

# Strategic Global Mass Customization: Supporting Generic And Global Strategies

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## ABSTRACT

*Production processes have moved beyond mass production to more customized approaches. Global mass customization moves beyond Woodward's models of production to create business models that allow customers to get what they want, although not quite when they want it. This paper explores Woodward's approaches to production processes, extends mass production to include global mass customization and discusses the process as it supports generic and global strategies.*

**Keywords:** mass customization; generic strategic; global strategies

## INTRODUCTION

International mass customization has become a more viable business process to support a firm's strategy. More intense rivalry and other competitive forces create pressures for the firm to re-examine profit margins, as well as to reach more customers by fully satisfying their needs. Mass customization on a global level helps satisfy these pressures, but also allows the firm to walk a line between the paradox of mass production and customization. In addition, mass customization allows the customer to experience the product differently. The customer is able to select order a customized product to meet specific needs.

Mass customization is defined as "Customer co-design process of products and services, which meet the needs of each individual customer with regard to certain product features" (Piller, 2004). The firm is able to attain mass production efficiencies and a customized product at the same time.

However, trying to implement both a differentiation strategy and a low-cost leadership strategy would ordinarily condemn a firm to be "stuck in the middle", a no-man's land that Porter (1998) described. Firms that have not selected one or the other strategy would not be able to achieve both a differentiation position and low-cost leadership position because the two strategies are antithetical to one another. A differentiated product would drive up costs beyond the point that a firm could achieve a low-cost leadership position. However, mass customization is able to offer customers exactly what they want without sacrificing a low-cost leadership position.

Mass customization allows a firm to customize a product to exacting standards set by the customer, while at the same time, taking advantage of mass production processes. Modular product design and manufacturing processes allow the firm to easily and quickly adapt the product. Mass customization combines elements of small batch jobs with mass production. Small batch or unit jobs are highly customized processes (Woodward, 1965), but are typically higher cost processes.

This paper examines mass customization in a global context and reviews Woodward's (1965) model and extends it. In addition, mass customization is also discussed as a way to support generic and global strategies. A case is also discussed.

## PRODUCTION PROCESSES

Woodward's (1965) study of production technology upon organizational structure delineates among distinct classifications: Unit or small batch production, large batch or mass production, and continuous process

production. Each of these types of technology was described with its particular impact upon the organization, and that organizational performance was contingent upon having the right type of organization to support the technical system. The right “fit” between technology and organization became a critical strategic direction for the firm.

Some important distinctions are made among the three categories in terms of the role of technology in the organization, as well as organizational processes performance. In unit production, workers create one-of-a-kind products and work in a more organic structure. Workers are tightly coupled with research and development and marketing. Woodward (1980) goes on to extend her work by describing an organizational structure that is tightly coupled among the functional areas of marketing, development, and production, and specifically prescribes interpersonal contact on a day-to-day basis to support the adaptability required of small batch and process firms.

In process production, however, the goal is to move the product through production as smoothly and as quickly as possible (Woodward, 1980). The structure is more mechanized, and the production process has more rules and boundaries to ensure that costs are contained. Moving through the production process quickly and smoothly allows the firm to keep costs down and to achieve efficient processes.

Later studies disproved some of the Aston group’s assertions about the relationship among manufacturing process, technology, and administrative functions. The effects of production technology upon the organization tend to be curvilinear (Woodward, 1965; Hickson, Pugh, and Pheysey, 1969; Child and Mansfield, 1970; Blau, Falbe, McKinley, and Tracy, 1976). In addition, the degree of technical complexity did not predict variations in organizational structure (Hickson, Pugh, and Pheysey, 1969). Today’s mass production firms are moving beyond mechanistic forms of organization toward organic models of control (Kalagnanam and Lindsay, 1998).

