International Journal of Mechanical, Industrial and Aerospace Sciences
ISSN: 2517-9950
Vol:7, No:2, 2013

Mass Customization in Supply Chain Management Environment: A Review

Nirjhar Roy, V. R. Komma, and Jitendra Kumar

Abstract**—**In the supply chain management customer is the most significant component and mass customization is mostly related to customers because it is the capability of any industry or organization to deliver highly customized products and its services to the respective customers with flexibility and integration, providing such a variety of products that nearly everyone can find what they want. Today all over the world many companies and markets are facing varied situations that at one side customers are demanding that their orders should be completed as quickly as possible while on other hand it requires highly customized products and services. By applying mass customization some companies face unwanted cost and complexity. Now they are realizing that they should completely examine what kind of customization would be best suited for their companies. In this paper authors review some approaches and principles which show effect in *supply chain management* that can be adopted and used by companies for quickly meeting the customer orders at reduced cost, with minimum amount of inventory and maximum efficiency.

Keywords**—**Mass customization and supply chain management.

I. Introduction

MANUFACTURING and service firms have always adopted strategies that they consider to be vital to success. For example, when Henry Ford introduced the moving assembly line, product standardization was considered critical. This facilitated mass production, which in turn boosted productivity and led to reduced unit costs and better wages for workers. A major characteristic of the automotive industry then was vertical integration: all parts required for making cars were manufactured in-house. That period, sometimes referred to as the "product-out" phase for the automobile, was essentially a producer's market: demand was high, competition was low, and all items produced were sold [1].

Mass customization offers the opportunity to perceive and capture latent market niches and subsequently to develop technical capabilities to meet the diverse needs of target customers. Facing the buyers' market, many industries are now shifting from mass production to continuous improvement and to mass customization [2].

Nirjhar Roy is with the Mechanical Engineering Deptatrment, Motilal Nehru National Institute of Technology, Allahabad, India-21104 (phone: 91-0532-2271501; fax: 91-0532-2247811; e-mail: nroy_39@ rediffmail.com).

V. R. Comma, is with the Mechanical Engineering Deptatrment, Motilal Nehru National Institute of Technology, Allahabad, India-21104 (e-mail: kvrao@mnnit.ac.in).

Jitendra Kumar is with the Mechanical Engineering Deptatrment, Motilal Nehru National Institute of Technology, Allahabad, India-21104 (e-mail: jitendra2500@ rediffmail.com).

Author [2] clearly defined the differences between mass production, continuous improvement and mass customization:

The traditional mass production company is bureaucratic and hierarchical. Under close supervision, workers repeat narrowly defined, repetitious tasks. Result: low-cost, standard goods and services.

In continuous-improvement settings, empowered, cross-functional teams strive constantly to improve processes. Managers are coaches, cheering on communications and unceasing efforts to improve. Result: low-cost, high-quality, standard goods and services.

Mass customization calls for flexibility and quick responsiveness. In one ever changing environment, people, processes, units, and technology reconfigure to give customers exactly what they want. Managers coordinate independent, capable individuals, and an efficient linkage system is crucial. Result: low-cost, high-quality, customized goods and services.

Once homogenous markets have turned fragmented and heterogeneous, where customers may express their individual needs. Product life cycles and development cycles are constantly reduced. With the increasing flexibility in manufacturing systems and the high speed of information exchange, mass customization may satisfy the requirements of individual customers with near mass-production efficiency. Such a new manufacturing paradigm enables higher profit margins for designers and manufacturers, better and improved customer satisfaction, as well as high-value added business opportunities [3].

Mass customization is customizing product to individual customers and producing those with principles of mass production. The key issue is customer focus. This means constructing the products, organization, manufacturing systems and concepts in order to fulfill the needs of strategic customers [4].

Supply chain involves main processes starting from supplying material and ending with product delivery. The processes in supply chain are divided into two categories depending on whether they are executed in response to a customer order or in anticipation of customer orders. While Pull processes are initiated by customer order, push processes are initiated and performed in anticipation of customer order [5]. Based on this, different supply chain strategies are distinguished varying from mass production to mass customization. The forerunner of mass production is mass customization. Mass customization (MC) is *"the ability to provide the customers with anything they want profitably, any time they want it, anywhere they want it, any way they want it"* [6]. While a number of companies which apply mass-

production system cannot afford greater level of responsiveness to its customer, the committed companies to mass customization should be able to deal with unpredictable nature of its marketplace. Mass Customization into a standard that is independent of context and so is relevant to customizing enterprises in general. A pragmatic interpretation of Mass Customization that blends the two view- points is that Mass Customization is different from pure customization in that some compromise, limitations and constraints are inevitable if mass characteristics responsiveness, efficiency, high throughput with high quality are to be achieved and if premium prices are to be avoided [7].

