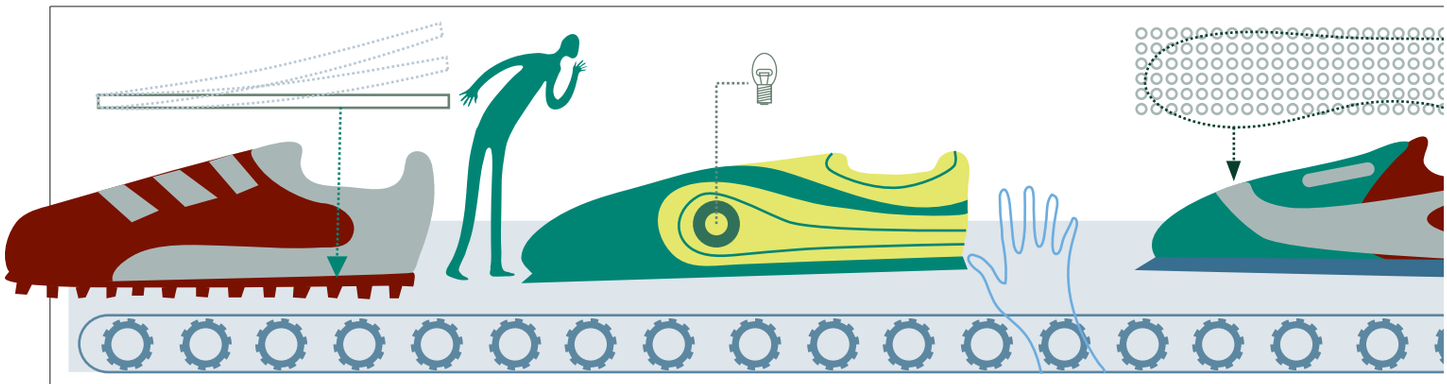


CUSTOMERS AS CO-DESIGNERS

CHRISTOPH BERGER AND **FRANK PILLER** EXPLAIN HOW SPORTS GOODS MANUFACTURER ADIDAS SALOMON MASTERED THE CHALLENGES OF MASS CUSTOMISATION

The international sports shoe industry is a fine example of innovative variant management. The five biggest brands – Nike, Adidas, Reebok, Asics and Puma – no longer do their own manufacturing, but rely on strong outsourcing, often to the same suppliers. Their core competencies are the recognition of market trends and the design and development of new products. Extensive market research activities, lean contract manufacturing systems, sound forecasting skills, and good supply chain management along with a strong brand management are seen as the preconditions for success. However, even the two market leaders Adidas Salomon and Nike are facing problems. New fashion labels are attacking their brand names, and consumers are demanding high-quality shoes for lower prices.

