

COMPANY SIZE AND SUCCESSFUL MASS CUSTOMIZATION

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Abstract: *Mass customization is an actual concept for more than two decades. In recent years, some large enterprises have started abandoning mass customization business approach, while small and medium enterprises have been more successful in developing and adopting their MC strategy. In this paper we represented some success factors of mass customization business approach, difference between SMEs and LEs in applying MC, as well as implementation strategies for these two types of enterprises. By analyzing experience of three large companies, Dell, Levi's and Lands' End the main reasons for failures of these LEs in MC have been pointed out and analyzed. In conclusion the future trends of mass customization are discussed.*

Key Words: *Mass Customization, Small and Medium Enterprises (SMEs), Large Enterprises (LEs)*

1. INTRODUCTION

Mass customization has gathered remarkable momentum and currency in recent years. With its unique promise of delivering highly customized products at mass production (affordable) prices, it has not only successfully challenged the grand old assumption that high product customization necessarily carries an exorbitant price tag, it has also triggered a transformation of market dynamics in the most fundamental and structural fashion [1].

Mass customizers can Build-to-Order both customized products and standard products without forecasts, inventory, or purchasing delays [2]. Big companies have had success in adopting mass customization strategy. But these are the companies with unlimited resources in workforce, technology and capital, from the standpoint of small and medium enterprises (SMEs). However, in recent years, some large enterprises (LEs) have started abandoning mass customization strategy.

The questions emerging from this issue are:

- What are the reasons for LEs' failures in implementing MC strategy?

- Do SMEs have more success in implementing MC strategy, and if yes, why?
- Are SMEs the future of MC?

This paper represents some success factors of mass customization business approach and comparison between SMEs and LEs in applying MC, by pointing out how the size of a firm affects customized production.

2. SUCCESS FACTORS FOR MASS CUSTOMIZATION

Mass customization provides tremendous variety and individual customization, at prices comparable to standard goods and services, to enable the production of products and service with enough variety and customization that nearly everyone finds exactly what they want [3]. The accelerating rate of technological change, the increasing sophistication of products, and empowered customers demanding greater product variety, are powerful forces driving the success of MC.

Mass customization requires a highly flexible production technology, an elaborate system for eliciting customers' wants and needs, a strong direct-to-customer logistics system, as well as people readiness to pay for customized products [4]. These are also constraints of MC strategy. It is neither a one-size-fits-all approach nor is it the right strategy in all contexts.

There are some conditions that must be fulfilled so MC could be implemented as a competitive strategy, such as [5]:

- customer demand for variety and customization must exist;
- market conditions must be appropriate;
- value chain should be ready;
- technology must be available;
- products should be customizable;
- knowledge must be shared.

The success of MC depends on a series of external and internal factors. External factors include customer, product, market and industry factors, and internal factors represent company capabilities. These factors drive the ultimate success of mass customization that can be defined as delivering superior customer value related to

mass-produced offerings. Conceptual model of success factors for mass customization [6] is given at Fig. 1.

