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THE EFFECT OF CUSTOMIZATION SERVICE ON FLOW EXPERIENCE AND BEHAVIOR INTENSIONS IN CUSTOMER CO-DESIGN PROCESS

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Abstract

Computer Mediated Environments (CMEs) prepared a satisfactory opportunity for providing customization service on line. This characteristics of synchronous and interactive allow designers or enterprises enhance to discover customer s' demands. Interface design plays a core role and influence customers' decisions. Yet, the research of this field also has varied investigation about "flow experience", which considerable attention has been paid in the past to research issues related to motionless state of customization product process in CMEs (e.g. system, technology, and communication tool et al.), a literature on issues of dynamic state has emerged only very slowly and in a more scattered way. It excited the curiosity of this study

In this study, we attempt evaluate customization improvements of customer value by content customization and context customization. Further to investigate the relationships between content and context customization, flow experience and behavioral intentions when provide customer co-design service.

According the findings, content customization service and context customization service provided enhanced the flow experience occur. Yet, the flow experience was significantly associated with behavior intension.

Key word: Interface design, Customization, Flow Experience, Co-design

Introduction

The introduction of e-commerce "is the most wide-ranging and significant area of current development in marketing" [1]. US retail e-commerce sales (excluding travel) will reach \$146 billion in 2008, up 14.3% over 2007. And there are nearly ninety million broadband subscribers and the monthly growth of 1.5 million in China. The online shopper grew 79% over forty-nine million people. A recent report by Performics tells us that sixty percent of a study's respondents are spending as much or more money on online shopping in 2009 as they did one year

ago. To admit of no doubt e-commerce certainly is a major combat zone for most enterprises.

When on-line shopping already became a popular commerce behavior, both enterprises and consumer the same start to seek more interesting, flexible, and valuable business model in the WWW world. Yet, Computer Mediated Environments (CMEs) provide users to communicate and interact electronically, the characteristics of synchronous and interactive allow designers or enterprises enhance to discover customer s' demands. Therefore a numbers of industries begin provide customization service, they invite and allow consumers have more choose, even to be the co-designer of the products, some successful case as DELL and Nike and Bear.com.

A number of research focused on mass customization discussed how to execute it as an efficient strategy to companies [2] [3], it became popular in academia and was adapted as an e-business approach or a strategy of supply-chain management [5]. But few focus on the improvement and investigation of customization service process and related consumer behavior. Nowadays, B2C Web sites are becoming more and more complex with varied functions and design element, much less website that provide customization service. It is required to be more press close to consumers' demands and has to touch affect states. The development of successful and adaptive user interfaces has been a strong research issue in human-computer interaction (HCI). User interface, which has a critical role during the interaction, should provide optimum communication between the user and the computer [5]. For the reason, scholars have input on how best to create an online space to the subject.

In the last several decades there has been a tremendous wave of interest in the relationship between users into online environment. Some previous studies explore this issue of the relationship between web interface design and consumer behaviors. They adopted the TAM (Technology acceptance model), extended TAM or combined TAM and flow theory, have mostly investigated online shopping behavior [6] the effect

of learning [7], the users' degree of involvement in online game playing [8].

With the increasing usage of HCI related researches, requirements for understanding human behaviors have become more critical. Bai, Law, and Wen [9] reviewed number researches and provide a discussion of behavior intention. They argued that a necessary measure in understanding customer loyalty, purchase intention has been considered indispensable in this loyalty construct. However, the questioned loyalty might spurious loyalty. Oliver and Rust [10] asserted that loyalty should include cognitive, affective, cognitive (behavioral intent), and action (repeat purchase behavior) dimensions. Yet, the research of this field also has varied investigation about "flow experience", which considerable attention has been paid in the past to research issues related to motionless state of customization product process in CMEs (e.g. system, technology, and communication tool et al.), a literature on issues of dynamic state has emerged only very slowly and in a more scattered way. It excited the curiosity of this study. Thus, this study attempts to explore the relationships between content and context customization, flow experience and behavioral intentions when provide customer co-design service.