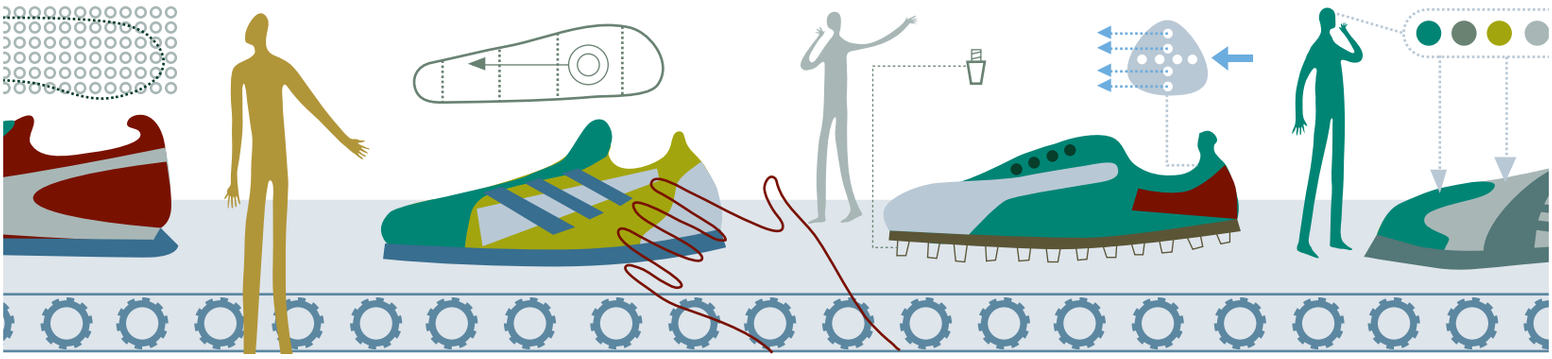
SUPPLY CHAIN COMPLEXITY

Adidas Salomon AG (Adidas), with its wide assortment of product lines, is challenged by an increasing individualisation of demand. There is a tendency towards an experience economy, a design orientation, and, most importantly, a new awareness of quality and functionality that demands durable and reliable products corresponding exactly to the needs of the buyer. Consumers with increasing purchasing power are increasingly attempting to express their personality by means of individual product choice.

As a result, Adidas was forced to create product programmes with an increasing number of variants. This development makes forecasting and planning for Adidas more difficult than ever. The result? High overstocks, an increasing fashion risk, an enormous supply chain complexity, and the necessity to provide often large discounts to get rid of unwanted products.

Adidas realised that implementing made-to-order manufacturing, instead of made-to-stock variant production, could become a promising option to manage the costs of variant explosion and broad product assortments. Adidas' management board decided to head towards mass customisation (MC).

The programme development started in the mid-1990s, resulting in the mass customisation product range mi Adidas. It was launched in test markets in 2001, and introduced, on a wider scale, in 2002. The programme provides consumers with the opportunity to create unique footwear to their exact personal specifications in terms of fit, function and design in specialised retail stores or at selected events. The shoes are offered in selected markets



world wide at a price that is about 30% above the price of an in-line (standard) product. All shoes are made-to-order at an Asian factory, and the delivery time is in the region of three weeks.

MC can be seen from the Adidasperspective as an approach to improve both its operational performance and its competitive position by providing higher customer value. From market research studies and customer surveys we know that consumers love the system, and even make appointments to buy shoes. Other benefits to Adidas are outlined in the box below. However, these benefits come at a cost, as MC also brings a number of challenges.

BUILD YOUR OWN SYSTEM

Selling an MC pair of shoes requires information and co-ordination about the customer specific product design. The customer and supplier need to be in direct communication to complete the two-stage process of product development.

Product architectures and range are fixed during a preliminary design stage linking overall company strategy to manufacturing capability. Here, the solution space of an MC system is set.

The second design and development stage takes place in close interaction between the customer and the supplier. Here, the capabilities of the solution space from the first stage are turned through adequate configuration tools into a specific customer order. This process is called the elicitation of a mass customisation system. The supplier has to interact with the customer to obtain specific information to define and translate the customers needs and desires into a concrete product specification. However, instead of just listening to the customer, in many cases customers are performing this design (configuration) activity by themselves on a tool supplied by the manufacturer. The selling process turns into a co-design process.

MC AND MASS PRODUCTION ARE NOT CONTRADICTORY THEY ARE COMPLEMENTARY

Integrating customers in the elicitation process requires a dramatic shift in our perspective of value creation. While users and customers have no part within the traditional value chain framework, in a mass customisation system consumers are getting ➔

BENEFITS OF MASS CUSTOMISATION

- Postponement/negative cash flow: Integrating the customer offers the opportunity to postpone some activities until an exact order is placed. The result: a negative cash flow. In mass production days, the company made the product and then the customer paid for it. In mass customisation (MC) days, the customer pays for the product first and then the company makes it. Also, made-to-order manufacturing instead of made-to-stock largely minimises the risk of forecasting, eliminates distribution stocks, and decreases the fashion risk.
- Increase in flexibility and scalability: Integrating customers early into product definition increases the flexibility of a company to react fast to changing market trends. Combined with postponement effects, firms can substitute traditional fashion cycles by a continuous flow of new products and models.
- Open Innovation: Instead of asking customers what they (may), want, through market research, customer integration can lead to open innovation – the integration of customers into the actively taking part in innovation activities. Co-design platforms allow consumers to create their own products by themselves, minimising the fashion risk.
- Innovation leadership: On a global scale, Adidas is still a mass producer. However, the mi Adidas programme serves as a main brand building tool for the whole brand. The MC initiative successfully supports the performance leadership Adidas has against its competitors and the flexible system and technologies used in the MC system serve as a 'learning factory' for the whole enterprise. New technologies are tested first in the innovative and open MC environment before being introduced company wide. In fact MC and mass production are not contradictory, but benefit each other.

