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Communications of the **I**nsformation for **S**ystems

INFLUENCE OF THE WEB VENDOR'S INTERVENTIONS ON PRIVACY-RELATED BEHAVIORS IN E-COMMERCE

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ABSTRACT

Concern about information privacy is considered one of the most important issues in e-commerce. To deal with this concern in the context of self-regulation, e-commerce web sites have implemented measures such as posting privacy policies and displaying third party seals. The purpose of this study is to examine the impact of the level at which a web site addresses privacy has on the users' perceptions and behavioral intentions during the initial interaction with the web site. A research model is presented and empirically tested by means of an experiment. The study showed that web vendors' interventions had an overall effect on the user perceptions of information privacy in the site. However, having more privacy elements in the web site did not increase the favorable perceptions of the web site. The research model also incorporated other privacy related constructs such as general concern about online privacy and type of information.

Keywords: electronic commerce, privacy, trust, user perception, behavioral intentions

INTRODUCTION

The Internet is expanding at an unprecedented rate and has enhanced the ability to collect, store, and analyze personal information at levels never seen before. While collecting consumer information is very important for businesses to create customer profiling and market segmentation, it is also a source of a growing concern for privacy invasion [Cranor et al., 1999; Chung and Paynter, 2002; Turner and Dasgupta, 2003; Ashrafi and Kuilboer, 2005; Rifon et al., 2005.] This concern is an important issue in e-commerce because the lack of confidence that Internet users have regarding security and privacy is one of the major impediments to full-scale utilization of the Internet. Privacy concerns affect users' behavior and, as a result, businesses' effectiveness in on-line transactions. For instance, Ranganathan and Ganapathy [2000] found that among several dimensions of e-commerce web sites, information security and privacy have a greater effect on the purchase intent of consumers than the other dimensions. Ahuja et al. [2003] also found privacy and security concerns to be the leading reason that prevented people from buying online.

Dhillon and Moores [2001] state two reasons for the increased importance of Internet privacy concerns. First, a more competitive business environment is forcing companies to collect more personal information. Second, advances in information technology have made possible not only various ways of data collection, but also mapping the patterns of online behavior. In response to public concern, various countries have implemented varying degrees of privacy legislation [Milberg et al., 2000; Chung and Paynter, 2002; Grupe et al., 2002]. While European Union (EU) member countries have agreed to implement stringent controls on personal information, the United States has relied more on self-regulation of companies, following a more business-friendly and market-oriented approach [McKenna, 2001; Ashrafi and Kuilboer, 2005]. To deal with this self-regulation environment, e-commerce web sites have implemented measures such as posting privacy policies and displaying third party seals [Liu and Arnett, 2002; Milne and Culnan, 2002; Ryker et al., 2002; Moores and Dhillon 2003; Gauzente, 2004; Moores, 2005; Rifon et al., 2005].

The purpose of this study is to examine the role that such interventions have on the users' perceptions and behaviors in the context of privacy. Researchers have examined the effect of privacy related elements, but focused on the influence of specific privacy-related interventions. This study goes a step further. It empirically analyzes the effect that the *degree* of these interventions has on users' perceptions. In other words, it attempts to answer the question of whether having more privacy-related elements in the web site results in better perceptions of information privacy, which in turn would result in a greater willingness to disclose information and buy from the site. It presents and empirically tests a model of Internet consumer behavior that aims to further the understanding of privacy issues in e-commerce. Specifically, the research question is: *what are the effects of the degree of a web vendor's interventions with regard to privacy on the users' perceptions of information privacy in the web site and subsequently on their intentions to provide personal information and buy from the web site*. Since the need to overcome privacy concerns with online transactions is more prevalent when the consumer is unfamiliar with the e-vendor, this study focuses on the initial stage of the consumer's interaction with a particular web vendor, in the case when the customer is unfamiliar either with the web site or with the online vendor.

BACKGROUND

ONLINE PRIVACY

Although there are various definitions of privacy, there is no commonly accepted definition of this concept [Goodwin, 1991]. Generally speaking, the term privacy is usually described as "the right to be left alone." In the context of activities in the electronic marketplace, privacy refers to personal information, while invasion of privacy usually means the unauthorized collection, disclosure or other uses of personal information as a direct result of online transactions [Wang et al., 1998].

Consumer International found that only 58% of Web sites display privacy policy [Moores, 2005]. However, companies are trying to enforce privacy, bringing new developments on several aspects. For example, at the organization level, many companies have created a new high-level position in the corporate hierarchy, the Chief Privacy Officer [Sipior and Burke, 2002]. At a technical level, various privacy management methods are currently being implemented, such as Privacy Policies, Privacy Seal Programs, and Platform for Privacy Preferences (P3P). Since this study focuses on the role of privacy related elements of the Web site, it is important to describe some of these privacy management methods.

In 1998, the Federal Trade Commission (FTC) issued Fair Information Practices (FIP) principles to guide its assessments and recommendations for online privacy [Caudill and Murphy, 2000]. At this point, FIP practices are guidelines, not laws. They stimulate private firms and associations to develop their own private guidelines. Online industry formed the Online Privacy Alliance (OPA) to encourage self-regulation, free from governmental legislation. OPA has developed a set of privacy guidelines that members are required to implement. The primary focus has been the

development of online “seals” that attest to privacy policies on a site. Three major privacy seals are TRUSTe, BBBOnline, and CPA WebTrust. Other privacy and general Web assurance seals have also been developed, such as BetterWeb by PricewaterhouseCoopers, WebAssured’s Online Purchase Protection program, and Good Housekeeping’s Web Site Certification. These privacy logos are displayed on a firm’s web site if the firm conforms to certain privacy principles. The number of web sites that use privacy seals is still relatively small. As of October 2004, CPA WebTrust had only approximately 40 recipients, TRUSTe around 1,300, and BBBOnline around 600 [Moore, 2005]. The FTC has not deemed the seal programs as “safe harbors” yet and it continues to push for legislation to enforce privacy protection principles.

In addition to posting privacy policies in their web sites, some companies are also adopting the Platform for Privacy Preferences, also known as P3P. This platform represents one of the efforts undertaken to deal technologically with the issue of privacy concerns. The work on the platform began in 1997 by W3C (World Wide Web consortium), an international industry consortium. Its goal is to enable users to become active players and exercise preferences over web site privacy practices [Reagle and Cranor, 1999; Brandt, 2002]. P3P is designed to help users reach agreements with web sites through a step-by-step process. The web site sends a machine-readable proposal where its identity and privacy practices are declared. The proposal can be automatically parsed by user agents, such as web browsers, and compared with privacy preferences set by the user. As of July 2003, 588 web sites had P3P policies and policy reference files [Byers et al., 2003].

RESEARCH ON PRIVACY

A significant amount of research has been conducted on privacy, both in the offline and online context. An often cited work on privacy is a study by Smith et al. [1996] which identified four dimensions of privacy concerns: Awareness of Data Collection, Secondary Usage, Errors, and Improper Access. The first dimension, Awareness of Data Collection, is defined as a general concern that an extensive amount of identifiable information is being collected and stored in databases. Secondary Usage refers to the concern that information collected from individuals for one purpose is used for another, secondary purpose without authorization from the individuals. It is frequently cited in literature on privacy as one of the main dimensions of privacy concern [Culnan, 1993; Cranor et al., 1999]. The third dimension, Errors, concerns the inadequacy of protection against deliberate and accidental errors in handling personal data. The fourth dimension, Improper Access, represents the concern that data can be readily available to people not properly authorized to view or work with.

Another stream of research on privacy relates privacy concerns to individual characteristics, both from personality and demographical perspectives. For instance, Smith et al., [1996] showed that personality factors are correlated with informational privacy concerns. Ackerman et al. [1999] grouped Internet users in three categories based on their general attitude about privacy: (1) privacy fundamentalists; (2) pragmatists; and (3) marginally concerned. Sheehan [2002] suggested a four-part typology to categorize online users: (1) unconcerned users; (2) circumspect users; (3) wary users; and (4) alarmed Internet users. National and cultural values have also been related to information privacy concerns [Milberg et al., 1995].

Privacy management methods and their impact on privacy concern are also investigated in literature. These studies focused on the longitudinal analysis of content of online privacy notices [Adkinson et al., 2002; Milne and Culnan, 2002; Desai et al., 2003], cross-country comparison of privacy policies [Johnson-Page and Thatcher, 2001], and privacy policies of web sites of Fortune 500 companies [Liu and Arnett, 2002]. Other researchers analyzed the influence of privacy statements and company’s information practices on the online customers’ behavior [Culnan and Armstrong, 1999; Miyazaki and Fernandez, 2000; Berendt et al., 2005; Liu et al., 2005].

Researchers also studied the effect of assurance services on the consumer perceptions of the web site. These studies have reported mixed results. Some of them have showed that third party

seals provide an additional effect on the likelihood of purchase [Houston and Taylor, 1999; Nöterberg et al., 1999; Kovar et al., 2000; Miyazaki and Krishnamurthy, 2002; Earp et al., 2003]. Other researchers concluded that such seals did not influence the purchasing decisions of the web users [Head and Hassanein, 2002; Kimery and McCord, 2002; Mauldin and Arunachalam, 2002].

In spite of the significant amount of research on privacy, it is suggested that there is a need for more comprehensive studies. Phelps et al. [2001] indicated that academic studies that examined the relationship among antecedents and consequences of privacy concerns are extremely difficult to find. Smith et al. [1996] indicated that, in addition to consideration of the complexity of individuals' concern, the factors that may affect privacy concerns and the outcomes of those concerns must be considered. Milne and Culnan [2002] state that there is a lack of understanding on how users perceive various web privacy features. This study attempts to address some of the issues discussed above by focusing on the information privacy in the context of e-commerce.

THEORETICAL BACKGROUND AND RESEARCH MODEL

Researchers have analyzed issues of privacy online using social contract and procedural justice theories. A social contract emphasizes the role of norms of behavior [Milne and Gordon, 1993]. Kaufman et al. [2002] described a social contract as "defining the collective rules that constraint the behavior of individuals and groups living in a society in such a way as to protect the individual, while also benefiting the society as a whole." The social contract concept in the context of privacy means that individuals are willing to disclose personal information as long as they perceive that organization would uphold its side of the social contract [Dhillon and Moores, 2001]. For instance, a web site that has a clear-cut privacy policy may influence the perception that the social contract in exchange of private information is maintained. Kaufman et al. [2002] also posit that while access and security are important in privacy protection, establishment of expressed agreements or "contracts" between the user and the provider of information is the most important factor.

