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Development model of web design element for clothing e-commerce based on the concept of mass customization

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ABSTRACT

The purpose of this research was to study the elements of electronic commerce (e-commerce) web designs that led to customer co-design based on the concept of mass customization. The study collected information from 438 e-commerce customers in Bangkok and used a questionnaire as the research instrument. Statistics for the data analysis were the Pearson correlation coefficient and stepwise multiple regression analysis. The results showed that: 1) customization, an element of web designs, had a statistical significance ($R^2 = .112$), affecting customers' needs to design clothing types; 2) customization, context, and commerce, which were elements of web designs, together had a statistical significance ($R^2 = .198$), affecting customers' needs to design clothing parts; 3) customization and context, which were elements of web designs, together had a statistical significance ($R^2 = .259$), affecting customers' needs to design clothing details; and 4) context and customization, which were elements of web designs, together had a statistical significance ($R^2 = .279$), affecting customers' needs to create co-design tools. After analysis, the research results were used to design a website model that allowed its customers to participate in the design process.

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Introduction

Marketing today has adapted to surroundings and consumer behavior; that is, marketing has to adapt itself to an era when customers are a business's first priority. Now, as customers are able to receive information from several channels and have more creativity, they have become the value creator. In other words, customers pay for goods or services not only for functional utilities, but also for value and identity that help show self-identity. A number of customers are not satisfied with the products available in the market since almost all of them look identical and simply look like many copies of a product (Pongsakornrungsilp,

2012). Therefore, the production process has changed due to the technological advancements and consumers' lifestyles in accordance with more specific customer trends. Accordingly, the concept of mass customization arises. It allows consumers to participate in the design process to help ensure the result meets their needs (Laosirihongthong, Tungkaprasert, Banjongmanomai, & Somlake, 2009). This participatory design requires technology to reach each individual's needs; business has to adapt to consumer behavior that does not want ready-made products anymore (Hart, 1996).

Nowadays e-commerce is popular among entrepreneurs in Thailand due to the continuous growth of the internet and the increase in business websites. Face-to-face trading in stores has changed to screen-to-face trading (Iamsiriwong, 2013). According to a survey on consumers' online shopping behavior in Thailand in 2012, clothing is one of the best-

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selling products and gets more attention, and is expected to get steadily greater, from small and medium enterprises (Kasikorn Research Center, 2012). E-commerce uses a website as its electronics storefront to communicate with its customers. Therefore, it is essential to design the content layout and decorate the website in order to be eye-catching and interesting for the customer, even at first sight. Also, the information on the website should support the customer well (Phakdiwatthanakun & Kanjanasuwan, 2004).

Against this background, the researcher studied the elements of e-commerce web designs that led to customer co-design based on the concept of mass customization for e-commerce websites. The concept of mass customization was studied in order to fulfill individual customer needs through e-commerce websites. It is confidently believed that the results of this research can be applied to e-commerce development in the future.

Literature Review

Mass Customization

The concept of mass customization aims at offerings that best serve the individual customer's needs (Hart, 1995), and some segments of customers at the same time (Pine, 1993). The concept focuses on fast and effective offering of various products or services at low costs (Laosirihongthong et al., 2009). It gives priority to the participation of the enterprise and its customers in the design process in order to produce goods and services to meet customers' needs (Gilmore & Pine, 1997). The approach of mass customization is to systematically collect individual customer's orders using computer technology and, then, to start mass production (Pine, 1993). For this reason, websites should provide customers with a practical order form through which they can specify the required product details, and, accordingly, the production process should be flexible and able to produce made-to-order products (Laosirihongthong et al., 2009) within the organization's capacity (Pamela, Lenda Jo, & Weifang, 2003). In short, mass production is a new strategy for both entrepreneurs and consumers in the modern world.

Co-design

In the strategy of co-design, manufacturers and customers work together in the innovation process to satisfy customers' needs (King, 1989). It is suitable for manufacturers who already have product choices available for alteration as required (Gilmore & Pine, 1997). The co-design process has three main principles: 1) to give customers choices of products, 2) to use an illustrating tool to show sample products before a purchase is made, and 3) to interpret the specification—materials, details and parts—of each order so that the goods exactly meets customers' needs (Peterson, Larsson, Muijanovicl, & Mattila, 2011). As fashion retail shops have introduced the co-design strategy, customers have the chance to participate in designing and choosing apparel details, such as fabric, color, and size, through the website (Fiore, Lee, & Kunz, 2001). However, it is not possible to make products according to every single

requirement, so, the computer technology plays a big part in co-design and illustrating the adjusted product prior to purchase and production. During the design process, customers engage as co-designers creating and decorating clothes as they want (Udwadia & Kumar, 1991).

Elements of E-commerce Website Design

Electronic commerce, commonly written as e-commerce, is trading, which is related to buying, selling, delivery and barter, by using electronic media (Iamsiriwong, 2013). This kind of commerce uses computer networks which have access to the internet, promoting the potential of communication between sellers and buyers. Business to Customer (B2C) e-commerce is a transaction directly conducted between a business and a consumer (Keeratikrainon, 2006). Since B2C e-commerce uses websites as the media or channels to communicate with customers, it is important for traders to design their websites to impress their customers. Generally, the web design has seven elements: 1) context: an aesthetic and functional layout and design; 2) content: presented on the website in forms of text, picture or multimedia; 3) community: ways in which the website facilitates interaction, such as sharing and commenting, among customers with the same interests; 4) customization: the ability of the website to allow customers to customize products; 5) communication: ways in which a website enables communication between sellers and buyers; 6) commerce: a website's capacity to facilitate commercial transactions; and 7) connection: any links on the website that lead customers to other e-commerce websites and links from other sites to the site (Phakdiwatthanakun & Kanjanasuwan, 2004). This research did not study the last element (connection) because it is not related to products.

The literature review led to a certain framework for the entire study. Independent variables were web design elements which were separated into six aspects: context, content, community, customization, communication, and commerce. Likewise, the researcher defined dependent variables as the customers' needs for design participation which were, in this study, divided into four aspects: clothing types, clothing elements, clothing details, and co-design tools. Figure 1 shows the research framework.

Methods

Participants

The population used in this research was 5,686,252 people from 50 districts of Bangkok (Bureau of Registration Administration, 2013) who have bought fashion online. The sample size of the study was calculated by using the formula in Yamane (1973) with a 95% confidence level. According to the sample size calculation, the researcher had to have at least 400 subjects. However, the sample size was increased by 20%—480 in order to prevent data loss. The sampling method used in the research was multi-stage random sampling involving four stages: 1) Area cluster sampling which separated Bangkok into three zones—inner city, urban fringe, and suburbs; 2) Density sampling which selected districts with a high population density and

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