Research on Mass Customization Strategy in Higher Education

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Abstract: Mass customization is proved valuable in manufacturing area. In the perspective of strategic management, mass customization is a differentiation strategy and it also can be used in service area. This paper concentrates on the possible applications of mass customization in the filed of higher education. To pursue mass customization in campus, essential infrastructures such as the Internet, Intranet, Extranet, and Portal are to be deployed.

Keywords: Mass customization, E-commerce, Higher Education, Information infrastructure

1 Introduction

Mass customization comes from the idea “build to order”. By contrast with the concept “build to forecast”, mass customization indicates that the organization begin to produce by receiving the exact orders from customers. This approach overcomes the drawback that the outputs of production cannot match the unique demands of different customers. The core of mass customization is customer involvement. Customers are integrated into value creation process by designing, configuring, or modifying an individual solution. With the deep involvement of customers, the producer would be able to adequately fulfil each customer’s demand. In a broad view, mass customization is not only valuable for manufacturing organizations, but also a good strategy for service organizations. This paper concentrates on the mass customization strategy in the area of higher education, as well as the structure of information infrastructures to deploy in campus to pursue the benefit of mass customization.

2 Concept of Mass Customization

To meet the requirement of personalization, companies begin to apply the concept of mass customization to their business. Mass customisation is the ability to treat every customer as unique and provide all of the value added services they have come to expect. In the opinion of Turban et al (2002. p.19), mass customization means a company produces items in large quantity but adapts each item to fit the desires of each customer. In short, mass customization is a kind of business strategy, which enables customers joining the design of the product or service to meet their personal requirements. In the perspective of manufacturers, they produce standard items in large scale, and assemble different items according to customers.

The whole process is shown in Figure 1. Unlike mass production strategy, the process of mass customization begins from customers and ends in manufacturers. A company does not assemble standard components to form the final product until receiving orders. Therefore, mass customization enables companies reducing inventory cost, as well as achieving the benefits of market-orientation.
Figure 1: Mass Production Mode vs. Mass Customization Mode

3 Relationship to E-Commerce

According to Laudon K. C. and Laudon J. P. (2002, p.24), E-commerce is the process of buying and selling goods and services electronically with computerized business transaction using the Internet, and other digital technologies. However, in a broader view, besides selling and buying, E-commerce also includes customer service, business collaboration, and electronic transaction within organization. Although mass customization can be looked as an independent concept, E-commerce is the enabler to make it possible in the real world. In the view of Sophie Lee et al (2000), E-commerce is the perfect partner of mass customization. There are several reasons. First, E-commerce allows users to share information by electronic means with relatively low price. Second, Web technology enables users to browse, select, and design products on the Internet. Third, orders can be delivered timely, through Electronic Data Interchange (EDI) systems or E-mail. Forth, E-commerce provides on-line payment systems. Fifth, manufacturers can realize Just-in-time (JIT) inventory. Sixth, groupware and other applications can flexibly coordinate team works. Without these capabilities, mass customization cannot achieve the efficiency and timeliness.

4 Mass Customization in Higher Education

Applying mass customization strategy, some companies have achieved significant success. Levi’s enables customers to design their own jeans and then, assembles personal combinations by working with pre-manufactured components. By doing this, Levi’s increase profits because of low inventory costs. On the other hand, customers feel satisfactory because the jeans fit perfectly. In the same way as Levi’s producing jeans according to the specifications of customers, higher education could be customised according to each student’s needs.
4.1 Mass customization strategy in Charles Sturt University
Charles Sturt University (CSU) is an Australian university, which considers that e-Environment is a critical factor to achieving the flexible learning strategy (Flexible Learning CSU, 2003), which is defined as ability for staffs and students to increase their current ways of matching instructional strategies, delivery systems and materials to learner characteristics and course content (Turner, 1996). Nowadays, both on campus students and distance education students have taken up online access. Through CSU’s Web sites, students fulfill their administrative purpose by eBox and my.csu, as well as behaving academic function, such as joining variety of forums for learning purpose (Flexible Learning CSU, 2003).

In order to improve the e-Environment and provide better experience for staff and students, there are several ways could be discussed to apply mass customisation strategy.