Procedural justice has also been suggested as a theoretical basis for research on information privacy [Culnan and Armstrong, 1999; Dhillon and Moores, 2001; Culnan and Bies, 2003]. The procedural fairness theory refers to the perception of the individual that a particular activity in which he/she is involved is conducted fairly [Lind and Tyler, 1988]. Culnan and Armstrong [1999] incorporated the concept of procedural justice in their theoretical framework about information privacy, finding that companies that establish fair information practices and disclose these practices greatly reduce the customers' perceived risk.

Dhillon and Moores [2001] stated that the concepts of social contract and procedural justice or fairness are closely coupled to one another in the context of privacy. If a customer feels that the social contract in the exchange of information is not maintained, even when procedural fairness is observed, this would lead to lack of trust on the organization. On the other hand, if the customer is willing to disclose personal information in exchange for social or economic benefit, but the procedure used to collect information is not fair, this again would lead to concerns about privacy.

McKnight and Chervany [2001] proposed a model of trust in e-commerce that includes constructs such as disposition to trust, institution based trust, trusting beliefs, trusting intentions, and web vendor interventions. Disposition to trust represents the extent to which an individual displays a tendency to rely on others in general, and institution-based trust represents users' perceptions of the Internet environment such as beliefs that legal, regulatory, business, and technical protections for consumers are in place to enable successful transaction. The construct "Web vendor interventions" represents actions taken by the web vendor to assure customers about the web site such as privacy policy, third party seals, links to other sites, etc. The model posits that trusting beliefs and intentions influence Internet behaviors, and that these interventions can also influence consumers to provide information or purchase from the site. However, this hypothesis was not tested empirically. Thus, one purpose of our study is to explore the effects of these trust-building interventions on privacy beliefs of customers.

Our research model of information privacy online was based on the above Web Trust Model of McKnight and Chervany [2001], but adapted in the context of privacy online. This model is presented in Figure 1.

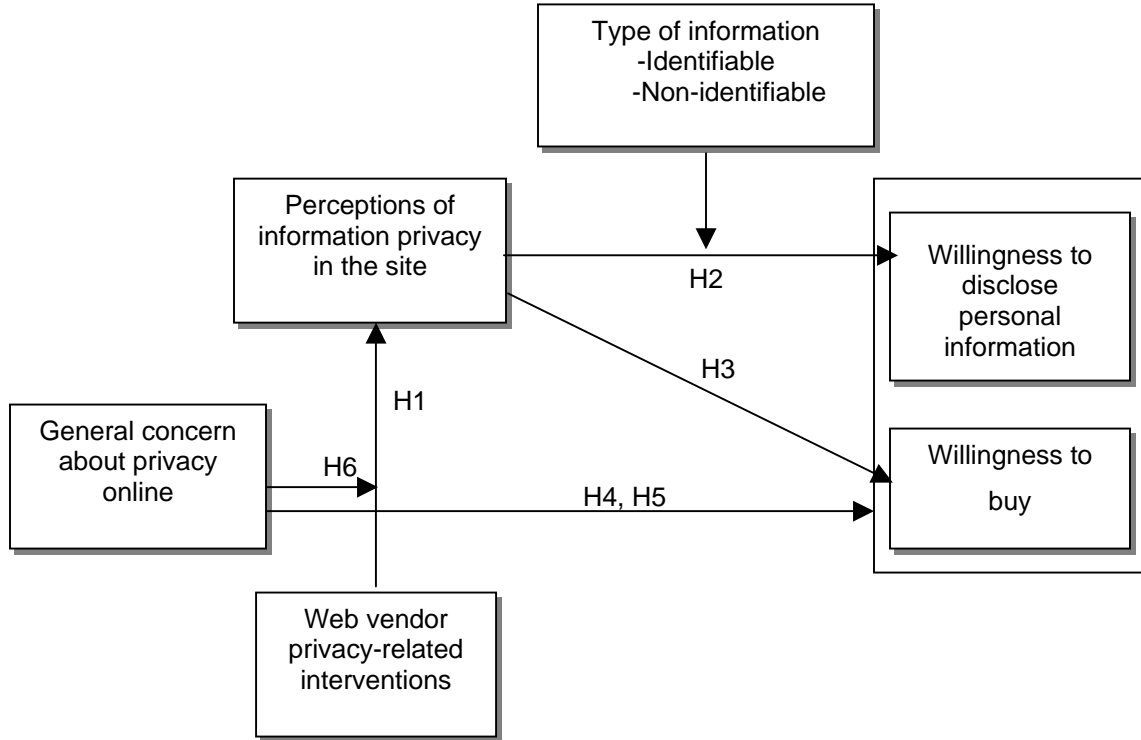


Figure 1. Research model

The construct “web vendor privacy-related interventions” represents the level to which a specific web site conveys the company’s efforts to address privacy issues and disclose company’ information practices. The construct “perception of information privacy in the web site” refers to the perceptions of the individual on how the web site will handle personal information and how serious the e-vendor is about a customer’s information privacy. This construct represents the consumer’s beliefs about the site and is similar to the trusting beliefs (perceptions of specific web site attributes) included in the model introduced by McKnight and Chervany [2001] and McKnight et al. [2002]. Instead of addressing issues of trust in general, this construct, in the context of this study, represents the perceptions of web vendor attributes with regard to privacy.

“The general concern about information privacy” construct refers to an individual’s attitude or state of concern towards the use of their private information by companies in the context of e-commerce. It reflects the general concern of individuals on how their personal information is handled by web sites. This construct is similar to institution-based trust in the Web Trust model. It is distinguished from the other construct “perception of information privacy in the web site” since it is cross-situational and reflects the general tendency of an individual to be concerned about the privacy of personal information online.

The last two constructs in the model, “willingness to disclose information and willingness to buy”, represent behavioral intention. The willingness to disclose personal information is analyzed in the context of the type of information requested by the web site, specifically whether this information is identifiable or not. Type of information has been an important factor considered and included in

theoretical frameworks for privacy [Phelps et al., 2000]. As such, the construct “willingness to disclose information” is represented in two subconstructs: “willingness to disclose non-identifiable information” and “willingness to disclose identifiable information”.

According to social contract theory, customers would be willing to disclose personal information as long as they perceive that benefits from the exchange exceed the current or the future risks of the disclosure. In this study, we focus on the risk aspects associated with information disclosure, specifically on the loss of information privacy. Thus, taking measures to lower the level of risk perceived by the customer means increasing their willingness to participate in the exchange and disclose personal information. As such, the more open the web site is about its information practices, and the more measures an e-vendor takes to convey dedication to privacy, the greater the chances that customers perceive the disclosure to be a low risk proposition [Culnan and Bies, 2003]. According to procedural justice theory, the fairness of the procedure, rather than the outcome can be a determinant of the level of privacy concern [Dhillon and Moores, 2001]. This theory also suggests that the knowledge of the existence of fairness procedures and how they work can be an aspect of procedural justice. This would lead to the conclusion that the more measures a web vendor undertakes to convey its privacy practices and make them accessible to the web user, the better the user’s perceptions regarding the information privacy of the web site.

Based on these considerations, the model posits that the higher the level of web vendor’s privacy-related interventions to privacy issues, the better the user perceptions on information privacy in the web site. So, it is hypothesized that:

Hypothesis 1: The level of web vendor’s interventions with regard to information privacy is positively related to the customer’s perception of information privacy.

Theory of Reasoned Action (TRA) [Davis, 1989] posits that perceptions lead to intentions. McKnight et al. [2002], distinguish trusting beliefs from trusting intentions. They propose that web vendor interventions such as privacy policies and third-party seal would affect the customer’s perception of the integrity of the vendor which would affect the intentions or the consumer willingness to share personal information and to buy from the vendor. Thus, it is hypothesized that:

Hypothesis 2: A customer’s level of favorable perception concerning information privacy of a web site is positively related to the willingness to disclose personal information in the web site.

Customers’ information privacy concerns, both offline and online, revolve around individual-specific data. Studies have indicated that the willingness of Internet users to provide information depends on whether they are identified or not, or that their information is used in an identifiable way or not [Cranor et al., 1999; Long et al., 1999; Phelps et al., 2000; Phelps et al., 2001]. According to Phelps et al. [2000], customer information falls into five broad categories: demographic characteristics, lifestyle characteristics, shopping/purchasing habits, financial data, and personal identifiers such as names, addresses, and social security numbers. Users have lower privacy concerns when it comes to providing personal information that cannot be used to identify them and these concerns would increase when identifying information is collected [Cranor et al., 1999; Long et al., 1999]. Thus, a customer will be more willing to reveal non-identifiable information regardless of their perception of the web site. However, if the customer does not have a favorable perception about a web site, they will be unwilling to reveal any identifiable information. Therefore, it is hypothesized that the effect of the privacy perceptions about the web site will not be the same for the willingness to disclose identifiable and non-identifiable information.

Hypothesis 2.1: A customer’s level of favorable perception concerning information privacy of a web site is positively related to the willingness to disclose personal information in the web site when identifiable information is asked to be disclosed.

Hypothesis 2.2: A customer's level of favorable perception concerning information privacy of a web site will not significantly affect the willingness to disclose personal information in the web site when non-identifiable personal information is asked to be disclosed.

In addition to willingness to disclose personal information, another intention considered in the study was the customer's willingness to buy from the web site. The following was hypothesized:

Hypothesis 3: A customer's level of favorable perception concerning information privacy of a web site is positively related to the willingness to buy from the web site.

Previous research on privacy has shown that Internet users' general concern about privacy online is one of the factors that prevent them from conducting transactions online. Smith et al. [1996] suggest that concern about information privacy is related to the intentions to take privacy-related actions such as participation, or not, in activities that require disclosing of personal information.

Hypothesis 4: The level of general concern about privacy online is negatively related to the willingness to disclose personal information in the web site.

Research has also shown that concerns about privacy in general affect purchase decisions online. A study by Phelps et al. [2001] indicates that privacy concerns are related to customer purchase behavior. George [2002] found that privacy beliefs were negatively associated with attitude toward Internet purchasing. Lee et al. [2001] found that the level of perceived risk in the context of online transaction (including risks to privacy) is one of the important factors that determine the customer's purchasing behavior.

