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**PRIVACY OF PERSONAL INFORMATION ON THE INTERNET:
DO PRIVACY CONCERNS AFFECT
ON-LINE CONSUMER TRANSACTIONS?**

by

LISA WATSON, B. COMM.

A thesis submitted to
the Faculty of Graduate Studies
in partial fulfilment of
the requirements for the degree of

**Master of Management Studies
Carleton University
Ottawa, Ontario**

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**PRIVACY OF PERSONAL INFORMATION ON THE INTERNET:
DO PRIVACY CONCERNS AFFECT ON-LINE CONSUMER
TRANSACTIONS?**

submitted by **Lisa Watson, B.Comm.**
in partial fulfillment of the requirements for
the degree of Master of Management Studies

Thesis Supervisor

Director, School of Business

Carleton University
May 11, 1999

Abstract

This exploratory study is based on the past research that has used theory to determine that changing ethical policies to suit consumer expectations can eliminate privacy concerns surrounding electronic commerce and World Wide Web use. A pen and paper survey completed by 228 Web users and 88 non-users of the World Wide Web was used to determine whether privacy concerns affect consumer behaviour on the Web and are slowing the growth of Web commerce. Consumer likelihood to reveal personal information was significantly lower when using the Web as compared to other media. Results also show that consumers are not satisfied with the control they believe they have over their information while using the Web. There is no evidence to suggest, however, that these concerns are the result of privacy or policy concerns, or that those concerns have any significant effect on the transaction people conduct over the Web.

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1.0 Introduction

In recent years Canadians have repeatedly expressed concern about a loss of control over their personal information (Industry Canada/Justice Canada, 1998). Culnan (1993) said that privacy concerns are often fueled by information technology. This is supported by the fact that over 50% of Canadians have attributed reduced privacy in this country to the information highway (Ekos Research Associates Inc., 1998 as cited in Industry Canada/Justice Canada, 1998). No research, however, has previously been done to offer empirical evidence that privacy concerns directly affect people's use of the Internet, and specifically the World Wide Web (WWW). The pervasive lack of consumer trust in the WWW as a medium is believed to be slowing the development of electronic commerce (Hoffman and Novak, 1997). As a result, empirical research about consumers' perception of the WWW would be helpful in developing solutions for building consumer trust in the medium.

Neumann (1994) believes that our expectations of computer-communications privacy are higher than are realistic and still lower than we would like. He suggests that privacy problems arise when gaps exist between what we desire and what can be achieved. The way to reduce privacy problems is to reduce the width of the gaps.

The first two gaps include technical gaps between security requirements and computer system capabilities, and social gaps between

societal expectations and personal behaviour. An example of a technical gap would be the current perception that existing encryption software is inadequate for protecting information transfer over the Internet. Technical gaps are narrowed through improved computer encryption and system protection software. Technology, however, is limited and can not by itself solve social problems. As a result, this gap does not fall within the scope of this study. An employee using files he or she should not be accessing is an example of a social gap. Social gaps can be narrowed to a limited extent through education and disincentives for inappropriate behaviour. They may be narrowed more effectively through the narrowing of the other two gaps. The final gap is of interest in this study.

The final gap, called a sociotechnical gap, exists when societal expectations are not consistent with system policies. An example of this gap could occur when a company's customers force the company to develop a policy of keeping their client database confidential. Some researchers have implicitly suggested that a sociotechnical gap is the cause of Web privacy issues by arguing that existing ethical guidelines do not adequately address the concerns raised by the Web environment (Thomas, 1996; Milberg et al., 1995). There has been a lack of evidence, however, to demonstrate that a gap has opened as a result of the use of this new medium. With this in mind, it is unclear whether revised ethical guidelines would, in fact, alleviate people's privacy concerns with the WWW.

This study attempts to add to the research and determine what gaps are influencing consumer privacy concerns by answering two important questions.

1) Do consumers' privacy concerns affect their use of the WWW?

This question seeks to determine whether consumer privacy concerns are, in fact, having an impact on the growth of electronic commerce by studying their behavioural consequences. It asks whether or not consumer privacy concerns regarding the WWW are great enough to cause a change in behaviour. These behavioural changes can incorporate either behaviour within the medium, or the choice of whether or not to adopt the medium as a communications tool.

2) Do consumers want more control over what information is collected over the WWW and how it is used?

This question studies whether a sociotechnical gap exists by asking if consumers are satisfied with their control over personal information in the new WWW medium. More specifically, does the WWW offer consumers less control over their personal information than other media do?

The findings of this study are used to determine whether consumer privacy concerns have an effect on people's use of the WWW, thereby affecting commercial development of the WWW. This study also begins to determine whether the privacy problem attributed to the Web stems from a

sociotechnical gap, and whether its solution lies with recommendations regarding policy changes. Additional exploratory findings also offer direction for further study in this area.

The next section will provide a contextual framework for the research. It will outline where this study fits into the existing literature and the bases for the study's development. Once the background has been provided a full report of the study itself, its findings and its ramifications will follow.

2.0 Relevant Information from the Literature

Business and marketing often incorporate multi-disciplinary research for practical application. The study of consumer privacy concerns with the WWW incorporates multiple fields of study including ethics, marketing, communications and information technology. The existing literature relevant to this study is diverse and lies along a spectrum of topic areas. As a new area of study very little literature exists that studies the topic directly. Studies across all fields must therefore be adapted for application to this research.

Three studies, by eTrust (1997), Hoffman and Novak (1997), and Industry Canada and Justice Canada (1998), currently exist that deal with consumer privacy on the Internet. They all address the same major issues in different ways. They all agree that a sociotechnical gap exists between consumer expectations and system policies on the Internet and offer suggestions for changing system policies to narrow the gap. While all three studies cite consumer dissatisfaction with the current situation, none offers any empirical evidence of the basis for their suggested solutions.

All of the remaining literature that is relevant to this research requires adaptation to fit the context of this particular study. It is either purely theoretical or was intended for application in an entirely different context. The three studies that directly address the topic of privacy on the Internet are discussed first. Discussion of the remaining literature that can be applied to

this study follows. It includes privacy theory, communications theory, technology theory, ethical theory and various concept definitions.

2.1 Existing Internet Privacy Literature

Three key studies have provided knowledge of consumer privacy on the Internet. One was conducted in the private sector by eTrust (Boston Consulting Group, 1997), a commercial association. Another came from Hoffman and Novak (1997) in the academic literature. The federal government (Industry Canada/Justice Canada, 1998) carried out the third in the public sector. They all offer the same general conclusion. On-line consumers are dissatisfied with their privacy on the WWW. Concerns about both the Web environment and secondary use of their information are to blame for the dissatisfaction. While all three studies discuss potential causes of the problem related to all three of Neumann's (1994) gaps, all focus on narrowing the sociotechnical gap as the solution to the consumer privacy problem. The various studies and their solutions follow.

The eTrust study was a WWW survey of consumers and merchants that looked at the potential influence privacy assurance rating of commercial World Wide Web sites would have on electronic commerce. ETrust, a partnering of The Electronic Frontier Foundation (EFF) and CommerceNet, conducted the on-line survey (Appendix A). The 9300 consumer respondents indicated that they would willingly give more personal information over a WWW site if they were assured that security measures were being taken and

that personal information would not be disclosed outside the organization in question (Boston Consulting Group, 1997). The results demonstrate that by closing technical and sociotechnical gaps, a company could collect relevant and accurate client information thereby building stronger relationships with their customers. The motive of this study, however, was very specific and ultimately did not explore options other than those leading to their preconceived solution.

This research is consistent with the academic discussion paper published by Hoffman and Novak (1997). It indicated that consumers do not consider WWW exchanges to be transactions of personal data for something else of value, but believe that they should be treated as relationship exchanges involving an implicit social contract about how personal information will be used. From this point, this paper builds a logical argument for a solution to the implications of this difference based on theory without the benefit of actual consumer input. Again the narrowing of technical and sociotechnical gaps are discussed as a way to expedite electronic commerce. The paper offers the ability to accept anonymous or pseudonymous transactions as a solution for Web providers to narrow the sociotechnical gap in the short-term, emphasizing that this requires enforcement of currently stated opt-out policies, such as the ability to have your information removed from a mailing list. In the long-term, however, they recommend cooperative sharing of information on the part of consumers, in an effort to achieve the

trust and true relationship exchanges they desire and to facilitate a higher level of on-line commerce. This would require the development of new opt-in policies, such as only having your name put on a mailing list if you ask to be added, which are currently uncommon in the marketplace. It suggests that by offering consumers the level of privacy they desire on-line firms will develop a competitive advantage over unethical firms and develop their Web commerce more quickly.

The federal government discussion paper agrees with much of the information in the previous two documents, but approaches it from a legislative and policy perspective. It states that a technical gap between increasingly sophisticated data collection software and counterpart security software is the cause of a widening sociotechnical gap that must be closed through new legislation. There is no evidence offered, however, as to how the link between people's concern with privacy and computer security is actually made or if it has actually been measured. The paper simply recognizes that, while a set of standard guidelines is widely accepted by private associations, no enforcement exists. Rather than arguing that companies should narrow the sociotechnical gap by earning consumer trust, this paper argues that the government should legislate privacy standards to ensure that a disregard does not lead to a competitive advantage and that consumers have a method of retribution if they are not followed.

2.2 Privacy

Privacy theory exists in the ethics and marketing literature, but is not supported by empirical research. A few articles by different authors (Foxman and Kilcoyne, 1993; Culnan, 1993; Milberg et al., 1995; Goodwin, 1991), offer some theories and models of privacy, which have yet to be practically applied. Due to its appropriate consumer focus and practical applicability the model by Goodwin (1991) was of significant use in developing the model for this study.

Goodwin first defines privacy and then develops it into a measurable model. The Goodwin model and its dimensions are then discussed more thoroughly. Finally some other key issues about privacy and behavioural guidelines are discussed.

2.2.1 Definition of Privacy

Goodwin's (1991) definition and corresponding model of consumer privacy is the one most applicable to this study's development. A discussion of alternative definitions follows.

Webster's dictionary (1988) defines privacy as "the quality or state of being hidden from, or undisturbed by, the observation or activities of other persons." Academics have had to develop a measurable adaptation of this construct of privacy for use in their research. A simple operational definition states that privacy is "the ability to control one's personal information" (Shoeman, 1984 and Westman, 1967 as cited in Culnan, 1993; Milberg et al.,

1995). Using this basis, the concept of information privacy has been more specifically defined.

Industry Canada (1998) offers a simple definition of information privacy, which “is defined as the right of individuals to determine when, how, and to what extent they will share personal information with others.” It focuses mainly on what information people choose to disclose. Gardiner Jones (1991) takes it one step further by stating that “a generally accepted concept of individual privacy has emerged that rests on two general principles: the right to be left alone and the right to control information about oneself.” Once again the disclosure of information is highlighted, but now control over interaction is also considered.