This study attempt to address gaps in the literatures as focuses on following quotations:

- (1) Can the website interface which provides content customization service trigger flow experience happen?
- (2) Can the website interface which provides context customization service trigger flow experience happen?
- (3) Can the flows experience trigger behavior intention happen?

Theory Background

Customer co-design and CMEs

In this customer-centric economy, more and more customers desire the opportunity to design their own product. Bateson [11] asserted that customers might have the propensity to choose the "do-it-themselves" approach across many services, even when the service that might be more expensive or less convenient than traditional services. In most recent review, customer s can play an active role in mass customizing process. They should not be viewed as just passive receptacles, but a source of productivity gains in service industry [12] [13]. Therefore, customer-firm interaction represents a core issue for value creation through personalization strategies and eventually for customer relationship development [14].

About this kind activity of customer, it was represented in the pass researches by the different terms. For instance, Customer Co-design [4] [15]; do-it-themselves [11]; co-producer [16]; customer participation [12] [17]; prosumers [18] [19]. Dabholkar [17] defined customer participation as the extent to which customers are involved in producing and delivering the product in previous study; and the participation of the consumers is required. They must adjust the timing of their demand to match the availability of service [12]. Later, Khalid and Helander [15] defined that customer co-design describes a process that allows customer to express their product requirements and carry out product realization processes by mapping requirement into the physical domain of the product. In the lately research, most researches describes this behavior as "customer co-design", thus we to continue the term in this study.

Environment and behavior

When the commerce competing platform shifts to on-line, the computer interfaces replace the role of retail shop environment. For this reason, the development of successful and adaptive user interfaces has been a strong research issue in HCI for many years.

Several scholars start the research focus on web quality. Liu, Arnett and Litecky [20] found that a well-design website would lead to better customer recall and recognition and a favorable attitude toward the site and its products. Bai and Wen [9] divided the website quality into two factors: system quality and information quality then developed and empirically tested the impact of website quality on customer satisfaction and purchase intentions. Results indicated that website quality has positive impact on customer satisfaction, and that customer satisfaction has a direct and positive impact on purchase intensions. Yet, Chang and Wang [21] investigated the effects of the level of interactivity on web users' attitudes and intentions towards the use of online communication tools. Tue results shows that attitude and behavioral intentions are directly affected by users' internal and external motivation, and are indirectly affected by interactivity through the perceived ease of use, perceived usefulness, and flow experience.

Donovan and Rossiter's [22] pioneering work on store atmospherics, and recently year some scholar have argued that the relationship between environment, affective state and behavior may also apply to online retailing. However, most studies considered customer as both shopper and a computer user while explore customer behavior on line. And the physical store environment has been transformed into a virtual store thought information technology. Thus, the interface could be deem that the environment of online shopping.

Scholars have special discuss of this issue star from interface feature. Seneler, Basoglu and Daim [5] examine the effects of five product design features; customization, adaptive behavior, memory load, content density, and speed on user preference through and experimental study by using conjoint analysis. And Hausman and Siekpe [23] provided a framework including human elements and computer element to explore the relationship between the interface features and consumer online purchase intentions.

Further, Éthier, Hadaya, Talbot and Gadieux [24] examined four Web site interface features on the cognitive process that trigger online shoppers' emotions. These interface features including "structure of information presentation", "navigation/orientation", "text (appearance and arrangement)" and "visual aspects". They found that the interface not only a key component of the usability of a website but also influenced the cognitive appraisal of situational state and control potential impacted the six emotions examined. Studies in marketing and HCI shown that website environment play an important role on the web.

Flow experience

Flow theory in based on a public lecture presented by Professor Mihaly Csikszentmihalyi in Sydney on 17 March 1999. Players shift into a common mode of experience when they become absorbed in their activity. This mode is characterized by a narrowing of the focus of awareness, so that irrelevant perceptions and thoughts are filtered out; by loss of self-consciousness; by responsiveness to clear goals and unambiguous feedback; and by a control over the environment... [25].

