further to the customers of its customers.

By doing so, these numerous R&D projects and continuously developing the firm's finishing processes further. Also, company B is doing trend research in its field of businesses and embrace growth opportunities, which seem promising. Furthermore, the company is not doing any other marketing activities besides presenting the company on trade fairs and their website. Mainly, customers approach them after such a trade fair or because another company recommended company B. So especially here, word of mouth is essential for long-term success of the company, which requires then also a well-organized customer-relationship management and continuously high efforts in innovative and high-quality finishing processes.

In the case of company B, the identification of the MC defining aspects of this company is more difficult. Nevertheless, the company shows most of the criteria. Considering the supplier-sided complexity, also this company uses a modularization approach regarding different finishing processes, which can be combined. But because finishing processes can just be combined to a particular extent and sometimes the finishing revoke each other's characteristic, consulting activities are necessary to support the customer in finding the correct configuration. This is mainly done by technical departments or designers and made to control the customer-sided complexity. Finally, the customization process is stringently orientating on the value components required by the customers – the finishing in this case – to create value in the defined solution space of possible finishing combinations. However, in case a new finishing has to be developed there is no stable solution space, which makes the company just partly a mass customizer and thereby, to a particular extent an ETO company.

4.3 Pattern-company C

Company C is a medium-sized company in premium home textiles. The corporation offers textiles for furniture as sofas, chairs, and pillows for example to its business customers. Trends in this industry are not as fast moving as in the clothing industry, but nevertheless, make a

continuous change of designs and colors necessary. Therefore, the firm relies on sales agents, who visit customers on a regular base. From these visits, also new ideas and desires from the customer's side are taken and used for the adjustment of the existing or the set-up of a new collection. Designs are developed inside of the company first and are then presented to the customers as an idea and base for discussion. The reason for this is that customers often cannot imagine haptic aspects of the textiles as well as the color accuracy just from pictures. This means, company C has to show samples and prototypes, which are then further developed together with the customer.

A common obstacle is the technical feasibility of the customers' needs and ideas. Therefore, the sales agents and the design department of the company need to be trained in-house regularly in order to respond and react quickly on requests and offer potential solutions, which sometimes differ from the actual ideas of the customers. But even if customers do not receive all aspects of their idea included into a new product, the customers are most often satisfied due to the aspects they also relate to company C as quality, longevity, customizability, innovativeness in design and the ability to additionally deliver.

Also, the prototypes customers receive over and over again until they are satisfied with the result are essential for the customers' satisfaction. For company C, these prototypes are the main cost drivers, because customers are usually not asked to pay for them. Exceptions are customers, who are unwilling to reach a decision and ask for more than four or five prototypes. In this case, the customer is asked to pay for any additional iteration. Based on its experience, company C decided to put more efforts into their collection in order to meet customers' needs and faster reach a consensus about a prototype with less iteration. Also, costs were meant to decrease. Therefore, the company introduced image folders and mute boards to show already at the beginning of the consulting process a broader range of textiles and colors. During the process, the customer receives the image folder first and decides on a preselection on which basis then the mute boards are sent out. In the beginning, the company feared too much confusion on the customer's side with the different kinds of samples. But with well-trained sales agents, decisions were made faster and with less iteration. The reason for this also was found in the customer's feedback. The problem often was, as mentioned earlier, the imagination of patterns on the textile, haptic aspects and color accuracy. Especially for furniture, colors need to be checked

in reality and under different lights. Additionally, patterns cause shadows, which can be perceived as more or less pleasant. But by using these mute boards company, C can decrease this kind of complexity in the consulting process. Furthermore, by using the mute boards, the expectations of the customers are met faster, due to the preselection based on the image folder which was done earlier and decreased the number of potential choices beforehand. The developed and chosen designs are then produced in large volumes for the customers from the furniture industry. Especially, because trends are changing not as quickly as in the clothing industry large quantities of the same customized textile are often ordered over several years, which again makes the ability to deliver strategically important for company C and its customers. Satisfied by this process, customers recommend company C to other companies, which added its textiles into their assortment. This shows a strong word of mouth in this industry. Furthermore, trade fairs are perceived as important as well as the website of company C as two different ways of the first point of contact.

Deriving now the conclusion about whether company C is a MC company or not from the case description, also here evidence can be found. First, the firm controls the supply-side complexity by setting up a collection, which is then modified according to customers' needs. Therefore, the textiles are predefined, and patterns on them are possible to be modified as well as the color, which is variable. Thereby, the customers are integrated, which fulfills one principle of MC. Second, the customer-sided complexity is faced by a design department, which is consulting the customer and creates a customized solution. By doing so, the company reached the advantage of differentiation. Third, with this customized solution, the customer receives a solution space and value creation oriented product, which is orientating on the central value components required by the customer. Nevertheless, the solution space is not open, which neglects one of the essential principles of MC. Finally, the cost position principle can be perceived as fulfilled, because MC efficiencies occur after the order was placed and large quantities are produced, which also amortize the development or design cost occurred upfront.

