

THE ABC OF MASS CUSTOMIZATION.

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Mass customization, the much trumpeted big idea of the 1990s, is alive. Here we tell you how to implement it.

If you are a music lover, Pandora's Box (www.pandora.com) relieves you from the burden of searching for your favorite music by switching through radio stations. Based on an initial set of customer-specified "preferred songs," Pandora's Box identifies a broader set of songs that fit your preference profile and broadcasts them to you as a custom radio channel. Over 400 different musical attributes are considered when selecting the next song, including rhythm syncopation, key tonality, vocal harmonies and displayed instrumental proficiency. These are then combined into about 2000 larger groups called focus traits. By automatically classifying some 500,000 songs along these focus traits, Pandora's matching service automatically creates a personalized radio station for each of its more than eight million enthusiastic listeners, listening to over 4 billion of songs. (may 2007)

Try MyVirtualModel. It has a roster of partners including Adidas, Best Buy, Levis, H&M and Sears, and enables consumers to build a virtual model of themselves, an avatar that allows them to evaluate product alternatives. This means they can, for example, try on clothes virtually and either buy them online or just learn about what is in the shop, or even store them in a virtual cabinet for friends to make recommendations or purchase the items as gifts. More than 10 million users have already signed up for the service and early adopters report encouraging results.

Take a look at the iconic design of BMW's Mini Cooper, where Gucci meets "Pimp my Ride". Over 80% of Minis are custom-built by customers with an online toolkit. The toolkit enables customers to design the car's roof with their very own graphic pattern or picture, which is then produced with an advanced digital printing system on a special foil. Since its debut in 2001, BMW has sold well over a million of the compact car which has the cost of a Honda Civic and the price of a small but well equipped SUV.

One size fits all. RIP. Mass customization –is already delivering what we need, when we need it, turning customer's heterogeneity into profits.

The ABC. So, what does it take to crack the code of mass customization? While specific answers are clearly industry or product-dependent, a decade of studying mass customization successes and failures led us to identify three fundamental things you will need to develop your ability to mass customize: A well-developed Space, Business value chain, robustly designed, Choices for customers, simply done.



First and foremost, a company has to understand what the needs and wants of its customers are, and create a solution space map, where customer needs are understood, positioned and calibrated. Mass producers targeted universal needs, evenly spread across customers and arguably easy to identify: this is a unidimensional space. Mass customizers identify the product attributes along which customer needs mostly diverge, creating a multidimensional one, and evaluate each customer group and, ideally, understanding each individual customer and the value s/he generates for the firm

This is a big challenge. We have been identified three core approaches:

Provide innovation toolkits. With this software, customers can translate their preferences into a product variant by themselves: they design their own product, highlighting unsatisfied needs in the process. This information is later fed back to the solution provider, who can evaluate it and later include in their offerings.

For example, BMW developed an online toolkit that allowed consumers to design their own navigation system. This is not cosmetic: customers can even design new mobility services that they would have liked to be supported by the system. The information gathered from more than 5000 users creating their "dream system" – and not just responding to market research surveys – enabled BMW to create an entire range of new navigation system solutions.

Virtual concept testing. The sheer number of prototype variants that may be required by mass customization demands a shift from the real to the virtual.

To sell its assortment of over 55 million sneakers, distributed among more than 10,000 SKUs, Adidas used to produce more than 230,000 footwear samples every season. Montreal-based MyVirtualModel enabled Adidas to substitute physical samples with more accurate but cheaper virtual prototypes that merchandisers can sample on virtual models. In addition, the digital designs can be used for online market tests. Adidas can now test new assortments for the upcoming season in real time. Consumers can even virtually try-on potential garments – on their own virtual avatar – and provide qualified feedback on the designs.

Learning from the experiences of past customers. Customer experience intelligence turns raw information from past customer interactions into knowledge about real, tangible customer preferences.

Pandora's Box systematically applies user feedback to improve the matching algorithm of its system, continuously fine-tuning its solution space . If a user skips a song suggested by the system, this information is not just used to provide better personalization of the music stream for this user. It is also aggregated with similar feedback from millions of other users to prevent the system from making incorrect recommendations in the future. Until May 20th 2007 Pandora's customers provided 525.432.352 of these "thumb feedback", making future recommendations even more accurate.



Business Value Chain, robustly designed.

Increased variability in customers' requirements must not lead to significant deterioration in the firm's operations and supply chain. This can be achieved through robust value chain design -- the capability to reuse or re-combine existing organizational and value chain resources to fulfill a stream of differentiated customers needs. With robust value chain design customized solutions can be delivered with near mass production efficiency and reliability.

But what does it take to design a robust value chain? We identified four best practices:

Flexible automation. Automation is no longer synonymous with rigidity. In the auto industry, for instance, robots and automation are compatible with previously unheard-of levels of versatility and customization. Many intangible goods and services also lend themselves to automated solutions, often internet-based.

In the case of Pandora's Box the entire service delivery system is automated, with no human intervention at any stage. This delivers an entirely personalized entertainment experience simultaneously to millions of users.