Flow also has been recommended as a possible metric of the online consumer experience [26] [27]. Whereas strong theoretical arguments support the flow experience contribute to enhance customers' on-line shopping behavior (e.g. purchase intension, return visit, loyalty). Csikszentmihalyi and LeFevre [28] suggest that flow consists of four components – control, attention, curiosity, and intrinsic interest. In the last few years, flow has also been studied in the context of information technologies and CMEs and has been recommended as a possible metric of the online consumer experience [29].

Customization as an improvement of customer value

Porter [30] proposed that a business has been viewed as "the processes composed of value-adding activates", and the output of firms' activities are considered "value to the customer". The value created by a firm can be measured by the amount that customers are willing to pay for it. A

business is profitable if the value it crates exceeds the cost of performing the value activities. And in marketing area, perceived value is most commonly described in terms of the relationship between price and value [31].

The internet business can also be viewed as a new way of creating and providing value for the customer. Firm can create value for customers in a manner that is different from that which has been achieved in conventional business. Value creation and provision in the Internet business can be performed differently from the conventional business [32]. And decisions such as selection and development of business models and website construction and its operation, and other tasks should be made based on the value for the customer [33].

Jarvenpaa and Todd [34] derive four main groups of factors that affect customers' attitudes towards on-line shopping, such as product perception (price, quality, and variety), shopping experience (effort, compatibility, and playfulness), customer service (responsiveness, assurance, reliability, tangibility, empathy), and consumer risk (economic risk, social risk, performance risk, personal risk, privacy risk). Later, Han and Han [35] developed a framework to analyze and evaluate customer values in the Internet Business, this framework is comprised of value components and value improvement directions. Customer value can be created and /or enhanced by changing two components: the "content" and "context", and the value improvements of both can be achieved by quality enhancement, cost reduction, and customization. To review the previous studies, scholars have done several research related quality enhancement, and there is no doubt that reduce cost will enhance the purchase intension. However, we still full of curiosity about the issue of customization.

Because of these factors will affect the customer and in order to clarify the relationship between customization improvements, flow experience and behavioral intention when provide customer co-design service. In this study, we applied Han and Han's [35] framework to be the basis, and evaluate customization improvements of customer value by content customization and context customization.

Concept Model and Hypotheses

Base on the reviewing of existing literature, we propose a research model to examine the influence of content customization and context customization to flow experience and customer behavior intention, as shown in Figure 1.

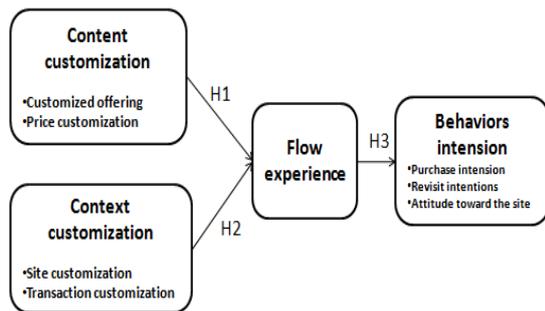


Fig. 1. Research model.

Content customization, context customization and flow experience

Csikszentmihalyi [25] noted that flow experience usually not happen in a relaxing or enjoyment situation. It happens during people in venture situation instead. It emphasis on a participate process with all one's strength. He also argued that people obtain happy through flow experience but not directly. Hoffman and Novak [26] conceptualized flow on the web as a cognitive state during on-line navigation, which is characterized by a seam less sequence of responses facilitated by machine interactivity. Besides, the on-line navigation is intrinsically enjoyable, accompanied and telepresence.