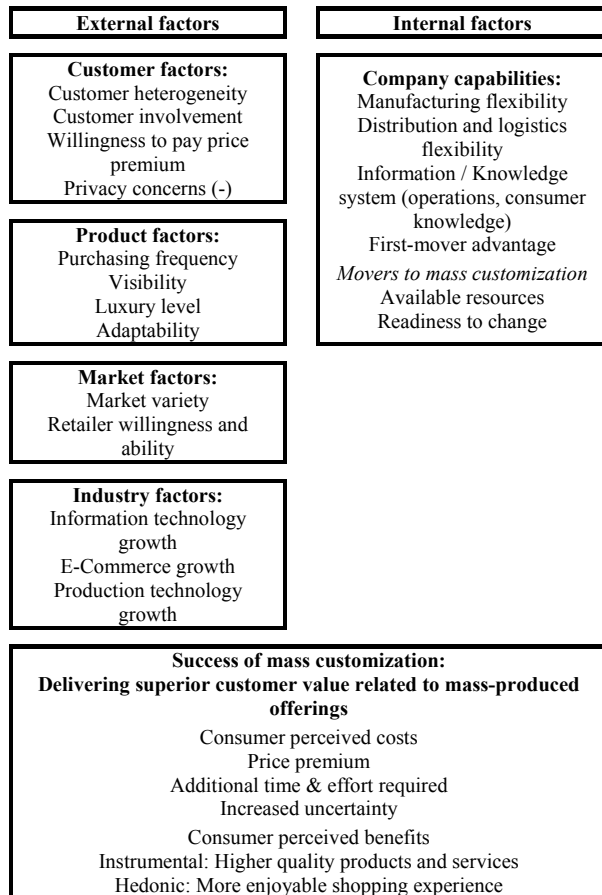


Fig. 1. Conceptual model of success factors for mass customization

3. MASS CUSTOMIZATION AGAINST CRAFT CUSTOMIZATION

Mass customization is bringing together effectiveness of mass production and individualization of craft production into one paradigm (Fig. 2).



Fig. 2. The development of emerging market of mass customization [7]

Evolution of production companies since the beginning of production can be summarized in only a few resulting paradigms in whole human history [8]:

- Craft production - peak in late 19th century;
- Mass production - peak in middle of 20th century (around 1955.);
- Mass customization - active paradigm from 80's;

- Global production - with Personalization and Regionalized production as sub categories.

The branch of the industry, the type of products manufactured, the characteristics and qualifications of the work force, material flows, the level of the automation in company, the level of informatics integration, using of push or pull principle in the production – these are all characteristics of the company that should be taken into account.

The development of mass customization markets has its roots in the beginning of mass production in the first half of the 20th century. The development of paradigm has taken the markets from craft production, through mass production all the way to mass customization and globalized production of the future markets [8]. Today there are two ways of mass customization company to emerge (Fig. 3). The first is to come from the ranks of mass producers implementing mass customization paradigm, and the other is coming from the ranks of craft producers or craft customizers.

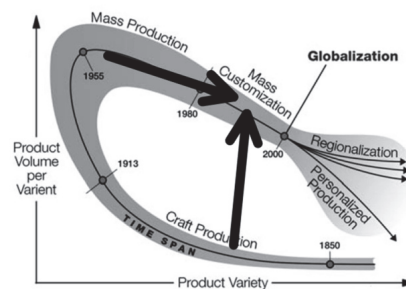


Fig. 3. Development of production systems through time [8] and ways for mass customizer to emerge

Mass producer will not expect the same results as the craft producer or craft customizer when implementing mass customization strategy. Their starting points and expectations will be completely different.

4. SIZE OF THE COMPANY AND THE ROAD TO CUSTOMIZED PRODUCTION

In order to analyze SMEs from the angle of mass customization we must determine the scope of these companies and what we mean when we say small or medium company.

There are different approaches to defining what are small and what medium enterprises. Many countries in Europe have their own definition. However there are recommendations from the European Commission used to determine the size of the company. By these recommendations [9] there is also a subcategory of small companies called micro enterprises consisting of 10 or less employees (Table 1).

Enterprises qualify as micro, small and medium-sized enterprises (SMEs) if they fulfill the criteria laid

down in the Recommendation which are summarized in the table below. In addition to the staff headcount ceiling, an enterprise qualifies as an SME if it meets either the turnover ceiling or the balance sheet ceiling, but not necessarily both.

Table 1. *Classification of micro, small and medium enterprises as given in recommendations of EU Commission [9]*

Enterprise category	Headcount	Turnover	or	Balance sheet total
medium-sized	< 250	≤ €50 million		≤ €43million
small	< 50	≤ €10 million		≤ €10million
micro	< 10	≤ €2 million		≤ €2million

All enterprises whose headcount, turnover or balance sheet total exceed these numbers are referred to as large enterprises.