Goodwin (1991) offers a measurable matrix of information privacy states (2.2.2 A Taxonomy of Privacy States) which is directly applicable to the design of this study. Here consumer privacy is defined as “the consumer’s ability to control (a) presence of other people in the environment during a market transaction or consumption behaviour and (b) dissemination of information related to or provided during such transactions or behaviours to those who were not present” (Goodwin, 1991). This taxonomy is described in further detail in the following section.

2.2.2 A Taxonomy of Privacy States

This model was developed for the marketing and public policy sectors. It has since been used in other marketing and public policy studies and provides an accepted basis for dealing with issues such as consumer awareness of privacy rights (Foxman and Kilcoyne, 1993; Hoffman and Novak, 1997). In particular, the Hoffman and Novak (1997) study of on-line information privacy used the Goodwin model to structure their discussion of consumer privacy concerns with Web transactions.

Goodwin's (1991) definition of privacy and her taxonomy of privacy states divide privacy concerns into two dimensions: control over the environment and control over the disclosure of personal information. Smith et al. (1996) expand on the Goodwin (1991) model by detailing the elements of environment and disclosure. The element affecting one's environment involves the collection of personal information. Similarly, improper access to and unauthorized secondary use of personal information affect one's control over information disclosure. The model uses those two dimensions to describe four separate privacy states (Figure 2.2.1). The environment and disclosure dimensions should be thought of as continuous variables, however, because consumers' perceptions of their control may lie anywhere between the two extreme states shown on each axis (Foxman and Kilcoyne, 1993; Cespedes and Smith, 1993).

Figure 2.2.1: Taxonomy of Privacy States (exactly as it appears in Goodwin, 1991)

		Control over disclosure of information to others not present during the original transaction	
		Low	High
Control over unwanted physical presence of others in consumer's immediate environment	High	ENVIRONMENTAL <ul style="list-style-type: none"> •control over who is present during transaction or activity •no control over information disclosure to those not present 	TOTAL CONTROL <ul style="list-style-type: none"> •control over unwanted presence of others during transaction or •control over information disclosure to those not present
	Low	NO CONTROL <ul style="list-style-type: none"> •no control over who is present during transaction or activity •no control over distribution of information obtained during transaction 	DISCLOSURE <ul style="list-style-type: none"> •no control over who is present during transaction or activity •no disclosure of information associated with transaction or activity

The four dimensions include no control over one's information, control over one's environment, control over disclosure of one's information, and total control over one's information. In the case of having no control, a person has no control over either the environment in which he or she conducts transactions or over the disclosure of his or her information to those not present for the transaction. An example of this could be a woman in a busy market having to give her phone number verbally to a cashier in order to complete a transaction and then having the cashier add it to a database which he later sells to another vendor. Someone who has environmental control can affect who is present during a transaction, but cannot control who may gain access to his or her information once the transaction is completed. An example would involve the same woman using the telephone in her living

room to order a sweater from a catalogue and the person who took the order selling her mailing address to another company. Having disclosure control means that a person can control what happens to his or her information once he or she has completed a transaction, but cannot control who is present during the transaction. In this case the woman conducts the same transaction in the market but refuses to give her telephone number knowing that the vendor does not require it. Total control exists when a person has control over their environment and what happens to his or her information once a transaction is completed. An example of this could include the woman silently purchasing an item when she is the only customer in the store and paying cash for her purchases, leaving no personal information to misuse.

2.3 The World Wide Web Environment

One research team, Hoffman and Novak, is responsible for most of the communications literature about the Web. The theories put forth by Hoffman and Novak include discussion of the WWW as a communications medium (1995), measurement difficulties on the WWW (1996b), business usage of the WWW (1996a), and privacy issues associated with the WWW (1997). The last paper uses the Goodwin (1991) model of privacy states in its discussion. These studies are all done in the context of electronic commerce and have illustrated gaps in our current knowledge of the WWW. They do so without actually providing measurable evidence to support their ideas, but offer the most complete theoretical context for the WWW environment available in the

literature. Their work brings a better perspective on the issue of a person's control over their environment in the Web medium.

The Internet offers a new and unique method of information exchange through the use of a new environment (WWW). Hoffman and Novak (1997) note that "networked, distributed computing environments like the Internet offer unprecedented opportunities for the invasion of privacy." They suggest that this medium makes it possible to invade a consumer's privacy very easily through technical and social gaps. They turn to more stringent and comprehensive ethical guidelines as a sociotechnical solution to privacy invasion potential. It is unclear, however, if these guidelines would actually be effective in reducing privacy concerns involved with the WWW. A better understanding of their postulation can be gained by looking at the Hoffman and Novak (1995) model of the Web as a communications environment.

2.3.1 The Many-to-Many Communications Model

The many-to-many model of communication proposed by Hoffman and Novak (1995) demonstrates how computer-mediated environments (CMEs) and specifically the WWW offer a new and powerful communication tool for electronic commerce (Figure 2.3.1). This model depicts the exchange of information that can now take place not only between consumers (C) and marketers (F) on the Internet, but with the environment itself. Hoffman and Novak (1995) argue that despite privacy concerns, this new ability of consumers to add content to the medium actually increases the amount of

control that consumers can demand over the CME and its use. If consumers were to take more control over the Web through what they contribute to the medium, Hoffman and Novak (1995) argue that they would force firms on the Internet to adjust more totally and quickly to consumer demands than ever before. This includes demands for acceptable privacy protection for closing technical gaps, as well as satisfactory guidelines to steer on-line firms' behaviours for narrowing sociotechnical gaps and subsequently helping to reduce social gaps.

As has been previously stated, all of the Hoffman and Novak literature is theoretical in nature. As a result, there is no evidence to suggest that it is actually correct. This study seeks to determine whether consumer privacy

Figure 2.3.1: A Model of Marketing Communication in a Hypermedia Computer Mediated Environment (Hoffman and Novak, 1995)

concerns are affecting the content they are contributing to the WWW.

Content can include information they offer on their own Web site or the that which they are willing to disclose while interacting through another site, such as through registration with a site or an e-mail link. The study also considers whether sociotechnical adjustments are actually the best way of solving privacy problems associated with Web technology.

2.4 Information Systems Theory

Most of the information systems (IS) literature involving computer privacy is in the context of workplace use of technology. The computer privacy studies are not directly applicable to this study, but can provide insights into study design and will therefor be briefly discussed. Literature on technology adoption and diffusion of innovations is also not directly applicable to this study, but can be applied to exploratory questioning and is useful in interpreting findings. Diffusion of innovation theory and technology adoption theory will, therefore, also be discussed.

2.4.1 Computing Privacy

The study of computing privacy is widespread in the IS literature. Most current computer privacy theory deals with employee monitoring (Agre, 1994; Sipior and Ward, 1995; Weisband and Reinig, 1995) and information ownership concerns (Pierce and Henry, 1996; Walsham, 1996; Conger et al., 1995; Myers and Miller, 1996). These issues are more directly relevant to the workplace than to the consumer environment, therefore, they are not useful in

the development of this study. It is, however, an interesting gap in the literature which, through discussion papers like that of Hoffman and Novak's (1997) is now closing.

2.4.2 Diffusion of Innovations

Rogers' (1995) article uses the diffusion of innovation theory to explain adoption of practice guidelines by physicians. This article has the potential to be applied to other fields and professional ethical and behavioural guidelines. It discusses the problem of many different medical associations and journals developing individual sets of guidelines. Not only are there too many sets of rules for individual medical practitioners to follow, but the guidelines may in some cases contradict each other. In the context of this study changing ethical guidelines to better fit consumer privacy expectations will have no practical effect if the required changes are not universally agreed upon. It is important, therefore, to consider how new guidelines become accepted.

Rogers' (1983, 3rd ed.) theory describing the diffusion of innovations is probably the best known and most commonly accepted theory of technology adoption and acceptance. In this section the theory is briefly outlined and the article's relevance to this study is discussed.

Figure 2.4.1 illustrates the S-shaped curve of the typical rate of technology adoption. “Diffusion is the process by which (1) an innovation (2) is communicated through certain channels (3) over time (4) among members of a social system” (Rogers, 1995). Types of adopters include innovators, early adopters, and later adopters. Early adopters who are approached for information and stimulate later adopters to try the innovation are also referred to as opinion leaders and spur the innovation to “take off”. This theory has been used to explain the adoption of many types of innovations, including medical practice guidelines. Rogers (1983) further identified 5 characteristics of an innovation that affect the rate of innovation diffusion.

Figure 2.4.1: The Diffusion of Innovations Curve (Rogers, 1995)

2.4.3 The Technology Acceptance Model

While many exist, there are two theories of interest that attempt to explain information technology adoption: the Theory of Planned Behaviour (TPB) and the Technology Acceptance Model (TAM) (Davis et al., 1989; Mathieson, 1991; Taylor and Todd, 1995). TAM is the simpler and more generalizable of the two (Mathieson, 1991; Taylor and Todd, 1995). TAM is a very simple model (see Figure 2.4.2) which uses a potential user's perceived usefulness (U) of a new technology and their perceived ease of use (E) of that technology to estimate their attitude toward that technology (A) and their intention of adopting that technology (BI). That intention is used as a predictor of actual behaviour or adoption.

Figure 2.4.2: Technology Acceptance Model (Davis et al., 1989)

Moore and Benbasat (1991) used Rogers' (1983) 5 perceived characteristics of an innovation and Davis et al.'s (1989) TAM model to develop a measurement instrument of how Perceived Characteristics of an Innovation affect Technology Adoption. In the context of this study, this link

reinforces that there are technical concerns, like usefulness or complexity of an innovation, that can hinder or slow the diffusion of an innovation, which can not simply be solved through policy change. Adaptations of the Moore and Benbasat (1991) instrument were of use in scale creation for this study and in asking questions in the exploratory side of this study.

2.5 Ethical Theory

Ethical concern about research invading the privacy of individuals on the Internet may be found in the social science literature. Here, Boehlefeld (1996) states that as researchers “we must take precautions to protect those individuals from whom we learn.” To do so, we must take the steps necessary to prevent harm to them when we gather, store, and report data, as well as when we interact with them in this new communications medium.” Some basic ethical theory and principles are required in analyzing existing ethical guidelines. The following section first discusses why these guidelines are important, and secondly reviews some useful ethical theory for comparing consumer requirements with existing practice.