The rapid progression toward a 'mass customization' business model, where products such as PCs, cars, and even airplanes are created, marketed, and sold not by forecasts of demand, but on a build-to-order basis has altered the traditional definition of the supply chain by adding the actual customer into the process. Some even claim that "mass customization will be as important to business in the twenty-first century as mass production was in the twentieth [8].

In this context, the mass customization of products implies the existence of a production infrastructure and process that can quickly change to produce customized products. This type of production infrastructure will be component based and may involve many business partners, such as suppliers and other companies that affect the delivery of products to customers.

This new paradigm requires a significantly greater degree of synchronization of the entire supply chain, including the entire inventory system. In particular, the order, reorder, replenishment inventory cycle under this model will be more frequent, involve smaller lot sizes, and require shorter delivery schedules.

Such a synchronized production process will necessitate greater cooperation among the participating members—from the manufacturer to the first and secondary suppliers. Truly successful members of such a manufacturing environment must have stronger alliances and be willing to significantly improve their inter-firm communications. In addition, this infrastructure should:

- Reduce time-to-market for product development, enhancement, and customization
- Directly tie order-entry and manufacturing planning systems to speed the availability of demand Requirements.
- Intelligently and selectively communicate with a manufacturer's strategic trading partners.
- Respond expediently to orders, changes in order configuration, and level of demand.
- Provide flexibility and reliability in a manufacturer's component supply.

To offer greater variety in a cost efficient way (also referred to as mass customization), various supply chain structures have been explored. Many of these structures involve either delaying the delivery of the products until after the customer orders arrive or delaying the differentiation of the products until later stages of the supply chain [9].

II. Mass Customization Concept

Mass customization (MC) can be defined either broadly or narrowly. The broad, visionary concept was coined by [10] and promotes MC as the ability to provide individually designed products and services to every customer through high process agility, flexibility and integration. MC systems may thus reach customers as in the mass market economy but treat them individually as in the pre-industrial economies.

Many authors propose similar but narrower, more practical concepts. They define MC as a system that uses information technology, flexible processes, and organizational structures to deliver a wide range of products and services that meet specific needs of individual customers, at a cost near that of mass- produced items [11]. In any case, MC is seen as a systemic idea involving all aspects of product sale, development, production, and delivery, full-circle from the customer option up to receiving the finished product [12].

The justification for the development of MC systems is based on three main ideas. First, new flexible manufacturing and information technologies enable production systems to deliver higher variety at lower cost. Second, there is an increasing demand for product variety and customization. Finally, the shortening of product life cycles and expanding industrial competition has led to the breakdown of many mass industries, increasing the need for production strategies focused on individual customers.

III. Supply Chain Management Landscape

Supply chain is a link of everything which is necessary to obtain a useful product for end users. SCM is a better integration, better coordination and better controlling of all types of flows such as flow of products, flow of information and flow of finance for satisfying the customers.

The author[13] described supply chain management as an an integrative approach to dealing with the planning and control of the materials flow from suppliers to end-users.

Author[14] defines that supply chain management is a network of firms interacting to deliver product or service to the end customer, linking flows from raw material supply to final delivery and it holds promise as a competitive form, provided that certain hazards are avoided, and that a competitive advantage results.

The author [15] described supply chain management as the chain linking each element of the manufacturing and supply process from raw materials through to the end user, encompassing several organizational boundaries. According to this broad definition, supply chain management encompasses the entire value chain and addresses materials and supply management from the extraction of raw materials to its end of useful life.

The author [16] described that supply chain management is a network of manufacturing and distribution sites that procure raw materials, transform them into intermediate and finished products, and distribute the finished products to customers.

The author [17] describe that supply chain management aims at building trust, exchanging information on market

needs, developing new products, and reducing the supplier base to a particular OEM (original equipment manufacturer) so as to release management resources for developing meaningful, long term relationship.