5. OVERVIEW OF BUSINESS MODEL PATTERNS

The differences in the business model patterns were found on the economic, the operational and the strategic level as well as on the four principles of MC. Having a look at the operational level, the

differences in the way how the companies are interacting with their customers to customize a product were diverse. In the case of company A the company is following an adaptive customization approach, company B besides its standard products a collaborative approach for their customized products and company C a mixture of both. Thereby, all companies just to a different extent integrate their customers into the customization process.

Furthermore, the value creation and the range of value-added services is different. Company A offers a wide variety of additional services to its customers in order to create an experience for and relationship with the customers with the product and the brand. Company B and company C offered comparably few additional services to their customers. But all three companies had the prototyping service in common.

Because especially the textile industry struggles with capability of imagination and haptic aspects for the decision on the customer's side, prototyping is essential for all companies in order to be able to deal with complexity of product characteristics.

But then the prototyping itself was designed differently. In most cases the prototypes are mainly a source of costs on the economic level for the selling company, but company B for example is passes these costs on to the customer and might even be able to turn this aspect to source of profit. In the end, for all companies, it is important to have the ability to quickly additionally deliver previously developed products again to the customer, which makes agile processes essential. And especially this ability is also contributing to the MC efficiencies in the business model. Besides the large volumes business customers purchase with one order, which causes scaling effects and is the base for MC efficiencies, also the ability to additionally deliver is therefore important due to quantities business customers request over time. Considering all these aspects, there is indeed the differentiation advantage as well as the cost position principle of MC fulfilled by all three companies.

On the strategic level, the extent to which the brand perception is built proactively was highly different. Considering company A with a wide range of marketing activities, company B, and company C has a much smaller set of marketing activities. Also, these marketing activities do not necessarily have an impact on potential growth opportunities. Especially, for company B the certification for its finishing processes underlies legal requirements set by politics. With changing legal necessities, the company's customers need

to fulfill them, which cause orders as well as R&D efforts especially for company B, but to a particular extent also for company C. In general, the R&D activities of company B and company C are the reason, which both companies are not fulfilling the MC principle of a stable solution space. By offering the possibility to create and design completely new solutions and products, these companies can mainly be perceived as ETO companies with some MC structures. A summary of the characteristics of the business model patterns regarding the economic, operation and strategical level as well as for the four principles of MC is shown in table 3. Independent if the companies reach it by marketing activities or mainly word of mouth among customers, the perception of the East German textile industry is coherent, which for all involved economic entities an advantage from a strategic point of view.

The industry and thereby most companies are perceived as flexible towards customer request and special needs, innovative, transparent and able to customize their products, mainly sustainable, offering products of high quality and reliable in delivering its products as well as being able to additionally deliver them. Finally, the essential statement, which was mentioned in every interview, was the importance of personal contact with and consultancy for the customers, as well as the ability of the companies to provide small samples and prototypes to its customers.

6. DISCUSSION

Through our analyses we identified and described three different business model patterns, which essentially differ in the extent of the interaction with the customer and the offerings to customers. This again has consequences also on other aspects of the companies. The results have shown that in the German textile industry companies with adaptive customization have to offer more value-added services to their customers in order keep them attracted and stay in their perception, than companies offering customers the customization of products with a collaborative approach.

The same holds true for the necessity of marketing actions. With a collaborative customization approach the importance of word of mouth among customers and potential ones increases and make additional marketing activities more and more obsolete.

This means, as more influence customers receive in the design and development process of a product, as more attached they feel to it. As more as the interaction with the producing company is, as more the customer is willing to recommend the

company, in case the result was satisfying, which means in the end, less necessity for additional marketing activities.

Additionally, the study has shown that the term “Made in Germany” is mainly positively perceived by customers from Germany but also internally and also further used for promoting products to the end-customer. Thereby, customers of the German

Table 3. Summary of business model patterns

		Pattern-company A	Pattern-company B	Pattern-company C
Strategical Level	Range of additional Services offered	Large	Rather few	Few
	Importance of “Made in Germany”	Unimportant	Important for quality aspects	Important for quality aspects & brand reputation/perception
Operational Level	Potential for Individualization	High	Offering standardized products or new developments	Individualization based on standardized collections & new developments
	Customer Contact	Medium	Partially very intense	Always very intense
Economic Level	Revenue Streams	Customized products, services & prototyping	Standardized & newly developed products	Individualized & newly developed products
	Source of Costs	Partially prototyping costs	R&D costs (but mainly paid upfront by customers)	R&D costs carried by company C itself
Business Model Pattern in Respect to the Four Principles of MC				
Advantage of Differentiation		<i>Product-related:</i> high & <i>Service-related:</i> high	<i>Product-related:</i> high & <i>Service-related:</i> Medium	<i>Product-related:</i> high & <i>Service-related:</i> Medium
Cost Position		Very good	Medium	Medium
Stable Solution Space		Existing	Non-existing	Non-existing
Customer Integration		Medium	Medium	High