2.5.1 The Need for Universal Guidelines

The Internet is a global tool that is not governed by any one country's regulations or legislation. Privacy is a construct which is affected heavily by one's culture (Foxman and Kilcoyne, 1993; Turkheimer, 1994; Milberg et al., 1995). While most cultures place some value on privacy, the level of concern varies significantly. What is considered private may differ from one culture to

another. For instance, the Japanese are said not to be particularly sensitive to privacy concerns while it is claimed that Americans highly value their privacy (Turkheimer, 1994; Milberg et al., 1995). To further complicate the issue, regulation of privacy varies significantly across countries (Turkheimer, 1994). Because of these discrepancies, one universally acceptable code of conduct with respect to research and information gathering and storage on the Internet would be ideal but difficult to facilitate (Turkheimer, 1994; Milberg et al., 1995). Organizations like the United Nations and the International Telecommunications Union do exist to facilitate worldwide cooperation in dealing with such issues. Rogers' discussion of guideline adoption and this study's look at where consumer privacy concerns lie should aid in the development of these policies.

2.5.2 Moral Principles

Deontological theories examine people's moral duties to others (Walsham, 1996). Moral reasoning offers a set of duties as guidelines which should be taken into account in applied ethics (McDonald, 1993). Each of the four principles discussed heavily influence guideline development and may be applied to maintaining consumer privacy.

2.5.2.1 Autonomy

Autonomy involves the right to personal freedom from coercion and of making one's own choices (McDonald, 1993; Thomas, 1996). These choices, however, may be made as a result of awareness of their negative consequences. From this, it can be argued that regardless of their motivation for either disclosing or withholding information over the WWW, on-line consumers are considered to be acting autonomously.

2.5.2.2 Non-Maleficance

This principle simply means to do no harm. It is said to be a "negative duty" because it is achieved through inaction to avoid causing harm (McDonald, 1993). In the case of consumer privacy on the Internet it could involve not selling a client database to another firm or not merging your database with another firm's, potentially leading to invasion of a customer's privacy. The phrase "do no harm" can be found in ethical guidelines such as The Association of Computing Machinery's (ACM) Code of Ethics and Professional Conduct (1993).

2.5.2.3 Beneficence

Beneficence is a positive duty that involves three aspects: preventing harm, removing harm, and doing good. Preventing harm includes that which is caused by negligence. Removing harm and doing good is required when there is a special obligation to one party by another (McDonald, 1993). Once again in the case of exchanges on the World Wide Web, there is a special

obligation on the part of the data collector as outlined previously by Boehlefeld (1996). This further suggests a duty on the part of the researcher to carefully consider the implications of their actions (Thomas, 1996).

2.5.2.4 Justice

This principle means, simply, to be fair. Three types of justice include fair compensation, punishment and distribution. Fair punishment includes legal ramifications for wrong-doing, which is the preferred method of the federal government for narrowing the on-line sociotechnical privacy gap (Industry Canada/ Justice Canada, 1998). Punishment denounces a wrongdoer by offering a punishment proportionate to the wrong done, while disabling the wrongdoer and ultimately protecting society. Fair compensation involves making up for harm done by righting the wrong. Once privacy has been invaded, however, it is difficult to restore the situation to its previous state. Fair distribution deals with the allocation of benefits and burdens. It is unclear at this point which governing body, like the United Nations or the Internet Society, is most appropriate to provide this service. Currently there are no stable mechanisms to serve justice for users of the WWW, nor is it clear what is punishable.

2.6 Other Construct Definitions

There are several definitions that must also be considered in the design of this study and development of its measurement instrument. They are discussed very briefly here.

2.6.1 Definition of Information

Information may be defined as “a signal or character (as in a communication system or computer) representing data” (Webster’s New Collegiate Dictionary, 1977). Once data has been represented, however, that information may become the data input for further information which can be defined as “knowledge obtained from investigation, study, or instruction” (Webster’s New Collegiate Dictionary, 1977). It is this second definition of information that is of use in the application of this study’s measures.

2.6.2 Definition of Security

Often there is confusion on the part of on-line consumers when discussing privacy and security issues (Boston Consulting Group, 1997). The Webster’s New Collegiate Dictionary (1977) defines security as “measures taken to guard against espionage or sabotage, crime, attack, or escape.” The eTrust study (Boston Consulting Group, 1997) defines security as being “related to measures taken to protect your information or communications from theft (e.g. encryption, firewalls, etc.).” In other words, security only involves potential technical gaps in the Web environment. For the purposes

of this study, therefore, security is only a small part of the privacy concerns being examined.

2.6.3 Definition of a Firm or Researcher

A traditional definition of marketing research is “a formalized means of obtaining information to be used in making marketing decisions” (Tull and Hawkins, 1987). This definition can be broadened to anyone who conducts research over the WWW. For the purposes of this study, a firm or a researcher includes anyone gathering information through a Web site for the purposes of obtaining personal information from its visitors. These include operators of non-commercial sites that want people to register personal information with them. The application of this broader definition is crucial to survey response.

2.6.4 Definition of a Transaction or Exchange

This study considers a transaction to be any sort of exchange over the Internet. This could include an actual purchase, but could also include the exchange of information. An example could involve registering your name with a Web site in order to view a specific page of information. This definition is used to include all types of on-line exchange situations in which privacy is an issue to better address all exchange situations in which privacy gaps may exist.

3.0 Proposed Model

This section discusses the proposed model in this study. The model tests hypothesized privacy states and outcomes in World Wide Web users. The hypotheses are then modified for non-users. Discussion first clarifies the basis for its development. Secondly, the model itself and its measurement is explained. Finally, the two sets of hypotheses based on the model are formulated and postulated.

3.1 Theoretical Framework

The proposed model is designed to study

- 1) where a gap may exist between consumers' actual privacy and desired privacy on the WWW, and
- 2) if privacy concerns affect consumers' use of the WWW.

Neumann's (1994) postulation that the existence of these gaps is what leads to privacy concerns was the basis for the model. The measures of privacy where the gaps may exist were based on the Goodwin (1991) privacy taxonomy discussed in the literature review. Hoffman and Novak's (1996b) CME communications model was used to determine the outcome measure for the model of how privacy perception affects the content people reveal over the WWW.

The model in Figure 3.1.1 uses the two privacy taxonomy axes, control over one's environment and control over disclosure of one's information, as the independent measures of consumers' perceptions of their current privacy states. The environment measure is concerned with one's control over one's information while conducting exchanges over the WWW as previously defined in the literature review. Disclosure refers to what is done with one's information after it is revealed over the WWW. Neumann's postulation of existing gaps between what people desire and what they have is represented by the moderating variables. They illustrate the postulation that if consumers' desired privacy in the two situations is not the same as what they believe they have, then a gap exists that may lead to privacy concerns. The model suggests that these relationships will ultimately affect the dependent variable of what information people reveal over the WWW.

Figure 3.1.1: Proposed Model

3.2 Model Measurement

The proposed model is firmly based in existing theory, but addresses a controversial measurement issue. The proposed model in this study is actually trying to measure a gap between people's desired and perceived control over their information, and then predict what information they will reveal over the Web as a result of the gap. The preferred method of gap measurement is an issue that remains unresolved in the service quality literature (Parasuraman et al., 1994).

The most direct way to measure a gap between two constructs is through the use of a difference score. This involves measuring each construct and then subsequently creating a subtractive measure between the

two. This method of gap measurement has proven to hold high diagnostic value for assessing the relative positions of the two states (Parasuraman et al., 1994b as cited in Elliot, 1996). Alternatively, a direct score uses a single measure of a gap with the subtraction of two variables being built into a newly derived construct. There are three compelling reasons for applying a direct score to this study's model measurement.

First, as was previously emphasized, this model studies a predictive relationship between information control and information revealed over the WWW. Direct scores have been shown to hold more predictive power of how a gap will affect behaviour than the subtraction of direct measures (Parasuraman et al., 1994).

The second reason involves the statistical analysis of measurement scales. A construct's reliability, or its ability to measure a concept consistently, is deemed acceptable at a level of 0.7 or higher. Measuring the gap between the separate constructs of desire and perception would reduce the reliability of the new construct to the multiplication of the reliabilities of the original constructs. In such an instance it is possible to have a measurement problem between two sufficiently appropriate variable measures, since $0.7 \times 0.7 = 0.49$. Constructing new scales alone causes room for measurement error. The potential of compounding potential measurement problems is ill advised. Therefore, a single measure is preferable.

The third reason considers the specific constructs being measured.

Asking people to record their desire for something that they like will generally lead them to respond that they would like more of it regardless of whether they are, in fact, satisfied with what they have. Consequently, asking people to measure their desired privacy states will lead to a tendency to over-report gaps. Instead, an alternative measure that already incorporates the subtraction between desire and perception may be a more conclusive response format.

A direct measure of the gap between desire and perception was developed for incorporation into the proposed model. Satisfaction with control was chosen to act as the appropriate comparative measure between how much control people believe they have and how much control people want or desire.

The direct effect of the use of a new scale is that the model that will be tested looks slightly different than the one originally proposed. Because of the exploratory nature of this study, the alternate measure will keep the practical implications of the measures intact. The differences are, however, influential in the wording and measurement of hypotheses. The model that is actually used for testing can be seen in Figure 3.2.1 and its corresponding hypotheses are discussed in the following section.

Figure 3.2.1: Proposed Measurement Model

3.3 Hypotheses

The proposed model for this study was measured based on information collected from a sample consisting of both people who use the WWW (users) and those who do not (non-users) in order to detect any differences between the two populations. Each group's responses were tested against the proposed model separately. Because the two populations are slightly different, they required two different sets of hypotheses. The user hypotheses were formulated directly from the model, while the non-user hypotheses were modified from the user hypotheses to better represent their situation.

3.3.1 User Hypotheses

Web users have direct experience conducting exchanges in that environment. As has been derived through the theoretical framework, it is postulated that there is a relationship between what control people believe they have over the environment in which they conduct exchanges and what content they will contribute to that environment (Hoffman and Novak, 1995). In this case, it is believed that the control people believe they have over the WWW medium will affect the information they reveal over the medium.

Hypothesis 1: As Web users' perceived state of control over the WWW environment increases, the amount of information they are willing to contribute to the WWW also increases.

Using satisfaction as a measure of the gap between what people believe their situation to be and what they would like it to be, the next postulation was derived. This measure will only measure a gap in which the desired level of control over one's environment is higher than the perceived level of control. It suggests that if a gap of some type does exist between people's perceived control over the WWW environment and their desired level of control, the amount of information they are willing to disclose over than medium will be affected.

Hypothesis 2: If Web users are dissatisfied with the amount of control they have over the WWW environment, the amount of information they will contribute to the WWW will be reduced.

The same concepts were applied to the development of hypotheses regarding the disclosure of one's personal information after it has been released over the WWW, the second privacy taxonomy axis.

Hypothesis 3: As Web users' perceived state of control over disclosure of their information increases, the amount of information they are willing to contribute to the WWW also increases.

Hypothesis 4: If Web users are dissatisfied with the amount of control they have over disclosure of their information, the amount of information they will contribute to the WWW will be reduced.

