

Claudio Vignali  
Demetris Vrontis  
Peri D. Vronti\*

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## MASS CUSTOMISATION AND THE CLOTHING INDUSTRY

*As we have entered the new millennium, we are experiencing record-breaking economic growth, rapid global expansion, and technological innovation. Mass customisation is penetrating within many industrial sectors ranking from products to services such as banking and clothing.*

*This case study analyses and discusses the changes that might occur in the implementation of mass customisation in the clothing industry. It describes what might be tomorrow's clothing habits and style of shopping in a new environment. Finally it analyses the impact of mass customisation within the clothing industry and the effect it has on market participants.*

*Keywords: Mass customisation, clothing, technology, design, marketing adaptation, globalisation.*

### Introduction

Mass customisation in the clothing industry is the new edge to competitive advantage in the 21<sup>st</sup> century. This approach is marketing orientated as it offers the exact product with the exact individual measurements to the increasingly demanding consumers.

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\* C. Vignali, PhD, Professor of Retail, Leeds Metropolitan University, UK; Visiting Professor Vorarlberg, Zagreb, Rome; D. Vrontis, PhD, Associate Professor of Marketing, Head of Marketing Department, Intercollege, Nicosia Cyprus; Visiting Professor of Marketing, Vorarlberg University of Applied Science, Austria; P. D. Vronti, Faculty of Food, Clothing and Hospitality Management, Department of Clothing Design and Technology, Manchester Metropolitan University, UK. Članak primljen u uredništvo: 11. 12. 2003.

In the past, consumers were catered as individuals. However, in our modern society, with the development of mass production and mass marketing, these values have been lost. A consumer can no longer enjoy that old feeling, of being individual and having the personal attention, by his/her tailor. While only the very privileged can afford to have, for example, a bespoke suit. With mass customisation one can enjoy again these values without any significance costs and eventually at no added costs.

Although mass customisation is a futuristic concept for the fashion industry, there are already some initiators companies, which have started customised fashion but have not combined all the existing components. This is due to very high price implementations of this new technological equipment.

These pioneer manufacturers have already introduced personal tailored-made clothes with the aid of three-dimensional body-scanners, interactive point-of-view (POS) terminals and telecommunication networks (i.e. Internet). All these components are linking the customer's decisions with the production line, wherever in the world it might be. This instantly brings together geographically far away consumers and manufacturers, consequently reducing dramatically time implementation for design, development and production.

Mass customisation is a new technology for consumers, as well as for manufacturers and retailers. All market participants will experience a new environment where the distribution process will alter, having on the top of its chain and priority the consumer.

### **Mass Customisation. A Conceptual Development**

Mass customisation is defined as the ability to prepare on a mass basis individually designed products and communications to meet each customer's requirements (Kotler 1997).

We are witnessing the dawn of a new age of customisation, an age in which new advanced technology, increased competition, and more assertive customers are leading firms towards customisation of their products and services. This is evident in many industrial sectors and it is consequently a current concern for the clothing industry.

It is no more a matter of only relaying on skilled labour and craftsmanship, in most industries. In modern societies, we are observing how technology and machinery is replacing the human hands.

In the case of mass customisation, certain software and hardware packages and equipment exists. Concentrating on the CAD/CAM (Computer Aided Design/

Computer, Aided Manufacture) system, 3D (3 Dimensional) body scanners transform the human body into graphic forms. They provide accurate information about the body, which can then be downloaded to the pattern adjustment process.

Customers are able to try over 300 prototypes and then fine-tune the measurements for a perfect fit. Measurement of waist and hips are taken and entered together with name and address into a touch-screen computer.

Mass customisation is seen as a new strategy for achieving competitive advantage. It is customer rather than production orientated and it is based on the idea of market adaptation to fit individual needs, wants and requirements both on a national and international level.

### **Current and Future Changes in Consumers Buying Behaviour**

The time has passed, when goods were produced by production orientated organisations with the hope that they will sell within a homogeneous market. Today, markets desegregated; therefore organisations are increasingly becoming customer orientated offering to customers customised and desired garments.

As a result of environmental and societal influences, consumers are constantly changing their behaviour and habits. We now observe heterogeneity in markets, something that makes it extremely difficult for companies to respond quickly and profitably.

