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Patrick Y.K. Cha

University of Hong Kong, pchau@business.hku.hk

Paul Jen-Hwa Hu

University of Utah, actph@business.utah.edu

Bill L.P. Lee

University of Hong Kong

Rosseita M.H. Ng

University of Hong Kong

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Customers' Trust in Online Vendors and Their Dropout Decisions: A Cross-Country Study

Patrick Y.K. Chau¹, Paul Jen-Hwa Hu², Bill L.P. Lee¹, and Rosseita M.H. Ng¹

¹: School of Business
University of Hong Kong
pchau@business.hku.hk

²: Accounting and Information Systems
David Eccles School of Business
University of Utah
actph@business.utah.edu

Abstract

Customer dropout represents a critical challenge to online vendors and has significantly hindered the proliferation of B-to-C e-commerce. In this study, we investigate the relationship between customers' trust in an online vendor and their decisions to exit of the vendor's website along the general consumer decision process. We analyze important salient trust antecedents for each stage of the decision process and empirically test them and their correlation with the dropout decision by conducting an online study that involves undergraduate business students from two major universities in the U.S. and Hong Kong, respectively. Our comparative analysis results are fairly consistent and suggest that customers' trust in an online vendor has significant effects on their decisions to exit of the vendor's website, and that important salient trust antecedents appear to vary in different stages of the consumer decision process. Interestingly, our findings show that customers tend to rely on general, subjective antecedents that pertain to personal traits or perceptions about the website's ease of use for assessing the trustworthiness of an online vendor in the early stages but focus on specific, objective, transaction-oriented antecedents specific to their purchase decision making in the later stages. Our results show little differences between the investigated countries and have important implications for e-commerce research and practice, which are discussed in the paper.

Keywords: E-commerce, Trust, Consumer dropout, Consumer decision process

1. Introduction

Customer dropouts represent a fundamental challenge in B-to-C e-commerce and have greatly hindered its developments. Such dropouts, occurring at alarming frequency and on massive scale, have significant adverse impacts on the proliferation of e-commerce. Understandably, online purchases are critical to the ultimate success of B-to-C e-commerce which requires customers' clicking on the "confirm purchase" button. According to Silverstein et al. (2001), between 20% and 90% of the customers decided not to complete online purchases. Raymond (2001) estimates that 65% of online shoppers have dropped out of retailers' websites and many of them abandoned the shopping carts somewhere in the checkout procedure. Goldwyn (2003) report that approximately 78% of

consumers have abandoned shopping carts on vendors' storefronts. Independent industry reports show similar analyses of customers' dropouts and shopping cart abandonment, including those by National Mail Order Association (NMOA 2005) and Pastore (1999).

This salient customer dropout phenomenon is intriguing in e-commerce because both its scale and frequency are substantially higher than those commonly observed in physical store outlets. Customer dropouts hurt online vendors and, in many cases, also frustrate the consumers who have the need/want, desire, or intention to purchase online. When abandoning a shopping cart for various reasons, the consumer had already investigated time and efforts for searching for relevant information, comparing alternative products/services, and attempting to complete the checkout procedure. Understanding customer dropouts is essential and can allow online vendors to better serve the customers who visit their websites. Customer dropouts directly affects online retailing, which has grown at a steady pace in the past few years but only accounts for a small portion of retailing. According to the United States Census Bureau, online sales represented a marginal 2.2% of the total sales in the United States.

Customer dropouts can be analyzed from different perspectives, among which, trust is essential and can provide a legitimate and practical lens for examining this unsettling phenomenon online. Trust affects consumers' purchase decision making. Previous research has shown the consumer's trust in an online vendor to be fundamental to the proliferation of B-to-C e-commerce (Keen et al. 1999) and has profound and lasting effects on an online vendor's bottom-line (Hoffman et al. 1999). Trust represents a common strategy for reducing social complexity, particularly in social environments that cannot be regulated through rules, customs, or norms (Luhmann 1979). E-commerce is predominantly informational and virtual; it offers few physical tangibles and limited social cues. Not surprisingly, consumers in general find it substantially more difficult to judge the trustworthiness of a vendor in an online setting than in the conventional business context (Reichheld and Schefter 2000).

In a typical online shopping scenario, the customer bears substantial risks when purchasing from a vendor, partially because most of his or her encounters with the vendor are through its website. An online vendor might behave opportunistically or even fraudulently, at the expense of its customers. Rationale and sophisticated customers would assess such risks when contemplating making online purchases from a website. Prior studies suggest that customers' trust in a vendor can significantly affect their intentions or decisions to purchase from the vendor online (Gefen et al. 2003; McKnight et al. 2002; Gefen 2000; Jarvenpaa et al. 2000). When visiting a vendor's website, an individual would choose to leave the site when lacking sufficient trust in the vendor, probably on the basis of his or her assessment of and interactions with the vendor's website (Reichheld and Schefter 2000; Jarvenpaa and Tractinsky 2000). Hence, it is essential to examine the relationship between customers' trust in an online vendor and their decisions to dropout from its website. Specifically, this relationship can be investigated along the general consumer decision making process and may be generic or specific to countries.

Trust has been conceptualized from different perspectives, ranging from a belief that the trustee is able to fulfill a commitment (Rotter 1971) to specific expectations of the institutional environment (Zucker 1986) to the willingness of one party to be vulnerable to the actions of another (Mayer et al. 1995). Alternative trust classifications have been proposed and examined empirically. For example, Kim et al. (2003) distinguish potential customer trust and repeat customer trust, whereas Singh and Sirdeshmukh (2000) categorize trust as pre- or post-encounter. However, empirical investigations of the effects of trust on customer dropouts have received little attention from prior research. Cho (2004) examines the likelihood of the customer's aborting an intended online transaction but does not approach this phenomenon from the basis of trust.