3.3.2 Non-User Hypotheses

Non-users are unable to report their actual behaviour on the WWW. As a result, while responding to survey questions they were asked to report their what they believed their responses would be if they were to use the WWW. The non-user hypotheses take into consideration this different perspective in their response context. All other reasoning behind the postulations is consistent with that used for users. Hypotheses 5 to 8, therefore, are stated as follows.

Hypothesis 5: As non-Web users' perceived state of control they would have over the WWW environment increases, the amount of information they believe they would contribute to the WWW also increases.

Hypothesis 6: If non-Web users are dissatisfied with the amount of control they believe they would have over the WWW environment, the amount of information they believe they would contribute to the WWW will be reduced.

Hypothesis 7: As non-Web users' perceived state of control they would have over disclosure of their information increases, the amount of information they believe they would contribute to the WWW also increases.

Hypothesis 8: If non-Web users are dissatisfied with the amount of control they believe they would have over disclosure of their information, the amount of information they believe they would contribute to the WWW will be reduced.

4.0 Methodology

The pen and paper survey was distributed using a drop-off / pick-up method. The Regional Municipality of Ottawa-Carleton was chosen as a population with the Postal Code Directory as a sampling frame. A full explanation of the process follows, ending with a detailed demographic description of the sample group.

4.1 Research Design

A pen and paper survey was chosen for this study. This method allowed non-users the opportunity to respond to the survey and offered the opportunity for interesting comparison. It is, however, logical to question why, given the subject matter, a technological medium such as electronic mail was not offered as an optional response method for users. In fact, it was discovered that technological media do not yield acceptable consistency in results when measuring technological subject matter (Webster and Compeau, 1996). In other words, using the Internet as a medium for data collection about the Internet could yield unacceptable measurement results. As a result a more traditional data collection method was required and the pen and paper option ultimately offered the maximum benefit.

4.2 Questionnaire Development

This exploratory field study employed a pen and paper survey for data collection. Because this study considers both users and non-users of the Internet, the questionnaire was designed to accommodate the ability of each group to answer the questions being asked. The same instrument was used for each group in order to keep the results comparable.

4.2.1 Scale Development

When considering questionnaire development, existing scales were consulted for use in this study's instrument. A scale developed by Smith et al. (1991) was originally intended for use. Upon closer examination, however, the instrument (Appendix B) was deemed inappropriate for use in measuring perceived control over one's environment or perceived control over disclosure of one's personal information. Because the instrument contains measures of concern it could be argued that it was an alternative measure of satisfaction with those states, but was rejected for not being directly applicable. It was, however, included in the questionnaire for comparison with newly developed scales.

New scales were developed to measure all four independent variables: perceived control over one's environment, perceived control over disclosure of one's personal information, satisfaction with control over one's environment and satisfaction with control over disclosure of one's personal information. The possibility of invalid measures was high, given the complexity of proper

scale development and the researcher's inexperience in the area. The constructs of environment and disclosure were already clearly defined by Goodwin. The constructs for measuring perception and desire, however, were not.

To help ensure that the measures were appropriate, the constructs in question were given operational definitions and then appropriate reflective constructs were chosen to measure each of them. It was through this process that the decision to use satisfaction as a measure of the difference between desired and perceived control was made. Perceived control was described in layman's terms as "the way you think things are." Satisfaction with control was defined as "not wanting change in the way you think things are", where dissatisfaction would demonstrate a privacy gap of some type. As was previously explained, this construct offers a more direct measure of the originally proposed model by allowing respondents to measure the gap between desire and perception themselves.

The originally developed scales included 7 measures of each construct and were later reduced to 4 after pre-testing. More discussion of the process can be found in 4.4 Pre-testing.

Information revealed was measured using several different types of personal information on another newly developed scale.

Other exploratory questions were also included in the instrument. They generally focused on privacy and different media such as the Smith scale. Other questions about adoption intention were included for analysis of non-user respondent results. Compeau and Meister's adapted scale (Appendix C) for measuring the perceived relative advantage of a technology and Davis's measure of attitude toward a technology from Gagliardi's instrument (Appendix D) were used to measure attitudes toward adoption intention, along with one other question measuring adoption likelihood. A brief demographic section was also included to determine the fit of the sample with the Web user population and with the region in which the data was collected.

The first copy of the questionnaire (Appendix E) was then used in a pretest to determine its effectiveness. The original instrument was pretested and revised accordingly to ensure that it could be answered easily by the entire respondent sample and adequately meet data analysis requirements. More information about the pre-test procedure and results can be found in 4.4 Pre-testing. The final questionnaire may be found in Appendix F.

4.2.2 Existing Instruments

The survey was created using information and questions from existing instruments mentioned previously. These instruments include those developed by:

1. Smith et al. (1996) for measuring individuals' concerns about organizational privacy practices will be used to measure views with respect to personal information privacy. (Appendix B)
2. Moore and Benbasat (1991) as modified by Compeau and Meister (as cited in their 1997 paper) measuring adoption intention. (Appendix C)
3. Davis' (1989) scale as adapted by Gagliardi (1994) measuring perceived usefulness of a technology. (Appendix D)

The application of these scales to this study was already explained. As a result, a further examination of their quality is warranted and follows.

4.2.2.1 The Smith et al. Instrument

The tool is a 15-item instrument that measures concerns about personal information on the four sub-scales of collection, errors, unauthorized secondary use, and improper access. These scales have been developed to simulate the unobservable construct of consumer privacy. The tool has been thoroughly tested for validity, reliability, and generalizability and is very relevant to the topics of discussion in this study. This scale was used in the questionnaire for supplementary analysis. The analysis of this data was used to measure respondent concerns about their privacy on the WWW.

Smith et al. tested the instrument through several iterations of development for both reliability and validity. The reliability of the instrument has been tested for adequacy by evaluating internal consistency and test-retest reliability. Internal consistency of the constructs was measured using composite reliability of and average variance extracted from the four sub-scale dimensions. The variety of tests determined that the instrument was a sound measure of information privacy concerns.

Administering the instrument to the same sample on two different occasions measured test-retest reliability. The correlations between responses were in line with previously reported acceptable levels. The instrument's reliability was, therefore, also deemed to be sufficient. The instrument offers a tested method of measuring the constructs in question in this study.

Validity of the instrument has also been tested on a number of different bases. Through three steps of construct validity testing using 10 different samples of respondents from a variety of backgrounds, a 20-item scale was developed. Of the 20 items, 15 of them loaded unambiguously into a 4-factor model, which was tested for best fit against several other plausible models found through the literature review. Six tests of 6 types of validity followed. The convergent and discriminant construct validities of the scale were tested using confirmatory factor analysis and both were found to be adequate. Studying factor loading size and significance tested convergent validity.

Average variance extracted was used to test for discriminant validity.

Concurrent validity was tested using correlations between responses to the instrument and responses to public opinion survey questions and the expected correlations were observed. Nomological validity was tested in two ways. The first uses the two possible antecedents of previous personal experiences and media coverage that may affect responses. The expected results were supported. The second test of nomological validity used the individual personality factors of trust/distrust, paranoia, and social criticism to determine their effects on responses. Once again, the expected influence was seen. Through this thorough variety of techniques the validity of the instrument has proved to be sound.

4.2.2.2 The Compeau and Meister Instrument

As was discussed in the literature review, Rogers developed a list of 5 critical Perceived Characteristics of an Innovation (PCIs) that affect innovation adoption based on his Diffusion of Innovations theory (Rogers, 1995; Compeau and Meister, 1997). Compeau and Meister (1997) modified the 1991 Moore and Benbasat scale for measuring PCIs for use in 3 different studies, including an instrument measuring use of the World Wide Web (WWW). According to his theory, innovations differ in their rates of adoption according to the following attributes:

1. **Relative advantage:** the degree to which a new idea is perceived to be superior to the practice which it replaces
2. **Compatibility:** the degree to which an innovation is perceived to be similar to an individual's existing beliefs
3. **Complexity:** the degree to which a new idea is perceived to be difficult to understand
4. **Trialability:** the degree to which an innovation can be used experimentally by an individual
5. **Observability:** the degree to which a new idea can be seen by others.

Similar factor groups exist throughout the instruments listed above.

The Moore and Benbasat (1991) tool is based on Rogers' theory and utilizes the 8 variable categories of voluntariness, relative advantage, compatibility, image, ease of use, result demonstrability, visibility and trialability. This study demonstrates Compeau and Meister's adaptation of the existing instrument in three previous studies.

Inconsistencies between the earlier study results, however, led to this study to test reliability of the instrument across research contexts. Reliability was tested using Cronbach's alpha with a cut off of 0.70 as an acceptable score. The findings indicate that reliability was only adequately consistent across all three studies on the scales of relative advantage, compatibility, and ease of use. Not all of the measures were required for use in exploratory

questioning. Relative advantage was chosen because it had an acceptable reliability and was an appropriate measure of all respondents to this study.

The study also suggests some flaws in construct definition and changes in the “negative” wording of some questions to reduce response error. This information was a consideration in scale development and was also applied to analysis of the data collected.

4.2.2.3 The Gagliardi Instrument

This instrument included a measure of attitude toward of a technology adapted from the Davis (1989) scale. The Gagliardi (1994) scale used seven semantic differential measures on 7-point scales to measure attitudes toward Smart card use. His scale could be easily adapted to a 5-point measure of perceived usefulness of the WWW and would be a good compliment to the relative advantage scale.

4.3 Instrument Distribution

A drop-off / pick-up method of data collection was employed in this study. Distribution continued until the target number of responses was reached.

In this method, the distributor of the survey begins a door-to-door distribution at a randomly selected address. They then determine their direction using a die with predetermined results (ie. even number turn left, odd number turn right at a T intersection). The distributor asks the person

who answers the door at each house if they would be willing to fill in the survey, which they will be back to pick up in a set period of time. Because distributors were alone in this case, it was decided that they would use this procedure for the first half of distribution and then double back down the opposite side of the streets until they returned to their cars. It is recognized that this method reduced randomness, but it was the researcher's decision that the safety of volunteers was the more important issue.

Questionnaires were dropped off between 6:30 and 8:30 p.m. on weekday evenings. This time was chosen to minimize interference with respondents' schedules, reaching them after their dinner hour but before children's bedtimes. The questionnaires were picked up three evenings later at the same time to provide respondents with ample time to complete the survey. It was suggested to respondent that the questionnaire be left in the mailbox by that time for their convenience or else the doorbell would be rung. In order to maximize returns, the distributor returned one more time two days later for those that were not yet complete or to places where participants were not home at the pick-up time. The time was either discussed with the person who answered the door or left on a reminder flyer in the mailbox (Appendix G).

