BANKING WITH A PERSONALIZED TOUCH:
EXAMINING THE IMPACT OF WEBSITE CUSTOMIZATION ON COMMITMENT

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ABSTRACT

It is widely accepted as a truth in the business industry that customization is an indispensable element for viable e-commerce websites. However, some critical questions have been overlooked: does the inclusion of website customization induce users' commitment to the website more than does its absence? Do certain types of website customization enhance relational bonds while others are detrimental? The purpose of this paper is to investigate the impact of types of customization on commitment toward the website. Building on the conceptual framework of levels of processing [Craik & Lockhart 1973], this paper identified three types of customization: remembering, comprehension and association. An experiment with pretest-post test control group ($N = 100$) was designed to assess the impact of these three types of customization on commitment to the website. The results indicated that comprehension- and association-type of customization significantly induce higher commitment to, and a higher tendency to stay with, the website than that without any customization. Remembering-type of customization was found insignificant on all dependent measures as compared with non-customization. Implications of the findings are discussed.

Keywords: customization types, commitment, levels-of-processing

1. Introduction

Website customizations have drawn considerable attention from the fields of business and web design. Business scholars and practitioners consider customization to be one of the essential determinants of a viable online business bringing customers a sense of the old village market, where a shopkeeper knows every patron, interacts with each of them differently, and adjusts his or her services to each patron's individual needs, allowing the patron to feel a close relational bond with the shopkeeper [Lounsbury 2000; Schoder & Madeja 2004]. The ultimate goal of customization is to induce a user's commitment to a relationship with the website [Tiwana 2001; Wells & Wolfers 2000]. Research shows that profits could be exponentially increased from every committed customer [Berger & Nasr 1998].

Because of the Internet's great potential and promise, e-commerce practitioners have plunged headlong into website customization. For example, websites now greet users by name when they revisit a website, make personal recommendations when a user is looking for a book, or send an e-mail to alert a user about the latest special offers based on completed online questionnaires. Enormous industry faith has been put in customization as a panacea, no matter what sorts of customization are offered, because the individual needs of each consumer can be satisfied [Fineberg 1999; Kalyanaraman & Sundar 2006]. However, some customization strategies make the use of the website more complicated, distracting users and, as a consequence, leading users away from the websites. The consequences of the relationships between these customized websites and customers are even worse than that of websites without any customizations because of those undesirable customization strategies [Fournier et al. 1998; PWC 2001]. E-business vendors merely rush to cash in on potential rewards and assume that customization is a desirable element regardless of the types of customization. This gives rise to some critical questions: Does website customization induce users' commitment to the website more than its absence? Do certain types of website customizations produce a beneficial effect in enhancing relational bonds with the users while others are detrimental?

Communication scholars have made attempts to resolve these questions. Research on customization has branched into two main bodies of work, one focusing on the nature and dimensions of customization [Kalyanaraman & Sundar 2006], the other borrowing concepts from interpersonal interaction to study the influence of customization [Fogg et al 1997; Moon 2000; Moon & Nass 1996b; Reeves & Nass 1996;]. Because of its emphasis on the nature and attributes of customization, the former approach tends to revolve around a static type of customization (i.e., a user customizes the site according to his or her content preferences when first registering with the website), thus

overlooking the impact of dynamic types of customization (i.e., a website that offers customized services by anticipating what a user might find interesting and useful). In the latter approach, the scholars borrow the concepts from human-human interactions and apply them to human-computer interactions. The problem with this approach is that it limits the conceptualization of customization types. This paper attempts to fill in the gaps by conceptualizing types of customization as levels-of-processing, and by examining the impact of different types of customization on users' commitment to customized websites.

2. Customization

Most services exchanges involve face-to-face interactions between the buyer and the retailer. The experience of interpersonal interaction between a customer and a service provider has been recognized as a key competitive weapon that allows retailers to differentiate themselves from other service outlets.

Surprenant & Solomon [1987] noted that a service provider customizes the service to a customer, in an attempt to enhance the interpersonal experience, by a simple friendly greeting, by adjusting the basic service to suit the customer's needs, or by offering advice. They stress that the central theme of customization is any behavior occurring in the interaction to recognize the customer's uniqueness as an individual rather than an anonymous service recipient. Mittal & Lassar [1996] echoed that "customization concerns the manner in which service employees relate to customers as people" (p.96).

The advent of the World Wide Web and the advancement of computer software and databases make customization in e-commerce context possible on a massive scale [Yang & Padmanabhan 2005]. The role of service provider or employee is replaced by a website. However, the fundamental social nature of dyadic interaction between a customer and a retail website remains the same. The interaction between the e-commerce website and a customer can be defined as person-computer interpersonal communication [Cathcart & Gumpert 1983]. This refers to "any situation in which one party activates a computer which in turn responds appropriately in a graphic, alphanumeric, or vocal mode (or combinations thereof) thereby establishing a sender/receiver relationship" (p.275). A series of studies conducted by Nass and colleagues attested that the interaction between human and computer is intrinsically social and unmediated [Nass & Moon 2000; Nass et al 1997; Reeves & Nass 1996]. When users interact with computers, they tend to perceive the computers as independent social actors.