The effect of technology upon organizational size tends to be curvilinear, with mass production plants generally being larger than small batch plants (Blau, Falbe, McKinley, and Tracy, 1976). Also, the relationship between manufacturing process and the proportion of workers in direction production, as well as spans of control are also curvilinear. Specialization of training in workers is less frequent in mass production, but more frequent in small-batch production. In sum, advances in production technology have curvilinear relationships with various aspects of plant structure (Blau, Falbe, McKinley, and Tracy, 1976). The main limitation of this study is that it was done before computer technology automated many processes on the manufacturing floor and before globalization became a driver for sourcing labor and resources around the world.

Mass production is characterized by the pursuit of economies of scale and efficiency (Mintzberg, 1979) and became a supporting technology in the drive toward establishing economies of scale on a global level. As firms felt pressure to lower costs as globalization increased competition, mass production became the “go-to” technology.

However, firms also felt pressures to conform to local preferences, and the manufacturing technology to support creating differentiated products changed. Starbuck and Dutton (1973) point out that flexible technical system support small batch and process firms. In fact, product flexibility requires a flexible structure in which the machinery is module, flexible, and easy to set up for small batch jobs. However, Woodward’s work occurred during a time when globalization did not affect the management of manufacturing processes. Manufacturing processes were kept in-house by the firms, as were marketing and research and development. Tight integration among the functional areas was critical for firms, and so major functions were kept geographically centric. Although raw materials may have been sourced globally, all of the activities revolving around production were kept locally.

Today’s firms do not have the luxury of locating all activities in one geographic area. In fact, in modern international business theory, activities and resources are sourced globally to take advantage of location specific advantages. The global value chain allows the firm to analyze the cost and administrative advantages of not only sourcing raw materials globally, but also to place manufacturing in locations that offer low cost labor, and to take advantage of specific labor skills in other markets.

## **DRIVERS BEHIND MASS CUSTOMIZATION**

The move toward mass customization has become easier for firms, and for some firms, an imperative. Customizing a product and at the same time, achieving the benefits of mass production, create tensions within the

organization. At the same time, drivers from outside the firm also create tensions that move the firm toward mass customization.

**Customer satisfaction**

The opportunity to satisfy customers’ needs is the main driving force behind mass customization. The customer uses technology as a way to connect to the product, create the design, modify it, and manufacture it. It is a provocatively attractive idea to the customer, but results in more specialized niches that the firm must manage.

**Globalization**

Global free markets have opened up new sources of revenues for firms, but also have created more competition. As a result, firms experience more pressures to lower costs through economies of scale and economies of scope. However, differences in tastes and preferences also create pressures to differentiate products.

**Technology**

Advances in manufacturing and communication technologies have also created opportunities to meet customer’s preferences. Flexible manufacturing systems and modular product design allows the firm to change out portions of the assembly line and create a batch of just one product for the customer. Because of the flexibility in the process, the firm is still able to achieve attractive costs without pricing the customized product out of the range of the customer. In addition, communication technologies such as the Internet allow order processing, inventory control, and manufacturing to be tightly coupled, not just domestically, but on a global level. An order in one country is sent to a manufacturing facility in another country, allowing for seamless integration of each part of the value chain. Improvements in transportation technology also allow the customer to receive the product only days after the order is generated and manufactured on the other side of the globe.

**GENERIC STRATEGIES**

Michael Porter (1980) detailed the three generic strategies available to a firm: cost leadership, differentiation, and focus strategies. Firms must make a choice if the firm is to attain a competitive advantage vis-a-vis its rivals. Modern manufacturing systems and technologies support global mass customization, which in turn supports the strategic position the firm has chosen. However, a customer base with generic needs is a “fading scenario” (Tersine and Harvey, 1998), but at the same time, are customers ready for mass customization (Bardakci and Whitelock, 2005)? The key is to align business processes with customers’ needs using mass customization (Salvador, Martin de Holan, and Piller, 2009).