4.4 Pre-testing

The questionnaire for this stage of the study (Appendix E) was originally pre-tested using a convenience sample of respondents to get feedback on format and comprehension. It was then piloted using the actual sampling frame and distribution technique. There were two key issues to be observed through the pre-test. The first was a concern that there would not be enough non-user respondents to make analysis of those hypotheses possible. The second issue was a concern about the quality of the personally developed measures of model constructs. Because a very large pre-test group would be needed to test the validity of the new scales, it was determined that testing reliability would offer a sufficient indication of the quality of the measures. It was decided that approximately 25 responses would be adequate for a pre-test response.

The starting address for distribution was the first one on a randomly selected list created for actual data collection (see 4.5.1 Sampling Frame for more details). In total 60 houses were approached. Of those 60 houses, 18 did not answer the door, 10 people refused to participate and 32 questionnaires were distributed. 17 questionnaires were returned on the agreed upon day with another 5 being returned on the next agreed upon time and 1 returned by mail. See Table 4.4.1 for a breakdown of the response rate. These results were used to estimate response rate for the actual study and did prove to be a good indicator. The proportion of non-user respondents

Table 4.4.1: Pre-testing Response Information

	Actual Numbers	Cumulative Percent (%)	Percent of Previous (%)
Households Approached	60	100	
Responses to Approach	42	70	70
Questionnaires Distributed	32	53	76
Questionnaires Returned	23	38	72

was 17%, which would be a sufficiently high percentage of actual respondents for data analysis.

From this process several difficulties with the questionnaire became apparent, including necessary changes to the newly developed scales. The new scales were deemed to be too long and difficult to respond to. As a result, the scales were reduced to containing only 4 items which were chosen based on best fit with the original construct definition, pre-test response rate for each, and a cursory consideration of reliability results. Comments suggested that many respondents did not perceive a substantial difference between the constructs of environment and disclosure. This preliminary finding suggested that the Goodwin taxonomy that was a key component of the proposed model in this study is not practically significant to consumers. This prompted the addition of an exploratory question that asked respondents to indicate how similar or dissimilar they believed the constructs to be. It was also apparent that respondents had difficulty responding to the semantic differential scales in the survey. The instructions were changed in an attempt

to make them easier to understand. An inconsistency in the new instruction was missed before printing, however, which made the change ineffective¹.

The data was coded and used in an initial data analysis. This process was necessary for ensuring that the intended analysis techniques could be used on the data as it had been collected. Some scaling difficulties were found and the appropriate adjustments were made.

Significant enough changes were required to the instrument that the pretest sample could not be used as part of the final study.

4.5 Sampling

4.5.1 Sampling Frame

The population of study included consumers in the Ottawa-Carleton region. The sampling frame was the Ottawa-Carleton postal code directory. In this case, 24 postal codes were randomly selected out of the Ottawa area before data collection began. First a random page out of the appropriate section of the Ontario postal code directory was chosen using a random number generator, then a column out of 6 and then a number out of 100 for the row. Because rows vary in length, the number was counted down and then began again at the top of a row if necessary. Each code has a corresponding starting address that was recorded as the starting point for

¹ Three slightly different instructions were included for the 3 semantic differential questions. The inconsistency can be seen in questions 9, 19 and 22 of the survey (Appendix F).

data collection in that area. Of the 24 selected codes, the 1st was used for the pretest and another 13 were used for the study. The codes were consulted in order from the list until the target number of responses was returned. Only 3 addresses remained on the list at the end of the collection process. Table 4.5.1 gives an outline of the 24 codes selected and their applications.

For this study, only English-speaking respondents were used due to the high cost of translation. Only one response per household was solicited. Although no apartment complexes were encountered, it was decided that the rental office would be approached as the household representative. The youngest respondent age was set at 18 for two reasons. The first was to ensure their ability to comprehend the language in the questionnaire and answer appropriately. The second was that children are not legally allowed to gamble and Lotto 6/49 tickets were offered as response incentives.

Table 4.5.1: Data Collection Location Use

Pretest	1
Data Collection	13
Not Required (met collection target)	3
PO Box (invalid address)	1
Could not be located on maps	2
Corresponding street numbers could not be found on that street	1
Unsafe to conduct data collection*	3
Total	24

* 4 women performed data collection individually in the evenings in the dark. These areas either had virtually no lighting or were known to be potentially unsafe.

4.5.2 Sample Size

As will be discussed in more depth during data analysis, Partial Least Squares (PLS) was used to test hypotheses in this study. This data analysis method does not rely on an assumption of normality and can tolerate smaller sample sizes. PLS requires 10 times the number of cases as there are independent variables in the most complex regression in the model (Barclay et al., 1995). Using this figure as a rule of thumb, the minimum number of respondents per group would be 40 per group for a total of 80 respondents. In actuality, a minimum sample of double that size (200) is preferable. In order to allow for response error and to account for the 20% non-user response ratio expectation, a sample size of 300 was the target for this study.

4.6 Response Rate

The pretest had yielded a 40% overall response rate and a return rate of 75% of distributed questionnaires. While more conservative results were expected on a larger scale, in fact, data collection proved to be quite consistent with these results. The 39% overall response rate and 80% return rate achieved were far higher than anticipated. Comparably, mail surveys are considered very successful if they obtain a 30% return rate and personal interviews with only one approach elicit approximately the same result (Cooper and Emory, 1995). Non-response always leads to a potential for biased results, and this study's 61% non-response rate is no exception. This study's distribution method, however, did not allow for a second approach to

those households who were not at home at the time of distribution, which makes the rate of self-selected non-response much lower. With this in mind the potential for bias is believed to be no more limiting than most other studies. Table 4.6.1 shows the numeric result.

Of the 318 returned questionnaires, 228 respondents were users, 88 were non-users and 2 of the respondents did not fill out the first page, leaving their user status unknown. Despite concerns about achieving a large enough non-user representation with a requirement of a 17% minimum response rate the necessary number of respondents was exceeded with a 27% rate.

Several tactics were employed in an attempt to increase the response rate to the survey. It is these tactics that are believed to have increased the response rate to such a high level. The drop-off/pick up method of instrument distribution was treated as a cross between a personal interview and a mail survey. Personal interviews establish a rapport with the respondent and can as a result be longer than a mail survey, which should generally require no more than 10 minutes to complete to achieve an adequate response rate.

Table 4.6.1: Data Collection Response Information

	Actual Numbers	Cumulative Percent (%)	Percent of Previous (%)
Households Approached	823	100	
Responses to Approach	507	62	62
Questionnaires Distributed	399	48	79
Questionnaires Returned	318	39	80

The surveys in this study required 45 minutes to complete. By distributing the questionnaires by hand a relationship was built with the respondent and agreement to complete the questionnaire was established in advance.

Evidence of that relationship was shown upon pick-up of the surveys when many respondents addressed the distributor by name. An incentive of a 6/49 lottery ticket was also mentioned as a “small token of appreciation for their time” during the drop-off and provided to respondents upon the return of the completed questionnaire. This was intended to show respect for the respondents’ time and increase their desire to actually fill out the survey once they had accepted it. A letter of introduction on Carleton University letterhead also accompanied the questionnaire to offer the respondent proof of the study’s legitimacy (Appendix H) and offer them the opportunity to seek retribution if they were unhappy with the process, which no one did.

4.7 Respondent Demographics

The demographic make-ups of the user and non-user samples were compared with the demographics of the Ottawa region (Statistics Canada, 1991; RMOC, 1994) to determine their representativeness. The user characteristics were also compared to those of the average Internet user according to Web surveys conducted by Pitkoe and Kehoe (1996) and MIDS (1996). Comparisons with Ottawa demographics and Internet statistics were not consistent. The sample includes a much older audience than the area norms, and accordingly there are also differences with marital status and

occupations. Education levels were also far above expectations. The deviation could be explained by the fact that the random sample yielded no neighbourhoods with apartments and places that younger people may reside. Comparisons between the two groups of users and non-users, however, show some interesting differences.

4.7.1 Gender

The first demographic measure was gender. Table 4.7.1 compares the demographics for the Ottawa area, the entire sample, and for each of the user and non-user groups. The sample had a higher representation by males (55%) than Ottawa as a community. The Ottawa regional distribution holds a 52% female and 48% male split (Statistics Canada, 1991). This higher male representation is consistent with Internet surveys that record a 60% male usage rate. Results also demonstrated an obvious difference between users and non-users. Users had the expected 60% representation of male respondents. The non-Web users had 43% male and 57% female respondents, which is almost a reverse distribution to the user ratio.

Table 4.7.1 Gender Comparisons for Sample

	Ottawa (%)	Entire Sample (%)	Users (%)	Non-Users (%)
Male	48.1	55.1	59.6	42.0
Female	51.9	44.0	39.5	56.8
missing		0.9	0.9	1.1

4.7.2 Age

The overall ages of the sample group remain higher than Ottawa profile expectations (Table 4.7.2). A full 50% of Ottawa's adult population is under the age of 40 (Statistics Canada, 1991), while only 32% of the sample falls below that age. The sampling bias may be attributed to the likelihood of selecting suburban addresses as opposed to urban ones in the sampling frame of the postal code directory, with much of the younger population living in rental housing and apartments within the city. Respondents' ages were significantly different between the two respondent groups. Users as a group were younger with a median age between 40 and 49, while non-users had a median age between 50 and 59. Users under 40 years of age made up 35.6% of their total, with non-users having under 40 representation of only 25%. Similarly, the non-user group held a 12.5% distribution of people 70 and over while the user group had no respondents above 69 years of age. The younger ages of Internet users are consistent with Internet user profiles, but are not as low as would be anticipated.

Table 4.7.2 Age Comparisons for Sample

	Ottawa (%)	Entire Sample (%)	Users (%)	Non-Users (%)
18-19*	3.3	2.5	3.5	
20-29	23.0	12.9	15.4	6.8
30-39	24.0	17.0	16.7	18.2
40-49	19.3	28.3	32.5	17.0
50-59	11.9	21.1	19.7	25.0
60-69	} 18.5	7.5	4.8	14.8
70+		3.4		12.5
missing		7.2	7.5	5.7

* Ottawa figure estimated from the 15-19 year old category

4.7.3 Marital Status

Marital status results can be found in Table 4.7.3. It was found that 33% of Ottawa area residents 15 years and older are single and 52% are married (Statistics Canada, 1991). 72% of all of those sampled were legally married and only 18% were single (or had not been legally married).

Because the sample group did not contain people aged 15 through 17, it is expected that the number of single respondents would be lower than the Ottawa base, but not to such a large extent. Once again, a sample bias can be attributed to the older respondent base. The younger user group had a 21% single status, while only 10% of their older non-user counterparts were single. While married status is higher than anticipated for the user group, the finding that more users are single than non-users is consistent with Internet survey trends.