Academics and professionals have begun to discuss how to apply the concept of customization to e-commerce websites in order to make the human-computer interaction experience more social. Cingil et al. [2000] defined customization as "making a website more responsive to the unique and individual needs of each user" (p. 136). Mulvenna et al. [2000] referred to customization as a website that can automatically make adjustments to an individual user. Mobasher and colleagues [2000] proposed that customization is not only more responsive to customers but also *tailored* to the individual user. They stressed that customized responses are "other-directed" activities, targeted toward users. Dorf [1998] directly applied the view of dyadic nature of human-computer interaction in thinking of customization as *accommodating* a customer based on knowledge of the past behaviors of that customer and his/her inputs captured by the website. In short, the above discussion emphasizes that customization is the manner in which the website, as a service employee, relates to the customer as individual. It echoes the centrality of the individuation of the customer and unique social experience proposed by Surprenant & Solomon [1987].

3. Types of Customization as Levels of Processing

Conceptualizing types of customization is a major issue in the search for possible ways to implement customization in an e-commerce context. Building upon the social nature of human-computer interaction, the conceptualizations in current literature can be classified into two approaches: The first approach is directly transplanting an interpersonal interaction pattern (i.e. reciprocity) into human-computer interaction. Fogg & Nass [1997] designed experimental conditions in which a computer assisted a user to complete a task and the users were asked to assist the computer to complete another task subsequently. The purpose was to test whether computer users would conform to the principle of reciprocity. Users responded reciprocally to the computers that assisted them. Moon (2000) conducted another study on reciprocal self-disclosure. The results showed that users reciprocated to computers and they had a positive attitude toward reciprocated computers.

The second approach is taking directionality of change as the basis to form two customized types (e.g. similarity and complementary). The results showed that users were more positively disposed to computers when the computer's personality cues change from dissimilar to similar to users. However, the ratings were lower when the computer maintained its personality cues consistently during the interaction. The results imply that computers which customize to customers' behaviors are preferred to non-customized ones.

However, these two approaches have their problems. The first approach suffers from conceptual limitations.

Interpersonal interaction patterns are operationalized by forms of verbal, vocal and kinesic actions [Burgoon et al. 1995; Cappella, 1998]. In other words, people adapt to their partners by adjusting their verbal and nonverbal behaviors. However, the verbal and nonverbal expressions of computers are limited and restricted by preset computer programs and equipment. For instance, a computer's ability to adjust its verbal style depends on choices of vocabularies stored in the computer database and software. A computer's ability to adjust its nonverbal styles (e.g. voice, use of space, and paralanguage) is dependent on the accessories such as speakers, screen size, etc. The varieties of verbal and nonverbal expressions of computers are not as rich and natural as human beings; therefore, directly borrowing interpersonal interaction patterns found in human-human interaction has inherent disadvantages in operationalization of customization types. Although researchers [Moon 2000; Moon & Nass 1996] have paid attention to this aspect and designed conversational basis interaction in their studies, the study of customization is limited to websites with agents design interface [Moon & Nass 1996]. In fact, when we look at the current customizations performed by websites on the World Wide Web, most of them do not adjust in verbal and nonverbal domains as in human-human interaction. For instance, Amazon.com and Yahoo adjust themselves to accommodate a particular user by changing its layout or the way of performing tasks to achieve the user's goals better.

In the second approach, conceptualizing customization types by directionality of change suffers from the measurement problem. Simple exhibitions of change or directionality of change is not a sufficient condition to claim the presence of customization because customization types such as similarity and complementary may not be contingent or other-directed [Burgoon et al. 1995]. These two types of customization could be perceived as coincidence or mechanical responses. Users may not perceive that their own behaviors on the website are the causes that trigger the changes of similar (dissimilar) behaviors on the website. They may consider it a coincidence or a discrete incident.

Because of these limitations, levels-of-processing is proposed as an alternative approach. Levels-of-processing framework proposes that there are different ways to process messages and that processes are qualitatively different [Craik & Lockhart 1972]. Levels-of-processing can be divided into three levels and each level represents a different qualitative type of processing carried out on a message [Craik 2002]. Change of one level to another represents change of processing qualitatively. Although these three levels of processing vary from shallow to deep, the sequence of processing is not a linear one that proceeds to a certain level and then stops [Treisman 1979]. Instead, each type of processing signifies a different type of elaboration on the message [Craik 2002]. Each level exists separately from the other [Treisman 1979]. Therefore, each level of processing will be considered as a separate type of processing in this study.

Goss [1989] elaborates on the levels-of-processing framework in a communication context. The first type of processing is the recognition of the message itself. This type of processing simply requires an individual to recognize and acknowledge the existence of the incoming message, without giving any thought to it. Type two processing occurs when an individual assigns meaning to the incoming message by analytic elaboration. An individual analyzes the content of the message to uncover the underlying idea being presented. For instance, when a person says, "It's hot out there and I feel thirsty". By analyzing the content, an individual discovers the idea behind and assign the meaning of "That person needs something to drink" to that message. The last type of processing occurs when an individual forms an association through reflective elaboration. An individual may look for the similarities in the message content and meanings stored in their memory. The individual then builds an associative connection between the message content and stored meanings allowing for reflection on the implications of the message.