First, CSU is suggested to design courses according to students’ specifications. Since each student has their own preference, CSU could think about authorizing students to design their course, rather than addressing the generic need of students. For example, in MBA course, CSU supplies three directions, namely international relationship, international management and information technology (Postgraduate prospectus, 2003, p.35). However, some students may have other concerns, such as medicine and food science. It is possible to increase the freedom of students to decide their courses.

Second, CSU are supposed to deliver courses through a variety of modes. Courses can be delivered by means of print content, video content, Web content, and mobile content. Therefore, students can choose the most efficiency modes to perform study process, in the means of paper, computers or mobile devices.

In the online strategy of CSU, the e-Environment is required to increase the range of learning modes available to students (An Online Strategy for CSU revised, 2003, p.4).

Third, CSU are expected to enable customer-comfortable study environment. Matti Hämäläinen (1999) divides learning environment into corporate training, home-based learning and formal learning. With the maturing of e-Environment, CSU is able to supply course in each category. As described in An Online Strategy for CSU Revisited (2003, p.4), the e-Environment should enable greater numbers and types of communication between students, teachers and the University. In the industry age, students went to the class room. In the information age, the class room comes to the student.

One character of mass customization is economy of scale. The Internet and Web presence enables a university promotes its programs and services in a global market. Since universities can contact larger pool of potential students, it is more possible to achieve the advantage of ‘mass’ (economies of scale). CSU is in the process to build an advanced e-Environment and therefore realize its flexible learning strategy. Since basic infrastructures for E-learning are quite good, CSU is able to attract more students, as well as satisfy them in a higher level, by pursuing the idea of mass customization.

4.2 Information infrastructures to meet mass customization strategy
In order to build up e-Environment, information infrastructures are required to deploy in campus. Since E-commerce is the perfect partner of mass customization, the underlying information infrastructures are based on the E-commerce environment. There are two main categories, public facility and organizational infrastructure. Public facility is the pre-requirement of E-commerce, including network infrastructure (Internet, telecom, and cable TV), Web publishing infrastructure (World Wide Web, Java, and HTML), and information distribution infrastructure (EDI, E-mail, and HTTP) (Turban et al, 2002, p.169).

Organizational infrastructure is a comprehensive internal information system to support the whole business process. Specially, to fulfill mass customization strategy, universities need build up a system that is able to characterize staff and students’ needs and subsequently fulfill these needs by configuring standard components. Jianxin Jiao and Mitchell Tseng (1999) call this system Product Family Architecture (PFA). It includes requirements of customer needs, information of standard components, configuration structures and rules, and economic evaluation.
Applying this idea to higher education, PFA means a platform collecting all subjects (standard components), and based on certain rules, which enables universities to configure a new program (product) according to students’ requirements. To support the PFA and the whole mass production process, the basic infrastructures are considered as the Internet, Intranet, Extranet, and Portal. The structure is shown in Figure 2.

![Figure 2: Structure of Information Infrastructures for Mass Customization in Higher Education](image)

Intranet is the network to handle the internal information need of a university. By connecting to the Internet, Intranet enables universities to conduct E-learning. Mass customization is heavily depended on Intranet because of its communication and collaboration capabilities. To make a proper configuration, PFA needs information from each department (see Figure 2), such as student administration (students’ requirements), academic departments (standard subjects), and accounting (economic evaluation). Therefore, Intranet is the critical infrastructure to support the configuration, as well as the collaborating work among departments.

Portal is like a gate of an organization. Turban et al (2002, p.132) define it as a personalized platform that allows users access the information inside or outside organization. It is an essential infrastructure for mass customization because customers can realize self-design by Portal. For example, CSU offers a platform named my.csu (www.my.csu.edu.au) and through it, students are able to select subjects online, as well as performing online payment, sending E-mail, discussing in forums, and so on.

**Conclusion**

E-commerce has significantly changed our life, which enables organizations to serve customers easier and better. In universities, students are able to study more effective in the e-Environment. Through Intranet students and staffs are able to deal with both administrative affairs and academic issues more efficiently. With the trend of customer-orientation, the strategy of mass customization is already used in some manufacture companies. By analysing CSU, it considers that mass customization also can be used in the higher education, such as flexible course design, multi study modes choose, and various study environments support. To pursue mass customization in campus, underlying infrastructures are the Internet, Intranet, Extranet, and Portal.
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