Table 4.7.3 Marital Status Comparisons for Sample

	Ottawa (%) *	Entire Sample (%)	Users (%)	Non- Users (%)
Single (includes common law couples)	32.7	18.2	21.5	10.2
Married (includes remarried)	52.5	72.0	71.4	72.7
Divorced or separated	9.2	3.8	3.1	5.7
Widowed	5.6	1.9	3.9	6.8
Other		.6	.4	1.1
missing		3.5	3.5	3.4

* calculated for persons 15 years of age and older

4.7.4 Education Level

The entire sample group had very high levels of education. Table 4.7.4 shows the comparisons of respondent education levels. 56% of users held an undergraduate degree or higher compared to 40% of non-users. Both groups fell well above the 23% of Ottawans who are reported to hold university degrees (Statistics Canada, 1991). Despite the difference, however, the two groups held similar percentages of graduate degree holders at approximately 25% each. This very high level of education is consistent with the profile of an Internet user with an above average education level, but is higher than the general population should demonstrate. Because formal education has become much more critical in recent years, the result that the younger user group has a generally higher level of education than non-users is consistent with expectations.

Table 4.7.4: Education Level Comparisons for Sample

	Ottawa (%) *	Entire Sample (%)	Users (%)	Non- Users (%)
Less than high school diploma	25.3	2.5	2.2	3.4
High school diploma	14.9	9.1	7.9	12.5
Trade certification	2.5	4.1	3.1	6.8
Some university or college study	13.7	15.4	14.5	17.0
College certificate	20.9	15.1	14.0	18.2
University degree (undergraduate)	} 22.6	20.1	22.8	12.5
Graduate study or professional certification		31.7	33.8	27.3
missing		1.9	1.8	2.3

* calculated for persons 15 years of age and older

4.7.5 Occupation

Occupation was requested through an open-ended question. This posed a problem in reporting because people reported by industry as well as by task classifications. The comparison of occupations to Ottawa standards, therefore, is not clear in many cases. It also explains why the Ottawa percentages surpass 100%, because the reporting overlaps between tasks and industries. Actual results can be found below in Table 4.7.5. Despite these recording difficulties the sample results differ from the breakdown reported by the Regional Municipality and Statistics Canada. A reported 23% of Ottawa residents holding civil service jobs (RMOC, 1994). It is of interest to note that neither set of Ottawa statistics distinguishes the high tech industry or its related positions in its results. The occupation differences found between groups can also be explained by the age distribution of the two groups. The largest group of non-users was retired or unemployed (23.9%), while users held a majority of civil servants (11.8%) and computing industry workers (11.4%). Internet surveys do indicate a high level of technical occupations among Web users. Another difference of note is that the non-user group had a significantly higher proportion of stay at home wives, consistent with the lower representation of women in the user group. The non-user group had a much higher number of missing values (13.6%) than users (5.7%).

Table 4.7.5: Occupation Comparison for Sample

	Ottawa (%) *	Entire Sample (%)	Users (%)	Non- Users (%)
Housewife		5.0	3.5	9.1
Retired/ unemployed	7.0	9.4	3.9	23.9
Student		5.7	7.9	
Education	4.8	5.7	5.3	6.8
Social sciences	14.4	2.8	3.5	1.1
Administration/ clerical work	20.9	5.7	5.3	6.8
Management and business consulting	} 18.5	7.5	9.6	2.3
Professionals		9.1	10.1	5.7
Finance/ real estate	5.0	4.7	5.3	3.4
Sales and service	21.0	5.3	6.1	3.4
Construction / industry	10.7	2.5	1.3	4.5
Computing industry		8.8	11.4	2.3
Civil service	23.8	10.7	11.8	8.0
Health/ sciences	5.0	4.1	3.1	6.8
Business owner	7.8	2.2	2.6	1.1
Other		2.8	3.5	1.1
missing		7.9	5.7	13.6

* calculated for persons 15 years of age and over

4.7.6 Conclusions

The deviation between the overall sample and the Ottawa population can be attributed to the sampling frame and the selected postal codes. The differences between the user and non-user groups, however, are not so easily explained through structural limitations in the chosen methodology. It is interesting to note that users were much more likely to be younger males with higher education levels and more senior occupational positions than non-users. It is unclear whether these differences can be attributed to technology adoption theory, but further study is warranted.

5.0 Findings

Data analysis in this study involved several types of statistical analysis done using two different software packages. Statistical Package for the Social Sciences (SPSS) was used to test research questions and other exploratory questions asked in the study. Partial Least Squares (PLS) was used to test the proposed research models and their corresponding hypotheses.

5.1 Descriptive Findings

This section reports the findings derived from exploratory questions in the survey that were posed to further general knowledge of Web privacy and studies the potential existence of non-sociotechnical gaps that may be causing privacy concerns about the Web.

5.1.1 Media Types and Information Revealed

One key question asked how personal did respondents consider 11 types of information to be on a scale of 1-5, where 1 was not at all personal and 5 was extremely personal. They were then asked to estimate their likelihood of giving each of those types of information through the mail, over the phone and over the WWW respectively, also on a scale of 1-5 where 1 was not at all likely and 5 was extremely likely. Mean responses can be found in Table 5.1.1.

Table 5.1.1: Mean Likelihood of Revealing Information by Medium

	Users			Non-Users		
	mail	phone	WWW	mail	phone	WWW
Name	3.91	3.39	3.07 *	3.33	2.75	2.20 *
Age	3.12	2.74	2.61 *	2.82	2.57	2.49
Address	3.46	2.79	2.26 *	3.56	2.94	2.43 *
Phone number	3.13	3.04	2.22 *	3.22	3.18	2.32 *
Email	3.16	2.77	3.14 *	3.29	3.11	3.41
Gender	3.37	3.23	2.84 *	3.37	3.34	2.99
Marital Status	3.06	2.74	2.57 *	3.15	3.02	2.74
Income	1.61	1.42	1.36	1.76	1.50	1.49
Credit Card	1.98	1.78	1.54 *	2.21	1.91	1.68
Household Info	2.57	2.10	1.99 *	2.52	2.31	2.05
Purchasing Info	2.41	2.15	2.11	2.56	2.43	2.18
False Info	1.46	1.60	1.70	1.28	1.53	1.43

* media effect significant at .001 level for respondent group

The top three pieces of information most likely to be revealed by users over each medium were name, gender and the identifying piece of information for communication in that medium (address, phone number, and email address). Non-users included email address in the place of name in their top three pieces of information most likely revealed over the telephone. The difficulty that non-users may have had in answering this question could be due to a lack of experience and might explain the anomaly here. The three pieces of information least likely to be revealed were income, credit card and false information for each group.

It is of interest to note the low likelihood of respondents to report false information to firms using any medium. The likelihood of giving false information is reverse to that of other information, however, as it increases

form mail to phone to web for users. This finding demonstrates that consumers do not have a problem refusing to provide information, providing evidence that they do indeed have autonomy across all media, including the WWW. The non-user results, however, once again deviate in their view of the Web as they believe they would be less likely to give false information on the Web than over the telephone.

Another point of interest is that people perceive email addresses to be less sensitive than telephone numbers. Respondents reported being more likely to disclose their email address than their telephone number over the Web, which is logical in that medium. They were also, however, more likely to disclose their email address over the Web than they were to disclose their phone number over the phone. This difference has significant potential benefits for firms engaging in electronic communications with consumers.

The significance of the differences in information revealed by media type was tested using MANOVA for each group of respondents. A benefit of this method is that skewed response distribution does not have a substantive effect on analysis results (Stevens, 1996). The significance of the differences across media types is indicated by an asterisk (*) for both the user and non-user groups in Table 5.1.1. Media effects were significant with all information types except income and purchasing information for users. Non-users exhibited much less significant media effects. Only the likelihoods of

revealing one's name, address and phone number were significantly affected by the medium in question.

Results indicate that media do have a significant effect on what information Web users reveal, supporting McLuhan's assertion that "the medium is the message" (as cited in Finkelstein, 1968). McLuhan's assertion indicates that a medium creates a new environment that alters the senses of the people in it, thus making the alteration the actual message of importance. Non-user results show much fewer significant mean differences, possibly because they have never functioned in the Web environment and thus have not been altered by it. The comparison of the two groups is strong evidence that the Web is seen as being significantly different from other media.

The technological level or age of the medium may also be a determining factor in what information people will reveal over each medium. In all cases except that of a person's email address, the mean likelihood of revealing information over a given medium went down from mail to telephone to Web (see Table 5.1.1).

5.1.2 Perceptions About Privacy

Only 34% of users and 7% of non-users believed themselves to be well informed about privacy. Despite a lack of information, privacy was still a concern to both groups, although the more informed user group demonstrated less concern than the non-users. While 86% of non-users rated personal privacy as important, less than 75% of users felt the same. Similarly, 59% of users and 71% of non-users were concerned about threats to their privacy. This may suggest that education may alleviate potentially unfounded fears about privacy. The result may also be attributable to past privacy invasion: 58% of users and 68% of non-users responded that their privacy had been invaded at least once before and in both groups over half stated that privacy invasion significantly affected their current behaviour in conducting transactions.

When asked whether they would purchase items either through the mail, over the phone, or over the WWW results mimicked those relating to the likelihood to reveal information through each medium. Likelihood decreased from mail to phone to Web. While 80% of users and 70% of non-users said they would buy something through the mail those figures dropped to 63% and 48% respectively for buying over the phone. Approximately half of WWW users (52%) reported a willingness to buy over the WWW. A mere 24% of non-users, however, believed that they would use the medium to make a purchase. Non-user reporting could have been based on a lack of intention to

use the Web at all in the future. The willingness of users to buy over the Web, in contrast, was quite high and offers encouragement for the growth of electronic commerce in the near future.

Measures derived from the Smith et al. scale (see 4.2.2 Existing Instruments) provide some interesting insights into the areas of privacy people are most concerned with. Responses about concerns regarding unauthorized access to, improper use of, and collection of information are studied. While there is only a slight difference between groups with respect to their concerns over improper access to and unauthorized secondary use of their information, the results are still significant in their magnitude. In comparable terms, unauthorized secondary use corresponds to control over information after disclosure over the Web and improper access corresponds to security (or technical gap) concerns about the Web. On a scale of 1 to 5, with 5 showing strong concern, the mean response by both groups for all types of concerns was approximately 4.5. Approximately 90% of users and 95% of non-users scored the issues as a 4 or higher. The greater concern of non-users is consistent with previous findings. Collection concerns deal with the environment in which information is collected. This type of concern again demonstrates differences between users and non-users in their comfort with the Web as a medium. Only 75% of users agree that collection issues are a concern on the Web (scoring it as a 4 or higher) compared to 88% of non-

users. From all of these findings it is evident that people have less concerns about the WWW as they use it.