Levels-of-processing offers a number of advantages in studying types of customization. First, levels-of-processing is based on cognitive processing and is applied to explain how individuals process social information during social interaction between individuals [Gross 1989]. It provides a framework to conceptualize how computers (or websites) process users' information and behaviors during the human-computer interactions. Second, the levels-of-processing not only delineates the well-defined types of cognitive processing a website may engage in while dealing with social information about a web user, but also provides a classification framework of customized responses resultant from the products of these processes. The framework delineates three distinctive customization types. Each type is different in terms of the way computers (or websites) make sense of users' information and behaviors. Finally, applying this framework in conceptualizing customization types can overcome the limitations of the past studies. This framework does not restrict the number of types being operationalized because these customization types are based on qualitative processing of social information. Also, this framework is not constrained by the limited capacity of a computer's verbal and nonverbal cues as operationalized by customization types. The following section will adapt and modify the framework of levels-of-processing to conceptualize types of customization.

3.1. Remembering Type

The type one customization, labeled as remembering-type in this study, refers to a website that is customized for users through the simple remembrance of information input by the user at the time of registration or through the frequency of user action (e.g. most frequently-accessed web page in a website) without the website necessarily understanding the meaning of the information. A website recognizing the page a user visits most frequently through hit counts is an example of remembering-type customization. The website retrieves the user's information and customizes the web content display to the most frequently visited page on the front page of the website when the user logs onto the website in following visits.

The customization features used by MyYahoo.com clearly belong to remembering type of customization. At the time of registration, a user expresses his name, interests and location on MyYahoo.com. At the next visit, MyYahoo.com customizes the web content display by greeting the user personally and presenting content tailorized to their interests and location (e.g. weather) more prominently. MyYahoo.com stores this information in a database without any further processing and retrieves exactly stored data.

3.2. Comprehension Type

The second type of customization, namely comprehension type, refers to any website customized features that assign meaning to a user's behaviors and then make contingent adjustments directed to satisfying the user's needs. To say a website understands the meaning of a user's behaviors, a website has to demonstrate its ability to identify the user's behaviors as a step of a procedure and its ability to understand the functions of that specific behavior by analytic elaboration.

The MS Office program, "Office Assistant" is a good illustration of this type of customization [Tiwana 2001]. When a user attempts to write a letter with MS Word, they begin typing this phrase "Dear," on the keyboard. After the user presses the enter button, an Office Assistant pops up and asks whether the user needs help with letter writing. If the user clicks the "yes" button, a letter wizard will pop up to guide him to write the letter. The Office Assistant feature analyzes the behavior of typing "Dear," as a step of letter writing and discovers the meaning of such behavior as performing a letter writing task. This feature customizes by offering the wizard to ease the letter writing task.

3.3. Association Type

The last type of customization, namely association type, refers to any customized features that allow a website to associate a user's behavior with similar users' behaviors to reflect on the implications of what that particular user wants. The website looks for similarities between that user's behavior and behaviors of all other users in the database.

Amazon.com's personal recommendation is a typical example of association type of customization. When a user is browsing for a book to purchase, Amazon.com shows a list of books that other users bought while buying the item the user is interested in. Amazon.com compares and contrasts a particular user's searching behavior to all other users' searching behaviors in its database. Amazon.com relates that particular user's searching behavior to other like-minded people's searching behaviors stored in a database.

4. Impacts on Commitment

The ultimate interest of studying customization is its attitudinal and behavioral impacts on computer users [Pine, Pepper & Rogers 1995; Wells & Wolfers 2000]. Of all attitudinal and relational variables, commitment is the most important because it is a central ingredient in developing relational permanence and stability [Adams & Jones 1997]. Studying commitment may provide more insights into the permanence of a relationship than other relational variables such as satisfaction. Commitment retains relational partners despite dissatisfactory experiences and makes the relationship persist. Conversely, a relationship can fall apart, even though both parties feel satisfied, if they are not committed in the relationship. Especially for e-commerce vendors, consumers' commitment can be directly translated into ongoing profits [Peppers & Rodgers 1996]. Many Scholars [Mittal & Lassar 1996; Riecken & Schefter 2000; Surprenant & Solomon 1987] agree that the central benefit of customization is locking customers into a long term relationship despite short-term customer dissatisfaction.

The concept of commitment fundamentally consists of two dimensions relevant to e-business context: affective attachment and perceived costs.

4.1. Affective attachment

Affective attachment refers to a psychological attachment whose defining features are a positive affection for the partner, and the desire to maintain and continue the relationship [Adams & Jones 1999]. Johnson et al. [1999] noted that affective attachment constitutes of three components. Attraction is the first component, which reflects one's willingness to continue in a relationship because of an attraction to the counterpart. Satisfaction in the relationship is the second component. It is either a joint function of behaviors of both parties or primarily attributed to one party. Relationship identity is the third component, which refers to identifying oneself as a part of the

relationship.

In the case of customization, users may find their partners, websites, more attractive because they customize to users' individual needs and idiosyncrasies. Customized websites also make the users more satisfied by providing the users with what they want and assistance in achieving their goals. A recent study [Kalyanaraman & Sundar 2006] showed that users found websites with more customization more attractive, appealing and positive than those offering a lower level of customization. Users found the experience with highly customized websites more satisfactory and were willing to return to the website.

