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Effectiveness of Internet-based Customization Systems: Impacts on Business Value Creation

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Abstract

The phenomenon of user develop new products to serve their own needs is now rapidly growing due to the advances of information technology. Some people call it 'Democratizing Innovation'. It means that individual consumers are being able to innovate for themselves. Thanks to the continue advances in computer and communications technologies, the contributions of users are growing rapidly. The powerful ICT technologies also lead to a cost efficient custom product design. Mass customization becomes an increasingly viable model for a broad range of different industries. This has resulted in more companies are battling for providing what customer need/want, Dell Computer a famous example is successfully leveraging internet as a tool to implement the mass customization. Logically, the concepts of customization and mass product have been mutually exclusive. Mass production provided low cost but at the expense of uniformity. Customization means product designed and manufactured based on individual customer's needs. A new emerged concept is now being known by consumer - mass customization which combine the advantages of both mass production and customization. To-day, new interactive technologies, like the Internet, allow customers to interact with a company and specify their unique requirements using a internet toolkit, we call it as Internet-based customization systems（ICMs. ICMs allow customers to specify their requirements by selecting and configuring products on the Internet, which in turn is produced by the manufacturer. It enables enterprises to meet with customers' individual requirements and bring out innovative and profitable products to the market more effectively and quickly. In this study, we will analyzes a new method of integrating user into new product development process by using a ICMs, and try to evaluate how this novel system can contribute to value creation of firms. We aim to specify how enterprises benefit from adopting of ICM has an extremely advantage in value creation. Also we try to understand in what level of price premium that customer willingness to pay by placing an order through Internet-based customization systems. This paper will contributes to electronic commerce literature by examining the impacts of Internet-based customization systems on firm's value creation and give suggestions about how to specify a pricing strategy for customized products. We will not only estimate the impact of ICMs on consumers' willingness to buy and willingness to pay a price premium, but also the degree of problem solving for customers. As a result, we hope this study can contribute to enterprises which attempt to provide the ICMs on web but not sure whether ICMs can do. Ultimately, this paper will propose an optimum pricing strategy for firms' references in conducting mass customization strategy.

Keywords: Internet-base customization systems; Internet pricing strategy; Mass customization

1. Introduction

The phenomenon of user develop new products to serve their own needs is now rapidly growing due to the advances of ICT technologies. Some people call it 'Democratizing Innovation'. It means that individual consumers are being able to innovate for themselves. It is well-known that investment and use of ICT technologies boost the overall productivity of the society. The powerful ICT technologies also lead to a cost efficient custom product design. Mass customization becomes an increasingly viable model for a broad range of different industries. This has resulted in more companies are battling for providing what customer need/want, Dell Computer a famous example is successfully leveraging internet as a tool to implement the mass customization.

In order to achieve mass production and stay competitive, the ability to innovate and create the applications of value for the humans will become more and more focus (Eriksson et al., 2005).

In this study, we will proposed a systemic innovation approach, a Internet-based Customization System (ICSs) – a mean to bring the users/consumers/citizens into the innovation process, thereby leveraging on a larger mass of ideas, knowledge and experiences and substantially boosting the innovation capability.

2. Literature Review

In this section, we first review research on Internet-based Customization System. Next, we describe how inno-

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vation by users and within user innovation communities can change in underlying product designs and production technologies.

2.1 Innovation by Users

Customer integration into value creating activities has become widely appreciated by companies in many different branches of industry. User innovation is a concept that integrates consumers in early value chain stages of product innovation and development (Piller et al., 2004). Enterprises in all industries are being forced to react to increasingly heterogeneous demand and to find ways for a closer reaction to customers' need. The idea of integrating users in the design and production process is a promising strategy for companies being forced to react to the growing individualization of demand (Franke et al., 2002). Users rather than suppliers are the actual designers of the application-specific portion of a product (Von Hippel 1998). Offering communities of users the possibility to interact and collaborate with company in order to co-create new product to be a successful development strategy for company.

2.2 Mass Customization

Mass customization refers to a customer co-design process of products and services which meet the needs of each individual customer with regard to certain product features. The concept of mass customization is that goods and services are to meet individual customer needs produced with near mass production efficiency (Tseng et al., 2001). Mass customization starts with understanding customers' individual requirements (Fulkerson 1997). Effective definition of customer requirements is a prerequisite for realizing mass customization. Companies must initiate a dialogue with individual customers to help them articulate their needs (Proops 1996). A number of techniques have been used to facilitate customer input into the design phase of product development. These include surveys, focus groups, and customer interviews. But these techniques do not capture the complete picture of customer preferences (Brown, Hitchcock, and Willard 1994).