5.1.3 Perceptions about the Privacy Model

Respondents were asked to state to what degree they agreed or disagreed that they had control over their information either in their transaction environment or once they had released it while in a store, over the telephone and over the WWW. The scales had anchors of strongly disagree at 1 and strongly agree at 5. Opinions regarding control over one's environment during transactions were relatively similar between respondent groups. In both groups over 70% agreed that they did have control over their environment in a store. 52% of WWW users and 61% of non-users agreed that they had control over the phone, while the number of respondents from each group that believed they would have control over their environment on the WWW hovered in the 30-40% range. Comparisons were similarly unenlightening when opinions about control over information once it has been released were studied. Just over 30% of each group agreed that they had control once their information had been released in a store compared to 17% over the phone. Only 9% of users and 15% of non-users agreed that they had control over their information once it had been released over the WWW. These results demonstrate that all consumers feel more power over their environments when there is more direct interaction with the researcher.

Consumers also, however, universally believe that they possess very little control over their information once it has been released.

Previously it was noted that the perceived similarity between the constructs of environment and disclosure should be reviewed in more depth. The pre-test suggested that consumers might not consider the Goodwin taxonomy's privacy states to be significantly different. This led to the addition of a question in the survey in which respondents were asked to identify how similar they found the states of control over environment and control over disclosure to be on a scale of 1-5 with 1 being extremely dissimilar and 5 being extremely similar. The response mode for both groups was approximately a 3, meaning neither similar nor dissimilar, a neutral and rather inconclusive result. As will be postulated again in the section about construct reliability and reverse-coded questions, it is apparent that many respondents did not take as much time and care in completing the survey as was warranted by the complexity of the subject matter. It is possible that people who were confused by the question or the subtle differences between the constructs chose a neutral stance rather than to leave the question blank. When the neutral responses were eliminated from analysis more conclusive results were found. 66% of remaining user respondents found the constructs to be similar compared to 34% who found them dissimilar. Non-user results were similar with 61% finding them similar as compared to 39% finding them

dissimilar. The usefulness of the taxonomy as a foundation for this theoretical application, therefore, warrants further study.

Before studying the effect sociotechnical gaps may have on consumer behaviour, consumer perception of their existence had to first be determined and measured. For the measure of all independent variables in the proposed model, 5-point scales with a neutral midpoint of 3 were used. A mean response of 2 or lower was selected to demonstrate a perception of privacy gaps over the WWW. This number allowed for the variance in the measures while still illustrating gaps. All means fell below the neutral 3 level, but the selected benchmark indicated that gaps only existed in the perceived control over disclosure and satisfaction with control over disclosure variables respectively for both user (1.83, 1.72) and non-user (1.85, 1.55) groups. While these results demonstrated that consumer privacy gaps do exist while using the WWW, the next step was to determine whether they had any practical influence over consumers' behaviour. It was this practical effect that would determine if the action of changing privacy guidelines could also influence behaviour and ultimately close the gaps.

5.2 Proposed Model

PLS is a statistical technique that measures the fit of unobservable constructs to a proposed model and can also be used to test specific relationships within that model (Hughes et al., 1986). It is one of a group of “second generation” multivariate analysis techniques that can simultaneously test reliability and validity of the constructs in a model and measure relationships among the constructs (Barclay et al., 1995). These techniques differ from other more traditional techniques because traditional techniques test each relationship separately and are not able to detect the effects that each of those relationships may have on each other. PLS was chosen over LISREL as a means of analysis because it is better suited to predictive applications with low theoretical information (Barclay et al., 1995). It is also able to support a variety of measurement scales, is less affected by the distribution of residuals than LISREL, and is much more forgiving of small samples (Fornell and Bookstein, 1982). The indicators used to measure each construct are described in Table 5.2.1.

5.2.1 Reliability and Validity Testing

The appropriateness of the individual measurement variables (or indicators) was studied first. The loadings for each indicator should be higher than .7 to be considered a good measure of the construct to be included in the measurement scale for the construct. The table of the indicator loadings can be found in Table 5.2.1. Difficulties were immediately evident, especially

with questions were reverse-coded². Reverse-coded questions are asked in a fashion that should induce a response opposite to the rest of the questions in the scale, so if three questions induce a 4 out of 5 response the reverse coded one should be recorded as a 2 out of 5. The error in response raises issues about the care taken by respondents in filling out the survey. Non-users also had low loadings for more indicators than users. These discrepancies were considered while conducting further tests.

The construct measurement scales were tested for internal consistency in both the user group and the non-user group (Table 5.2.2). Internal consistency measures the extent to which respondents answer questions similarly, determining the stability or reliability of the scales (Cooper and Emory, 1995). The technique used for measuring internal consistency was developed by Fornell and Larker (1981) and is computed taking the sum of the loadings, all squared, divided by the sum of the loadings, all squared, plus the sum of the error terms (Barclay, et al., 1995), or $(\sum \lambda)^2 / ((\sum \lambda)^2 + \sum (1 - \lambda^2))$. All internal consistency measures fell above the .7 acceptable level of reliability.

² These questions were first properly coded into the database to be comparable to the remaining measures in the scales. Ones and fives were interchanged, as were twos and fours. The results were coded, checked and rechecked for accuracy.

Table 5.2.1: Model Construct Indicators and Factor Loadings

Constructs	Individual Measures (indicators)	User Loadings	Non-user Loadings
Perceived Control over one's Information in the Web Environment	Low/high	.8471	.8929
	(Un)reasonable	.8303	.8633
	(In)adequate *	.6714	.6739
	(Un)satisfactory	.8534	.6340
Satisfaction with Control over one's Information in the Web Environment	Want more *	.6492	.5860
	Concern	.7738	.5694
	Expectation	.7157	.8733
	Satisfaction	.7623	.8385
Perceived Control over one's Information after its Disclosure over the Web	Low/high	.7087	.8321
	(Un)reasonable	.8079	.9045
	(In)adequate *	.5660	.2858
	(Un)satisfactory	.8540	.5833
Satisfaction with Control over one's Information after its Disclosure over the Web	Want more *	.7693	.5058
	Concern	.8925	.5284
	Expectation	.4950	.5683
	Satisfaction	.6360	.8606
Information Revealed over the WWW	Name	.7739	.7590
	Age	.7058	.8904
	Address	.8004	.7916
	Phone number	.7663	.8030
	E-mail address	.7322	.7786
	Gender	.7468	.8563
	Marital status	.7154	.8736
	Income	.6481	.3013
	Credit card number	.6163	.3905
	Household information	.6945	.7180
	Purchasing habits	.6169	.6864
	Personal Information	.7435	.5700

* indicates questions which were reverse-coded

Table 5.2.2: Construct Reliabilities

Construct	Users	Non-Users
Perceived Control over Information in Web Environment	.8788	.8543
Satisfaction with Control over Information in Web Environment	.8169	.8150
Perceived Control over Information after Disclosure over Web	.8277	.7666
Satisfaction with Control over Information after Disclosure over Web	.7990	.7558
Information Revealed over the WWW	.9260	.9255

After pre-testing indicated that respondents did not consider the constructs of Environment and Disclosure to be significantly different, testing for discriminant validity was crucial. Discriminant validity measures to what extent constructs differ. Fornell and Larker (1981) offer two criteria for ensuring discriminant validity (Barclay et al., 1995).

The first requirement of discriminant validity is that the average communality (average variance extracted) of a construct must be significantly higher than the squared correlations (shared variance) between it and other model constructs. Comparing the square roots of the average communalities for each construct to the straight correlations achieves the same result. This test was completed for both the user and non-user models and results can be found in Tables 5.2.3 and 5.2.4 respectively. The diagonal elements shown in the tables are the square roots of the average communalities for each scale while the others are the correlations between constructs. The comparisons found a validity problem with the satisfaction with control over information after disclosure measure. The inter-correlations between that variable, and the satisfaction with control over the Web and the perceived control after disclosure measures also indicated a potential multicollinearity problem. Referring back to the individual factor loadings, this difficulty was expected.

The second requirement is that no item should load more highly on another construct than it does on the construct it intends to measure. The

Table 5.2.3: User Communalities compared to Variable Correlations

	Perceived Control over Web	Satisfaction with Control over Web	Perceived Control After Disclosure	Satisfaction with Control After Disclosure	Information Revealed over Web
Perceived Control over Web	<u>.804</u>				
Satisfaction with Control over Web	.490	<u>.727</u>			
Perceived Control After Disclosure over Web	.452	.471	<u>.742</u>		
Satisfaction with Control After Disclosure	.361	.630	.535	<u>.714</u>	
Information Revealed over Web	.312	.191	.244	.229	<u>.716</u>

Table 5.2.4: Non-User Communalities compared to Variable Correlations

	Perceived Control over Web	Satisfaction with Control over Web	Perceived Control After Disclosure	Satisfaction with Control After Disclosure	Information Revealed over Web
Perceived Control over Web	<u>.774</u>				
Satisfaction with Control over Web	.519	<u>.730</u>			
Perceived Control After Disclosure over Web	.296	.335	<u>.695</u>		
Satisfaction with Control After Disclosure	.332	.668	.368	<u>.632</u>	
Information Revealed over Web	.150	.214	.041	.401	<u>.724</u>

current PLS software does not include the tools required to conduct this test. However, it was suspected from examining the correlations between the scales that there were problems with the measures, so the test was important. As a result, principal component factor analysis was used as a comparable test. This test takes the model out of the context of its underlying assumptions, so results must be used cautiously.

The tests were done on four sets of constructs to ensure clarity between each set of construct measures. The sets were based on the taxonomy axes of environment and disclosure, and the model moderator measures of perception and satisfaction. Because of the inconclusive results provided by the extracted factors from the non-user group, only the user results are reported here. It is believed that the inconclusive results for the non-user group demonstrate an inability to accurately estimate their desired states on the Web due to their lack of familiarity with the medium.

The measures were loaded onto 2 factors using a varimax rotation. The resulting factor loadings can be found in Tables 5.2.5 to 5.2.8. Tables 5.2.5 to 5.2.7 show that the environment, disclosure and perception measures all loaded appropriately onto their two corresponding variables. Table 5.2.8, however, illustrates a difficulty with the satisfaction measures. These findings are consistent with the discriminant validity test that showed potential multicollinearity between satisfaction with control over one's information in the Web environment and satisfaction with control over information after

disclosure over the Web. Two of the satisfaction measures from each scale loaded onto each factor, showing that the scales were not clearly identifying two different constructs.