Piller et al. [4] argued that co-design also lead to a complex, risky and uncertain buying situation that could deter customers from participating in this process. Then Wu and Chang [36] accordingly theorized that only when consumers perceive that the hypermedia CMEs contains challenges congruent with their own skills can flow potentially occur. In the flow state, people become a absorbed in their activity. The concept has been extensively applied in studies in a broad range of contexts. Chang and Wang [37] examined online communication behavior, especially for the acceptance of online communication tools. They found that those users' beliefs about interactivity, perceived ease of use, perceived usefulness, and flow experience are salient for online communication.

Han and Han [35] constructed a customer value framework can be evaluate the degree of value offered to the customer and to derive the value creating and enhancing alternatives in an internet business firm. And they mentioned that customization is enhancing by changing two components: the "content" and "context". The content customization contains "customized offering" and "price customization"; the context customization contains "site customization" and "transaction customization".

Interactivity has been found to deliver available information effectively by engaging the

user's attention, increasing his or her involvement and enriching his or her experience [38]. Ghose and Dou [39] also noted that the higher the interactivity level of a webpage, the more attractive it is. Therefore, interactivity is expected to have a positive influence of the web user's perception of flow experience. Hoffman and Novak [26] pointed out that, when browsing the Internet, once an individual has had a series of seamless interactions with the machine, enjoyment, loss of self awareness, and a heightened sense of the self will ensue; that to say, the higher the intensity of interactivity, the more likely flow experience will occur [37]. Accordingly, we propose following hypotheses:

H1: There is a positive relationship between content customization and flow experience.

H2: There is a positive relationship between context customization value and flow experience.

Flow experience and behavior intension

Hoffman and Novak [26] indicated that key consequences of the flow experience for customers in hypermedia computer mediated environment (CME) are increased learning, exploratory and participatory behaviors, positive subjective experiences, and a perceived sense of control over their interactions. They also argued that Flow Theory to provide a better understanding of online communication behavior. The higher the perceived (expected) benefit (returns) from product compared to the (expected) cost, the higher the likelihood of a customer employing mass customization. One of the returns is possible rewards from the design process such as flow experience or satisfaction with the fulfillment of a co-design task [27]. Choi and Kim [40] also found that people continue to play online games if they have optimal experience because flow state had impact on consumer loyalty. Later, Shin and Kim [41] proposed that flow can be seen as reinforcement that user intention is strengthened, directed, and moderated. Users knowingly and unknowingly have flow feelings, and it increases the intention to use. Users in a flow experience may be deeply immersed in the process of activities. And Chang and Wang [37] argued that greater flow experience corresponds to a greater behavioral intention to use online communication tools. Thus, we propose the following hypothesis:

H3: There is a positive relationship between flow experience and behavior intension.

RESEARCH METHODS

Measurement development

A survey instrument was designed to ask participants if and how their behavior intentions

might be influenced by content customization, context customization and flow experience when a website provides the co-design service. All constructs were assessed using 5-point Likert-type scales using very agree and very disagree as the anchors, unless otherwise noted.

Content customization was composed of six-item adopted from Anderson and Srinivasan [42], Oliver [43] and Han and Han [35]. Context customization was composed of six-items adopted from Han and Han [35]. Behavior intention including three components: purchase intention, revisit intention and attitude toward. These components were assessed using Bai et al. [9] three-item, Yoo and Donthu [43] two-item and Chen and Wells [44] four-item 5-point-Likert-type scales. For assessing flow experience, five-items were developed based on the flow theory conceptualized by Hoffman and Novak [26] and modified item by Chang and Wang [37]. Demographic data including gender, age, education, time of using internet/day and occupation. Altogether questionnaire included 31 questions.

Procedure and methods

A core concept of the study is customer co-design. The principle considered the product selecting in customization product design process as the stimulus in this study. Thus, we provided fifty products as choose for the participants, including: t-shirt, cup, business card, notebook, loadstone, folder, helmet...et al. The total 269 data were collected, and 108 participants choose t-shirt to be a customized product that they would like to design by themselves. It showed that t-shirt could be a most popular product that people would like to join the design process and suitable to be the stimulus of this study.