Finding from previous research have identified different sources of trust and its key antecedents (e.g., Gefen et al. 2003; Jarvenpaa et al. 2000; Mayer et al. 1995; McKnight et al. 1998). Imaginably, not all trust determinants are equally significant throughout the customer's purchase process; that is, some determinants may be more prominent or significant than others in a particular stage of the purchase process. In this vein, examining the "salient" trust determinants in each stage of the purchase process is important and can provide insights into the general relationship between customers' trust in an online vendor and their decision to dropout of its website. Specifically, this study examines the following research questions:

1. Is the customer's trust in an online vendor significantly associated with his or her dropout decision from the vendor's website?
2. What are the salient trust antecedents in each stage of the general consumer decision process? Do salient trust antecedents vary in the different stages of the decision process?

Specifically, we examine the customer's decision to continue or exit at each major stage of the general purchase process and analyze his or her trust in the online vendor, particularly from the aspect of prominent trust antecedents in that stage. Specifically, we adopt the consumer decision process by Engel et al. (1968) as a general framework for our investigation. Based on our review of relevant previous research and analysis of online purchases, we developed some hypotheses and empirically tested them using online study that involves a hypothetical retailing website and undergraduate business students from two major universities located in the United States and Hong Kong, respectively. Our comparative analysis results consistently point to a significant relationship between customers' trust in the online vendor and their dropouts in the different stages of the purchase process. Significant, salient trust antecedents appear to vary in accordance with in the particular stage of the consumer decision process. Our results seem to suggest an interesting pattern that customers tend to depend on subjective, general trust antecedents (such as disposition toward trust or perceptions about the website's ease of use) in the early stages of the purchase process and then emphasize specific, transaction-oriented antecedents in the later stages.

The remainder of the paper is organized as follows: Section 2 reviews relevant prior research and highlights our motivation. Section 3 describes our research framework and discusses the specific hypotheses to be tested, followed by study design details in Section

4. Section 5 highlights key evaluation results and discusses their implications for research and practice. We conclude in Section 6 with a summary and discussions of the study's contributions and limitations, together with some future research directions.

2. Literature Review and Motivation

Trust has interested researchers in several disciplines, including psychology (Rotter 1971; Rempel et al. 1985), sociology (Zucker 1986), and management (Mayer et al. 1995; McKnight et al. 1998). Prior studies differ in the conceptualization, focus, or perspective subtly (if not considerably) and results in definitions that share only some commonality. For many psychologists, trust is the belief that the trustee is able to fulfill a commitment (Rotter 1971). In sociology, trust usually refers to a set of expectations of the institutional environment (Zucker 1986); in management research, trust pertains to the willingness of a party to be vulnerable to the actions of another party based on beliefs about the other party's ability, benevolence, and integrity (Mayer et al. 1995). Trust has been studied in e-commerce contexts. For instance, Gefen et al. (2003), McKnight et al. (2002), and Jarvenpaa et al. (2000) consider trust as general beliefs about an online vendor. In this study, trust refers to the belief that the behavior of an online vendor is dependable, consistent with common definitions from prior research (Jarvenpaa et al. 2000; Heijden et al. 2003).

The impacts of trust on e-commerce in general have been investigated by previous information systems research, whose cumulative findings point to its importance for facilitating and fostering online business activities, directly or indirectly. In our context, trust has been shown to have affect customers' intentions to purchase online (Gefen et al. 2003; Jarvenpaa et al. 2000; Heijden et al. 2003; Pavlou 2002), participate in Web-based auctions (Pavlou and Gefen 2004), and provide personal information willingly (Xu et al. 2003). Prior studies that examine customers' trust in an online vendor purposefully distinguish the trust in a vendor associated with different types of visits by customers, perceived or developed through their interactions with the vendor's website. Kim et al. (2003) differentiate potential trust and repeat-customer trust. Potential trust indicates the initial trust of a customer, as is perceived or developed during his or her first visit(s), without transactions to an unfamiliar vendor's website (Singh and Sirdeshmukh 2000), whereas repeat-customer trust refers to the trust a customer has in an online vendor with which the customer has already transacted. Singh and Sirdeshmukh (2000) differentiate pre- and post-encounter trust on the basis of whether the customer has visited the vendor's website previously. A review of relevant previous research shows limited empirical investigations of either trust in an online vendor or its antecedents in relation to the different stages in the consumer decision process.

Visits to a vendor's website can be analyzed in relation to a multi-stage consumer decision process. Such general processes can provide a legitimate but intuitive framework for examining online consumer dropouts. When arriving on a vendor's website with a need or an intention to make purchases, a customer can choose to exit the website immediately after browsing its portal page or depart at a later stage. Examining customer dropouts along the consumer decision process is essential and can shed detailed lights on

the relationship between customers' trust in an online vendor and their decisions to discontinue in specific stages of the purchase process.

Important trust antecedents have been studied considerably. Zucker (1986) classifies categorizes trust-building as institutional-based, process-based, and characteristic-based. Institutional-based trust is impersonal and usually does not depend on the commonality of characteristics or past history, whereas process- and characteristic-based trust are considered sources of personal trust. In institutional-based trust building, trust is closely associated with salient social structures that may include third-party assurance, a legal system, or professional associations (Kim et al. 2004). McKnight et al. (1998) examine this trust-building mode and explicitly distinguish between structural assurance and situational normality. Structural assurance refers to the belief that the structures of an institutional environment (such as guarantees, regulations, legal recourse, or safeguards) are in place to promote trust-building (Shapiro 1987), whereas situational normality is a person's assessment of the likelihood of a successful transaction on the basis of how proper (Lewis and Weigert 1985) or customary (Baier 1986) the environment appears to him or her. In e-commerce, important antecedents of institutional-based trust have been shown to be salient and significantly affect customer trust in online vendors (Gefen et al. 2003; McKnight et al. 2002; Pavlou and Gefen 2004; Kim et al. 2004).