In another study [Nass, Fogg & Moon 1996], researchers showed how a customized website creates a sense of relationship identification, allowing users a possible increase in their attachment to the website. The researchers requested users to work on a collaborative task (e.g. searching for information on a topic) with a computer. The results indicated that users would perceive the computer as a teammate when they felt dependent on the computer to search and locate relevant information. In most web experience, people go to a website with a specific task to accomplish such as searching for needed information or buying a specific book. The essence of customization is the facilitation of these individualized tasks. As such, users may have a higher tendency to feel dependent on customized websites and feel like being a part of a team. Consequently, a sense of relationship identification is developed and users may feel more attached to the website.

However, different types of customization may lead to different attitudinal results. Some types of website customization may not necessarily induce more positive attitude and behaviors than websites without any customization [PCW 2001]. Some customization types are better than others in eliciting attraction and satisfactory responses. Nass & his colleagues have conducted a number of empirical tests on users' psychological responses to computers that make different sorts of adjustment to users. Fogg & Nass [1997] designed an experiment to test whether users would "help" the computer that had "helped" them. The results were consistent with reciprocity principle: users would "help" the computers which had "helped" them before and the attitudinal evaluations of the computers were more positive. In a study of reciprocal self-disclosure [Moon, 2000], the findings indicated that users disclosed more and deeper information to the computer when the computer revealed its own information in a similar amount and depth. The users gave higher evaluative scores to the reciprocal computer than the nonreciprocal one. Moon & Nass [1996a] and Moon & Nass [1996b] attached opposite personality types to different computers and matched users' personality types in the experiment. The results in both studies showed that users gave higher ratings to computers in terms of attraction and satisfaction when a computer adjusted its personality from dissimilar to similar to the users' (direction of similarity) rather than from similar to dissimilar (direction of complementation). A recent study showed that a computer's messages were more effective and were more likely to induce attitude change when the computer customized the messages according to the recipient's personality (Moon, 2002).

4.2. Perceived costs

Perceived costs refer to the sense of constraint or barriers to discontinuing a relationship. Allen & Meyer [1990] state that this dimension exists when "there is a *profit* associated with continued participation and a *cost* associated with leaving" (p.3). According to Johnson et al. [1999], perceived cost is varied as a function of three components. The first component is alternatives, which refers to both the attractiveness of alternatives, as well as the willingness to sacrifice the alternatives. Termination of procedure, which is the second component, represents the difficulty of actions required in order to end the relationship. The last component is irretrievable investment. It involves concerns about wasted time, energy and resources that have already been invested into the relationship.

The perceived cost has not been investigated in customization research but the set of constraints incurred by customization are essential in entrapping users in a website. Users may find alternative websites less attractive because customized websites offer tailored products, services, or information and the users enjoy higher quality and comfort with customized websites. To enjoy tailored services, products or information, users unavoidably invest effort in allowing websites to offer customization. If the relationship with a customized website comes to an end, these resources are lost and wasted. Customization may prevent departure because it means a cost will be incurred. The more that individual needs and preferences of a user are customized, the more the user is being satisfied, and the more difficult he/she will find it to leave or end the relationship [Peppers & Rodgers 1994]. Even if alternate websites offer the exact same customization capabilities, a user already involved with a customized website would have to spend an inordinate amount of time and energy inputting personalized information to bring such a website to the level of personalization of the original website. Different types of customization may incur different levels of constraints in the relationship, making it more costly for the user to leave the website. Some may not incur a cost large enough to build up the sense of entrapment. The level of perceived cost may vary among types of customization.

As discussed earlier, the attitudinal construct of commitment is comprised of affective attachment and perceived cost dimensions. If a website user affectively attaches to a website and perceives a high cost of leaving the website,

it is possible that the user may have a correspondent behavioral response consistent with their attitude. Therefore, the user may have a high intention to return to the website and stay in a relationship with the website.

5. **Hypotheses and Research Questions**

Based on the above discussion, levels-of-processing has been applied to the conceptualization of types of customization, in order to assess the effects of each type of customization on affective attachment, perceived costs and intention to stay with the website. The following hypothesis and research questions were posed:

H1: Customization in websites will induce high levels of affective attachment, high levels of perceived cost and higher intentions to stay with the website than non-customized websites.

H1a: Remembering-type of customization will induce high levels of affective attachment, high levels of perceived cost and higher intentions to stay with the website than non-customized websites.

H1b: Comprehension-type of customization will induce high levels of affective attachment, high levels of perceived cost and higher intentions to stay with the website than non-customized websites.

H1c: Association-type of customization will induce high levels of affective attachment, high levels of perceived cost and higher intentions to stay with the website than non-customized websites.

RQ1: Do affective attachment, perceived cost to the website and staying with the website vary according to the different website customization types to which subjects are exposed?

RQ1a: Do subjects who are exposed to remembering-type of customization differ from those who are exposed to comprehension-type of customization in terms of affective attachment, perceived cost to the website and intention to stay with the website?