**Table 1: Integrating Mass Customization with Generic Strategies**

<b>Type of Generic Strategy</b>	<b>Integrating Mass Customization with Generic Strategies</b>
<b>Cost leadership</b>	Focus is upon economies of scale and of scope. Mass customization is implemented through modular design of product and manufacturing process. Product parts are standardized, while some components are available to be customized. Costs for mass customized products not much different than standardized products, so charged prices are not different.
<b>Differentiation</b>	Focus is on flexibility in the manufacturing process. Multiple opportunities are developed to offer a customized product. Personalization is offered, as well as choice in how product is used. Efforts are made to deepen the differentiation experience.
<b>Focus</b>	Customized products appeal to a segment of the market. Customers’ customizing decisions create a collective database that the firm can use for future marketing efforts (sticky information, Piller, et al, 2004). Previous designs are highlighted to draw the customer into the customization process.

Porter warns against the “stuck-in-the-middle” position in which a firm has not made a clear choice between a cost leadership or differentiation strategy. Tensions exist between the two strategies as the firm continues to struggle with cutting costs, but choices made to differentiate the product increase costs. As a result, the firm floats in a no man’s land, not able to achieve low costs, but also not being able to successfully differentiate the product. Mass customization allows the firm to navigate the tensions between these strategies successfully (Table 1).

Each of the generic strategies is a different approach to the market, and requires a balance. Although “reducing cost does not always involve a sacrifice in differentiation,” firms need to reduce costs to position themselves for above average returns (Porter, 1980). This does not mean that the firm is pursuing a cost leadership position, but rather, is managing the value chain to deliver value to its customers.

Technologies have changed tremendously in the 30 years since Porter first published his hypothesis on the “stuck-in-the-middle” strategy. Current technologies and processes allow the firm to achieve both positions simultaneously, creating products both efficiently and effectively. Mass customization is a viable option for most firms, although implementation clearly separates successful firms from not so successful firms. Several industry leaders have tried mass customization, such as Toyota, but have failed because of a failure to understand the implementation and customer service issues (Dencker, 2010). However, NIKE iD, Nike’s service that allows customers to customize clothing purchased from Nike, has evolved over the past decade to comprise 20 percent of store revenue. In that same period, Nike’s market share has grown from 48 percent to 61 percent.

#### **THE NEXT STEP: GLOBAL MASS CUSTOMIZATION**

If a firm’s choice of strategy is fraught with tension, so is the inevitable confrontation of global markets. Globalization, by its very nature, demands cost efficiencies as firms locate production and other activities in locations that offer the best opportunities for cutting costs. Firms are forced to globalize and compete as competition becomes more and more intense. Bartlett and Ghoshal (1991) point out the tension as they explore the tension between globalized firms and decentralized subsidiaries that respond to the needs of local environments. Firms adopt “...the global mentality, which sees the diversity of international environments as an inconvenience whose effects must be minimized.” But firms reluctantly modify their standardized approach to reflect a multinational mentality, “which sees conformity to local needs as the unavoidable price of admission to the market.”

The challenge to the organization is to be able to facilitate both globalization and conformity to local needs simultaneously (Bartlett and Ghoshal, 1991), just as the firm pursues lower costs and differentiation simultaneously. Transnational firms that pursue both globalization and localization strategies navigate another fine line between being able to reduce conformity, while at the same time, delivering customized results to its customers. A mass customization approach allows the firm to accomplish both.

Inserting the customer into the mass customization equation creates “economies of integration,” a mixture of cost saving potential (Piller, et al, 2004). Modular product design, flexible manufacturing, and information technology allow the firm to achieve global cost cutting, while at the same time, creating a product that conforms to consumers’ local preference. Economies of integration are formed by the delaying of product production until the customer has actually placed the order, thereby creating an opportunity for lower costs; creating “sticky information,” by which customers’ activities are aggregated to form more precise market information; and increasing switching costs for the customer through the customization experience (Piller, et al, 2004).

Global mass customization takes the economies of integration even farther, pushing for more economies of scale, yet both conforming to the pressures of globalization and localization. Customers are better served with a product at a good price, yet the product has been customized (Table 2).