For examine the hypotheses of this study. We organized a website. We also separated the customization service into two types: content and context. Content customization service included that participants join the process of design a t-shirt by themselves, choose the t-shirt type, size, t-shirt price and the transportation price. Context customization service included that participants could choose the interface color, pictures for design t-shirt, transportation types, and payments.

There is an assumption that participant be asked to by a t-shirt which design by themselves to be a present for family or friends. Participants are allowed to design their own t-shirt by fifteen pictures and fifteen English sentences without time limited. Yet, the user's IP will be taken down while the participants attend; moreover, it could decrease the probability that participants do the same test more than one time. Participants also were asked to fill out a questionnaire after they finished design

the t-shirt. After the formal questionnaire survey was completed. The analysis used the SPSS 12.0 statistical software package. First, descriptive statistics were computed. Next, reliability as a measure of internal consistency was calculated. Cronbach α values for these survey items are between 0.77 to 0.89, and Cumulative explained variations are between 0.49 to 0.80. Thus, most of the validity of the measurement was good.

RESEARCH RESULT

Sample demographics

A total of 135 questionnaires were collected, and 126 completed and usable questionnaires were received, generating a response rate of 93%.

Fifty-four of the participants were male and seventy-two were female. The results indicate that respondents were relatively young with 90% of them are between 20 to 39 years old. And the sample seemed to be a highly educated group; which with the majority of the respondents (58%) holding a college/university and 42% had postgraduate degree. Descriptive statistics also show that, on a daily basis, 33% of participants spent three to four hours on line, and 58% of participants spent more time on line. 38% of participants were undergraduate/postgraduate students and others were working for different industries.

Analysis and finding

To address this issue, regression analyses were conducted. The results showed that "customized offering" is positively associated with "flow experience" ($t=10.97$, $p<0.001$) and "price customization" is positively associated with "flow experience" ($t=4.06$, $p<0.001$). Thus, H1 was supported.

The results indicated a significant positive relationship between "site customization" and "flow experience" ($t=6.49$, $p<0.001$), then "transaction customization" is positively associated with "flow experience" ($t=4.10$, $p<0.001$). Thus, H2 was supported.

At last, the results also showed that "flow experience" is positively associated with "purchase intention" ($t=9.00$, $p<0.001$), "revisit intention" ($t=11.86$, $p<0.001$) and "attitude toward the site" ($t=8.06$, $p<0.001$). Thus, H3 was supported.

DISCUSSION

More and more indication showed that customization product is the trend that could not be ignored and not only products but also the process should be considered. However, only little research discusses the role of the customer within the co-design process [45] [4].

The above findings suggest that content customization service and context customization service provided enhanced the flow experience occur. Yet, the flow experience was significantly associated with behavior intension. Flow experience might be an important factor of customer to tend to use online communication tools to join the co-design process of customization product.

On the theoretical front, the study makes several contributions to the literature. First, this study deemed that customer as a co-design in the customization product producing process. Second, the study attempted to construct an evaluation of customization service provided. The study classified customization service into two groups as content customization and context customization. Third, we also had a discussion from static state to dynamic process. We examined the internal mind state (flow experience) and outer behavior intension in the study. Further, for more clear and definite the behavior intension, it also was separated into three parts to discuss – purchase intension, revisit intension and attitude toward the site. At last, this study constructed a simulate environment that allows participants join the co-design process on CMEs.

Furthermore, according the open question responses, it showed that most participants willing to be adopting customers of this kind of service. To be a co-designer of customization product was interesting experience to them. However, few participants indicated that the interface we provided was not easy to use for them, and this problem will reduce their willing to join or purchase this product, thus the usability of interface is also an important influenced factor.

For the future research, there are some factors could be have further discussion. For example: the involvement of products categories, the knowledge required proceeding with the customization and the interaction degree of B2C and C2C et al.

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