INTERACTION SYSTEMS FOR MI ADIDAS: HOW DOES IT WORK?

Buying MC shoes is quite different from buying standard shoes. First, by means of a foot-scanning system, the customers' feet are scanned to determine the exact length, width and pressure distribution of each foot. Together with trained fitting experts the clients review the result of the scan. This information, combined with personal fit preferences, is entered into a computer to determine the best-fitting shoe.

Once customers have chosen personalised function and fit, they can test the shoes before heading into the final design phase. The customer then designs the colour elements and selects the preferred material. Customers can create an individual embroidered monogram on each pair of shoes.

All these steps are performed with the help of a configuration system, a PC-based sales kiosk leading the customer and the sales clerk through the whole customisation process. The system also visualises the results and connects the point of sale with the fulfilment systems

a new role – they are integrated into the process of value co-creation. Customer integration is defined as an economic process in which consumers take part in activities and processes that used to be seen as the domain of the company. Mi Adidas's customers are becoming – at least partly – co-designers of their personal pair of shoes.

COVER FOR INTERACTION COSTS

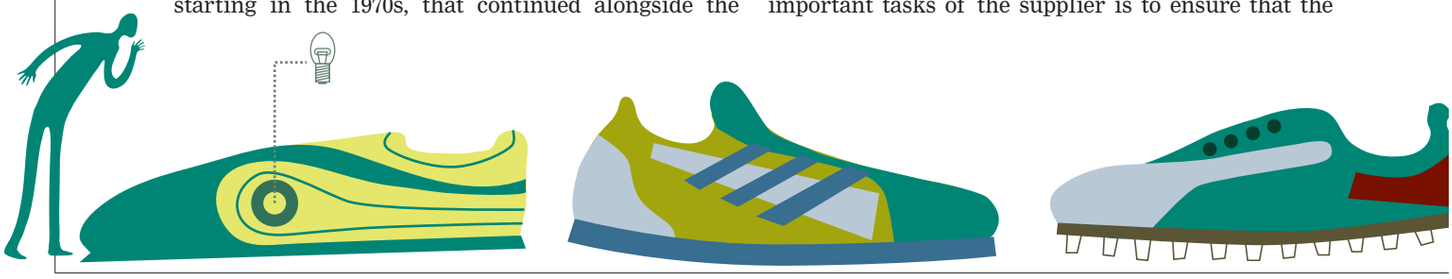
The elicitation stage has to be performed for every customer and every order, so sufficient information systems have to be available to cover the arising interaction costs of MC. In consumer markets this interaction often has to be carried out over the Internet. However, in the mi Adidas system a scanning process is involved, so a retail-based system is needed for the first pair of shoes. Re-orders can be placed easily via the Internet, saving money for the company, and time and effort for the consumer. One future option may be that customers using their shoes regularly for sports could even be able to subscribe to new pairs of their personalised shoes.

CUSTOMERS COULD EVEN BE ABLE TO SUBSCRIBE TO NEW SHOES AT REGULAR INTERVALS

Whether the elicitation stage is performed in a retail setting, or solely on the Internet, efficient information handling systems are the pin-points leveraging MC. While flexible manufacturing machinery has been accessible in many industries for several decades, systems that can handle the increasing intensity of information and interaction with consumers have only been available since the advent of the Internet. This discrepancy may also explain the time lag between the long discussion of MC starting in the 1970s, that continued alongside the availability of adequate manufacturing systems, and the late implementation of MC approaches in practice during the late 1990s.

Initially Adidas focused on getting a customised pair of shoes produced and delivered, but the perspective has now turned on communicating and interacting with the customer. The best and most advanced fulfilment system is worthless if it cannot express its added value to the customer. This is exactly the challenge that mi Adidas and other pioneering companies of MC are currently facing. While the following points may appear to be primarily marketing related, they are also linked closely with product development and supply-chain planning.