The author [18] describe that a supply chain is a network of facilities and distribution options that performs the functions of procurement of materials, transformation of these materials into intermediate and finished products, and the distribution of these finished products to customers.

The author [19] focuses that supply chain management is the total chain of exchange from original source of raw material, through the various firms involved in extracting and processing raw materials, manufacturing, assembling, distributing and retailing to ultimate end customers.

The author [20] further expands supply chain management to include recycling or re-use.

The author [21] described supply chain management as managing business activities and relationships (1) internally within an organization, (2) with immediate suppliers, (3) with first and second-tier suppliers and customers along the supply chain, and (4) with the entire supply chain.

The author [22] state that supply chain management is a network of entities that starts with the suppliers' supplier and ends with the customers' custom the production and delivery of goods and services.

The author [23] suggest that an effective supply chain has to be designed with respect to the product that is going to be supplied through the chain. Product can be either functional or innovative, depending primarily on its demand characteristics in terms of life cycle length, demand predictability, product variety, and market standards for lead times and service. Supply chain on the other hand can be either market-responsive or physically efficient depending on its design in terms of resource strategy, inventory strategy, and overall objective.

The author [24] explained that supply chain management focuses on how firms utilize their suppliers, processes, technology, and capability to enhance competitive advantage.

The author [25] narrated that the supply chain is the set of entities, including suppliers, logistics service providers, manufacturers, distributors, and resellers, through which materials, products and information flow.

The author [26] described that Supply chain management encompasses materials/supply management from the supply of basic raw materials to final product (and possible recycling and re-use). Supply chain management focuses on how firms utilise their suppliers' processes, technology and capability to enhance competitive advantage. It is a management philosophy that extends traditional intra-enterprise activities by bringing trading partners together with the common goal of optimisation and efficiency.

The author [27] defined that supply chain as a sequence of (decision making and execution) processes and (material, information and money) flows that aim to meet final customer requirements, that take place within and between different stages along a continuum, from production to final consumption. The Supply Chain not only includes the producer and its suppliers, but also, depending on the logistic flows, transporters, warehouses, retailers, and consumers themselves. In a broader sense, supply chains include also new product development, marketing, operations, distribution, finance and customer service.

The author [28] suggest three groups of SCM definitions: (i) Actor-oriented definitions focus on how to organize and manage the flow of materials from “point of origin” to “end user” as the point of departure, (ii) relation-oriented definitions focuses on the relationship between the actors in the supply chain, and how co-operation and mutual interest can lead to improvements, and (iii) process-oriented definitions focus on activities and processes in the supply chain and typically define SCM as “the integration of key business processes from end user to original suppliers that provide products & services information that add value to customers and other stakeholders.”

The author [29] described a advance definition of supply chain management which is called build-to-order supply chain management (BOSC) as “the value chain that manufactures quality products or services based on the requirements of an individual customer or a group of customers at competitive prices, within a short span of time by leveraging the core competencies of partnering firms or suppliers and information technologies such the Internet and WWW to integrate such a value chain.’’

The author [30] suggest that SCM is a purchasing philosophy devoted to discovering tools and techniques that increase operational effectiveness and efficiency throughout product and service delivery channels. It looks to align incentives across the supply chain, focusing on the end-users, desired product characteristics. Rather than merely purchasing goods or services from suppliers, SCM addresses the entire process of how products are designed and sourced to improve quality and reduce costs.

The author [31] defined that supply chain management is increasingly recognized as a strategic way to innovate a company’s entire business operation as well as its planning and execution.

The author [32] describe that the supply chain is a linked set of resources and processes that begins with the sourcing of raw materials and extends through to the delivery of end items to the final customer. While the separation of supply chain activities among different companies enables specialization and economies of scale, many important issues and problems need to be resolved for successful supply chain operations is the main purpose of supply chain management.

IV. Approaches to Customization

The author [33] identified four distinct approaches to customization, which called collaborative, adaptive, cosmetic, and transparent. While designing or redesigning a product, process, or business unit it should be examine each of the approaches for possible insights into how best to serve their customers. In some cases, single approach will dominate the design. More often, however, managers will discover that they need a combine of some or all of the four approaches to serve

their own particular set of customers. Let's summarize what characterizes the approaches and the conditions under which each should be employed.