Many companies are already successfully operating after MC business model. But most of them are rather small start-ups that utilize the novelty effect of mass customization to enter mature markets. Large-scale mass customization operations are limited to a few examples [3]. Table 2. shows some advantages and disadvantages of LEs and SMEs in implementing mass customization.

Table 2. *Advantages and disadvantages of SMEs and LEs*

Enterprise category	Advantages	Disadvantages
SMEs	Adaptability to trends	Limited resources
	Adaptability to change in demand	Difficulties to develop specific competence for low to medium technology
	Close customer interaction	
LEs	“Unlimited” resources (people, technology, R&D)	Smaller flexibility
	Specific competence developed through R&D	Low interaction with customers in co-creation process
	Organizational learning	Poor change management in MC implementation
	Alignment of technological and business strategies	

Having everything said in mind Fig. 7. shows the size of the production systems in relevance to the type of the production being done. Every size of the enterprise is able to undertake at least two types of production. Which of them it will be, depends of the enterprise target market and technological factors relevant to the production.

Fig. 4. also shows the evolution of the enterprises from craft producer, craft customizer and mass producer into the mass customizing company.

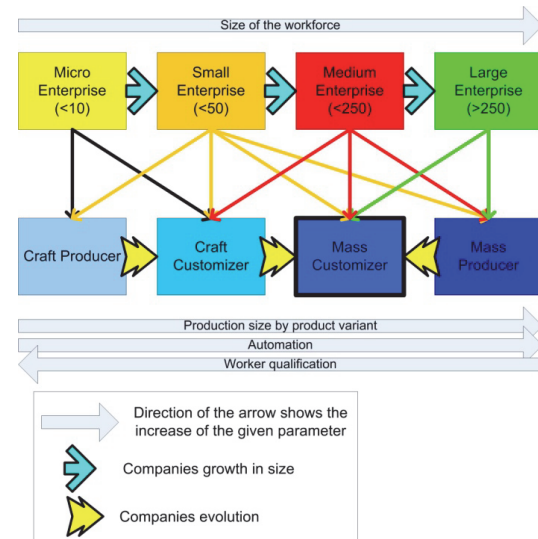


Fig. 4. *Size of the enterprises and the type of the production*

5. SME's SUCCESS IN IMPLEMENTING MC

To enable mass customization, firms have to achieve flexibility in the production of their goods and to create an interaction system to learn about the preferences of their customers. There are a lot of success stories about the implementation of MC in small and medium enterprises. They have significant benefits of closer customer-supplier relationships and the implementation of MC on a small scale requires smaller investments.

As it has been pointed out earlier, the genus of MC is a co-design process of collaborative value co-creation and it has to be deeply implemented into the cultural mindset of the organization. Internal change management for MC demands that the firm's (top) management actively installs programs to comply the organization's norms and routines with customer co-design (3), that is much simpler and easier to achieve in SMEs, than in LEs. On the other hand, as a part of small supply chains, SMEs are able to work closely with their suppliers, that have a sense of security in sustaining their supplier-customer relationship with SMEs, much more than with LEs. SMEs are able to identify customer needs and offer detailed product, with high level of commitment and fast response time.

Aware of the existence of limited resources to implement MC, comparing to large enterprises, SMEs improve the three capabilities necessary for MC (solution space development, robust process design and choice navigation), by strategically focusing their resources on the capability where an investment would have the

greatest effect on overall competitiveness, without trying to lift all three on the highest level. Capitalizing on economies of scope (the expansion of new business activities with current customers) instead of economies of scale (the expansion of current business activities in the marketplace) will allow a small organization to implement and benefit from mass customization [10].

Besides direct advantages in MC, SMEs also have their advantages in economic, social and environmental spheres of business like relationships with customers, cultural identity, aesthetic awareness, etc. SMEs are able to exploit local niches and maintain diversity in available products, understand local tastes that foster craftsmanship, create greater social equity that humanizes relationships in buying and selling (building community), provide culturally sensitive options that empower marginalized groups, and from the environmental aspect, having shorter transport distances, they reduce pollution, as well as human risk. Maybe some of these advantages will be the reason that SMEs will be the future of the Mass Customization.