Many believe that the future is headed to individualisation. Even some designers, talk about consumers who are no longer interested in brands. A German fashion designer - Wolfgang Joop - states that the trend goes towards individualisation. Nobody likes to stand back behind the fashion someone else has made. Garments are an artificial skin, simultaneously presenting and protecting. Everyone walks his daily catwalk (Vogue, 1997).

### **Evolutions in the Fashion World**

In the past, the clothing industry was largely based on a two-season cycle. These were summer and winter collections. As consumers became more fashion aware and conscious, plus disposable income rose, the clothing industry responded in adding two more season collections, spring and autumn. Nowadays increased collection ascended to six and eight collections a year. Even some companies have more; for example Calvin Klein has ten collections within a year (World Cloth-

ing Manufacturer, 1995). Therefore, CAD/CAM system enables this vast moving and demanding fashion world, to cope with the quick changes and demands in the market place.

It is important that companies considering mass customisation should place consumers at the top of the distribution chain finding out their needs and undertaking them at their exact specifications. This evolutionary idea does not only meet the demanding customers needs, but also time and accumulated stock is significantly reduced.

### **Mass Customisation and the Manufacturing Process in the Fashion Industry**

In the fashion industry, there are many cost and time consuming processes that take place, from which raw materials and initial ideas transform to end product. Generally they consist of the following steps:

- Identifying target market
- Designing
- Allocating jobs (i.e. especially if work is done overseas)
- Sourcing fabrics, trimmings etc
- Pattern making
- Toile making
- Adjustments
- Process and operation planning
- Laying of fabric and cutting
- Sewing garments, plus any accessories (i.e. buttons, zippers)
- Finishing - ironing
- Putting labels
- Packaging finished garments
- Distribution - shipping

However, the above process is eliminated by the use of mass customisation. Once the customer has selected the desired order, the design data is fed into the CAM process via local area network (LAN). Patterns and grading can take place immediately, digitally. Technical drawings and patterns are sent via telephone lines to either domestic plants or via satellite overseas, where garments are cut, sewed and distributed.

With software design packages, the process for clothing becomes digital. Asyst, Gerber Garment Technology (GGT) and Lectra Systems are companies that have developed such software packages. Designs are transferred to the pattern making process and after to numeric controlled (NC) cutting machines. These make processes shorter, faster and less labour intensive, as patterns and grading is automatically performed.

For Levi-Strauss all measurements are sent via modem to the Levi's factory in Belgium, where each personalised pair is cut out separately (single-ply cutting) and given a unique bar code. After completion the jeans will be retrieved from the production line, identified by their bar code and shipped within three weeks. The price premium is an extra £19 on jeans costing £46, and shoppers who are the prime targets for information on the new products, will be able to re-order garments using the bar-code label (Summers, 1996).

CAD systems provide more flexibility over designs than manual methods. However, it could be argued that in introducing such high technological software packages the artistic values of a designer are lost. Therefore, a software (Artworks), of GGT is used, which offers effects like paint strokes, sketching tools, charcoal/pencil/water colour or airbrush effects. By this designers can visualise faster their ideas, and present them for approval or manufacture in an artistic way.

As seen, through this high technology break-through, many changes can be achieved during processes, without difficulty or time consumption. All these making manufacture as flexible as it can be.

The biggest drawback is the huge amount of investment required for equipment and employee trainee. Therefore companies should consider long-term plan of introducing training through out their company, as this process comprise everything from retailing shops to the manufacture floor.

## **Mass Customisation and Market Participants**

The importance of mass customisation has a vital and direct affect upon market participants (consumer, manufacturers, retailers and wholesalers).

### **Consumers**

According to Annon (1997) 50% of females and 43% of males interviewed do not make a purchase due to insufficient fit. Consumers can get confused and even frustrated when sizes are inconsistent among various manufacturers. In addition,

increased globalisation adds different size systems through the various manufacturers, which furthers confusion.

Mass production forces people to search around, in order to find the closest fit possible. However, people come in a much bigger variety of shapes and sizes, than the standardised ones offered by the clothing industry. Therefore people that desire to have more control over the production, fit and design of their individual outfits are bound to pay at a premium price at bespoke ateliers.

Mass customisation will be the mean of bridging bespoke personal, unique garments (tailor-made and individually designed) with affordable prices found in mass production.