Process-based trust building relates to previous experiences and expected future exchanges. Prior experience is a fundamental basis of trust (Hosmer 1995; Kumar et al. 1995). Luhmann (1979) suggests that familiarity reduces social uncertainty through the increased understanding of what is happening now. In B-to-C e-commerce, familiarity reduces complexity by allowing the customer to better understand how to search for products and services on a vendor's website, as well as the procedural details associated with his or her search (Gefen 2000). Increasing familiarity implies greater knowledge accumulated from previous experiences with the focal or similar websites. Trust also can be built through a calculative process (Hosmer 1995), such as the customer's cost-benefit analysis of situations in which another party could cheat or cooperate in the relationship (Buckley and Casson 1998; Shapiro et al. 1992; Lewicki and Bunker 1995). In this scenario, important antecedents of calculative-based trust deter a party from engaging in opportunistic behaviors that will jeopardize its reputation and trustworthiness (Shapiro et al. 1992). In our case, consumers are more likely to trust an online vendor when they believe that the vendor has more to lose than to gain by behaving dishonestly (Gefen et al. 2003).

Important antecedents of characteristic-based trust also are pertinent to individuals' trust-building and may be more personal than those for process-based trust building. Of particular importance is disposition to trust (also known as trust propensity), which refers to the extent to which a person is willing to depend on others (McKnight et al. 2002; Rotter 1971; Ridings et al. 2002). Previous research has shown this disposition (propensity) particularly essential for building new relationships, but its importance may decrease when the person interacts more with the trusted party (Rotter 1971; McKnight et al. 1998). When visiting an unknown vendor's website, a consumer is likely to depend

greatly on his or her disposition to trust to make initial trust assessments (Reichheld and Schefter 2000; Gefen 2000).

Luhmann (1979) approaches trust from a system's perspective and suggests it is affected by the functionality of the system (such as a website) implemented by the trusted party. Kumar (1996) comments that a well-explained, easily understood process can effectively create and foster trust in business transactions. In e-commerce, because consumers primarily, if not completely, interact with a vendor through its website, the extent to which customers can use the website easily is critical and thereby manifests the vendor's commitment and efforts to serve its customers (Gefen et al. 2003). Several studies show that the perceived ease of use of a website has significant positive effects on customers' trust in the vendor (e.g., Gefen et al. 2003; Koufaris and Hampton-Sosa 2004).

The relationship between trust antecedents and customers' trust or perceived trust in vendors has been examined empirically. McKnight et al. (1998) show dispositional and institutional-based trust to be essential trust antecedents. Mayer et al. (1995) report the importance of the trusting person's propensity. According to Jarvenpaa et al. (2000), the perceived size of an online store and perceived reputation of the vendor are key drivers of customer's trust in an online vendor. Gefen et al. (2003) indicate that calculative-based trust, structural assurances, situational normality, familiarity, and perceived ease of use of the online store represent prominent factors that affect trust. However, a review of relevant prior research shows limited investigations of this relationship in the context of customer dropouts or with respect to the general consumer decision process. Conceivably, customers' trust in an online vendor affects their decisions to exit from its website (i.e., dropouts), and the specific salient antecedents may vary from stage to stage in the consumer decision process. That is, customers may focus on particular antecedents when assessing their trust in the information-search stage but shift their emphasis to another set of antecedents during the purchase stage. In this study, we investigate consumers' trust in an online vendor and its effects on customer dropout decisions by examining key trust antecedents in each stage of the consumer decision process, which mimics their typical visits to retailers' websites.

3. Analysis Framework and Research Hypotheses

In this section, we describe our overall research framework and detail the specific hypotheses to be tested in our experiment.

3.1 Analysis Framework

The consumer decision process has interested marketing researchers and practitioners, prompting them to develop and empirically test several conceptual frameworks or models. Of particular importance and popularity is the framework by Engel et al. (1995), which we adopt as our overall analysis framework. According to this framework, the general consumer decision process consists of five distinct phases: need recognition, information search, alternative evaluation, purchase, and post-purchase evaluation. In the need recognition stage, a person senses a noticeable discrepancy between a desired state and his or her current state, which likely prompts him or her to recognize a need for some products or services. In the information search stage, the consumer searches for

information about available products or services that have the potential to satisfy this recognized need. Information search typically generates a set of preferred options or alternative products/services to be assessed in the alternative evaluation stage, in which the consumer evaluates and ranks alternative products/services on the basis of specific selection criteria that he or she establishes using related knowledge and previous experience pertaining to similar products/services or need scenarios. When the product/service assessment is sufficiently positive and the alternative evaluation points to a particular product/service, the customer executes a transaction with the vendor in the purchase stage. After using or consuming the product (service), in the post-purchase stage, the customer evaluates his or her experience and satisfaction and adjusts his or her knowledge or perceptions about this particular product (service) accordingly.

We choose this particular framework primarily because of its applicability to a wide range of consumer decision-making scenarios or phenomena (Rice 1997), as well as its resemblance to the common visit process on a retailer's website. Our analysis focuses on the information search, alternative evaluation, and purchase stages, which are arguably more important and relevant to customer dropouts on a vendor's website than are the other stages. As a result, our investigation targets a customer's visit to an unknown retailer's website for shopping purposes, in accordance with the chosen consumer decision process as a framework.

3.2 Hypotheses

Our hypotheses are built upon related theoretical premises and target significant salient trust antecedents in each investigated stage of the general consumer decision-making process.

Information Search Stage

Our investigation starts with the information search stage, in which consumers search for products or services potentially relevant to their needs and wants; we provided subjects with a specific need to purchase mobile phones. We expect disposition to trust and ease of use to be salient trust antecedents in this initial stage of purchase. Disposition to trust is crucial in personal or transactional encounters that can be characterized as new relationships (McKnight et al. 2002; Mayer et al. 1995; Ridings 2002) because it indicates a person's tendency to depend willingly on others across a broad spectrum of situations and people (McKnight et al. 1998). In this sense, it is a trust "credit" rendered to others before any experiences are available to provide rational interpretations of the (new) relationship (Gefen et al. 2003). When consumers know little about an online vendor, they often rely on their disposition to trust to assess the vendor's trustworthiness. In an online setting, consumers who have relatively high trust dispositions are more likely to engage in product information searches on a vendor's website that they have not visited before than are those with low trust dispositions.