RQ1b: Do subjects who are exposed to remembering-type of customization differ from those who are exposed to association-type of customization in terms of affective attachment, perceived cost to the website and intention to stay with the website?

RQ1c: Do subjects who are exposed to comprehension-type of customization differ from those who are exposed to association-type of customization in terms of affective attachment, perceived cost to the website and intention to stay with the website?

6. Method

6.1. Design

The experiment in this study was a pretest-posttest control group design with three experimental groups, one for each types of customization (remembering, comprehension and association) and one control group (absence of customization). The experiment was conducted on a standard IBM-compatible computer in a computer laboratory setting.

6.2. Participants

A total of 100[1] undergraduate students were recruited from communication classes at a mid-sized university in Hong Kong. Students were randomly assigned into four different groups (three experimental groups and one control group) using a table of random digit numbers. Each group consisted of 25 subjects. Forty participants were males and sixty were females. To control for gender effects in the experiment, the number of males and females was kept to a two to three ratio in each group (10 males and 15 females). Students ranged in age from 19 to 23 with a mean age of 21 years old. To control the web experience, respondents were asked to indicate their level of familiarity with using the World Wide Web on a 5-point scale from not very familiar to very familiar. The findings showed that they were relative familiarity with using the web (M = 4.06, SD = .83).

6.3. Procedure

A pilot study was conducted beforehand to ensure the manipulations of different website customization patterns had the intended effects. Forty-four participants took part in the pilot study. The results showed that nearly all participants acknowledged the occurrence of the website customization patterns. This implied that the manipulations of different website customization patterns were successfully implemented. Changes such as the style of the website

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[1] In order to estimate the statistical power to detect an effect for the current sample size in this study, a post hoc power analysis was conducted [Cohen 1998]. G-Power software was used to examine the statistical power of the data comparing customization types in a one-way analysis of variance with four levels (control, remembering-type, comprehension-type, and association-type) for n = 100 and α = .05 for small (.10), medium (.25), and large (.40) effect sizes [Cohen, 1988]. For small effect sizes the power was low (.11), for medium effect sizes the power was moderate (.52), and for large effect sizes the power was good (.92).

(font sizes, font styles) were made according to the comments of participants after the pilot study.

Upon arrival at the computer laboratory, the participants were randomly assigned into one of the four different groups according to a random digit table. The experimenter then explained to the participants that the experiment consisted of three sessions to be held at different times (December, January and February). Each person was told that he or she would be placed in a scenario and then asked to conduct a banking activity (bill payment) on an Internet banking website. The participant was notified that he or she would fill out a paper-and-pencil questionnaire after the completion of the bill payment. The participant was then given a paper copy of the instructions, a description of the scenario, and an experimental task (bill payment). After reading the hard copy, the participant moved to a computer and logged into the Internet banking account with a provided username and password. After logging into the account, the participant paid a mobile phone bill via the online transaction form as requested in the scenario. After this, the participant filled out a paper-and-pencil questionnaire to measure his/her commitment level to the website as the baseline measure.

Upon completion of the questionnaire, the subject began the second session. The scenario in the second session was similar to the first session and the experimental task was identical with the first session except for the amount of the mobile phone charge. This session also collected data in the computer database for users' behavioral pattern recognition. Additionally, it prevented misperception from the respondents of accidental/coincidental occurrences and mechanical exhibition of adjustments made by the website. After a short break, the participants began the third session. The experimental treatment (i.e. types of customization) occurred in the third session in the experimental groups. The scenario in the third session was similar to the first two sessions and the experimental task was also identical except for the amount of the mobile phone charge. When the participants were working on the experimental task, the Internet banking website made different adjustments based on the users' past behaviors in the earlier sessions according to the assigned experimental condition. However, the presentation and interaction of the control group was identical throughout all three sessions in the experiment. After completion of the third session, the participant filled out a paper-and-pencil questionnaire, identical to that used after the first session, with a randomized order of the questions to measure his/her commitment level to the website after being exposed to different website customization types.

6.4. Scenario

In the experiment, a scenario, which was an Internet banking website, was set up to develop a stage for interaction between the users and the website. The purpose of the scenarios was to help subjects put themselves into the situations to test the effects of different types of website customization made by the website based on the user's actions. The basic setting for the experiment was an Internet banking environment. An Internet banking setting was selected as the context in the experiment for several reasons. First, previous research indicated that the banking service environment was the most familiar to university students when compared to other service/retail environments [Huu & Kar 2000]. Second, the penetration of Internet banking services has been increasing more steadily in Hong Kong than online retailing services [Hong Kong Economic Times 2000]. This indicated that online banking services were more acceptable to people in Hong Kong than online retailing services. Thus, online banking was chosen instead of online retailing website. Third, a banking website was an appropriate business for customization because the needs of financial services customers in different banking sectors were different and required personal attention [Tiwana 2001; Floh & Treiblmaier 2006]. Finally, a report from a global consulting firm indicated that Hong Kong financial service customers, when compared with all other Asian countries, were found to have the highest rate of dissatisfaction with their bank and intended to switch to other financial institutions [Sudhaman 2000].