In recent days, the concept of mass customization is well known throughout numerous industries. Prominent success stories were featured by well known brands such as Dell, and Land's End. Mass customization empowers customers to become co-creators and design their own, individual products or services. Managing mass customization thus includes to manage the internal change in an existing organization that is moving from a closed production system towards a system of mass customization. Shifting the locus of value creation towards customers requires no less than a radical change in the management mind-set.

Mass customization demands that customers are regarded not as "enemies" or disruptive factors of steady business processes. As a basic condition to enable mass customization, firms have to cope on the level of the normative management with the challenge to change old, often negative perceptions of the customers in an organization appropriately. The basic idea of mass customization has to be implemented deeply into the cultural mindset of the organization.

In summary, mass customization will be most successful in instances where customers are able to recognize the value associated with a customized attribute of a product or service. Only in this way will they be prepared to sacrifice either the time and/or money. For customized products. Products must be evaluated for suitability based on complexity, with the least complex being the most attractive targets.

2.3 Internet-based Customization System (Value Creation)

Normally, the term Mass Customization is connected with new manufacturing technologies, such as CIM, flexible manufacturing systems, in order to reduce the trade-off between productivity and variety (Franke et al., 2002). In addition to define and translate the customer needs and desires into a concrete product or service specification, the mass customization is an interacting mechanism for company to obtaining specific customer requirements. Thanks to the internet with its multimedia richness, interactivity, global accessibility and low cost communication and information processing offers new promising ways to interact with a large number of formerly anonymous consumers. Therefore, the company can easily to integrate customer into the value creation process of the company, the result is a co-design system for the purpose of attaining added value (Milgrom and Roberts 1990; Normann and Ramirez 1994).

Even if consumers know what they want, they are often not capable to express their ideas and requirements of a customized product in a way that their input can be utilized by the producer. What is missing is an approach that enables customers to contribute to product specification procedures in an easy and fast way. The internet-based customization system would be an excellent approach which is suggested by von Hippel (Von Hippel, 2004) who indicated that an effective ICS must provide the following characteristics:

- User-friendly operation: the system must provide offer easy-to-understand, intuitive menu-driven along with friendly interface for user to operate.
- Libraries: This allows users to create idea in an effectively way, therefore, by using the ready-made designs, user can easily added any new element on basic design.
- Trial and Error functionality: providing user some test runs functions let them evaluate the design result.
- Solution space: a predefined solution space

which allow user to ensure the program is executable.

A well-design ICSs can increase motivation and positively stimulate the customers to make the effort. In next section, we illustrate 3 notable ICSs.

3. Case Study

3.1 NikeID

The NikeiD is a cutting edge marketing tactic to draw attention to the Nike. It's a space allow masses to buy self-customized sneakers of their own. There, customers can build footwear starting from a blank shell, adding colors and patterns and logos according to their specifications, as long as printing a personalized iD on shoes. Products change in real time with each design decision a user makes. Another tool, the Fit Consultant, extends NIKEiD's commitment to personalization by recommending shoe sizes based on user input. The Nike iD is a project to make good on the promise of mass customization, which is transforming industrial production into a made-to-order tailoring process. The site is being built largely on visitor feedback - a clear reflection of NIKEiD's responsiveness to the needs of its customers.

Figure 1. Web page of NikeID
(source: http://nikeid.nike.com/nikeid)

3.2 BMW

In order to take advantage of mass customization such industries have to undergo fundamental change. BMW is working on it - developing the car which utilizes painted body panels, eliminating the need for batch painted bodies, and achieving much greater operating flexibility. Since the 1990s, the BMW has gained recognition for its customization program, which allowed customers to design their own cars from a set of available options. The cars were then delivered within 2 weeks of the order being placed.

BMW also offer an ICS which name Mini Roof Designer, a very well done playful online design toolkit that allow customers to generate their own roof design. The configurator is full of nice gimmicks providing a great experience, therefore helping customers to come up with a better design. This system only helps a better exterior design rather then functional design.