Hypothesis 5: The level of general concern about privacy online is negatively related to the willingness to buy from the web site.

The influence of privacy measures taken by the web vendor on user's perceptions of privacy is also likely to be influenced by the degree of consumers' general concern regarding online privacy. In addition to considering the direct effect of general concern on willingness to disclose information and buy from the web site, in this study we also analyzed a potential moderating role of general concern. Previous research suggests the existence of this effect. McKnight et al. [2002] recognize the influence of disposition to trust in the effectiveness of trust-building strategies. They suggested that it would be of interest to analyze whether people with low versus high disposition to trust respond differently to trust building treatments such as third parties seals. Miyazaki and Krishnamurthy [2002] considered the moderating role of the online shopping risk in the effect of third party seals to customer perceptions of the site's privacy practices and information disclosure. They found that the presence of a third party seal influences the willingness to disclose information and to buy from the site only for customers with higher levels of online shopping risk, and not for those with lower levels. In the context of this study, this means that people who have higher levels of concern regarding privacy online may be more influenced in creating a positive perception about a web site as a result of the web vendor's interventions than those that have lower levels of concern. Thus, it is hypothesized that privacy measures undertaken by the web vendor may not have the same effect on the customers who have lower levels of privacy concern as compared to those with a higher level of privacy concern.

Hypothesis 6: The level of general concern about information privacy moderates the relationship between the level of web vendor interventions with regard to privacy and the customer's perception of information privacy of an unknown web site.

Hypothesis 6.1: The influence of the level of web vendor interventions with regard to privacy on the customer's perception of information privacy of a web site will be higher for individuals that have a high level of general concern for information privacy.

Hypothesis 6.2: The influence of the level of web vendor interventions with regard to privacy on the customer's perception of information privacy of a web site will be lower for individuals that have a low level of general concern for information privacy.

RESEARCH METHODOLOGY

The hypotheses stated above were tested by means of a laboratory experiment. Participants in the study were students from two Midwestern universities. A total of 260 subjects participated in the study. An experimental web site was set up for the purpose of this study. The web site represented a hypothetical online textbook company closely modeled after the web site of an existing online book company. A web site that sells college textbooks was selected because of the interest the subjects (students) would have in this type of product. In addition, books are among the most purchased products in e-commerce and they are considered 'low-touch' items [Gefen et al., 2003].

MANIPULATIONS

To measure the construct of "web vendor interventions" we created three different levels of interventions based on the number of privacy-related elements in the web site. Screenshots of the web site are presented in Appendix I. The web site was the same for the three levels, except for the privacy-related elements.

- The web site that represented the first level of intervention had only one privacy element: a privacy statement. The complete privacy statement can be found in Appendix II.

- The second level of intervention was represented by the same web site with two privacy elements: a privacy statement identical to that of the first web site and a third party seal. The TRUSTe third party seal was chosen for this study because it is the largest provider of privacy seals.

- The web site for the third level had one additional element compared to the second level: an interactive privacy policy summary. When the users click on the link, an interactive privacy policy summary is displayed in a new window. The idea for this element originated from the Platform for Privacy Preferences (P3P) standard [Reagle and Cranor, 1999; Brandt, 2002] and was based on a P3P user agent developed by AT&T, called the AT&T Privacy Bird [Cranor et al., 2002]. On the AT&T Privacy Bird, among other options, a user can click on the bird icon and select Policy Summary to view a site's privacy policy. The summary includes a bulleted summary of each statement in the policy, as well as information from the P3P Access, Disputes, and Entity elements including images of any privacy seals referenced by the web site. The presence of this element in the web site is supposed to convey the web site's commitment to privacy in two ways. First, by showing that the web site has adopted a standard such as P3P and created a P3P privacy policy, and second, that the web site is putting an effort toward making its privacy policy more accessible, easier to read, and understand.

EXPERIMENTAL PROCEDURE

A questionnaire using 7-point Likert-type scales was employed to measure the study constructs and control variables. Most of the scales used to operationalize each construct were adapted from previous studies. A few of them were developed specifically for this study. Items for each measure are presented in Table 1.

General concern about information privacy was measured using the Smith, et al. scale [1996]. However, their instrument was developed and applied mainly in the offline context. To adapt their scales in the context of Internet, we used three dimensions of concern for information privacy: awareness of data collection, secondary usage, and improper access. The fourth dimension, "Errors," was not included as it has not been frequently cited as one of the main issues related to privacy concern for online business [Dhillon and Moores, 2001; Malhotra et al., 2004]. The

Internet decreases two types of errors: deliberate and accidental. In the context of Internet business, deliberate errors can be virtually eliminated by authentication check through passwords. Accidental errors can also be reduced a great deal as electronic data entry replaces manual entry.

Table 1. Items used to measure study variables

Research Variables	Items	Reference Source
Willingness to buy	Seven point scale anchored with (1) Very unlikely, (7) Very likely 1. How likely is that you will buy from this web site? 2. How likely is that you would return to this web site? 3. What is the likelihood of you considering buying from this Internet store?	Grazioli and Jarvenpaa, 2000
Willingness to disclose information	Seven point scale anchored with (1) Never Willing, (7) Always willing <p style="text-align: center;">Non-identifiable information</p> 1. Age 2. The name of the school 3. Educational standing 4. Major 5. The types of books you like to read <p style="text-align: center;">Identifiable information</p> 1. E-mail address 2. Zip code 3. Full name 4. Telephone number 5. Credit card number 6. Address	Developed for the context of this study based on a categorization of personal information requested by Phelps et al., 2002.
User's perceptions of information privacy in the web site	1. CollegeTextbooks.com views consumer privacy issues seriously. Anchor points: (1) Strongly disagree (7) Strongly agree 2. CollegeTextbooks.com is dedicated to consumer privacy. Anchor points (1) Strongly disagree (7) Strongly agree 3. CollegeTextbooks.com will treat consumers fairly with respect to privacy issues. Anchor points: (1) Very unlikely (7) Very likely 4. CollegeTextbooks.com will violate acceptable privacy standards? Anchor points: (1) Very unlikely (7) Very likely 5. Confidence in providing personal information to CollegeTextbooks.com. Anchor points:(1) Not at all confident (7) Extremely confident	Items 1- 4 adopted from Miyazaki and Krishnamurthy, 2002 Item 5- developed by authors
	Seven point scale anchored with (1) Strongly disagree, (7) Strongly agree	

<p>General concern about information privacy online</p>	<ol style="list-style-type: none"> 1. It usually bothers me when a web site asks me for personal information. 2. It bothers me to give personal information to so many web sites. 3. Web sites are collecting too much information about me. 4. Information can be used for other purposes inside the company. 5. The web site might sell the personal information in their computer databases to other companies 6. The web site might not be secure enough to prevent unauthorized access. 7. The Internet in general is not secure for transactions. 	<p>Items 1-6 adapted from Smith et al., 1996 Item 7-Developed by authors</p>
<p>Control variables</p>	<p>Items</p>	<p>Reference source</p>
<p>Attitude to trusting web sites in general</p>	<p>Seven point scale anchored with (1) Strongly disagree, (7) Strongly agree</p> <ol style="list-style-type: none"> 1. Web sites tell the truth about their abilities and experiences. 2. Web sites can be counted on to do what they say they will do. 3. Most web sites are run competently. 	<p>Items 1 and 2 adopted from Grazioli and Jarvenpaa, 2000 Item 3 adopted from Stewart, 2003</p>
<p>Perceived site quality</p>	<p>Seven point scale anchored with (1) Strongly disagree, (7) Strongly agree</p> <ol style="list-style-type: none"> 1. Overall this site worked very well technically. 2. Visually, this site resembles other sites I think highly of. 3. This site was simple to navigate. 4. On this site it was easy to find the information I wanted. 	<p>McKnight et al. (2002)</p>
<p>Experience with computers and the Internet</p>	<ol style="list-style-type: none"> 1. How much time per week are you using computers? 2. How much time per week are you spending on the Internet? 3. How long have you been using the Internet? 4. In total, how much would you estimate you have spent on Internet purchases in the past 12 months? 	<p>Developed by authors</p>

Subjects were randomly assigned to one of the three versions of the web site. The average completion time of the experiment was 20-30 minutes. To ensure that study participants attended to their assigned web site and read privacy intervention conditions related to the assigned web site, manipulation checks were included in the post-test questionnaire. These consisted of questions that could be answered correctly only if the respondent read the privacy statement, saw, and/or clicked on the seal, and the interactive privacy policy. As we will explain below, the manner in which the experiment was conducted did not allow subjects to return to the web site when they answered manipulation checks. This ensured that they were accurately reporting their attention to the privacy elements in the web site.

The experiment included the following steps: reading and signing the informed consent form, filling out the pre-test questionnaire, experiment instructions, description of the scenario, visiting the web site, filling out the first part of the post-test questionnaire, handing in the completed pre-test questionnaire and the first part of the post-test, and filling out the second part of the post-test questionnaire.

Subjects were asked to read the privacy policy of the site and click on the third party seal and the link to the interactive privacy policy if they were present in their site. The post-test questionnaire was divided into two parts: the first part was used to measure the user's "perception" of

information privacy of the website that they visited (attitude) and the second part was used to measure the “willingness” to provide private information to and buy from that web site (behavioral intentions). The pre-test questionnaire included general questions about the respondents’ attitude toward web sites and Internet usage. Next, they were introduced to the experimental scenario. All subjects were asked to assume that a friend of theirs had identified a web site that sells textbooks online. The friend has found the book she was looking for, and at a good price, but she is asking for a second opinion about the web site. The subjects were then asked to visit the web site themselves and to answer some questions about their perception on information privacy of the web site they visited (first part of the post-test questionnaire). After completing the pre-test questionnaire, visiting the site, closing the browser, and filling the first part of the post-test questionnaire, they turned in both the pre-test questionnaire and the first part of the post-test questionnaire. Then students were asked to complete the second part of the post-test questionnaire. The reason for administering the post-test questionnaire in two parts was that as students answered questions about their perceptions of information privacy of the site (in the first part), they needed to be unaware that they will be asked to give personal information and to buy from the web site (during the second part). Furthermore, participants could not go back to their responses about the perceptions of the site (first part) when answering questions about the willingness to provide information and buy from the site (second part). This allowed for an independent measurement of attitude and behavioral intention.