V. Defining the Four Approaches

Collaborative customizers conduct a dialogue with individual customers to help them articulate their needs, to identify the precise offering that fulfills those needs, and to make customized products for them. The approach most often associated with the term mass customization, collaborative customization is appropriate for businesses whose customers can not easily articulate what they want and grow frustrated when forced to select from a plethora of options.

Paris Miki, a Japanese eyewear retailer that has the largest number of eyewear stores in the world, is the quintessential collaborative customizer. The company spent five years developing the Mikkissimes Design System (to be called the eye tailor in the United States), which eliminates the customer's need to review my myriad choices when selecting a pair of rimless glasses. The system first take a digital picture of each customer's face, analyses its attributes as well as a set of statements submitted by the customer about the kind of look he or she desires, recommends a distinctive lens size and shape, and displays the lenses on the digital image of the consumer's face. The consumer and optician next collaborate to adjust the shape and size of the lenses until both are pleased with the look. In the similar fashion, consumers select from a number of options for the nose bridge, hinges, and arms in order to complete the design. Then they receive a photo-quality picture of themselves with the proposed eyeglasses in the store in as little as an hour.

Adaptive customizers offer one standard, but customizable, product that is designed so that users can alter it themselves. The adaptive approach is appropriate for business whose customers want the product to perform in different ways on different occasions, and available technology makes it possible for them to customize the product easily on their own.

Consider the lighting systems made by Lutron Electronics Company of Coopersburg, Pennsylvania. Lutron,s customers can use its systems to maximize productivity at the office or to create appropriate moods at home without having to experiment with multiple switches each time they desire a new effect. Lutron's Grafik Eye System, for example, connects different lights in a room and allows the user to program different effects for, say, lively parties, romantic moments, or quiet evenings of reading. Rather than repeatedly having to adjust separate light switches until the right combination is found, the customer can quickly achieve the desired effect merely by punching in the programmed settings.

Cosmetic customizers present a standard product differently to different customers. The cosmetic approach is appropriate when customers use a product the same way and differ only in how they want it presented. Rather than being customized or customizable, the standard offering is packaged specially for each customer. For example, the product is displayed differently, its attributes and benefits are advertised in different ways, the customer's name is placed on each item, or promotional programs are designed and communicated differently. Although personalizing a product in this way is, frankly, cosmetic, it is still of real value to many customers.

Transparent customizers provide individual customers with unique goods or services without letting them know explicitly that those products and services have been customized for them. The transparent approach to customization is appropriate when customer's specific needs are predictable or can easily be deduced, and especially when customers do not want to state their needs repeatedly. Transparent customizers observe customer's behaviour without direct interaction and then inconspicuously customize their offerings within a standard package.

Considering Chem Station of Dayton, Ohio, Which mass customizes a product that most of its competitors treat as a commodity: industrial soap for such commercial uses as car washes and cleaning factory floors. After analyzing each customer's needs, Chem Station custom-formulates the right mixture of soap, which goes into a standard Chem Station tank on the customer's premises. Through constant monitoring of its 80-to-1000-gallon tanks, the company learns each customer's usage pattern and presciently delivers more soap before the customer has to ask. This practice eliminates the need for customers to spend time creating or reviewing orders. They do not know which soap formulation they have, how much is in inventory, or when the soap was delivered. They only know and care that the soap works and is always there when they need it.

VI. Combining Multiple Approaches

Each of the four customization approaches used alone challenges the mass production paradigm of offering standard goods or services to all customers. Many companies however combine two or more approaches. For example, Lutron, predominantly an adaptive customizer, nonetheless collaborates with customers to match the color of its products to their walls or to integrate its lighting controls with their security systems. Similarly, Planters, primarily a cosmetic customizer, periodically collaborates with retailers to change the mix of nuts they receive.

VII. Principals of Mass Customization

The key to mass-customizing effectively is postponing the task of differentiating a product for a specific customer until the latest possible point in the supply network. Instead of taking a piecemeal approach, companies must rethink and integrate the design of their products, the processes used to make and deliver those products, and the configuration of the entire supply network. By adopting such a comprehensive approach, companies can operate at maximum efficiency and quickly meet customer's orders with a minimum amount of inventory [34].