Figure 2. Web page of Mini Roof Designer
(Source: http://www.mini.com)

3.3 Harley-Davidson

The Harley Davidson provides vast options for customers to create a unique motorcycle. Users can choice from hand controls to wheels, from seats to exhaust. The nice thing about this system is the simple interface, ease to use with no rules, no right way or wrong way to customize. It's an individual process; a way to stand apart from the crowd.

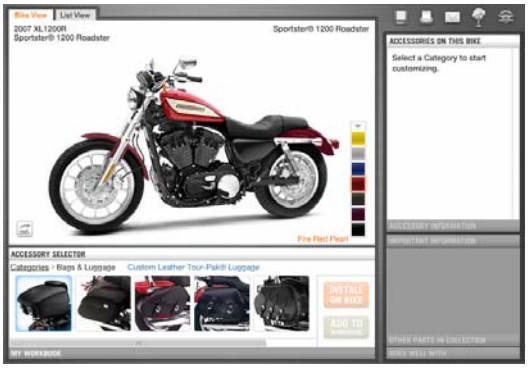

Figure 3. Web page of *Harley-Davidson*

(Source: http://www.harley-davidson.com/)

4. Method

In order to gain a deeper understanding of value creation in ICSs, we will conduct a web page analysis into the sources of value creation.

4.1 Research object: a BikeDesign System

We decided to focus on a single, relatively simple system that allow design and innovation processes. Compared to the prior research design of investigating the interactions with multiple systems, our approach has the advantage of providing the deeper insight. An apples-and-oranges risk

might happen while adopting a multiple-case approach.

This system we chose is under construction. The system is relatively simple. The user design activities which user engage with allow user immediately look at a simulation that incorporates each design decision made. The system also allows for trial-and-error with a suggestion function. It should offer a wide variety of design possibilities: selecting and combining pre-defined options of a bike.

Users start on choosing one of the basic bike categories. They can choose the sequence of selecting options freely. It is always possible to go back one or more steps or to begin the design process over by returning to the stage 1.

4.2 Measuring Willingness to Buy/Pay

In order to estimate the impact of ICS on business value creation, we'll examine 2 variables - willingness to buy (WTB) and willingness to pay (WTP). We assume that higher WTB and WTP will lead to a higher value creation follow by prior studies (Wertenbroich and Skiera 2001; Mitchell and Carson 1989; Franke and Piller 2004).

Figure 4 is our research model which aim to evaluate the effect of ICSs on business value creation. We expect that the company conduct the ICSs will lead to a higher business value.

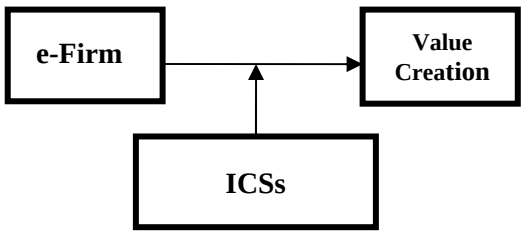

Figure 4. Research Model

5. Status and Future Work

We are in the process of design and implementing an Internet-based customization system and expect completion of an initial version by the end of the year 2008. The system facilitates the enterprises to bring out innovative and profitable products to the market quickly. The current systems for product customization allow customers to specify their requirements by selecting and configuring products. This paper proposes an internet-based customization system for Bike Market. We expect the system enables enterprises to meet with customers' individual requirements more effectively by providing more customization approaches and provide valuable insight into the limitations and possible extensions of the mass customization. Through system to integrate customers' unique requirement, we assume this can optimize company's product development processes and supply chains according to customers' requirements in a systematic way. Although, the system structure and function model are not presented in this paper which is the next important task for this study. We do hope this kind of system will benefit for both customers and enterprises.

Aside from our planned exploration into the application of Internet-based customization systems, we see the following research issues to be open and worthy of further examination:

1. What features make Internet-based customization systems fun for the user/customer? How user/customer feel about this kind of customization system?
2. How can we measure the effect of Internet-based customization systems?
3. What are the key factors driven users/customers to involve the product design process?
4. Why would users/customer want to share their innovation idea with enterprises or public?

More and more researches are related with user-centric innovation. Using the internet-based customization system is our initial entry into the genre. Our hope is that a symbiosis will exist between users and enterprises with each other providing benefits to the other.

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