6. CASES OF MC LARGE ENTERPRISES FAILURE

According to Piller and Kumar, the starting point of MC is “to make custom products achievable for large market segments and not only a few premium customers” [11]. However, there are examples of large enterprises that have failed at trying MC. One of the main reasons is probably that they want to produce as much as possible, at a cost as low as possible, and benefit from large scale with great number of different products in addition to ongoing mass production. Implementation of MC requires change management capabilities that few LEs have. They have to manage the change process from a product-focused, mass-producing enterprise to a customer-centric.

Another reason for failures in MC implementation is the fact that all LEs do not have the necessary capabilities for it. The lower cost of entry into MC market encourages enterprises to rely on success stories of other companies, without focusing on their own capabilities required for successful implementation of MC. As it was said earlier, these capabilities are [12]: solution space development, robust process design and choice navigation.

However, if they are aware that their capabilities need improvement, they usually try to improve all at once, without adequate allocation of resources, which is not shown as a good practice and does not have expected results.

6.1. Case 1: Dell Computers

In the context of mass customization, computer manufacturer Dell is often named as the most successful

model of MC. However, this company managed neither to lower the costs of its MC production, nor to make its production processes flexible enough for the customization of its products. Dell utilized a single direct configure to order model and gave its customers a cascade of options to choose from when configuring a product specifically for their needs (Fig. 5.).

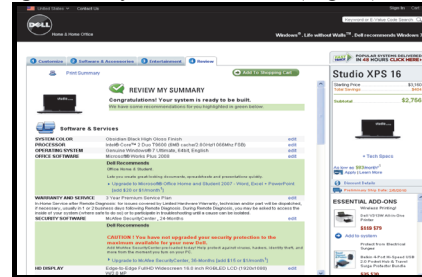


Fig. 5. Configuring of Dell laptop computer in 2009

Although mentioned by Dell representatives as a good model for mass customization, it has been too complex and costly for this company to maintain. Company also stated that configuration process is economical only with premium prices of products. We can just assume that the company could not achieve the robust process design and suitable solution space, as key MC capabilities. Also the influence of economic crisis on Dell's leaving of MC strategy cannot be diminished.

6.2. Case 2: Levi Strauss Jeans

Another example is Levi's. For several years (from 1997), this clothing manufacturer has offered a MC concept called Original Spin (Fig. 6) at its retail locations, which was based on the availability of flexible manufacturing technology. Levi's used digital technology to create a pair of jeans customized to fit an individual's proportions (Fig. 7). A customer in a Levi's store, with the help of a salesperson, picked style options depicted with graphics on the screen. The order was sent via the internet to a server at Levi's factory. The Original Spin mass-customization process was built around a computer-aided design (CAD) system linked with marketing and logistics databases. The whole process, from kiosk to delivery lasted for two to three weeks. The price of jeans was \$55, or about 35 percent more than a traditional pair of Levi's [13].

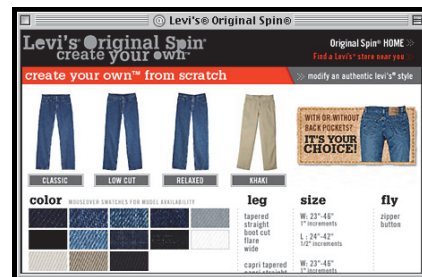


Fig. 6. Levi's Original Spin

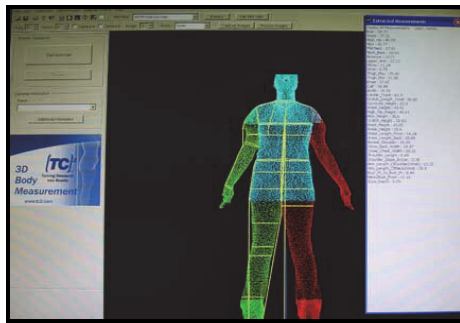


Fig. 7. MADM scanner image

However, this company managed neither to turn the customized product into a customized relationship with its customers, nor to use the knowledge from the individual orders for customer knowledge management. Levi's could not establish a system for reordering jeans. According to Piller [14], this was just a marketing and PR gimmick. This Levi's first attempt at MC was a failure and by 2004 they had shut it down.