Online visitors often use the structural design and functional aspects of a website (e.g., product category index and search engine) to search and access prospective products or services relevant to their needs and wants. According to Gefen et al. (2003), customers can recognize an online vendor's intent and investments in the relationship when it

properly configures its website and makes it easy to use. Following this reasoning, consumers value the ability to locate and access prospective products without much hassle and may develop greater trust in the vendor when its website has the desired functionality and is easy to use (navigate). This suggestion is congruent with the discussion by Luhmann (1979), who indicates that trust can be developed through the features or functions of a system implemented by the trusted party. In addition, Koufaris and Hampton-Sosa (2004) report a significant relationship between the perceived ease of use of a website and customers' trust in the vendor, such that consumers tend to exhibit greater trust in an online vendor when its website is perceived as easy to use or navigate. Overall, consumers who trust an online vendor are more likely to engage in product/service information search on its website, as compared with those who do not trust the vendor and therefore tend to exit the website without completing the information search (i.e., advancing to the subsequent alternative evaluation stage). Thus, we test the following hypotheses:

- H1: In the information search stage, a customer's disposition to trust has a positive effect on the likelihood that he or she will trust an online vendor.
- H2: In the information search stage, a customer's perception about the ease of use of a vendor's website has a positive effect on the likelihood of his or her trusting the vendor.
- H3: The customer's trust in an online vendor in the information search stage has a positive effect on the likelihood of his or her continuing with the purchase process (i.e., advancing to the subsequent alternative evaluation stage).

Alternative Evaluation Stage

In the alternative evaluation stage, consumers compare the products identified in the information search stage on the basis of their important product attributes, preferences, standards, specifications, or some combination thereof. In most cases, the customer's choice set includes products that vary in brands or models and is assessed simultaneously. In a typical online shopping context, a customer browses a finite set of products (often in an iterative fashion) and places the selected products in the shopping cart. To varying degrees, customers rely on third-party analysis reports, consumers' evaluative feedbacks, and product ratings in their comparative assessments. Structural assurance—the customer's assessment of existing legal recourses, guarantees, and policies before making a purchase decision (Zucker 1986; Shapiro 1987)—offers an important trust antecedent in this stage. In an online setting, customers often use third-party assurance, independent reports or ratings, transaction security, and refund policies to safeguard their online purchases. Many online vendors provide product quality guarantees and refund policies, obtain digital certificates issued by trusted certificate authorities (e.g., Verisign at www.verisign.com), implement secure encryption-based exchanges based on Secure Socket Layer and Secure HTTP protocols, or join widely recognized privacy seal programs for privacy compliance and monitoring (e.g., TRUSTe at www.truste.org). Structural assurance becomes increasingly significant in the alternative evaluation stage, and its effect on a customer's trust in the vendor therefore may exceed that of the customer's disposition to trust or perceived ease of use of the vendor's website. Accordingly, we test the following hypotheses:

- H4: In the alternative evaluation stage, a customer's perceived structural assurance of an online vendor's website has a positive effect on his or her trust in the vendor.
- H5: In the alternative evaluation stage, a customer's perceived structural assurance of a vendor's website has a greater impact on the customer's trust in the online vendor than does his or her disposition to trust.
- H6: In the alternative evaluation stage, a customer's perceived structural assurance of a vendor's website has a greater impact on the customers' trust in the online vendor than does the perceived ease of use of the vendor's website.
- H7: The customer's trust in an online vendor in the alternative evaluation stage has a positive effect on the likelihood that he or she will continue with the purchase process (i.e., advance to the subsequent purchase stage).

Purchase Stage

In the purchase stage, consumers make the ultimate decision whether to purchase the particular product(s) selected in the alternative evaluation stage. In an online setting, consumers typically have to make a payment online and provide shipping information to complete a purchase. In this critical stage, consumers may have concerns about privacy-related issues, additional costs previously not revealed by the vendor,¹ opportunistic behaviors by the vendor, or even unauthorized use of the payment information they provide (Smith et al. 1996; Stewart and Segar 2002). As Reichheld and Schefter (2000) warn, the behavior of an online vendor, for the most part, cannot be effectively monitored or guaranteed. Consumers' concerns about an online vendor's opportunistic behaviors, abuse or mismanagement of personal information, and fraudulence therefore are prevalent, and consumers generally weight the potential benefits and risks associated with an online purchase before confirming or completing their purchases. The level of trust in the vendor can be affected by the customer's cost-benefit analysis of the likelihood the vendor will cheat versus cooperate in the relationship (Buckley and Casson 1998; Shapiro et al. 1992; Lewicki and Bunker 1995), and when the customer believes the vendor has more to lose than gain by behaving dishonestly, he or she is more likely to trust the vendor (Gefen et al. 2003). This argument suggests the importance of the customer's calculative-based belief, developed on the basis of the vendor's website, which may have a greater effect on his or her trust than the trust antecedents discussed for the previous stages. Therefore, we test the following hypotheses:

- H8: In the purchase stage, the customer's calculative-based belief about an online vendor's website has a positive effect on his or her trust in the vendor.
- H9: In the purchase stage, the customer's calculative-based belief about an online vendor's website has a greater impact on his or her trust in the vendor than does the perceived structural assurance.
- H10: In the purchase stage, the customer's calculative-based belief about an online vendor's website has a greater impact on his or her trust in the vendor than does his or her disposition to trust.

¹ A common example of such additional costs might be the shipping cost of a selected product that the vendor does not disclose before the checkout process, whether purposefully or otherwise.

- H11: In the purchase stage, the customer's calculative-based belief about an online vendor's website has a greater impact on his or her trust in the vendor than does the perceived ease of use of its website.
- H12: The customer's trust in an online vendor in the purchase stage has a positive effect on the likelihood of his or her making a purchase online.