textile industry are also willing to pay a price premium for the quality and the services they are receiving. Furthermore, the location has shown to be an advantage due to fewer transportation costs, shorter waiting periods and ability to order smaller purchasing volumes. In general, this means for SMEs in high-wage countries that locality a personal customer contact and quality aspects are essential especially for narrow-specialized SMEs in niche markets to be able to customize products for customers properly and ensure large order volumes by business customers at least over time. Besides, the MC efficiencies the companies have shown the three elements of MC are shaped quite

differently in the B2B context in comparison to B2C markets. However, considering the four principles of MC, just one business model pattern can completely be perceived as a mass customizer so far. The others are mainly ETO patterns representing companies showing first approaches and some characteristics of an MC firm. Nevertheless, the interviews have shown, that with rising cost pressures from business customers’ as well as competitors’ side, the companies have to identify cost saving potentials in their processes and offerings. In future, companies today were perceived as ETO firms will necessarily shift to more standardization on which

basis customers can modify characteristics within a stable solution space. Approaches already exist and will be further developed by those companies for long-term and sustainable success on a high-quality market, but in a high-wage country.

Furthermore, because personal contact with the business customer is so important for a company's success, configurator solutions do not seem to be an appropriate tool in the co-design-process. Therefore, the companies have found different ways to deal with the customer-sided complexity. Design and technical departments provide support to the customers to find a solution, which at least contains the customers' most important if not all central value components, finally creating value. This means, the MC characterizing elements mentioned earlier cannot strictly be applied by using toolkits regarding a configurator for example when it comes to the consideration of B2B markets. For these markets, the elements have to be seen in a broader perspective to describe the business activities of these companies and taking the MC efficiencies.

In general, the results have shown that AC [15] is an appropriate form of MC to describe the industry activities best. Nevertheless, there is a variation in the concepts, processes and business models which differ from the definition provided. Furthermore, the four elements of MC – differentiation advantages, cost position, stable solution space, and customer integration – are often not fulfilled all. This again proves the idea of the industry is mainly marked by ETO companies with their re-engineering and modular approaches [17, 20, 21] often used in their business.

Finally, there has to be stated that maybe most of the companies are using ETO approaches than MC but show serious efforts to develop more into MC businesses. The challenge for research is then just the definition of lot-size one [33]. In the textile industry lot size one along the value chain. For the final chain link, it seems maybe clear that in B2C there is one t-shirt sold in the end. In B2B this is already different especially regarding technical products. This also holds true for the chain links before, because the question arises if lot size one is one spindle of yarn, one meter of textile or one role of grafted material.

7. CONCLUSION

The German textile industry found its niche in high quality customized products in fields as clothing, technical textiles, and furniture. By high efforts in consulting, personal contact with customers and prototyping the complexity of products is made understandable for the customer. Customer

interaction, process design, and brand, as well as industry perception, are the essential assets the companies can differentiate from their international competitors. Future research should try to emphasize on how the cooperation among SMEs from a high-wage country within the value chain can be improved to provide even more sophisticated services, promote the industry better and reveal further growth opportunities as well as potential decrease costs and increase order volumes. Therefore, network and platform approaches should be examined to develop the business models of the companies and industry further. Also, necessary for a long-term success will become an increased customer education on how cost intense customization processes can be in the field of technical textile or on the B2B market in general. They have to be educated in a way they are not changing their supplier due to fewer customization options, but more understanding them and their processes to be satisfied with a more simple solution than entirely new developed products, at least in this market and to the best possible extent.

Finally, the study has shown that the differentiation between MC and ETO is sometimes not that simple. The potential revision of the definition of lot size one needs to be taken into consideration for some cases, businesses, and industries with their related products. In practice, textile companies may now have a clearer picture of their actual business activities, because often before it was not clear to them that they are also service providers to their customers. Additionally, they often lack time to think about also strategic issues. This now could be the base for a more focused and stringent work on their way for becoming a mass customizer. For an even more profound picture also on another market of the textile industry, further studies should be conducted because this one is just limited to SMEs and the German textile industry. The industry picture could be similar or different to other markets and countries.

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Poslovni modeli B2B proizvođača kastomizovanih industrijskih proizvoda: Primer malih i srednjih tekstilnih preduzeća iz Nemačke

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Apstrakt

Poslovni model kastomizovane industrijske proizvodnje je postao široko prepoznatljiv u praksi. Ova tema je u teoriji razmatrana na optem nivou ili je fokusirana na B2C segment. Veoma je malo istraživanja usmerenih na poslovne modele na B2B tržištu. Kastomizovana industrijska proizvodnja se zbog svoje efikasnosti čini veoma obećavajućom za specijalizovana mala i srednja preduzeća (MSP) u zemljama sa visokim zaradama. Tekstilna industrija predstavlja primer usko specijalizovanih MSP, posebno ako se fokusiramo na nemačko tržište. Podaci koje smo prikupili tokom 29 poseta preduzećima kroz 33 intervjua su nam omogućili da definišemo tri najčešća obrasca poslovnih modela u tekstilnoj industriji, uzimajući u obzir njihove karakteristike u B2B segmentu.

Ključne reči: poslovni modeli, B2B, kastomizovana industrijska proizvodnja