Each participant was given a cover story/scenario, which told that he/she was a new client of the Hong Kong International Bank[2] and had just opened a savings account. He/She had already registered to be an Internet banking user and began to use the Internet banking website to handle his/her financial matters. The account details (e.g. username and password) were provided in the scenario. Then he/she was requested to conduct a banking activity (i.e. experimental task) via the Internet banking website (paying a mobile phone bill). This kind of banking activity was selected because it is a commonly conducted activity via online banking websites among the users in Hong Kong [Jupiter Communications 2000]. The mobile phone bill payment task required the subject to make payment for the mobile phone service. The details of the payment (e.g. the name of bill payee merchant and amount of charges) were listed in the scenario.

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[2] The brand of the bank corporation (Hong Kong International Bank) was created for this study to prevent associations with any other online banking experiences and pre-determined commitment with any existing brands.

An Internet banking website was developed with HTML and Java program language for performing dynamic adjustments exhibited by the website. The website was stored in a local hard drive rather than on a server for control purposes. The visual characteristics of the interfaces (font, font sizes, color and symbol) were identical across the three sessions and conditions in the experiment.

6.5. Types of Customization

The operationalization of three different customization conditions in the experiment was based on different levels-of-processing. The operationalization of customization types was carried out with reference to current retailing websites (Amazon.com, Yahoo.com), banking websites (HSBC, CitiBank), and software applications (MS Money and MS Offices). Therefore, the operationalization was not only theoretically but also practically based.

Types of customization were operationalized through the banking activity conducted by the subjects. The experimental treatments were as follows:

6.5.1. Remembering-Type

The major customized adjustment was that the e-banking website stored and retrieved the previous inputs entered by the subjects. For the mobile phone bill payment task, the website saved previous entries the subjects had made for bill payment forms, for example, the name of the bill payee merchant, the bill account number and the debit bank account. When the subjects typed the first digit/character into one of these fields in the third session, the website displayed a pull down list of possible suggestions based on previous similar entries in the first two sessions. When a suggestion in the list matched what the subjects wanted to enter in that field, subjects simply selected that entry and the computer automatically filled it in. This remembering function made entering web information easier.

6.5.2. Comprehension-Type

Comprehension type refers to a type of understanding in which the website knows what task the user was performing. During the first two experimental sessions, subjects made payments to the same mobile company with the same savings account number and debit bank account for transactions. The website comprehended this behavior as a bill payment habit. In the third experimental session, after the subjects keyed in the same merchant name in the form, the website popped up a payment wizard with pre-filled information for company name, bill number and debit account, with the message "Do you want to make a payment to the same merchant?" The payment wizard helped the subjects make the payment quicker and easier based on previous entries.

6.5.3. Association-Type

The indicator of this type of customization was the computer's ability to make connections to information in storage. The website recognized the habit of paying the bills in a regular interval as a monthly bill payment. The website related the users' monthly bill payment behavior with the banking service that used by others who also made monthly bill payments. The website offered a new banking service recommendation to the users by saying "People who make monthly bill payments also use our bill payment reminder service. This service is an automatic email reminder sent to you when your bill payment due date is getting close. Most people who make monthly bill payment also use our service to avoid surcharge caused by late payment". A choice of subscribing to the service was then made available to the subjects.

Similar to the framework of levels of processing, these three types of customization do not operate in a continuum from low to high customization. Rather, the customization types are independent. The major distinction between these three types of customization is the ways that a website processes the social information of a web user. The display of a particular type of customization will depend on the ways the website elaborates of the social information of the web user. For instance, the remembering-type stores the user's input in each field in the bill payment form without any elaboration; it simply recalls pieces of disconnected information, without understanding the content. The comprehension type elaborates on the social information by analyzing the content of user's inputs in the form and then discovers the idea behind the user's inputs as bill payment. The major difference of comprehension-type from the remembering type is not recalling more or less information in the payment wizard, rather that remembering-type recalls pieces of disconnected information and provides no insights into the content or understanding of the behaviors of that user. Comprehension type, on the other hand, discovers the idea of bill payment from the user's behaviors and customizes the banking service by asking whether the user needs assistance. Association-type elaborates the user's behavior by relating his/her discrete bill payment behavior to past bill payment behaviors. In essence, the association-type associates the smaller bits of information and strings them together with past behaviors or similar behaviors of all other users to find the general patterns. The major difference of this customization from the comprehension-type is that comprehension-type simply focuses on the meaning of current behavior itself, and does not relate this behavior to the past similar behaviors stored in the memory, while association-type emphasizes the relationship between this discrete behavior and past similar behaviors (or similar behaviors of all other users) in order to look for the patterns of these similar behaviors and their implications. One might argue that the degree of customization tactics in each type can range from simple to very complex,

however, the comparison between the three types of customization is still possible as long as the two (or more) customization tactics are conceptually different and fit in different customization types.

6.6. Dependent Measures

The dependent variables in this study were commitment to the website and intention to stay with the website. Participants rated their behavioral intention on a 7-point scale to indicate the degree of agreement with each question. The measurement in the pre-test and post-test conditions was identical except for the randomization of the order of the questions. The wordings were modified for relevance to the context. The scales of both measures are listed in the appendix.