CONTROL VARIABLES

To better understand the model proposed in this study, several other constructs related to e-commerce were considered. The reason is that customers’ perceptions toward a web site may be influenced by several factors other than the factors of interest in this study. Such factors may be related to the web site itself as well as to individual differences on Internet related issues. Research has shown that the design of the web site would influence users’ behavior relating to privacy [Belanger et al., 2002; Earp and Baumer, 2003] and influence trust in the web vendor [Roy et al., 2001; Head and Hassanein, 2002; McKnight et al., 2002]. Thus, in the context of initial interaction with the site, users may make judgments partly based on their perceptions about the web site quality. Perceived web site quality was one of the control variables in this study.

Regarding individual differences, research has shown that experience with computers and the Internet may be influencing factors, since experienced users may be more discerning in their evaluation of the web site or may be more comfortable using the web to make a purchase. For this reason, data on how long the subjects have been using computer and the Internet, the frequency of usage of the Internet, attitude to trusting web sites in general and their past purchasing behavior were collected and used to control for effects related to Internet experience. In addition, we asked respondents whether they were registered users with any web site and what items they had purchased online.

DATA ANALYSES AND RESULTS

Of the 260 participants in the study, 84 were assigned to the web site that had only a privacy statement, 88 subjects were assigned to the web site that had a privacy statement and a privacy seal, and 88 viewed the version of the web site that had a privacy statement, a privacy seal, and an interactive privacy policy summary. As previously mentioned, to ensure that study participants attended the web sites and privacy intervention conditions, manipulation checks were included in the post test questionnaire. Subjects that did not meet the standards of manipulation checks were dropped from subsequent analyses. As a result, the number of subjects included in the final analyses for each version of the web site was respectively 80, 66 and 64, a total of 210 subjects. Table 2 presents the demographic profile of the study subjects.

RELIABILITY AND VALIDITY

Before using the collected data for hypotheses testing, the instrument was subjected to reliability and validity analyses. Prior to conducting the experiment, a pilot study with 24 participants was carried out to test the web sites and the questionnaire. Uni-dimensionality of the scales was evaluated using an exploratory factor analysis. This analysis and the rest of the statistical analyses in this study were conducted using SPSS. The factor analysis used a principal component extraction method with Varimax rotation. Results of factor analysis are presented in Table 3.

Table 2. Demographic profile of participants (n=210)

Variables	Number of subjects	Percentage
<i>Time of computer use/week</i>		
30-60 min	8	3.8
1-2 hrs	16	7.6
2-4 hrs	29	13.8
4-6 hrs	48	22.9
8+ hrs	109	51.9
<i>Time of Internet use/week</i>		
0-30 min	1	.5
30-60 min	24	11.4
1-2 hrs	23	11.0
2-4 hrs	47	22.4
4-6 hrs	53	25.2
8+ hrs	62	29.5
<i>Length of Internet experience</i>		
2-4 years	7	3.33
4-6 years	38	18.09
6-8 years	89	42.38
8-10 years	54	25.71
10 years or more	22	10.48
<i>Registered user with any web site</i>		
Yes	182	89.7
No	21	10.3
<i>Made a purchase online</i>		
Yes	192	91.4
No	18	8.6
<i>Dollars spent on Internet purchases</i>		
\$0	7	3.6
\$0-50	25	13.00
\$50-100	28	14.6
\$100-150	22	11.5

\$150-200	17	8.9
\$200-250	15	7.8
\$250+	78	40.6
<i>Age</i>		
19- 25	168	80.77
25-30	22	10.58
over 30	18	8.65
<i>Gender</i>		
Female	80	38.1
Male	128	61.0

Table 3. Results of factor analysis

Item Description	F1	F2	F3	F4	F5	F6	F7
Web sites are collecting too much info about me	.861	-0.111	-0.003	.050	-0.049	-0.076	.001
Information would be used for other purposes inside the company	.833	-0.081	-0.092	-0.081	-0.039	-0.041	-0.053
It bothers me to give personal information to so many web sites	.829	-0.104	-0.072	-0.034	.052	.054	-0.027
It bothers me when a web site asks for personal info	.821	-0.154	-0.049	-0.019	.008	-0.032	-0.055
Web site might not be secure enough to prevent unauthorized access	.755	-0.032	-0.299	.028	-0.014	-0.023	-0.050
Web site might sell my personal information	.746	.037	.015	-0.108	-0.062	-0.076	.023
Internet in general is not secure for transactions	.675	-0.121	-0.226	.055	.059	-0.014	-0.114
Willingness to disclose educational standing	-0.112	.846	.110	.180	.119	.109	-0.027
Willingness to provide major information	-0.126	.845	.140	.097	.133	.066	.037
Willingness to provide book preferences	-0.039	.761	-0.009	.130	.127	.183	.093
Willingness to disclose school information	-0.060	.716	.319	.118	.119	-0.150	-0.020
Willingness to disclose age	-0.139	.698	-0.001	.072	.184	.151	.025
Willingness to disclose address	-0.145	.127	.821	.109	.123	.241	.183
Willingness to disclose credit card information	-0.119	.018	.793	.195	.039	.222	.154
Willingness to disclose phone number	-0.108	.104	.755	.043	.136	.087	.039
Willingness to disclose name	-0.216	.170	.724	.134	.233	.282	.020
Willingness to disclose zip code	-0.160	.461	.504	.252	-0.023	-0.031	.095

Willingness to disclose e-mail address	-.108	.297	.330	.288	.049	.102	.126
CollegeTextbooks.com is dedicated to consumer privacy	.072	.162	.107	.850	.157	.117	.086
CollegeTextbooks.com views privacy issues seriously	.039	.021	.090	.817	.234	.108	.125
CollegeTextbooks.com will treat consumers fairly with respect to privacy issues	.091	.160	.171	.752	.091	.144	.041
Confidence in sending personal information to CollegeTextbooks.com	-.176	.112	.191	.691	.166	.299	.218
Likelihood that CollegeTextbooks.com will violate acceptable privacy standards	-.203	.273	.042	.574	-.015	.134	.047
On this site it was easy to find the information I wanted	-.003	.177	.112	-.005	.812	.164	.139
Overall, the site worked very well technically	-.065	.137	.168	.266	.799	.122	.018
This site was easy to navigate	-.026	.215	.182	.107	.792	-.062	.093
This site resembles other sites I think highly of	.074	.110	-.015	.245	.661	.270	.065
The likelihood of you considering buying from the site	-.118	.125	.293	.299	.176	.789	.094
How likely is that you will buy from this web site	-.074	.159	.332	.264	.117	.784	.106
How likely is that you would return to this web site	-.013	.158	.268	.286	.250	.781	.037
Most web sites can be counted on to do what they say they will do	-.042	.115	.173	.070	.056	.055	.848
Most web sites tell the truth about their abilities	-.039	-.013	.013	.140	.110	.133	.832
Most web sites are run competently	-.087	.013	.120	.113	.074	-.016	.612

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

- Factors: F1- General Concern about Information Privacy (RV)
- F2- Willingness to Disclose Non-identifiable Information (RV)
- F3- Willingness to Disclose Identifiable Information (RV)
- F4- Perceptions of Information Privacy in the Web Site (RV)
- F5- Perceived Site Quality (CV)
- F6- Willingness to Buy from the Web site (RV)
- F7- Attitude to Trusting Web Sites in General (CV)
- RV- Research variable; CV-Control variable

Seven factors emerged from this analysis. All items loaded in the corresponding constructs, consistent with the instrument's underlying structure. The only item with relatively low loading was "willingness to disclose e-mail address." It showed cross-loadings between "willingness to disclose identifiable information" and "willingness to disclose non identifiable information." Since its highest loading was on the "willingness to disclose identifiable information," this item was left in that factor in the subsequent analyses.

The scales used in the study exhibited reliability levels in the accepted range. Table 4 presents the main constructs in the study, descriptive statistics, and the measure of reliability (Cronbach's

alpha). No alpha was less than 0.85 for the main constructs, while for control variables not less than 0.71. Intercorrelation matrix is presented in Table 5.

Table 4. Descriptive statistics for constructs

Construct	Factor	Mean (1-7 range)	Standard deviation	Reliability (Cronbach's alpha)
General concern about information privacy (RV)	F1	5.32	1.20	0.90
Willingness to disclose non-identifiable information (RV)	F2	5.83	1.08	0.87
Willingness to disclose identifiable information (RV)	F3	4.27	1.34	0.86
Perceptions of information privacy in the web site (RV)	F4	5.19	1.08	0.85
Perceived site quality (CV)	F5	5.53	1.00	0.83
Willingness to buy (RV)	F6	4.50	1.61	0.93
Attitude to trust web sites (CV)	F7	4.60	0.82	0.71

RV- research variable

CV- control variable

Table 5. Intercorrelation matrix

Variable	1	2	3	4	5	6	7	8	9	10
1. Site quality (CV)										
2. Past purchases (CV)	-.109	1								
3. Years Internet (CV)	-.058	.187**	1							
4. Internet use (CV)	-.020	.220**	.228*	1						
5. Comp Use (CV)	-.017	.123	.180**	.803**	1					
6. Trust Attitude (CV)	.230**	.027	-.075	.023	-.079	1				
7. Disclose non-ID info (RV)	.391**	-.098	-.003	-.059	-.076	.170*	1			
8. Disclose ID info (RV)	.366**	.150*	-.038	.150*	.111	.323**	.442**	1		
9. General concern (RV)	-.060	-.188**	-.166*	-.047	.026	-.133	-.236**	-.336**	1	
10. Web site perception (RV)	.417**	-.025	-.135	-.020	-.004	.313**	.390**	.454**	-.129	1
11. Willingness to buy (RV)	.454**	.082	-.271**	-.035	.014	.266**	.348**	.585**	-.174*	.568**

* p< .05

** p< .01

RV research variable

CV control variable

Another preliminary analysis was conducted to divide subjects into groups according to their level of general concern about privacy. This classification into groups was used in order to test hypotheses 6.1 and 6.2. These hypotheses posit that the effect of the level of web vendor's interventions on perceptions would not be the same for individuals with high and low general concern about privacy online. To test these hypotheses, study participants were grouped based on their general concern for information privacy, which was measured before they visited the experimental web site. The statistical technique used to achieve this was cluster analysis, specifically the TwoStep Cluster Analysis procedure in SPSS. This procedure is used as an exploratory tool designed to reveal natural groupings within a data set that would otherwise not be apparent. This clustering technique was chosen because the procedure can automatically determine the optimal number of clusters, instead of the researcher specifying the number of clusters. The results of the cluster analysis are shown in Table 6.