Through mass customisation our future shopping habits and buying behaviour are bound to change. It is not inconceivable that we will be able to sit at home, and view different styles in different fabrics on our own bodies, playing around with different alternatives until we find the outfit most appropriate to our requirements and then order it direct from the manufacturer (Tait 1995), where production will take place in matter of hours (Gerber 1995).

## **Manufacturers**

Manufacturers' size pattern systems are mostly based on average population sizes, which were collected a long time ago. It is evident that certain changes occur during generations, and through geographically separated countries, however the industry takes little or no notice of them for adjustments.

Mass customisation through the aid of body scanners can not only produce custom-made clothing, but also improve the fit of mass production garments. In addition, design deadlines can be met more easily, companies stay within budget, and designs can be tested and rapidly amended for customers wherever they are in the world (World Clothing Manufacturer, 1997).

CAD/CAM technology has acknowledged benefits for clothing manufacturers and the underlying message seems to be that it is essential for survival (World Clothing Manufacturer, 1997). Even the smallest companies should be investing in CAD (Tait, 1997). This including haute couturiers as well as downmarket chain stores, ranking from Chanel, Christian Dior, Givenchy, Calvin Klein, to NEXT, C&A, Mango and Top Shop. This is vital as mass customisation offers wealth in savings such as accuracy, reduced labour costs, and speed.

Mass customisation is a marketing oriented approach where payment from customers initialises the manufacturing process. This contradicts with the traditional production oriented approach where manufacturing was taking place prior from any direct contact with the customer.

## **Retailers**

Retailers such as Hugo Boss and Escada are currently adopting more integrated CAD/CAM systems. This enhances their international reputations for spearheading the global fashion business and facilitates faster response to global fashion trends especially where manufacturing is being undertaken overseas (Ward, 1997).

CAD/CAM and body scanners influence retailing in several different ways than those traditionally practised.

Stores have to change their marketing and selling operations as mass customisation is a powerful tool for building relationships and providing individual customer care.

Sales persons will no longer sell an existing product from the rail, but a product that will be exclusively produced for the customer by the aid of body scanners, CAD/CAM systems etc. Consequently, staff will need to be trained and educated and be prepared for the system, achieving knowledge upon the product, technology and materials.

Moreover, in terms of costs more investment will be required by retailers in both hardware and software components such as 3D scanners, printers and telecommunication link.

On the other hand mass customisation will dramatically decrease certain costs such as warehouse and shop spaces. It will no longer be required to have warehouses, as no garments will be stocked. Also, shop's sizes will decrease due to the fact that full ranges will no longer exist, and in a much more contained floor space greater sales will be achieved.

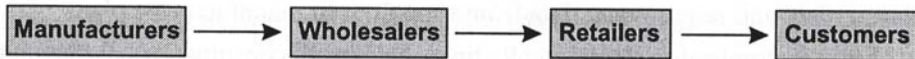
It is therefore evident that mass customisation incurs initial high costs, but in the long run investor's risk levels are minimised.

## **Wholesalers**

Finally, wholesalers will be the ones affected mostly by mass customisation in a negative manner. This is due to the narrowing down of the traditional distribution channels as seen in figure 1 making them unnecessary in the overall future distribution process as seen in figure 2.

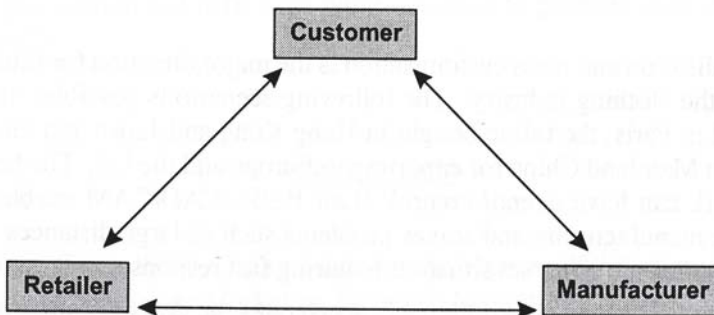
*Figure 1*

### THE CURRENT DISTRIBUTION PROCESS



*Figure 2*

### THE FUTURE DISTRIBUTION PROCESS



As seen above, there will be a significant change in the distribution process. It will be shortened as wholesalers in-between organisations are disappearing in garment manufacturing (Mattila, 1996). Customers will be placed at the beginning and they will be the ones to direct and require the products of their desire. Moreover, it is worth mentioning that in the future distribution process, market participants will have full interaction with each other.