7. Results

The four groups were tested for equivalency on the commitment to the website before the treatment by using ANOVA procedures. The results indicated that there were no significant differences on the pretest measures for affective attachment, $(F(3, 96) = 1.63, p > .05)$, perceived cost, $(F(3, 96) = .32, p > .05)$, and intention to stay with the website $(F(3, 96) = 2.22, p > .05)$ among the four groups. These indicated that the subjects held similar positions of commitment and intention to stay with the website before the implementation of customization types.

7.1. Customization Types vs. Non-Customization

Table 1 shows the summary statistics of all groups. ANOVA was used to compare the effects of each type of customization and non-customization on dependent measures. The findings indicated that there were significant differences on the posttest measures for affective attachment $(F(3, 96) = 6.09, p < .01)$, perceived cost, $F(3, 96) = 9.75, p < .001$, and intention to stay with the website, $(F(3, 96) = 8.04, p < .001)$ across the four groups,. A post hoc Tukey method was used to compare the mean differences between each type of customization and non-customization (i.e. the control group). As shown in Table 2, remembering-type did not have significant impacts on affective attachment, perceived costs and intention to stay as compared to non-customization. Therefore, H1a was not supported. Comprehension-type had significant positive impacts on affective attachment, perceived costs and intention to stay with the website as compared to the non-customization. H1b was thus supported. Also, subjects who were exposed to association type of customization indicated higher affective attachment, higher perceived costs and higher intention to stay with the website than those not exposed to any customization. H1c was supported.

7.2. Variations among Customization Types

For the research questions, a post hoc Tukey method was used to examine mean differences between groups (see Table 2). Both comprehension- and association-type had significant differences on affective attachment, perceived costs and intention to stay with the website as compared to remember-type. However, comprehension- and association-type did not significantly differ from each other on the dependent measures.

Table 1.   Summary Statistics by Customization Types

	Affective Attachment		Perceived Costs		Intention to Stay with the Website	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Non-customization (Control Group)	4.59	.86	4.72	.82	4.56	1.19
Remembering Type	4.78	.78	4.96	.64	4.92	.99
Comprehension Type	5.51	.88	5.65	.74	5.74	.81
Association Type	5.36	.85	5.64	.76	5.62	.86

Note. n = 25.

Table 2. Groups Means Comparisons

Groups (I)	Groups (J)	Affective Attachment	Perceived Costs	Intention to Stay with the Website
		Mean Difference (I-J)	Mean Difference (I-J)	Mean Difference (I-J)
Non-customization (Control Group)	Remembering Type	-.19	-.24	-.37
	Comprehension Type	-.91**	-.93***	-1.18***
	Association Type	-.77**	-.92***	-1.06**
Remembering Type	Non-customization (Control Group)	-.19	.24	.37
	Comprehension Type	-.73*	-.69**	-.81*
	Association Type	-.58*	-.69**	-.70*
Comprehension Type	Non-customization (Control Group)	.91**	.93***	1.18***
	Remembering Type	.73*	-.69**	.81*
	Association Type	.15	.004	.12

Note. n = 25., *p < .05, **p < .01, ***p< .001.

8. Discussion

The common belief, that customization is a panacea regardless of types, was put under empirical test. The major contribution of this study is the exploration into which types of customization are effective, and which types are ineffective. Building on the conceptual framework of levels-of-processing, remembering-, comprehension- and association-type are identified as types of website customization based on different qualities of processing. The main purpose of this study was to examine the impacts of these types of customization on affective attachment, perceived costs and intention to stay with the website.

When we scrutinize the impacts of each type of customization, a noteworthy phenomenon is found. When types of customization and absence of customization are compared, the impacts of remembering-type, comprehension-type and association-type customization on affective attachment and perceived costs are significantly varied. Comprehension- and association-type of customization evoke significantly higher affective attachment than both remembering-type and non-customization. Respondents reported higher satisfaction, higher attraction and felt more of a relationship when a website used comprehension-type and association-type customization than when the website used the remembering-type. As a result, those who experienced these two types of customization also had a higher tendency to stay with the website. Remembering-type of customization does not significantly elicit positive affective attachment and it does not differ from non-customization on affective attachment. Respondents did not feel that they received sizeable benefits from the remembering-type of customization and did not consider it valuable.

Regarding the perceived costs dimension, association- and comprehension-type customization triggered positive perceived costs. Respondents who experienced these two types of customization reported that they found alternative websites less attractive and felt a higher level of investment in the customized website. These types of customization produce a significantly higher sense of entrapment within the website. These users felt it was more difficult to terminate relationships with websites that use association- or comprehension-type of customization. These types of customization tend to better retain users and develop a more solid long term relationship than the other types of customization.

Two plausible reasons may explain why comprehension- and association-type customization induce higher affective attachment and perceived costs as compared to remembering-type customization and non-customization. Unlike the remembering-type and non-customization, comprehension- and association-type of customization move beyond the overt information and behaviors of users to identify the underlying meanings and implications. According to the levels-of-processing framework, comprehension-type customization deciphers the meanings behind this discrete information and the actions of users on a website. Association-type customization identifies a

user's needs and interests by identifying distinctive patterns of information and behaviors of the user and comparing it with past behaviors. Comprehension- and association-types recognize the individuality of users thereby inducing higher commitment to websites.