The author [34] also proposed three organizational-design principles together from form the basic building blocks of an effective mass-customization program:

1) A product should be designed so it consists of independent modules that can be assembled into different forms of the product easily and inexpensively.
2) Manufacturing process should be designed so that they, too, consist of independent modules that can be moved or rearranged easily to support different distribution-network designs.
3) The supply network – the positioning of inventory and location, number, and structure of manufacturing and distribution facilities – should be designed to provide two capabilities. First, it must be able to supply the basic product to the facilities performing the customization in a cost - effective manner. Second, it must have the flexibility and the responsiveness to take individual customer's orders and deliver the finished, customized goods quickly.

VIII. Modular Product Design

A product with a modular design provides a supply network with the flexibility that it requires customizing a product quickly and inexpensively. Such a design separates the composition of end products into parts or subassemblies, some of which are common to all product options, other of which are not. A modular product design has three benefits. First, a company can maximize the number of standard components it uses in all forms of the product, assemble those components for all product options in the earlier stages of the assembly process, and postpone the addition of the components that differentiate the product until the later stages of the process. Second, a company can make the modules of the product separately, in fact, it can manufacture different modules at the same time, which significantly shortens the total time required for production. Third, a company can more easily diagnose production problems and isolate potential quality problems.

HP has successfully implemented a standardization strategy for the Lasejet printer that it sells in Europe and North America. A partner in Japan makes the printer' core engine, which than is shipped by see to the two markets. Before HP and its partner designed the Laserjet for mass customization, the printer had a dedicated power supply of 110 volts and 220 volts, which forced the company to differentiate it by end-customer market as soon as production began in Japan. Under the improved design, a power supply that works in all countries is built into product. This universal power supply allows HP to ship products from one continent to another when a significant imbalance of supply and demand exists between the two regions. As a result of standardizing the Laserjet, HP was able to reduce the total costs of manufacturing, stocking, and delivering the finished product to the customer by 5% per year.

IX. Conclusion

The four approaches to customization provide a framework for companies to design customized products and supporting business processes. They demonstrate the need to mix the direct interaction of collaborative customization, the embedded capabilities of adaptive customization, the forthright acknowledgement of cosmetic customization, and the careful observation of transparent customization into one's economic offerings, customers do not value merchants who recite monolithic mantras on customer service, they value and buy goods and services that meet their particular set of needs. There is a time to conduct a dialogue with customers and a time to observe silently, a time to display uniqueness and a time to embed it. Business must design and build a peerless set of customization capabilities that meet the singular needs of individual customers.

References

[1] A. Harrison, "Just-in-Time Manufacturing in Perspective," Prentice Hall, New Jersey, 1992.
[2] B.J. Pine, "Mass Customization: The New Frontier in Business Competition," Harvard Business School Press, Boston, 1993.
[3] M.M. Tseng, and J. Jiao, "Design for mass customization," CIRP Annals, vol. 45, no.4, pp. 153–156, 1996.
[4] D.A. Anderson, and B. J. Pine II, "Agile Product Development for Mass Customization flow to Develop and Deliver Product for Mass Customization," Niche Markets, IT, Build-in-Order and Flexible Manufacturing, Irwin Professional Publishing, Chicago, IL, 1997.
[5] S. Chopra, and P. Meindl, "Supply Chain Management: Strategy, Planning and Operations," 1st edition, Publisher: Prentice Hall College, December 2000, ISBN: 01-3026-4652.
[6] M. Christopher, "Logistics and Supply Chain Management," Pitman Publishing, London, 1992.
[7] B.L. MacCarthy, P.G. Brabazon, and J. Bramham., "Key value attributes inmasscustomization,"In:Rautenstrauch,C.,SeelmannEggbert,R.,Turowski,K.(Eds.), Moving into Mass Customization: Information Systems and Management Principles. Springer, Berlin, pp.71- 89, 2000.
[8] J. H., Gilmore, & B. J., Pine II, "Markets of one: creating customer-unique value through mass customization," A Harvard business review book, 2000.
[9] J. C. P. Su, Y.L. Chang, and M. Ferguson, "Evaluation of postponement structures to accommodate mass customization," Journal of Operation Management, Vol. 23, pp. 305-318, 2005.
[10] S. Davis, "From future perfect: Mass customizing," Planning Review, vol. 17, no. 2, pp. 16-21, 1989.
[11] C. Hart, "Mass customization: Conceptual underpinnings, opportunities and limits," International Journal of Service Industry Management, vol. 6, no. 2, pp. 36-45, 1995.
[12] M. Kay, "Making mass customization happens: Lessons for implementation," Planning Review, vol. 21, no. 4, pp. 14-18, 1993.
[13] T.C. Jones, and D.W. Riley, "Using inventory for competitive advantage through supply chain management," International Journal of Physical Distribution and Materials Management vol. 15, no. 5, pp. 16-26, 1985.
[14] L.M. Ellram, "Supply chain management: the industrial organization perspective," International Journal of Physical Distribution and Logistics Management, vol. 21 no. 1, pp. 13-22, 1991.
[15] C. Scott, and R. Westbrook, "New strategic tools for supply chain management," International Journal of Physical Distribution and Logistics, vol. 21 no. 1, pp. 23-33, 1991.
[16] H.L. Lee, and C. Billington, "Managing supply chain inventory: pitfalls and opportunities," Sloan eManagement Review, vol. 33 no. 3, pp. 65-73, 1992.
[17] D. Berry, D.R. Towill, and N. Wadsley, "Supply chain management in the electronics product industry," International Journal of Physical Distribution & Logistics Management, vol. 24 no. 10, pp. 20-32, 1994.
[18] R. Ganeshan, and T.P. Harrison, "An introduction to supply chain management http://silmaril.psu.edu/misc/supply_chain_intro.html, 1995.
[19] M.J. Saunders, "Chains, pipelines, networks and value stream: the role, nature and value of such metaphors in forming perceptions of the task of purchasing and supply management," First Worldwide Research Symposium on Purchasing and Supply Chain Management, Tempe, Arizona, pp. 476-485. 1995.
[20] E.B. Baatz, "Best practices: the chain gang," CIO, vol. 8, no. 19, pp. 46-52, 1995.