This analysis revealed two groups of subjects based on their general concern about privacy online. Based on the group (cluster) means, subjects classified in the first group (mean=6.12) were considered with a higher level of general privacy concern and those of the second group (mean=4.16) with a lower level general privacy concern.

Table 6. Distribution of subjects into clusters by general concern

		N	% of Total	General concern	
				Mean	SD
Cluster	1	124	59.0%	6.1198	.54387
	2	86	41.0%	4.1645	.89617
	Combined	210	100.0%	5.3190	1.19570

This classification of subjects determined the final design of the experiment. As mentioned earlier, the level of web vendor intervention was measured at three levels, with the three versions of the web site. Thus, this part of the study resulted in a 2x3 factorial design (two levels of general privacy concern x three levels of web vendor intervention). The distribution of subjects in each cell is presented in Table 7.

Table 7. Distribution of subjects by groups

		Level of web vendor intervention		
		Web site with privacy statement only	Web site with statement and third party seal	Web site with privacy statement, third party seal, P3P statement
General privacy concern	High	47	32	44
	Low	33	33	20

RESULTS OF THE STUDY

Analysis of Covariance (ANCOVA) was used to test Hypothesis 1 and Hypothesis 6. Table 8 shows the means and standard deviations for each group in the study. The results of the ANCOVA analysis are presented in Table 9.

Table 8. ANCOVA statistics for each group

		Level of web vendor intervention		
		Web site with privacy statement	Web site with statement and third party seal	Web site with privacy statement, third party seal, and P3P policy
General privacy concern	High	M=4.66 SD=1.28	M=5.33 SD=0.87	M=5.36 SD=0.93
	Low	M=5.15 SD=1.11	M=5.39 SD=1.05	M=5.56 SD=0.80

The results of ANCOVA showed that the level of privacy intervention had an overall effect on perceptions of information privacy in the web site ($F(2,197) = 4.383, p < .05$). Thus, hypothesis 1 was supported. However, the results of ANCOVA showed no significant main effect ($F(1,197) = 1.547, p > .05$) for the general concern for information privacy. Also, the interaction effect between the intervention level and the level of general privacy concern was not significant ($F(2,197) = .909, p > .05$). This leads to the rejection of hypothesis 6.

Table 9. Results of univariate Analysis of CoVariance (ANCOVA)

Source		df	Mean Square	F	Sig.
Control variables	Trust Attitude	1	12.276	13.927	.000*
	Site Quality	1	22.398	25.409	.000*
	Comp Use	1	.921	1.045	.308
	Internet Use	1	1.414	1.604	.207
	Years Internet	1	1.693	1.920	.167
	Purchase	1	2.627E-02	.030	.863
Research variables	Website	2	3.864	4.383	.014*
	Concern Level	1	1.364	1.547	.215
	Website *Concern Level	2	.801	.909	.405

Web Site: Level of privacy intervention
 Concern Level: Level of general concern of information privacy

Trust Attitude: Attitude toward trusting web sites in general
 Comp Use Computer use/week
 Years Internet: Length of Internet experience
 Internet Use: Internet use/week
 Purchase: Past purchases online
 Site Quality: Perceived site quality

Since privacy intervention showed an overall significance, a follow up analysis was conducted to examine which particular groups differed with regard to perception about the web site. Pairwise comparisons using the Bonferroni procedure showed a significant difference between the first (one privacy element) and the second (two elements) level (mean difference = 0.40, $p < .05$) and between the first and the third (three elements) level (mean difference = 0.43, $p < .05$). However, mean differences between the perceptions about the second and the third web site were not significant.

To test hypotheses H2, H3, H4, and H5, multiple regression analysis was used. Three multiple regression analyses were conducted. Their results are summarized in Table 10. The results provided support for all hypotheses tested.

Table 10. Summary of regression analyses

Regression 1		Regression 2	
Hypotheses: H2.2, H4		Hypotheses: H2.1, H4	
Dependent		Dependent	
Disclose nonID info	Adj.R ² =0.26	Disclose ID info	Adj.R ² =0.36
Factors		Factors	
General concern	-0.201**	General concern	-0.253***
Perception of the web site	0.254***	Perception of the web site	0.286***
Control variables		Control variables	
Attitude to trusting web sites	0.010	Attitude to trusting web sites	0.139*
Years of Internet experience	0.044	Years of Internet experience	-0.069
Weekly use of Internet	-0.045	Weekly use of Internet	0.137*
Previous online purchases	-0.100	Previous online purchases	0.110
Perceived site quality	0.261***	Perceived site quality	0.210***
Regression 3			
Hypotheses: H3, H5			
Dependent			
Willingness to buy	Adj.R ² =0.46		
Factors			
General concern	-0.116*		
Perception of the web site	0.397***		
Control variables			
Attitude to trusting web sites	0.040		
Years of Internet experience	-0.242***		
Weekly use of Internet	-0.004		
Previous online purchases	0.143**		
Perceived site quality	0.274***		

* p < .05
 ** p < .01
 *** p < .00

Additional analyses were conducted to examine willingness to disclose information. Paired samples t-tests were conducted to examine the differences between the willingness to disclose non-identifiable and identifiable information. All the tests were significant, which shows that for each level of intervention and for all levels combined, the willingness to disclose non-identifiable information was significantly higher than the willingness to disclose identifiable information. Other tests were run to ascertain the effect of gender as a control variable. Results of these tests indicated that gender did not have any significant effect on the study variables.

Summary of all hypotheses tested are provided in Table 11.

Table 11. Results of hypotheses tests

Hypothesis number	Hypothesis	Predicted effect	Conclusion
H1	The effect of the level of web vendor's interventions on perception of privacy in the web site.	Positive	Supported
H2.1	The effect of favorable perception of information privacy in the web site on the willingness to disclose identifiable information.	Positive	Supported
H2.2	The effect of favorable perception of information privacy in the web site on the willingness to disclose non-identifiable information.	No effect	Rejected (Positive effect)
H3	The effect of favorable perception of information privacy in the web site on the willingness to buy from the web site.	Positive	Supported
H4	The effect of general concern about privacy on the willingness to disclose information in the web site.	Negative	Supported
H5	The effect of general concern about privacy on the willingness to buy from the web site.	Negative	Supported
H6	The level of general concern moderates the relationship between the level of web vendor's interventions and perception of privacy in the web site.	Positive	Rejected

DISCUSSION

As described in the previous section, the results provided support for five of the seven hypotheses tested. With regard to the main research question, the study showed that web vendor interventions do have an overall effect on the user perceptions of information privacy in the site. There was no significant difference in the user perceptions between the second and the third level of intervention. Specifically, adding the third privacy element in the web site did not result in a significant improvement of user perceptions, compared to a web site that has only two elements. One factor that might have contributed to this result is the type of privacy element. An interactive privacy policy makes the web site's privacy policy more accessible and easier to understand. According to procedural justice theory, companies that establish fair information practices and disclose these practices greatly reduce the customers' perceived risk. Thus, it was

assumed that the greater the efforts to disclose these practices, the better the user perceptions. However, this element does not provide a mean for reassuring that the web site's policy complies with some accepted and required standards, which is what third party seals attempt to do. This may be one reason that the addition of the interactive privacy policy to a web site that had a privacy seal did not significantly improve users' perceptions regarding privacy in the web site. We also examined the possible effect that familiarity with the seal may have on the user perception of information privacy in the site. At the end of the experiment, subjects in groups 2 and 3 were asked whether they had heard about TRUSTe (a privacy seal) prior to this study. Based on the answer to this question, subjects were divided into two groups. Mean scores of perceptions of information privacy between the two groups were compared using t-test for independent samples. Results of t-test showed no significant difference between the two groups. Thus, familiarity with the seal was not a confounding factor in the study.

Another analysis added in an attempt to find some further explanation from our data, was to see if there were any differences between the subjects that were included in the final analyses and those that were not. As mentioned earlier, the total number of participants in the study was 260. Based on the manipulation checks, 50 subjects that had not paid attention and/or had not clicked on the privacy-related interventions were dropped. Analysis of Covariance (ANCOVA) was used to test the differences between the excluded and included groups for each intervention level with regard to web site perceptions. Results showed that paying attention and clicking on the third party seal and the interactive privacy policy (present in the second and the third versions of the web site respectively) had an impact on the results of the study. For the third level of intervention, subjects that were included in the study had significantly different perceptions about the web site compared to those that were excluded. Specifically, subjects that noticed and clicked on the privacy related interventions had better perceptions than those who did not attend to these interventions. This means that, even though the primary analysis showed that adding a third privacy-related intervention did not significantly improve the perceptions about the privacy among those people that pay closer attention to privacy, it did make a difference among people that did not paid a close attention to it. In real-life situations, the majority of end users might be more like the last one. This emphasizes the importance of inclusion of these types of interventions in companies' web sites so that their customers create a better perception about that company's information's privacy.

General concern about information privacy online was a variable of interest in this study. Previous studies have indicated that people with different levels of general concern toward information privacy may react differently to the web vendor's privacy related interventions [Miyazaki and Krishnamurthy, 2002]. For this reason, it was hypothesized that the effect of the level of privacy interventions would be different for subjects with high versus low general concern about privacy. The results of the statistical tests showed that this was not the case. General concern about privacy did not affect user perceptions on information privacy in the specific web site directly, nor did not moderate the effect of web vendor interventions. However, the study showed that general concern about privacy had a significant effect on the willingness to disclose personal information in the web site and the willingness to buy from the web site (see Table 9, last row). This indicates that general concern about privacy might affect the decision to purchase online, but once the consumer overcomes that and goes to a specific web site, the web vendor's interventions are what determine the user's perception about the privacy of the web site, not their general concern about privacy.

This research illustrates that willingness to disclose identifiable information differed significantly from the willingness to disclose non-identifiable information. In addition, in this study it was hypothesized that user perceptions of the web site will not affect their willingness to disclose non-identifiable information. Given the lower concern about this type of information, previous research suggests that stringent policies regarding this type of information would not significantly reduce privacy concerns [Phelps et al., 2000]. However, contrary to these studies, we found that willingness to disclose non-identifiable information was strongly influenced by the general concern that users have about information privacy, and additionally by their perceptions of the privacy of the web site. This means that Internet users are not as indifferent toward disclosing this

category of information as generally thought, and organizations need to keep that in mind when they design their web site privacy policies.