Another explanation is that comprehension- and association-types influence users' perception of customized websites in term of relevance, interactivity, involvement, and novelty of customized websites [Kalyanarman & Sundar 2003]. Comprehension- and association-type provide more relevant services or information to users, which may capture users' attention, hence leading to higher commitment. Users may regard these two types of customization as more interactive because they provide feedback to a user's entered information and actions on the website and respond to them interactively by offering relevant customized services or information. Furthermore, these two types of customization may foster a sense of involvement among users on the websites. They may even create feelings of connectedness with users because relevant services or information provided by these two types of customization are built around users' preferences and habits. Lastly, users may perceive the websites with these two types of customization are distinctive and novel because they are relatively more innovative than the remembering-type and traditional non-customized websites.

The findings of this study show that the *types* of customization, not the *presence* of customization, is the key determinant in producing positive affects, higher perceived costs and higher tendencies to stay with the website than absence of customization. These results are consistent with previous studies [Kalyanarman & Sundar 2003; Moon & Nass 1996]. It is implied that selecting the correct type of customization in e-commerce websites is an effective way to keep consumers returning to the website and increases the chances of developing a long term relationship.

Although this study is situated in a banking context and a laboratory environment, the types of customization utilized and the operation of the website in this study were highly comparable to present practices of e-commerce websites in real world settings. Therefore, the findings of this study can provide some insights to other e-business contexts, such as retailing. An important practical implication can be drawn from these customization-type comparison results. When online retailers execute customization on websites, the types of customization have to be taken into account because different types of customization will generate different impacts on users' commitment. If the type of customization is not properly chosen, retailers may not be able to achieve what their expectations. As shown in this study, remembering-type of customization does not have significant impact on affective attachment, perceived costs and intention to stay with the banking websites. However, different types of customization may have different values in different business settings. Although remembering-type of customization may not have significant impact in online banking context, it may be a significant factor in other business settings. Online retailers need to examine the nature of their business and tasks when they select what types of customization to be implemented. However, even though remembering-type of customization was found unable to induce affective attachment and perceived costs to the website, this type of customization does not do worse than non-customization. This result does not support the claim proposed by some scholars [Fournier, et al. 1998] that poorly customized websites may produce detrimental effects in regards to the return of customers. This type of customization fared just as well as those without customization.

9. Theoretical Contributions

The major theoretical contribution of this study is the adoption of the levels of processing framework to help conceptualize different types of customization. Based on the quality of processing, types of customization are systematically and distinctively divided into three types, remembering-, comprehension- and association-type. This addresses the lack of conceptualization in regards to the classification of customization types in the literature. It also overcomes the shortcomings in the theory of past studies in this line of inquiry.

A theoretical linkage between customization and commitment is found in this study. In a previous study [Kalyanaraman & Sundar 2006], customization resulted in more positive attitudes toward the websites such as appealing, likable, pleasant, useful and favorable. The results of this study do not simply evoke short-term attitudinal impacts, they provide evidence that customization may produce long-term impacts on consumers. Respondents who were exposed to comprehension- and association-types of website customization had a higher desire to maintain and continue their relationship with the website. They also expressed a higher tendency to stay with the websites. These important results reveal the role of customization in developing relational permanence and stability with websites.

10. Limitations and Future Research

As with any study, this study has its limitations. Due to technical and resource limitations, the design of this experiment is a cross-sectional study. Future researchers may want to conduct a longitudinal study. This may show the accumulated effects of types of customization on perceived cost to the website more clearly. Experiencing persistent website customizations over a longer time period might assist in the accumulation of more perceptible

levels of the costs and investments associated with website relationships. This study used college students as the experiment sample. Future research may expand to the general public. This may enhance the understanding of customization in the business world.

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APPENDIX: Survey Items

	Adapted from Allen and Meyer (1990) and Kumar, et al. (1994)
Commitment to the Website	This concept is divided into two dimensions: affective attachment and perceived costs. These dimensions tapped the attitudinal responses of customization types.
	$\alpha = .83$ (Pretest), $\alpha = .88$ (Posttest)
Affective Attachment (9 items)	This dimension is comprised of three components: attraction, satisfaction and identification. These three components tapped the positive affection for the partner, and the desire to maintain and continue the relationship.
	$\alpha = .80$ (Pretest), $\alpha = .85$ (Posttest)
Perceived Costs (10 items)	This dimension is comprised of three components: alternatives, termination procedure and irretrievable investment. These three components tapped the costs and constraints in discontinuing the relationship.
Intention to Stay with the Website	Adapted and Modified from Kumar, Hibbard and Stern (1994)
	$\alpha = .73$ (Pretest), $\alpha = .83$ (Posttest)
	This concept tapped the behavioral responses of customization types.
Intention1	Considering all the benefits and drawbacks, I feel that I will still be a user of the Hong Kong International Bank Internet banking website for the foreseeable future.
Intention2	It is highly unlikely that I want to terminate our relationship with the Hong Kong International Bank Internet banking website
Intention3	Even if close friends recommended a different Internet banking website, I would not change my preference for using the Hong Kong International Bank Internet banking website
Intention4	My preference to use the Hong Kong International Bank Internet banking website would not willingly change