Process modularity. Think of operational and value chain processes as segments. BMW's factory producing the Mini can react to swings in customers' demands by flexibly redeploying into existing facilities individual mobile production cells with standardized robot units, called MobiCells. Imagine

demand for an option is low at a certain point in time while demand for another option is surging: BMW can re-configure and re-deploy MobiCells to shift capacity where it is needed in a matter of a few days, instead of the months typically needed for capacity adjustments. Process modularity is achieved by flexibly and quickly adapting existing capacities of the body shop without extensive modification of production areas.

Process modularity is not a prerogative of manufacturing. IBM has been redesigning its global business services unit around configurable processes called “engagement models”. With these engagement models, IBM fixes the overall architecture of a consulting project while retaining adaptability to the customers through recombination and local adaptation of proven solutions and best practices – what they call “knowledge assets”.

Recruiting adaptable people. Even the most flexible technology cannot be adapted to really unexpected customers’ needs. Customers may send ambiguous signals to the provider, and machines are bad at dealing with ambiguity. Human flexibility is an essential element also because oftentimes some of the resources that have to be recombined are people. Think of consulting or engineering firms delivering highly customized services. Evidently, people that can easily connect with new associates each time a new project is started are critical to effectively integrating different areas of expertise for the purpose of fulfilling a special customer need.



Choices for customers, simply done.

Finally, the firm must be able to support customers in identifying their own solutions, while minimizing complexity and burden of choice for them. The paradox of choice is that too much of it is not a good thing: consumers get confused and then angry.

Offering more product choices can easily prompt customers to postpone or suspend their buying decisions, and even to classify the vendor as difficult to deal with and hence undesirable.

As a result, it is crucial to help customer make their choice, even if they don’t really know what they want. Three techniques help:

Assortment matching, which means negotiating the characteristics of an existing assortment with a model of the customers’ needs.

MyVirtualModel's (MVM) core business is essentially based on assortment matching. Customers can build themselves in a virtual model (an avatar), by selecting different body types, hair styles, face characteristics, basic measurements, fit preferences etc. This virtual representation of each customer's needs can be matched then with a digitized model of the retailer's assortment (virtual garments). Like a personal shopper, the system then recommends items for the customers out of the vast assortment of the online merchant.

Adidas, for example, uses MVM's virtual models in its online swimwear store to allow consumers to virtually try on products and to easily compare them with other articles. Clients of MVM on average report an increase in conversion rates for apparel items by almost 50%.

Fast cycle trial-and-error learning. Customers may not be ready to make a decision even when they receive a recommendation. This might be because they are not sure about their real preferences or because the recommendation does not appear to fit their needs. Under these circumstances, a further complementary approach is required: *fast cycle trial-and-error learning*.

Thanks to information technology, customers can be helped to understand what better fits their needs by empowering themselves to engage in multiple but costless sequential experiments to test the match between available options and their needs. Fast cycle trial-and-error learning is a core value-adding principle of a good online configurator.

BMW utilizes this effect for all of its car series. Its online car configurators are designed to help customers learn about their own preferences. The returns for BMW are immense: the company estimates that customers using the configurator extensively to build their car before they head to a dealer to place an order spend an average premium of 20 percent of high-value items.

Embedded configuration. The ultimate solution to reduce choice complexity is to offer products that automatically adapt themselves to the customers' needs – they have an *embedded configuration* capability.

Adidas recently released a running shoe that applies this principle – the Adidas One running shoe. To embed flexibility, the shoe is equipped with a sensor, a system to adjust the cushioning, and a microprocessor to control the process. When the shoe's heel strikes the ground, the magnetic sensor measures the amount of compression in its mid-sole and the microprocessor calculates whether the shoe is too soft or too firm. During the milliseconds the shoe is airborne, a tiny motor shortens or lengthens a cable attached to a plastic cushioning element, making it more rigid or pliable. A small user interface also included allows for manual adjustments of the product, to trim the computer's decision to personal taste. Evidently, embedded configurators are in their infancy, but they promise to relieve the customer from the burden of choice, without sacrificing quality-of-experience.

Mass customization as a journey

Our experience reveals that mass customization is often rejected on the simple basis that “it can’t work in my business.” While we do not claim that it should be applied universally, this attitude is a byproduct of how mass customization has been described and popularized.

Unfortunately, the concept of mass customization has been portrayed mostly in terms of an “ideal state,” where a company knows perfectly what the preferences of its customers are, how to produce bespoke products at mass production cost, and how to allow customers to effortlessly choose their own solutions among many available. This is and will be impossible to achieve.

This is not necessarily bad news. Most companies can find useful and profitable to develop a mass customization capability to some extent. It is a matter of degree more than perfection. Most companies already have some degree of it, and they should seriously consider developing it further.

This does not mean that they have to pursue a full-blown mass customization strategy. Rather, mass customization has to be thought as one element in the portfolio of strategic capabilities of a company. Whenever real customers are not getting what they need, business opportunities are opened. Consequently, investment in building stronger mass customization capabilities is to be given serious consideration. As our research has demonstrated, the pursuit of this goal yields great results.

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