CONCLUSIONS

In doing business on-line, information privacy is one of the most important ethical issues, and is considered to be one of the key information liability issues that business managers face [Henderson and Snyder, 1999]. Issues related to information privacy have been subjects of research even before the Internet era. Research on privacy goes back to 1960s and 1970s [Westin, 1967]. However, since the 1980s, advances in information technology and particularly now, the wide usage of the Internet, has increased the concern about privacy. In the context of e-commerce, research has shown that privacy perceptions strongly influence trust in the web site and subsequently, behavioral intention to buy [Liu et al., 2005]. Thus, understanding customers' perceptions concerning privacy of personal information is important for EC businesses to attract new customers, build long-term relationships with them, and grow their business. As such, this study represents a contribution both from theoretical and practical perspectives.

IMPLICATIONS FOR RESEARCH

Previous research suggests that consumer behavior in the context of information privacy is a complex phenomenon and that privacy research in the IS domain should pay more attention to consumers' perceptions specific to a particular context (Malhotra et al., 2004). As such, this study represents a timely contribution toward the understanding of the thresholds of privacy concern that are manifested in the users' behavior online.

We proposed and tested a casual model of online privacy that extends existing research in several ways. First, our study analyzed both general and contextual concerns about online privacy. The model incorporated constructs that consider both the general attitude toward information privacy online and perceptions of information privacy in a particular context. Furthermore, the model and the hypotheses tested in the study were based on the Social Contract and Procedural Justice theories, as well as on existing frameworks of trust online. Therefore, a contribution of this study is the development of a model that integrated these theories and intention models such as TRA in the context of information privacy

Specifically, a contribution of this study is the analysis of two distinct constructs related to privacy: perceptions about information privacy in the web site and willingness to disclose information in the web site. These two constructs represent beliefs about the web site and behavior intentions related to the site, respectively. While previous research in e-commerce, such as that on trust, has treated beliefs and intentions constructs separately, this study represents an application of this theoretical aspect in the context of online privacy.

Previous research has considered general concerns about privacy online, but it focused mainly on the effect of these concerns on behavioral intention or factors such as trusting beliefs. Our study extends the previous research because it considers its effect on perceptions of information privacy in a particular web site and its moderating role in the relationships between level of intervention and perceptions of the web site.

An additional contribution of this study is the inclusion of a new construct, the degree of web vendor's intervention regarding privacy, which has not been previously considered by research. Although previous research on privacy has investigated the influence of specific privacy-related interventions on behavioral intention in e-commerce, no prior study has attempted to answer the question of whether having more privacy elements in the web site translates to better perceptions, and subsequently a greater willingness to disclose information in the web site. Moreover, the construct presented here is conceptual in nature. While privacy management methods such as privacy policies, interactive privacy policies, and privacy seals were used to operationalize the construct, it represents the level at which the web vendor addresses privacy

issues. As such, the model is not dependent on specific privacy management methods. This is important considering the rate at which the Internet technology is evolving.

Another important contextual characteristic considered in this study was the type of information to be disclosed. Willingness to disclose information has been frequently included in privacy-related research, but this concept has been studied in general. This study not only showed that Internet users do not treat equally all kinds of information, but revealed the grouping of information items based on the user's willingness to provide them. The study also indicates that Internet users' general attitude about the Internet and privacy is not always manifested in their actual behavior in a specific context when interacting with a specific web site. For instance, previous surveys of Internet users show that when asked about their general perceptions, people are more comfortable disclosing their e-mail address than a credit card number or their postal address [Ackerman et al. 1999]. However, in this study, when users interacted with a particular web site, their willingness to provide e-mail address was similar to the willingness to provide other identifiable information. This means that when it comes to a contextual setting, revealing non-identifiable information is as uncomfortable and concerning for users as is revealing identifiable information, even if their general attitude is not so.

IMPLICATIONS FOR PRACTICE

Some important implications for practice emerged from this study. First, the finding that information privacy concern is an important factor in the interaction of the customer with an unknown web site has important practical implication for companies trying to do business online. Specifically, this study found that both customers' general concern about privacy and the perceptions that the user creates about a specific vendor's privacy practices have a significant impact on the consumer's willingness to conduct transactions in the web site (either provide information or buy something). This is an important finding that has been assumed, but not tested empirically. When it comes to the purchase decision, there are various factors that are considered that may be more important determinants of purchase behavior than privacy concern. Given its experimental nature, this study provides the best test of the role of privacy-related factors since it controls for other factors that may influence the purchase decision. Thus, it is important for practitioners to realize that, in addition to other factors, privacy concern is a relevant element in the equation. For instance, it is not unusual for a potential customer to surf the web for a specific product and find online sellers that provide the same product at the same price. The level at which the customer will feel comfortable to provide his/her personal information to the web site might well be the main determinant in the choice of the web vendor. Thus, finding ways to increase the potential customer's confidence in this aspect is of value. In this context, this study provided some insights on the degree of interventions that web vendors could take to deal with users' privacy concerns. Perceptions about a vendor's web site privacy were found to be influenced by the number of privacy-related interventions the company includes in their web site. It is important for a company to include more than one element to make clear their policies related to client information privacy. However, the study showed that having more than two privacy-related elements in the web site does not necessarily mean better user perceptions of privacy.

The finding that perceptions of information privacy in the web site had a strong influence on the willingness to disclose non-identifiable information has several implications for practice. Non-identifiable information is important to web sites since it is used for personalization, customization, and other marketing purposes. Many web sites ask customers to register before using the web site or disclose some non-identifiable information while searching for a product or service. If the customer is concerned about providing such information he/she may abandon the web site. As such, it is important to improve a web site's perceptions of information privacy through proper type and amount of interventions. This is especially important for those web sites not directly involved in selling products or services online. While these web sites may not collect identifiable information, they may collect demographic or lifestyle information to better serve their users. For instance, a banking web site that provides investment advice may ask for information

about income, investments, etc. In addition, the very existence of many of these web sites relies on the collection of this type of information. As such, privacy related interventions are important elements to be considered by these web sites.

A finding of the study of interest to practitioners involves the level of awareness of third party seals. Only 36% of the respondents had previously heard about the TRUSTe. As mentioned earlier, TRUSTe is the most widely used privacy-related seal of approval. This is relatively lower with the recognition rates reported in earlier surveys. For instance, Cheskin Research reported that 69% of Web users recognized the TRUSTe seal (Cheskin Research, 2000). In a study by Head and Hassanein (2002), 52% of the respondents recognized the third party seals in the web site. While in a more recent study 42% of the respondents recognized the TRUSTe seal and the recognition rate is even lower for other seals (Moore, 2005).

In this study, familiarity with the seal did not influence the effect of the seal on consumers' perception about the web site. However, similarly to previous studies (Kovar et al., 2000), results indicated that paying attention and clicking on the third party seal had an impact on the perceptions of the information privacy in the web site. This has implications for practitioners to find solutions in order to increase visibility and awareness of the third party seal, such as the location of such seals in the web site.

LIMITATIONS AND FUTURE STUDIES

The research method employed in this study was the experiment. The main issue associated with this study, as with any other study that uses experimental design methodology, is external validity. The relatively homogenous nature of the sample (in terms of age, Internet experience, education level etc.) may have an influence on the generalizability of the findings to the larger public of Internet shoppers. Most of the subjects in the study were experienced online shoppers. More than 91% of them made purchases online and approximately 40% spent more than \$250 on online purchases in the past 12 months. Thus, generalizations to less experienced Internet users should be done with caution. Older or less educated customers may have different concerns related to privacy. Yet, researchers argue that it is meaningful to use college students as subjects for these types of studies. They represent the Web-aware digital generation and are the future of e-commerce (Moore, 2005).

Another limitation may come from the fact that the intention to disclose information and the intention to purchase were measured instead of the actual behavior given that the scenario used in the study was not an actual one. However, the subjects were not told that the Website being used was fictitious. Thus, the subjects took the experiment seriously when viewed as a class project.

Further testing of the research model proposed here is needed. Future research can operationalize the level of web vendor interventions by using increased levels of interventions and/or different combinations of privacy elements in each level. This study focused on the level of web vendor intervention, rather than the comparison of various privacy related interventions. Future studies can examine possible differences in the way users perceive different privacy-related elements in the web site. In addition, further studies can focus on the optimal number and types of interventions to be used by web sites and their effect on privacy perceptions of a web site.

Previous surveys have shown that Internet users find privacy notices too long and contain confusing language [Milne and Culnan, 2002]. In this study, an interactive privacy policy was included as a privacy-related intervention, but its comparison with the regular privacy statement was outside the scope of the study. Further studies of this aspect might be helpful in understanding how privacy notices in the web site should be formatted to improve their comprehension by the user.

Research has shown that concern about information privacy depends also on nationality and cultural values [Milberg et al., 2000]. As organizations are competing globally, it is essential to understand differences in information privacy concerns related to global information systems. This is especially relevant in the context of the Internet and the World Wide Web. The nature of the medium makes it possible for web sites to be easily accessible anywhere in the world, creating business opportunities at the global level. It would be of interest to extend this study in the context of a cross-country comparison. Issues of interest to consider might be whether the nature and level of privacy concern online differ among various countries; whether privacy interventions that web vendors use for the US market would have the same effect on user perceptions in different cultural and societal settings; what interventions would be more effective in a specific context.

Another extension of this study might be to test its findings with different types of web sites. Previous studies have suggested that the type of the web site has an effect on the willingness of people to reveal information. For instance, Earp and Baumer [2003] found that people are more willing to supply information to health-oriented web sites as compared to retail or financial web sites.

The online privacy dilemma is an issue of interest for various stakeholders in the development of e-commerce. In a self-regulation regime, it is possible that the growth of Internet-based business may be affected by the consumers' confidence in the privacy of their information in the web. As such, this study represents a timely contribution in the research efforts aiming at a better understanding of issues related to privacy online.