In year 2010, Levi's came back with mass customization to an extent with a new program called Levi's Curve ID (Fig. 8). Levi's has introduced jeans built around shape, not size. Unlike Levi's first experiment with mass customization, users customize their Levi's Curve ID online - not in a store.



Fig. 8. Levi's Curve ID project

6.3. Case 3: Lands' End Company

Lands' End is the first company that offered true mass customization at affordable prices. This online innovation was so unique that the New York Times named Lands' End Custom one of its "Top 100 Ideas of 2002" [15]. They were leaders in the apparel industry, customizing their textile products to an individual's body measurements (Fig. 9). However, they have abandoned MC concept and their current site looks like a regular on-line shop (Fig. 10).

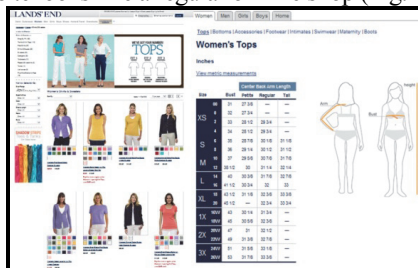


Fig. 9. Former Lands' End service for shopping on the Internet with possibility of product personalization



Fig. 10. Current Lands' End website

The reasons behind Lands' End abandoning the MC strategy stay fuzzy. Company had a big success with sales in the beginning of customization efforts. In 2002 Lands' End was bought by Sears and ultimately went off to practically close their customization business. Some of the mentioned reasons for deciding to end MC project are Sears being a large company used to economy of scale, rather than MC production.

6.4. The Cases Finding

LEs have too many customers to build a real interaction with them. To realize co-design processes with customers, companies need to understand their preferences, to determine the product offerings, and to provide a toolkit to let them customize their product. However, there is usually no direct connection between a LE and its customers, like in the case with SMEs. There is the connection over a market research firm or an advertising agency instead.

Of course, these are only the examples of mass customization failures and it is a very one-sided view of the state of the art. Having this on mind, there is still a question if the future of mass customization lies in SMEs rather than in LEs. We are witnesses of new developments and individualization approaches in car industry where Opel, for example, offers maximal individualization and "virtually unlimited customization" with its new car models. Levi's has come back for one more try, but now with only a limited customization.

7. CONCLUSION

There are success stories that prove that mass customization on the level of large enterprise is possible, but on the other hand we can not diminish the importance that leaving of MC strategy by companies like Dell, Levi Strauss (in one point) and Lands' End have. Especially the case of Dell who was for years "a flag" company in MC environment is symptomatic and worth of a deeper research.

It can well be concluded that Piller's statement from 2004 that mass customization is still very much a niche business, dominated by highly specialized businesses that are small and often young still stands [3]. There is no one best way to mass customize and the company needs to tailor their approaches in ways suitable for their business being it an SME or LE.

In recent years, mentioned large enterprises have started abandoning mass customization business approach, while small and medium enterprises have been more successful in developing their MC strategy. In this paper we represented some success factors of mass customization business approach, difference between SMEs and LEs in applying MC, and by analyzing experience of three large companies, Dell, Levi's and Lands' End, the main reasons for failures of these LEs in MC have been pointed out.

In comparison the research has pointed out the factors for successful implementation of MC in SME's and advantages small and medium business will have in the future over large companies.

The future research will put accent on SMEs and their successful handling of MC strategy. The aim of the future research is also to show that there is a connection between abandoning of MC strategy and world economic crisis and that crisis and fall of buying power of customers played a big role in this process, giving advantage to more flexible and adaptable SMEs.

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