4. Study Design and Data Collections

To test our hypotheses, we performed an empirical study in which all subjects had a need for a mobile phone and assessed and decided whether to search for and possibly make a purchase of the phone from a designated e-tailing website. Our investigation was conducted online and focused on three explicitly distinct phases that correspond to information search, alternative evaluation, and purchase in the general consumer decision process. Our study was controlled by an application program developed in Hypertext Processor and MySQL. Subjects assessed the particular trust antecedents important to the stage they had just completed before advancing to the subsequent phase of the study and explicitly indicated their decision to continue with or dropout from the purchase process. That is, at the completion of each stage, subjects were presented with a set of question items and were asked to provide their assessments using the provided Likert scale, as well as their decisions to continue or exit from the e-tailing website under study. Subjects also had to complete a questionnaire when they decided not continue with the purchase process in any phase of the study. Those who completed the process filled out a final questionnaire designed to capture their trust assessments.

Measurements: We adapted previously validated instruments to operationalize the investigated trust and its antecedents. Specifically, we measured disposition to trust with three question items adapted from Pavlou and Gefen (2004) and used five items adapted from Gefen et al. (2003) to measure perceived ease of use. We measured calculative-based belief with three items adapted from McKnight et al. (2002). We also used five items adapted from McKnight et al. (2002) to operationalize the customer's trust in the online vendor, our dependent variable. We measured all question items using a seven-point Likert scale, with 1 being "strongly disagree" and 7 being "strongly agree." Following the suggestion by Straub (1989), we reexamined the reliability and validity of our measurements, though they had been validated previously. The results are satisfactory and suggest appropriate validity of our instrument. We list the particular questions items used in the study in the Appendix.

Subjects: Our subjects are undergraduate business students enrolled in required Introduction to Management Information Systems classes at two major universities located in the United States and Hong Kong, respectively. Specially, we have a total of 219 subjects from the U.S. and 178 subjects from Hong Kong, showing a response rate of 76% and 94% from the respective class enrollments of 289 and 189. The Hong Kong subjects completed our online study from a designated computer lab equipped with Pentium 4 workstations, 17-inch LCD monitors, and high-speed Internet access. The U.S. subjects accessed the studied website from the Web but not from any designated computer labs. The website interface, survey page design and sequence, and data collection flow remain the same for all subjects, regardless of their locations or means for

accessing the study's website. All subjects voluntarily participated in the study at the request of their instructors and received extra class credits for their participation². We use a scripted document (available on the studied website) to inform subjects of the study's objective, the task to be completed, the data collection procedure, and the data analysis plan before their commencing with the study.

Task: Our task design targets mobile phones³, which are commonly used by most people in both Hong Kong and the U.S. and therefore are greatly familiar to our subject population, who in turn could better relate to the shopping need and task in the study. Our product category choice also offers reasonable and manageable product diversities in terms of manufacturers and models. We constructed a hypothetical website that closely mimics those of leading mobile phone vendors. Our study website offers a comprehensive selection of mobile phones for subjects' evaluation, consideration, and purchase. In a pilot study, we assessed the data collection flow, the clarity and consistency of the online instructions, the ease of navigation throughout the task required in the study, and the wording and sequencing of the question items. On the basis of its results, we made a handful of modifications to the screen layout designs, the presentation of several online instructions, and the wording choices in some question items. The subjects who participated in the pilot study were not considered for the subsequent study. Figure 2 shows a screenshot of the mobile phone website we used in the study

5. Evaluation Results and Discussions

In this section, we highlight important evaluation results pertaining to customer dropouts, the hypothesized trust antecedents, and their effects in each investigated stage of the consumer decision process. We also discuss some important implications for research and practice.

5.1 Analysis of Our Subjects

We had more male than female subjects in the study, at an approximate ratio of 8-to-2 among the U.S. subjects and 6-to-4 among the Hong Kong subjects. The U.S. subjects are considerably older and have more university experiences than their Hong Kong counterparts. Specifically, our U.S. subjects averaged 22.5 years in age and the Hong Kong subjects on average were 18.9 years old. The U.S. subjects have been receiving university education for 3.5 years which is considerably longer than an average of 1.2 years among the Hong Kong subjects. The Internet usage was considerable higher among the U.S. subjects (i.e., 20.4 hours a week) than among the Hong Kong subjects (approximately 10 hours a week). Almost all the U.S. subjects have shopped online before while only about half of the Hong Kong subjects have actual purchase experiences online. The extensive shopping experiences are consistent with the greater use of the Internet. Most subjects have some knowledge about digital certificates but may not know exactly their purpose or how they work. The Hong Kong subjects are relatively more

² The exact course credits received by a subject, to some degree, depended on his or her effort in the study.

³ Our study design stipulated a need for the subject to buy a mobile phone. That is, subjects did not actually need a mobile phone; rather, they were presented with a scenario that prompted their considering or purchasing a phone.

knowledgeable about digital certificates than their U.S. counterparts. Table 1 summarizes important characteristics of the students who voluntarily took part in the study.

5.2 Analysis of Customers' Dropout Decisions

We analyzed customer dropouts in each investigated stage (summarized in Table 2). A handful of our subjects (i.e., 35 U.S. subjects and 12 Hong Kong subjects) decided not to continue after reading the introduction to the study⁴ and the remaining subjects engaged in information search on the website to find mobile phones to consider for purchase. At the completion of the information search stage, 80 percent of the Hong Kong subjects decided to continue with the alternative evaluation stage but only 57 percent of the U.S. subjects elected to do so, showing a contrasting dropout rate of 20 percent versus 47 percent. Most of the subjects who had engaged in alternative evaluations continued with the purchase stage but few of them actually made a purchase. Among the subjects who had decided to perform alternative evaluation, 75 percent of those from the Hong Kong students and 66 percent of the U.S. students advanced to the purchase stage, during which the dropout rate is prominently high and comparable between the Hong Kong and the U.S. subjects. Based on our analysis, the dropout rate in the initial stages of the purchase process appears considerably higher with the U.S. subjects than with the Hong Kong subjects; i.e., need recognition and information search. Overall, our results show that subjects exit at different stages in the purchase process, and that the dropout rate seems to increase or even accelerate as they advance in the purchase decision-making process.