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EDITOR'S NOTE: The following reference list contains the address of World Wide Web pages. Readers, who have the ability to access the Web directly from their computer or are reading the paper on the Web, can gain direct access to these references. Readers are warned, however, that

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APPENDIX I

SCREENSHOTS OF THE WEB SITE USED IN THE STUDY

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Internet

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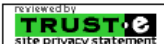
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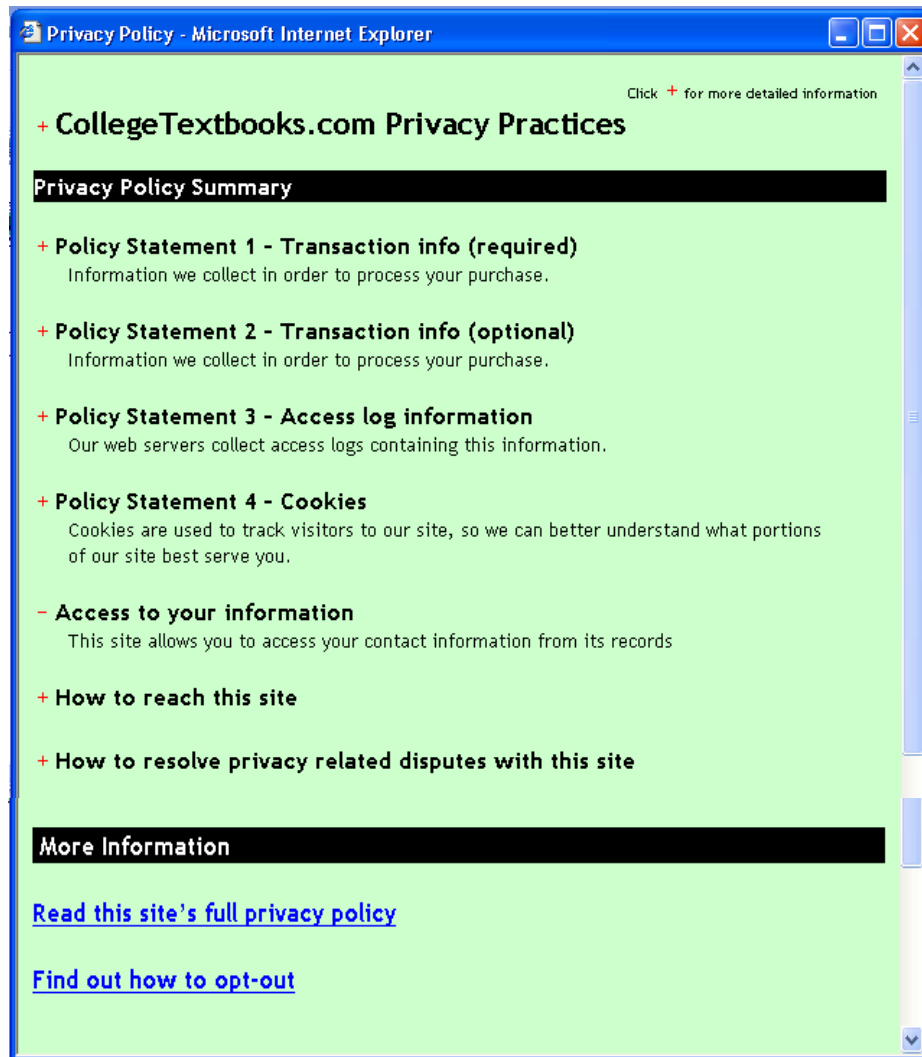
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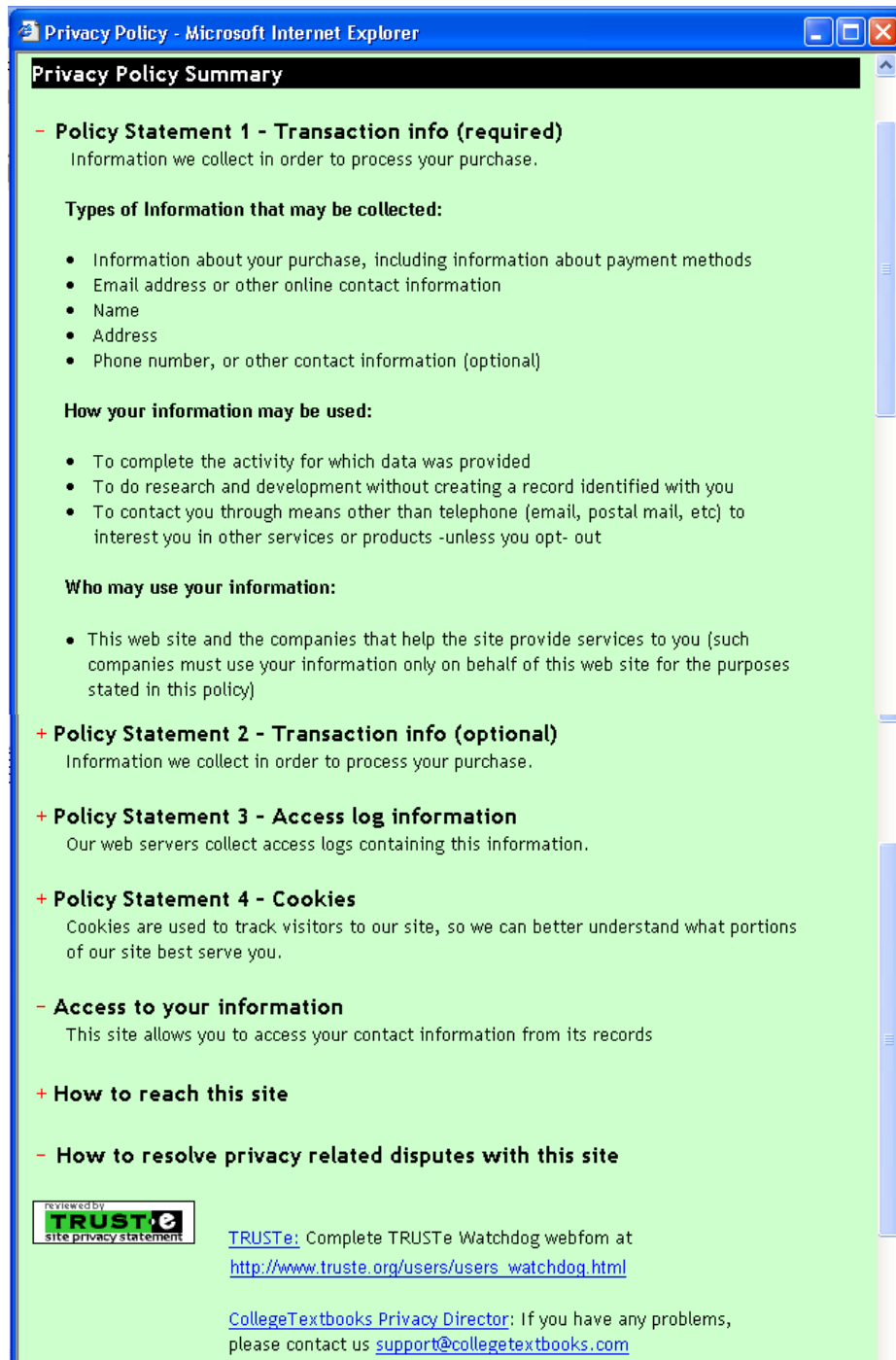
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6. Screenshot of the window with the interactive privacy policy summary
(All items collapsed)



7. Screenshot of the window with the interactive privacy policy summary
 (Illustration of how detailed information for items is displayed)



APPENDIX II

THE PRIVACY POLICY OF THE EXPERIMENTAL WEB SITE

CollegeTextbooks.com is totally committed to protecting your privacy. We make every effort to assure your confidentiality and to keep your trust. The information you provide us in your account is used to process orders and to assist us in providing you with a more personalized shopping experience. CollegeTextbooks.com utilizes every available technology to ensure that your confidential information remains secure.

Information Collection

CollegeTextbooks is the sole owner of the information collected on CollegeTextbooks.com. When you place an order, we'll ask you for your name, email address, mailing address, phone number, and credit card number with expiration date. This information allows us to process and fulfill your order and to notify you of your order status.

During registration we may ask you to provide information such as your college standing, your major, and gender. The provision of this information is optional, but encouraged so we can provide a more personalized experience on our site.

When you enter a contest or other promotional feature on our website, we may ask for your name, email address, and mailing address so we can conduct the contest and notify the winners.

CollegeTextbooks.com uses your purchasing information for the purpose of providing you a more efficient shopping experience and to make our recommendations about books and other merchandise that you might find interesting. We also monitor customer traffic patterns and site usage to help us develop the content, design, and layout of the web site. When you visit CollegeTextbooks.com, our web servers collect information by tracking your domain name (for example, "aol.com"), not your unique email address.

Using "Cookies"

"Cookies" are small bits of information stored by your browser on your computer's hard drive. Like most e-commerce sites today, CollegeTextbooks.com uses cookies. Our cookies do not contain any personal information, but they do store your settings and remember the contents of your shopping cart as you travel through the site or between visits. Most web browsers automatically accept cookies.

If users reject the cookie, they may still use our site. The only drawback to this is that the user will be limited in some areas of our site. For example, the user will not be able to participate in any of our sweepstakes, contests or monthly drawings that take place.

Communications from the Site

We send all new members a welcoming email to verify password and username. Occasionally, we may use your email address to deliver information regarding important functionality changes to our website, new services, and special offers that might be of interest to you. Out of respect for the privacy of our users we present the option to not receive these types of communications. Please see the "Unsubscribing from our e-mail list" section.

On rare occasions it is necessary to send out a strictly service related announcement. For instance, if our service is temporarily suspended for maintenance we might send users an email. Generally, users may not opt-out of these communications, though they can deactivate their account. However, these communications are not promotional in nature. (Users may opt-out of these communications. Please see "Unsubscribing from our e-mail list" section.)

Disclosing Your Information to Third Parties

CollegeTextbooks.com considers the information you share with us to be personal and confidential. We do not sell, trade, or rent any of your personal information to others. However, we may choose to release this information to trustworthy third parties at some point in the future. If you do not want us to share your personal information with third parties, please send an email to Unsubscribe@collegetextbooks.com.

CollegeTextbooks.com may also provide aggregate statistics about our customers, sales, traffic patterns and related site information to reputable third parties, but these statistics will include no personal information. Finally, we may release the name, address and email address of sweepstakes entrants to reputable co-sponsors and to other third parties for the sole purpose of administering such sweepstakes.

If you visit CollegeTextbooks.com via a co-branded site (by using a link to our site from a company we do business with), your personal information may be collected by both parties and used by each in accordance with their respective privacy policies. Your credit card information and password are not shared with co-branded businesses.