## **Relationship Between Market Participants**

The relationship between retailers, manufacturers and consumers will have to change for the best benefit of the process and technology emerged.

Retailers must co-operate more closely with the manufacturers. To achieve this, connectivity is required (i.e. via telecommunication links) in order to send measurement and requirement data from shop floor to manufacturing plan.

Mass customisation electronically links retailer and consumer in a partnership so that the retailer can anticipate the consumer's demands and adjust production to best suit requirements (Russell 1997).

In the case of mass customisation, both the consumer and the retailer have to proceed a learning stage. Together they will be able to grow database knowledge about the customers' individual taste and measurements. Retailers will no longer target the mass consumers. They will collect consumers' names, addresses, identify buying behaviour and target them through personalised promotion and advertising campaigns.

## **Authors' Final Thoughts**

Globalisation and mass customisation is the major direction for future development in the clothing industry. The following scenario is possible: 'the design is designed in Paris, the fabric bought in Hong Kong and Japan and the garment produced in Mainland China for exporting to Europe and the US. The head office in New York can have overall control' (Lau 1995). CAD/CAM enables control of offshore manufacturing and solves problems such as large distances and long distribution times in a market situation requiring fast response.

In today's speeded up world, CAD accelerates the design process and in the majority of cases the system soon becomes an essential tool for the business and generally reduces sampling costs.

There will also be a tremendous drop of wasted time, of consumers shopping around and trying on, in fitting rooms. It is argued that this will be one of the major characteristics, that mass customisation will impose on our future shopping habits. This is very important in modern society, which almost everyone has a career to look after, rather than wasting long hours on shopping.

Lay planning programmes, offers savings in time and fabric because computers are fast thinkers. Given a set of pattern shapes and width of cloth, the computer can try thousands of different arrangements in seconds showing the best layout and allowing optimal usage of fabric.

CAD/CAM allows easy and quick alterations, reduces cost and false starters, minimises the expense of bad guesses and increases security against copying.

Moreover, best fit arising from the aid of body scanners will attract a lost market of people with irregular bodies, who cannot shop from standardised sizes and cannot afford bespoke ateliers.

Further CAD/CAM will change the traditional distribution process and it will alter the role and the interaction between market participants.

CAD/CAM is marketing oriented and looks at the individual's specific needs, wants and requirements. Consumers are placed at the beginning of the overall process rather than at the end as practised by production oriented organisations.

There are fundamental changes underlying clothing manufacture today and companies need CAD/CAM to maintain or improve their trading position. This is needed not only for internal efficiency, but to demonstrate professionalism, competence and commitment to potential customers.

It is essential even for the smallest companies to invest in systems like CAD/CAM. Companies will have to explore the value of new technology to remain competitive and survive within the competitive and aggressive fashion industry.

As Peter Littman chairman of Hugo Boss said:

“if you want to sail before the wind you need to generate your own breeze”  
(Ward 1997).

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## STRATEGIJA MASOVNOG PRILAGOĐAVANJA I INDUSTRIJA ODJEĆE

### Sažetak

Na samom ulasku u novo tisućljeće svjedoci smo rekordnog ekonomskog rasta, nagle globalne ekspanzije i tehnoloških inovacija. Strategija masovnog prilagođavanja (mass customisation) predstavlja prodor unutar većeg broja industrijskih sektora, od proizvoda do usluga (kao što su bankarstvo i industrija odjeće). U radu autori analiziraju i raspravljaju o promjenama koje bi se mogle dogoditi prilikom primjene strategije masovnog prilagođavanja u industriji odjeće, te opisuju moguće odjevne navike i stil kupovine u novom okruženju u budućnosti. Naposljetku, autori istražuju utjecaj strategije masovnog prilagođavanja u industriji odjeće i efekte koje ona ima na sudionike na tržištu.

Ključne riječi: strategija masovnog prilagođavanja, industrija odjeće, tehnologija, dizajn, prilagođavanje marketinga, globalizacija