5.3 Hypothesis Testing Results

We performed linear regression to examine the significance of each investigated trust antecedent, thereby testing the associated hypothesis. To test the predictive or explanatory power of the customer's trust in the online vendor in each investigated stage, we performed logistic regression using the subjects' trust assessments and decisions to advance to the subsequent stage rather than exit from the study. We summarize our analysis and hypothesis-testing results in Table 3 and discuss them in accordance with the investigated stages of the consumer decision process.

Information Search Stage: Analysis of the responses from both the Hong Kong and the U.S. subjects, disposition to trust appears to be a significant antecedent of customers' trust in the vendor. This finding is consistent with previous research results and shows its importance for initially building trust in a relationship (Rotter 1971; Mayer et al. 1995; McKnight et al. 1998) and implies that consumers tend to rely on their propensity to judge the trustworthiness of an online vendor about which they have little knowledge, if any. For both groups of subjects, perceived ease of use of the vendor's website also shows a significant positive effect on customers' trust in an online vendor in the information search stage. This finding is congruent with those reported by Koufaris and Hampton-Sosa (2004) and Gefen et al. (2003), which show that consumers' trust in an online vendor is directly affected by the ease or difficulty of using its website. According to our analysis, consumers trust an online vendor more when its website is easy to use and navigate. However, a customer's trust in the vendor during the information search

⁴ The responses from these early-departure subjects (in the exit questionnaire) show that they did not feel comfortable with the described study or the task it required.

stage cannot sufficiently explain his or her decision whether to continue with the subsequent alternative evaluation stage. This suggests that consumers, in the information search stage, are likely to have concerns about trust-related issues but these concerns may not be strong enough to constrain them from engaging in alternative evaluations. From a cost–benefit perspective, consumers may consider that they can gain more than they risk by searching for and comparing product (service) information, even on a completely unfamiliar vendor’s website. In turn, our finding implies that trust may not be a significant barrier or hindrance in early stages of the consumer decision process, despite the existence of trust-related concerns.

Alternative Evaluation Stage: Structural assurance appears to be a salient trust antecedent for both the Hong Kong and the U.S. subjects in the alternative evaluation stage, showing a positive effect on the customer’s trust in the online vendor. According to our analysis, subjects seem cautious about the structural safeguards implemented on the studied e-tailing website and value the mechanisms that provide secure transactions, guarantees for refunds, third-party assurance, and independent product evaluations or ratings when they make comparative assessments of the products identified in the information search stage. Based on our finding, the effect of structural assurance is greater than that of the individual’s disposition to trust (significant at the 0.05 level) but comparable to that of the website’s ease of use perceived by the subjects, which remains a prominent trust antecedent in the alternative evaluation stage. The diminishing impact of the consumer’s disposition to trust in the alternative evaluation stage is consistent with prior research findings show disposition to become less important when customers gain more interactions or familiarity with the (trusted) party being evaluated (Rotter 1971; McKnight et al. 1998).

On the other hand, the significance of perceived ease of use seems to extend beyond information search. As Gefen et al. (2003) comment, consumers may have fewer suspicions when they believe an online vendor is not hiding something from them by making relevant information conveniently accessible and its website easy to use (navigate). In this stage, the customer’s trust in the online vendor serves as an important predictor of his or her decision to continue with the purchase process or exit from the vendor’s website. When deciding to advance to the subsequent purchase stage, a customer in effect exhibits an obvious and strong intent to purchase from the vendor’s website. This reasoning is congruent with previous research findings that show the significant effect of trust on consumers’ intention to purchase online (Gefen et al. 2003; McKnight et al. 2002; Gefen 2000; Jarvenpaa et al. 2000).

Purchase Stage: Analysis of the responses from the Hong Kong and the U.S. subjects shows the customer’s calculative-based belief to have a significant effect on his or her trust in the vendor, as suggested by a *p*-value of less than 0.001. In the purchase stage, customers indicate their decision to make purchases online by providing the personal data and payment information required by the vendor. When making this decision, a consumer is likely to calculate the benefits compared with the costs and foreseen risks (such as opportunistic or fraudulent behaviors by the vendor), upon which the customer forms his or her calculative-based belief. According to our analysis, this belief affects the

consumer's purchase decision directly and its impact on his or her trust in the vendor appears significantly greater than that of disposition to trust or perceptions of the website's ease of use (neither of which appears important in the purchase stage). Meanwhile, structural assurance continues to be a significant salient trust antecedent in the purchase stage for the U.S. subjects but not the Hong Kong subjects. This implies the importance of product quality guarantees, explicit refund policies, digital certificates issued by a trusted certificate authority, adequate security technology, and commonly recognized privacy seals in the final purchase stage. The customer's trust in an online vendor in the purchase stage significantly affects his or her decision to actually make a purchase on its website. Based on our finding, subjects are more likely to complete purchases online when they conceive sufficient calculative-based belief and, perhaps to a lesser extent, structural assurance in the purchase stage than otherwise.

5.4 Discussions

Findings of this study suggest an important relationship between customers' dropouts in the purchase process and their trust in an online vendor. Specifically, our empirical results show significant, salient trust antecedents to vary in the different stages of the consumer (purchase) decision process. An individual's disposition to trust and perceptions of the ease of use of the vendor's website appear to be significant antecedents of his or her trust in an online vendor in the information search stage. However, their effects seem to diminish as customers advance in the general purchase process, disposition to trust more rapidly than perceived ease of use. According to our analysis, disposition to trust becomes insignificant in the alternative evaluation stage, and perceived ease of use remains significant trust antecedent in the alternative evaluation stage but in the subsequent purchase stage. Structural assurance represents an important trust antecedent in the alternative evaluation stage and its effect remains significant in the purchase stage in which calculative-based belief has a significant effect on the customer's trust in an online vendor.

Analysis of the responses from our subjects shows little cross-country differences. Consistently, our findings suggest probable diminishing effects of important trust antecedents along the general consumer decision process. Specifically, a trust antecedent that is important in an early stage of the purchase process may have less significant effects in subsequent stages. In addition, our analysis indicates a tendency of the customer's dependence on general trust antecedents (e.g., those pertaining to personal traits or perceptions) to assess the trustworthiness of an online vendor in early purchase stages but emphasizing in the later stages on more specific, objective, or transaction oriented antecedents, such as structural assurance and calculative-based beliefs derived from cost-benefit analyses.