[21] C.M. Harland, "Supply chain management: relationships, chains and networks," British Academy of Management, vol. 7 (Special Issue), pp. S63-S80, 1996.
[22] H.L. Lee, and S.M. Ng, "Introduction to the special issue on global supply chain management," Production and Operations Management, vol. 6, no. 3, pp. 191-192, 1997.
[23] M.L. Fisher, "What is the right supply chain for your product?" Harvard Business Review, vol. 75, no. 2, pp. 105-116, 1997.
[24] G.A. Farley, "Discovering supply chain management: a roundtable discussion," APICS - The Performance Advantage, vol. 7, no. 1, pp. 38-39, 1997.
[25] L.R. Kopczak, "Logistics partnership and supply chain restructuring: survey results from the US computer industry," Production and Operations Management, vol. 6, no. 3, pp. 226-247, 1997.
[26] K.C. Tan, R.B. Handfield, and D.R. Krause, "Enhancing firm's performance through quality and supply base management: an empirical study," International Journal of Production Research, vol. 36, no. 10, pp. 2813-2837, 1998.
[27] M. Barratt, & A. O. liveira, "Exploring the experiences of collaborative planning initiatives," International Journal of Physical Distribution & Logistics Management, vol. 31, no. 4, pp. 266-289, 2001.
[28] G. Persson, "Supply chain management, a multi disciplinary study of integrated supply chain," Research report No. 9/2002, Norwegian School of Management BI, Oslo, 2002.
[29] A. Gunasekaran, and E.W.T. Ngai, "Build-to-order supply chain management: a literature review and frame work for development," Journal of Operation Management, vol. 23, pp. 423-451, 2005.
[30] E.W. Ford, and J.A. Hughes, "A collaborative product commerce approach to value-based health plan purchasing," Supply Chain Management: An International Journal, vol. 12, no. 1, pp. 32-41, 2007.
[31] H.M. Yang, B.S. Choi, H.F. Park, M.S. Suh, and B. Chae, "Supply chain management six sigma: a management innovation methodology at the Samsung Group," Supply Chain Management: An International Journal, vol. 12, no. 2, pp. 88-95, 2007.
[32] P. Trkman, M.I. Stemberger, F. Faklic, and A. Groznik, "Process approach to supply chain integration," Supply Chain Management: An International Journal, vol. 12, no. 2, pp. 116-128, 2007.
[33] B. J. Pine II, B. Victor, and A. C. Boynton, "Making Mass Customization Work," Harvard Business Review, Vol. 71, no. 5, pp. 108-111, 1993.
[34] E. Feitzinger, and H. Lee, "Mass customization at Hewlett- Packard: The power of postponement," Harvard Business Review, vol. 75, no. 1, pp. 116-121, 1997.