**Table 2: Global Mass Customization Activities and Global Strategies**

<b>International Strategy Pressures</b>	<b>Global Mass Customization Activities</b>
<b>Globalization</b>	Modular product design and flexible manufacturing allow the firm to standardize much of the manufacturing process. Producing to order, rather than producing to available inventory, reduces costs by delaying production.
<b>Localization</b>	Sticky information is collected from customers' experience, creating opportunities for responding to local preferences and needs. Customization experience creates high switching costs for customer, because customer's needs are being precisely met.

### **CASE: NIKE iD**

Many firms have tried mass customization, but not many have done it successfully or consistently. One firm that has managed to turn the corner on the venture is Nike with its online and in-store program, NIKE iD. Customers are allowed to design shoes online or in the store, choosing among thousands of color combinations (Schlosser, 2004). Nike batches the custom orders and sends them from its headquarters in Beaverton, Oregon to one of more than a dozen plants around the world, depending upon the shoe model chosen. One worker takes the entire shoe from beginning to end in a lean manufacturing model, so there is no downtime to the manufacturing line.

Deepening the relationship with the customer is the main objective, although turning a profit is critical too. It is only within the last two years of the decade-long venture that the strategic program has become a major driver of revenues and market share (Dencker, 2010). Once the customer has established a relationship with Nike by customizing a pair of shoes, the customer is more likely to return.

Leveraging Nike's global value chain is critical to the firm's global mass customization program. Its factories around the world are critical to reducing labor costs, its information technology allows orders to be instantaneously transmitted to the right factory, and the ability to produce a customized product without stopping the manufacturing line completely turns Woodward's mass manufacturing and batch processing on end. Woodward's models of technology and organization are blurred and morphed into an integrated, global value chain that allows customers to get exactly what they want, but not when they want.

One of the biggest weaknesses in global mass customization is that the customer doesn't get the customized product immediately. In an age of instant gratification, having to wait three weeks for the shoes to arrive decouples the customer's experience from ordering the product to actually touching and wearing it. As firms become more familiar with the technologies, it may be possible to shorten the delivery time to days, rather than weeks. Also, as global mass customization evolves, customers are already able to customize the shoe with different materials that actually changes how the customer would use the shoe. For instance, the customer can choose from different sole materials to differentiate between trail running and road running.

### **DEVELOPING CORE COMPETENCIES IN GLOBAL MASS CUSTOMIZATION**

Firms search for ways to delight customers, and giving a customer a customized product without exorbitant prices is made possible through global mass customization (Kumar, 2004). Firms don't have to choose between a cost leadership or differentiation strategy, but are able to combine both using flexible manufacturing system and information technology to configure a global value chain that benefits both the firm and consumer. Developing a competence that creates a sustainable competitive advantage is the most difficult part of this process.

A firm's sustainable competitive advantage is based upon the intangible resources that are difficult for competitors to imitate (Barney, 1991). Learning how to develop global mass customization processes, but doing it profitably, seems to be difficult for many firms. Nike has started the process by looking at an opportunity to deepen the relationship with the customer through brand building. This is one of the most important intangible assets that a firm can develop. Integrating a customer's experience with its brand in a way that raises switching costs in the mind of the customer is a primary advantage of global mass customization. However, as more firms master global mass

customization, the competence will no longer be unique. Firms need to move along the experience curve quickly to establish market share in order to gain above average returns now.

Trimming manufacturing time and delivery time to the customer are key core competencies. Integrating physical and information flows with customers improve efficiency (Zerenler and Ozilhan, 2007), while flexibility and quick responsiveness are skills that the firm develops in order to effectively implement mass customization (Kotha, 1995). A more organic structure helps achieve these competencies.

## CONCLUSION

Technology has allowed the firm to move past Woodward's model of manufacturing processes, integrating her mass production and batch and custom processes into a seamless business model that gives customers exactly what they want. However, an important hurdle still needs to be overcome. The marketplace today demands offering a customized solution, but the customer also wants delivery of the product now, if not quickly. If the firm is able to configure the global value chain to place a customized product into the customer's hands within days, instead of weeks, global mass customization will have not only overcome an important hurdle, but will have exceeded the customer's expectations.

## AUTHOR INFORMATION

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