This study represents a point of departure for continued investigations of essential or dominant trust antecedents in particular stages of the general purchase process online. While previous research suggests disposition to trust to become less important when people are more influenced by interactions in the relationship (Rotter 1971; McKnight et al. 1998), and our finding shows that its effect diminishes after the information search stage. Additional research attention could shed light on the dominant trust antecedents in

each stage of the purchase process. It is particularly interesting when examining customers' general tendency of searching product information online but making purchases offline from the lens of trust (BIGResearch 2005) and privacy of which importance is also implied by our results pertaining to structural assurance. In this vein, we thereby may better understand why consumers drop out in the information or alternative evaluation stages by examining their trust in an online vendor and simultaneously pointing to specific dominant trust antecedents. Product search and evaluation can be combined and proceed iteratively, in which case it is important to investigate prominent changes in trust and its antecedents accordingly. We do not examine the post-purchase stage which also deserves research attention. As Kim et al. (2003) commented, there appears to be an important relationship among trust, pre-purchase, and post-purchase intentions.

For practitioners, our findings suggest the importance of websites' perceived ease of use, particularly during initial encounters. Online vendors should provide adequate search support (e.g., via a search engine), make relevant recommendations in response to the user's search, and organize the contents (including products) effectively. These efforts can enhance the function and design of a retailing website and result in increased ease of use as perceived by customers. From the perspective of website design, online vendors should research the common ways consumers search for products on their websites, as well as the functionalities that best support their product search and access. Such analyses might point to common confusions in online shopping (e.g., a portable media player might be searched for as a video player, a music player, or a digital photo storage medium). These confusions can be reduced if the vendor provides appropriate, relevant product information on its website together with effective search support. Vendors also should provide information about products that they do not sell. As Kumar et al. (Kumar et al. 1995) argue, consumers may trust an online vendor more when they perceive high benevolence of the vendor through its providing detailed product information.

In both the alternative evaluation and purchase stages, structural assurance is an essential trust antecedent, which suggests that consumers pay attention to assurances, policies, guarantees, and security mechanisms on a vendor's website. Prior research has reported that e-seals have positive impacts on customers' trust building when they are noticed and recognized (Kimery and McCord 2002; Kovar et al., 2000). Thus, vendors should consider obtaining commonly recognized e-seals and place them in easily perceptible positions on their homepages. In addition, online vendors should acquire digital certificates for their websites. Because of the global nature of e-tailing, international acceptance and recognition is critical for e-seal and digital certificate choices by online vendors. For example, TRUSTe might enjoy better global recognition than BBB Online Reliability and Privacy seals (www.bbb.com) because they are known in regions or countries outside the United States and Canada.

6. Summary

In this study, we have investigated the relationship between customers' trust in an online vendor and their dropouts from its website in accordance with a general consumer decision process. While most prior research that examines trust and its antecedents has

taken a holistic approach towards the online purchase process, we investigate salient trust antecedents in each stage of the process and empirically test their effects on the customer's trust in the vendor. Thus, our analysis results shed light on probable relationships between customers' trust in an online vendor and their dropouts from its website. Overall, our findings are consistent among the subjects from the investigated countries and suggest customer dropouts to accelerate along the consumer decision process. More importantly, our subjects tend to use subjective, general antecedents (mostly based personal traits or perceptions) to assess the trustworthiness of an online vendor in early stages of the process but, in later stages, focus on specific, objective antecedents specific to the purchase under evaluation.

This study includes several limitations that must be considered when interpreting its results. First, this study is based on a simulated shopping scenario in which subjects do not make actual online purchases. Our subjects are presented with a scenario that prompts their consideration for purchasing a mobile phone on a website, hence mimicking common online shopping scenarios to some extent. While reasonably approximating the relationships under examination, our study design nevertheless cannot fully replicate the actuality of online shopping. The subjects used in the study are limited in background diversity and size. Our subjects are university students, who, as a group, have relatively reasonable familiarity with information technology and show modestly high Internet usage. Although it includes a relatively reasonable number of subjects from each investigated country, our study nevertheless is limited in sample size. The product choice represents another limitation. We chose mobile phones because our subjects have reasonable knowledge about them and are familiar with the different manufacturers and models; but, we cannot rule out potential biases that may have resulted from our examination of this single product. Hence, our findings may not be equally applicable across customer groups or products. The task used in the study represents another source of limitation. The design of our study is limited in that it prohibits subjects from returning to a previously completed stage. We adopted this "one-way" flow in the study to tease out the salient trust antecedents and test their impacts on the customer's trust in the vendor, as well as his or her dropout decision. Causal observations of actual online purchases show, however, that many consumers combine their product search and evaluation and may engage such activities in an iterative fashion. For example, a consumer who has identified a set of products may assess them comparatively and simultaneously bring additional products into his or her choice set. The search-and-compare activities may continue until the customer determines the particular products to purchase or decides not to purchase at all. In this study, we include a fairly large set of trust antecedents but do not investigate the probable transferability effects (Stewart 2003; Uzzi 1996). For example, we cannot determine whether part of the subjects' trust in the hypothetical online vendor stems from their trust in the investigation team, which consists of faculty members and demonstrators from the same university. Therefore, the level of trust we observe in each stage should be considered somewhat high, all other things being equal.

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The screenshot shows a web browser window titled "Questions" with the URL <http://147.8.210.25/phone/search02.php>. The page contains an instruction: "Please answer the following questions concerning your experience in using this website." Below this is a table with 8 rows of questions and a 7-point Likert scale for each.