CollegeTextbooks.com releases personal account information, in good faith, when such release is believed to be reasonably necessary. This includes situations in complying with the law; enforcing or applying the terms of any of our user agreements; or protecting the rights, property and safety of CollegeTextbooks.com, our customers, or affected third parties.

Unsubscribing from Our email List

Our users are given the opportunity to 'opt-out' of having their information used for purposes not directly related to our site at the point where we ask for information. For example, our order form has an 'opt-out' mechanism so users who buy a product from us, but don't want any marketing material, can keep their email address off of our lists.

CollegeTextbooks.com allows you to choose not to receive additional communications via email. Users who no longer wish to receive our newsletter and promotional communications may opt-out of receiving these communications by replying to unsubscribe in the subject line in the email or email us at Unsubscribe@collegetextbooks.com.

Security

CollegeTextbooks.com takes every precaution to protect our users' information. When users submit sensitive information via the Web site, their information is protected both online and off-line.

When our registration/order form asks users to enter sensitive information (such as credit card number), this information is encrypted and is protected with the best encryption software in the industry - SSL. While on a secure page, such as our order form, the lock icon on the bottom of Web browsers such as Netscape Navigator and Microsoft Internet Explorer becomes locked, as opposed to un-locked, or open, when users are just 'surfing'.

While we use SSL encryption to protect sensitive information online, we also do everything in our power to protect user-information off-line. All of our users' information, not just the sensitive information mentioned above, is restricted in our offices. Only employees who need the information to perform a specific job (for example, our billing clerk or a customer service representative) are granted access to personally identifiable information. Our employees must use password-protected screen-savers when they leave their desk. When they return, they must re-enter their password to re-gain access to user information. Furthermore, ALL employees are kept up-to-date on our security and privacy practices. Finally, the servers that store personally identifiable information are in a secure environment.

If users have any questions about the security at our Web site, users can send an email to support@collegetextbooks.com.

Correcting/Updating/Deleting/Deactivating Personal Information

If a user's personally identifiable information changes (such as zip code, phone, email or postal address), or if a user no longer desires our service, we provide a way to correct, update or delete/deactivate users' personally identifiable information. This can usually be done at the 'Your account' page or by emailing our Customer Support at support@collegetextbooks.com.

Your Consent

By using our website, you consent to the collection and use of this information by CollegeTextbooks.com. If we amend our Privacy Policy, we will immediately post the changes on this page so that you are always aware of what information we gather, how we use it, and under what circumstances we disclose it. We suggest that you check this page on occasion to keep up with the most current policies.

Contact Information

If users have any questions or suggestions regarding our privacy policy, please contact us at:

CollegeTextbooks.com
Director of Customer Privacy
5543 Main Street
Greenville, NC 27835
Tell Us What You Think

Send us an email at Feedback@collegetextbooks.com. We welcome any ideas, questions, and comments regarding Privacy and Your Information.

APPENDIX III

COMPLETE SURVEY INSTRUMENT

Thank you for participating in this experiment. Your help is greatly appreciated. Please follow the instructions carefully. Your cooperation is essential for the success of the study.

The study has 3 sections:

Section 1: Pre-experimental questionnaire

Section 2: Performing a task

Section 3: Post-experimental questionnaire

Respond to the survey in the sequence it is given to you.

SECTION I

Instructions: This part of the questionnaire is designed to obtain information about your Internet use. The information will be used strictly for the purposes of the experiment. All individual responses will be kept in strict confidence and results will be reported only as aggregated data. So please answer the questions openly. There are no wrong or right answers. Important is that you express your own opinion.

Indicate the extent to which you agree/disagree with these statements:

1. Most Web sites tell the truth about their abilities and experiences.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

2. Most Web sites can be counted on to do what they say they will do.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

3. Most Web sites are run competently.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

4. I am concerned to give my personal information on a Web site because Internet in general is not secure for transactions.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

5. It usually bothers me when a Web site asks me for personal information.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

6. It bothers me to give personal information to so many Web sites.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

7. I am concerned that Web sites are collecting too much information about me.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

8. It bothers me to give personal information in a Web site, because I am concerned it can be used for other purposes inside the company.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

9. It bothers me to give personal information in a Web site, because I am concerned that the Web site would sell the personal information in their computer databases to other companies

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

10. I usually hesitate to give personal information to a web site because I am concerned that the Web site might not be secure enough to prevent unauthorized access.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

11. On average, how much time per week are you using computers.

None 0-30 mins 30-60 mins 1-2 hrs 2-4 hrs 4-8 hrs 8+ hrs

12. On average, how much time per week are you spending on the Internet.

None 0-30 mins 30-60 mins 1-2 hrs 2-4 hrs 4-8 hrs 8+ hrs

13. How long have you been using the Internet? ____Years ____Months

14. Are you currently a registered user with any web site (providing name and email address)?
 ____Yes ____No

15. Have you ever made a purchase over the Internet? ____Yes ____No

(If you answer “**No**” please skip to the next section).

15a. In total, how much would you estimate you have spent in Internet purchases in the past 12 months?

\$0 \$0-50 \$50-100 \$100-150 \$150-200 \$200-250 \$250+

15b. What items have you purchased on the Internet? (check all that apply)

Computer hardware

Software

Books

Travel

Apparel and accessories

Special gifts

Other (please list)

<YOU HAVE COMPLETED SECTION 1. PLEASE PROCEED TO SECTION 2>

SECTION 2

The scenario

Assume it is the beginning of the semester and it's time again to buy the text books. John, a friend of yours, has been browsing on the Internet and has found a company that sells new and used textbooks. After searching the web site John has found the books he is looking for at the right price. However, John is not completely comfortable with the idea of purchasing online. So, he is requesting your help. He values your judgment and is seeking a second opinion from you on his decision to buy books from this site. John is willing to accept your recommendation not to enter the order, if you do not feel comfortable with the site. You are curious about this web site and you want to see whether you can use it for purchasing your books.

To visit the site:

Launch Internet Explorer.

Please access the site at [the link goes here]. You will see the home page of **CollegeTextbooks.com**.

Please take your time and visit and read all the information on the Web site as completely as possible. Click on the icons or links to get more information.

As you visit the Web site, keep in mind that the textbooks listed in the site are just a sample of the inventory that is available. The displayed list of the books is intended to give you an idea of how the web site works, rather than provide you with a full listing of inventory available. Don't let the selection of inventory influence your review of the Web site.

If you are ready to tell your friend your opinion about the site, please close the web browser completely.

<PLEASE PROCEED TO NEXT SECTION >

SECTION 3.A

Please answer the following questions based on your perceptions of the CollegeTextbooks Web site that you just reviewed:

1. Do you think that CollegeTextbooks.com views consumer privacy issues seriously?

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

2. Do you think that CollegeTextbooks.com is dedicated to consumer privacy?

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

3. What is the likelihood that CollegeTextbooks.com will treat consumers fairly with respect to privacy issues?

Very unlikely 1 2 3 4 5 6 7 Very likely

4. What is the likelihood that CollegeTextbooks.com will violate acceptable privacy standards?

Very unlikely 1 2 3 4 5 6 7 Very likely

5. How confident would you feel sending personal information to CollegeTextbooks.com?

Not At All Confident 1 2 3 4 5 6 7 Extremely Confident

<YOU HAVE COMPLETED THE FIRST PART OF THE QUESTIONNAIRE>

<PLEASE TURN IT IN TO THE EXPERIMENT COORDINATOR>

SECTION 3.B

Suppose you decided to use the Web site for searching for textbooks for yourself. Frequently Web sites ask user to register before using the Web site.

If CollegeTextbooks.com asks you to register first, and you are willing to give it a try, how willing are you to provide the following information items to the CollegeTextbooks.com:

1. Your age

Never Willing 1 2 3 4 5 6 7 Always Willing

2. Your e-mail address

Never Willing 1 2 3 4 5 6 7 Always Willing

3. The name of your school

Never Willing 1 2 3 4 5 6 7 Always Willing

4. Your current educational standing (whether you are a sophomore, junior etc)

Never Willing 1 2 3 4 5 6 7 Always Willing

5. Your name

Never Willing 1 2 3 4 5 6 7 Always Willing

6. Your major

Never Willing 1 2 3 4 5 6 7 Always Willing

7. The types of books you like to read (school related or other)

Never Willing 1 2 3 4 5 6 7 Always Willing

8. Your zip code

Never Willing 1 2 3 4 5 6 7 Always Willing

Suppose that, just like your friend John, you found the books you are interested in at a good price. How willing are you to provide the following information items to the Web site in order to purchase from the site:

9. Your full name

Never Willing 1 2 3 4 5 6 7 Always Willing

10. Your telephone number

Never Willing 1 2 3 4 5 6 7 Always Willing

11. Your credit card number

Never Willing 1 2 3 4 5 6 7 Always Willing

12. Your address

Never Willing 1 2 3 4 5 6 7 Always Willing

13. How likely is that you will buy from this Web site.

Very unlikely 1 2 3 4 5 6 7 Very likely

14. How likely is that you would return to this Web site.

Very unlikely 1 2 3 4 5 6 7 Very likely

15. What is the likelihood of you considering buying from this Internet store?

Very unlikely 1 2 3 4 5 6 7 Very likely

16. Overall this site worked very well technically.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

17. Visually, this site resembles other sites I think highly of.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

18. This site was simple to navigate

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

19. On this site it was easy to find the information I wanted.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

20. Did you notice the TRUSTe logo on the CollegeTextbooks web site.

____Yes ____No

21. Did you click on the TRUSTe logo to find out more information about the web site?

____Yes ____No

22. Have you ever heard of TRUSTe before this experiment? ____Yes ____No

23. Did you read the privacy policy of the Web site? ____Yes ____No

24. Did the Web site provided an "Unsubscribe" link (in its privacy statement) allowing you to withdraw your permission for future e-mails such as promotions from this Web site or other third parties? ____Yes ____No

This part of the questionnaire is designed to gather demographic information about you, to help classify the responses overall.

1. What is your age? _____

2. Your gender: [] Female [] Male

3. Marital Status: [] Single [] Married

4. Your major: _____

5. What year in school are you? ____Freshman ____Sophomore ____Junior
____Senior ____Graduate ____Other

THANK YOU FOR YOUR PARTICIPATION

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