Many MC approaches implemented in practice are based on offering a tremendous amount of variety and choice. But there is still only very little understanding about the perception of choice and the joy or burden of co-design or configuration experienced by customers, who often have no clear knowledge of what solution might correspond to their needs. At times these needs are not even apparent to the customers. As a result, customers may experience uncertainty or even perplexity during the design process. Uneasiness could also be spawned by the behaviour of the supplier too. The newer and more complex the individualisation possibilities are, the more information gaps increase. A customer orders from the supplier and often pays in advance for a product she can only evaluate in a virtual form and has to wait days, or even weeks, to receive it. These uncertainties can attribute additional, and most likely hidden, transaction costs. One of the most important tasks of the supplier is to ensure that the



customer's expenditure is kept as low as possible, while the benefit/value perceived by the customers has to be clearly delineated.

For example, a shop large enough to display all variants of *Cmax.com* sport shoes (circa $3.5*10^{21}$), an Adidas competitor, would need 7000 planets the size of the Earth, each completely covered with a shop. But all this choice may lead to information overload, resulting from the limitations of human capacity to process information. So what is the optimal degree of variety and extent of customisation possibilities?

There is plenty of research and knowledge in the industry of developing a modular product architecture and product families with regard to manufacturing and inventory management issues. However, the perspective of the customer as a co-designer that has to be able to use this product architecture is, in most cases, not considered. There is also limited research on how to define the optimal extent of customisation.

STEPS TO CUSTOMISATION

Adidas followed a three-step method to set its customisation options:

- Fit: All customisable products are based on existing inline products setting the basic product architecture, which is defined in the case of footwear by a 'last'. The last is responsible for the fit of a shoe. Adidas decided that matching a customer's feet to an existing library of lasts, insoles and soles with a much higher granularity than in the current mass production system can offer sufficient fit options. This option is less complex to implement, both in manufacturing and sales, than a full customisation approach based on a customised last.
- Functionality Adidas decided to base its programme on the performance a sports shoe delivers, so being able to offer customisation with regard to functionality was important. For each shoe, a set of insoles, cushioning, and sole patterns was defined and matched to typical use situations.
- Aesthetic design options are rather limited as selecting between hundreds of colours was not regarded as beneficial for either the consumer or the company. From a brand management perspective Adidas' design department was not in favour of offering rather unusual colour definitions which may spoil the brand image (just think of a pink football boot). So consumers can decide between a few style options only. To increase the emotional value of the product, however, it is possible to 'sign' each shoe with a self-selected name, word or number.

A very important development process, when defining the product architecture, is the design of the interaction system. It has to go hand in hand with setting the customisation options and in many cases, both steps are performed separately. However, a configurator is the premier instrument to balance the possibilities and the burden of choice in MC. Setting the customisation options has to accompanied by intense tests of how these options are perceived in different configuration systems. Research has shown that the perceived quality of a product itself, and that of the entire shopping experience, are closely related. Adidas therefore strives for shelf space in high-level outlets for its inline products. In an MC system, the physical store is often dominated by the virtual environment (of either an Internet configuration system or the configuration kiosk in a retail-based system), so the individual product is the direct result of the process. A mass customiser is offering a solution capability, not a product. A felicitous and successful configuration process will therefore have an impact on both process and product satisfaction. Much attention is needed here to define a corresponding communication and marketing strategy when implementing MC.

Adidas performed intense trial-and-error processes to achieve a balanced system (see Panel). In the end, Adidas co-designed the interaction systems together with its customers by continuously learning and feedback.

Implementing mass customisation at Adidas showed that mass customisation carries crucial implications for the design of the whole value creating system. The design of product-service bundles are most effective if they fit the customers' use logic, while the design of a business strategy calls for a business logic adapted to new value constellations. Organisational structures, through which strategies are constructed and implemented, and the design of tools and competencies are essential to the performance of these activities.

CUSTOMERS OFTEN DO NOT KNOW WHAT SOLUTION MIGHT MEET THEIR NEEDS

Mastering the challenges of MC will become – and already is – a key source of competitive advantage for many companies. Installing the right processes and tools for customer interaction has to become one of the major capabilities and core competencies of the company. Doing so in the course of introducing MC systems may be a good opportunity to counterbalance the expenditures and implementation costs by offering more value for consumers through customised products and services.

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