Item	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	This website is easy to use.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.	It is easy to become skillful at using this website.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.	Learning to use this website is easy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4.	This website is flexible to interact with.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.	My interaction with this website is clear and understandable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6.	The steps required for searching a product on this website are similar to those at other online vendor websites.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7.	The information available on this website is similar to that commonly available on other online vendor websites.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8.	The nature of my interaction with the website is similar to that of other online vendor websites.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 1: Sample Question Items Used in the Information Search Stage

The screenshot shows the MyPhone.com website. The header includes navigation links: About Us, News, Products, Top Sellers, Accessories, and Contact Us. A search bar is present with the text "Search phones" and a dropdown menu set to "Price Below HK\$". Below the search bar, there are three product listings:

- ALCATEL OT512**: Price: HK\$ 980. Screen: Mono. Dimensions (mm): 91 x 42 x 20. Weight: 75 g. Talk Time: 360 min. [Add to Wish List](#)
- ALCATEL OT511**: Price: HK\$ 980. Screen: Mono. Dimensions (mm): 97 x 42 x 20. Weight: 75 g. Talk Time: 360 min. [Add to Wish List](#)
- SonyEricsson K700i**: Price: HK\$ 2980. [Add to Wish List](#)

On the right side, there is a "My Wish List" box. It states: "There is 1 item in the list, please add 2 or more." and lists "1. ALCATEL OT525" with a [remove](#) link.

Figure 2: A Screenshot of the Study Website

Characteristic	Descriptive Statistics	
	Hong Kong	U.S.A.
Gender	<ul style="list-style-type: none"> • Male: 104 • Female: 74 	<ul style="list-style-type: none"> • Male: 171 • Female: 48
Average age	18.9 years	22.5 years
Average university education	1.18 years	3.51 years
Online purchase experience	<ul style="list-style-type: none"> • Have purchased online: 48.9% • Have never purchased online: 51.1% 	<ul style="list-style-type: none"> • Have purchased online: 99.09% • Have never purchased online: 0.91%
Average weekly Internet usage	9.7 hours a week	20.4 hours a week
Knowledge about digital certificates	<ul style="list-style-type: none"> • Do not know digital certificates at all: 12.29% • Know digital certificates but not sure about their purpose: 48.31% • Know digital certificates and their purpose: 29.21% • Know digital certificates, their purposes, and how they work: 10.19% 	<ul style="list-style-type: none"> • Do not know digital certificates at all: 36.96% • Know digital certificates but not sure about their purpose: 32.61% • Know digital certificates and their purpose: 24.20% • Know digital certificates, their purposes, and how they work: 3.65%

Table 1: Summary of Important Subject Characteristics

Stage	Decided to Continue (% of Subjects Entering the Stage)		Decided to Dropout (% of Subjects Entering the Stage)		Total Subjects	
	Hong Kong	USA	Hong Kong	USA	Hong Kong	USA
Need recognition	166 (93%)	184 (84%)	12 (7%)	35 (16%)	178	219
Information Search	133 (80%)	98 (53%)	33 (20%)	86 (47%)	166	184
Alternative evaluation	100 (75%)	65 (66%)	33 (25%)	33 (34%)	133	98
Purchase	19 (19%)	12 (18%)	81 (81%)	53 (82%)	100	65

Table 2: Analysis of Subjects' Decision to Continue or Exit from the Study

Stage		Trust Antecedent	Dependent Variable	Hypothesis Testing Result (<i>p</i> -Value)	
				Hong Kong	USA
Information Search	H1	Disposition to trust	Trust in vendor	Supported (< 0.001)	Supported (< 0.001)
	H2	Perceived ease of use		Supported (< 0.05)	Supported (< 0.05)
	H3	Customers' trust in the information search stage	Continue versus Exit decision	Not Supported (> 0.05)	Not Supported (> 0.05)
Alternative Evaluation	H4	Structural assurance	Trust in vendor	Supported (< 0.001)	Supported (< 0.001)
	H5	Structural assurance versus Disposition to trust		Supported (< 0.05)	Supported (< 0.05)
	H6	Structural assurance versus perceived ease of use		Not Supported (> 0.05)	Not Supported (> 0.05)
	H7	Customers' trust in alternative evaluation stage	Continue versus Exit decision	Supported (< 0.01)	Not Supported (> 0.05)
Purchase	H8	Calculative-based belief	Trust in vendor	Supported (< 0.001)	Supported (< 0.001)
	H9	Calculative-based belief versus Structural assurance		Not Supported (> 0.05)	Supported (< 0.05)
	H10	Calculative-based belief versus Disposition to Trust		Supported (< 0.05)	Supported (< 0.05)
	H11	Calculative-based belief versus perceived ease of use		Supported (< 0.05)	Supported (< 0.05)
	H12	Customers' trust in the purchase stage	Continue versus Exit decision	Supported (< 0.05)	Supported (< 0.05)

Table 3: Summary of Analysis and Hypothesis-Testing Results

Appendix: Question Items Used in the Study

Trust Antecedent	Question Items
Disposition to trust	<ul style="list-style-type: none">• Most online vendors are reliable.• Most online vendors keep their promise and commitments.• Most online vendors are honest.
Perceived ease of use	<ul style="list-style-type: none">• This website is easy to use.• It is easy to become skillful at using this website.• Learning to use this website is easy.• This website is flexible to interact with.• My interaction with this website is clear and understandable.
Structural assurance	<ul style="list-style-type: none">• This website has enough safeguards to make me feel comfortable with purchasing online.• I feel assured about this website's legal and technological structure for providing a secure online transaction environment.• I am confident that this website has sufficient encryption and security capability for supporting safe online transactions.• This website appears to provide a robust and safe environment for online transactions.
Calculative-based belief	<ul style="list-style-type: none">• This online vendor has nothing to gain by being dishonest in its interactions with me.• This online vendor has nothing to gain by not caring me.• This online vendor has nothing to gain by not being knowledgeable when helping me.
Trust in an online vendor	<ul style="list-style-type: none">• This online vendor is trustworthy.• This online vendor evidently intends to keeps its promises and commitments to customers.• I trust this online vendor for keeping my best interest in mind.• I find it NOT necessary to be cautious about this online vendor.• This online vendor's behavior meets my expectations.