Table 5.2.5: User Factor Loadings for the “Environment” Constructs

	Components	
	1	2
Perceived Control over Information in Web Environment		
Low/high	.712	.222
(Un)reasonable	.871	.126
(In)Adequate	.751	.270
(Unsatisfactory)	.845	.151
Satisfaction with Control over Information in Web Environment		
Want more	5.07 E-02	.752
Concern	.158	.593
Expectation	.282	.748
Satisfaction	.255	.816

Table 5.2.6: User Factor Loadings for the “Disclosure” Constructs

	Components	
	1	2
Perceived Control after Information Disclosure over Web		
Low/high	.668	.198
(Un)reasonable	.803	.150
(In)Adequate	.770	.205
(Unsatisfactory)	.833	.264
Satisfaction with Control after Information Disclosure over Web		
Want more	.191	.762
Concern	8.13 E-02	.747
Expectation	.254	.596
Satisfaction	.279	.748

Table 5.2.7: User Factor Loadings for the “Perceived” Constructs

	Components	
	1	2
Perceived Control over Information in Web Environment		
Low/high	6.83 E-02	.807
(Un)reasonable	.324	.803
(In)Adequate	.392	.689
(Unsatisfactory)	.332	.779
Perceived Control after Information Disclosure over Web		
Low/high	.690	.122
(Un)reasonable	.774	.256
(In)Adequate	.743	.291
(Unsatisfactory)	.816	.304

Table 5.2.8: User Factor Loadings for the “Satisfaction” Constructs

	Components	
	1	2
Satisfaction with Control over Information in Web Environment		
Want more	.351	.563
Concern	.167	.738
Expectation	.857	.156
Satisfaction	.796	.288
Satisfaction with Control after Information Disclosure over Web		
Want more	.266	.733
Concern	.121	.800
Expectation	.726	.140
Satisfaction	.666	.407

As a result of these tests, it was determined that the indicators used in model testing would have to be modified in order to create valid construct measures.

In analyzing the construct measures, it became clear that results from the non-user group were much less reliable measures, despite the fact that non-users had responded to the exact same questionnaire as the user group. This conclusion was supported by the inconclusive factor component findings for non-users, where user results offered conclusive information for analysis. The difference indicates an inability to accurately predict one's perceptions of or behaviour in an unfamiliar medium.

By revisiting the factor loadings of the measure, the discriminant validity test and correlations between constructs, and the principle component factor analysis results, a stronger and more appropriate set of measures was devised for the proposed models. The key criterion for adaptation was that the measures be consistent across respondent groups. This decision was made to allow for greater comparability of the two groups' model results. Because the non-user group posed significant measurement difficulty, the user group results were used for decision-making.

The first action taken was to remove reverse-coded measures from the scales, due to their poor individual measurement abilities. Study of the loadings also prompted the removal of the information revealed over the

WWW measures of income and credit card number. Difficulty in reporting on those two measures likely stems from the same difficulty seen in non-users: an inability to make predictions about situations they have not yet faced. The elimination of the inappropriate measures helped strengthen the scales' reliabilities, but the issue of validity still remained to be solved.

The next crucial decision was to remove the measure of satisfaction from the perceived scale to reduce correlation between the two constructs. In an attempt to solve the problem encountered with the satisfaction constructs, the individual loadings (from Table 5.2.2) associated with the two principle components for the satisfaction constructs were revisited. It was determined that the first two questions were proper measures of satisfaction with control after disclosure and that the second two questions were appropriate for measuring the satisfaction with control in the Web environment construct. In order to ensure that each construct had two measures, the reverse-coded measure of satisfaction was reintroduced.

As a result of all of the changes, in the final model test two indicators were used in measuring each of the four independent variables. For the perceived control constructs, the high/low and (un)reasonable indicators were used as the final measures. The indicators of expectation and satisfaction were used to measure satisfaction with control in the Web environment and the want more and concern indicators were used in measuring satisfaction

with control after disclosure. These revised scales were used to predict the constructs' effect on information revealed over the WWW.

Some difficulties still existed with the logic of these results despite their statistical support. From a practical perspective, questions measuring satisfaction should have resulted in similar loadings and factors across the two contexts in which satisfaction was being measured. It is not logical that satisfaction should be measured differently when determining one's state "while conducting a transaction" and "once personal information has been released."

Once these changes were decided upon the tests were conducted again, no more major difficulties were detected. The results from the new set of tests follow. Table 5.2.9 shows that the newly computed individual variable loadings for the revised scales showed great improvement. Similarly, all scale reliabilities (Table 5.2.10) were well above the required 0.7 level. By referring to Tables 5.2.11 and 5.2.12, it can be seen that discriminant validity was achieved, with the square roots of the communalities all being considerably larger than their corresponding variable correlations. While a potential for multicollinearity was still apparent, the correlations between the constructs dropped considerably. With this set of constructs proving sound, the model could then be considered for its predictive results.

Table 5.2.9: Revised Individual Variable Loadings

Constructs	Individual Measures (indicators)	User Loadings	Non-user Loadings
Perceived Control over Information in the Web Environment	Low/high	.9263	.9475
	(Un)reasonable	.8990	.8994
Satisfaction with Control over Information in the Web Environment	Expectation	.8997	.9324
	Satisfaction	.9433	.9013
Perceived Control over Information after Disclosure on Web	Low/high	.8330	.8421
	(Un)reasonable	.8654	.9220
Satisfaction with Control over Information after Disclosure on Web	Want more *	.9455	.8764
	Concern	.7678	.9006
Information Revealed over the WWW	Name	.7791	.7473
	Age	.7458	.8977
	Address	.7804	.7923
	Phone number	.7580	.8155
	E-mail address	.7597	.7883
	Gender	.7983	.8715
	Marital status	.7516	.8848
	Household information	.6813	.6953
	Purchasing habits	.6215	.6711
	Personal Information	.7142	.6013

Table 5.2.10: Revised Construct Reliabilities

Construct	Users	Non-Users
Perceived Control over Information in Web Environment	.9090	.9208
Satisfaction with Control over Information in Web Environment	.9187	.9135
Perceived Control over Information after Disclosure over Web	.8381	.8759
Satisfaction with Control over Information after Disclosure over Web	.8504	.8824
Information Revealed over the WWW	.9314	.9395

Table 5.2.11: Revised User Communalities compared to Variable Correlations

	Perceived Control over Web	Satisfaction with Control over Web	Perceived Control After Disclosure	Satisfaction with Control After Disclosure	Information Revealed over Web
Perceived Control over Web	<u>.913</u>				
Satisfaction with Control over Web	.507	<u>.922</u>			
Perceived Control After Disclosure over Web	.368	.335	<u>.849</u>		
Satisfaction with Control After Disclosure	.243	.363	.362	<u>.861</u>	
Information Revealed over Web	.254	.118	.199	.248	<u>.741</u>

Table 5.2.12: Revised Non-User Communalities compared to Variable Correlations

	Perceived Control over Web	Satisfaction with Control over Web	Perceived Control After Disclosure	Satisfaction with Control After Disclosure	Information Revealed over Web
Perceived Control over Web	<u>.924</u>				
Satisfaction with Control over Web	.490	<u>.917</u>			
Perceived Control After Disclosure over Web	.282	.376	<u>.883</u>		
Satisfaction with Control After Disclosure	.196	.263	.215	<u>.889</u>	
Information Revealed over Web	.161	.217	.061	.167	<u>.782</u>

5.2.2 PLS Result Interpretation and Significance Testing

PLS analysis calculates path coefficients (standardized β s) between constructs. Because there is no assumption of multivariate normality in PLS, a technique known as jack-knifing was used to determine significance of the path coefficients. Fornell and Barclay developed this program in 1983. It creates parameter estimates for a number of sub-samples (approximately 30) which are applied by the jack-knife formula to create Student t-values for the paths (Barclay et al., 1995).

5.2.3 Proposed User Model

The PLS graphical image of the proposed user model and its corresponding path coefficients can be found in Figure 5.2.1. Jack-knifing results found 3 of the 4 paths to be statistically significant at $\alpha=0.10$ in a two-tailed test with 31 degrees of freedom, as indicated by an asterisk (*) on the model diagram. Due to the remaining, although reduced, possibility of multicollinearity between some variables (i.e. $r=.507$ for Perceived Control on the Web and Satisfaction with Control on the Web), however, the reader is reminded that interpretation of the results must be done with caution. The number under the Information Revealed construct is its corresponding R-squared value. The amount of variance explained by the model is very small at only 11%. While this is not a high amount by itself it should not be totally dismissed in the light of future investigation.

Figure 5.2.1: PLS Results for Proposed User Model

The proposed hypotheses for the study were compared to results. The positive relationship between Perceived Control over Information in the Web Environment and Information Revealed over the WWW supports the relationship proposed in Hypothesis 1.

Hypothesis 1: As Web users' perceived state of control over the WWW environment increases, the amount of information they are willing to contribute to the WWW also increases. **(Supported)**

The second hypothesis is actually stated negatively to the relationship proposed in the model. The result, in fact, indicates that satisfaction with one's control would lead someone to reduce the amount of information he or she revealed over the Web and does not seem logical immediately. If considered in the opposite direction, however, it makes sense that users of the WWW who reveal less information are more satisfied with their level of control over that information. This significant result, however, indicates an opposite relationship to that proposed in the hypothesis, which as a result is not supported.

Hypothesis 2: If Web users are dissatisfied with the amount of control they have over the WWW environment, the amount of information they will contribute to the WWW will be reduced. **(Not Supported)**

As was the situation with Hypothesis 1, the positive relationship between Perceived Control and over Information in the Web Environment and Information Revealed over the WWW supports the relationship proposed in Hypothesis 3.

Hypothesis 3: As Web users' perceived state of control over disclosure of their information increases, the amount of information they are willing to contribute to the WWW also increases. **(Supported)**

Because the path between Satisfaction with Control over Information after Disclosure over the Web to Information revealed over the Web is not significant, Hypothesis 4 is not supported.

Hypothesis 4: If Web users are dissatisfied with the amount of control they have over disclosure of their information, the amount of information they will contribute to the WWW will be reduced. **(Not Supported)**

In practical terms, these findings offer measurable proof that the control Web users' have over their information in the Web environment does affect what information they reveal over the Web. Clearly, what drives Web users' behaviour is their perceptions of the control they have over their information, rather than gaps between the control they want and the control they have. This evidence carries important implications for electronic commerce.

5.2.4 Proposed Non-User Model

The Non-user Model (Figure 5.2.2) yielded similarly low path coefficient values to those in the User Model, however there are no statistically significant relationships. The reason for the lack of findings can be attributed to larger variances in responses for this group than the user group. Once again, as with earlier descriptive findings, the difficulty of postulating about an unfamiliar situation has lead to inconclusive results.

Figure 5.2.2: PLS Results for Proposed Non-User Model

As in the case of Hypothesis 4, because none of the paths were found to have statistical significance, Hypotheses 5 through 8 are not supported by this research. It is important to remember, however, that the lack of support may be attributable to measurement difficulties. As a result, these hypotheses can be considered for further testing using improved measures in the future.

Hypothesis 5: As non-Web users' perceived state of control they would have over the WWW environment increases, the amount of information they believe they would contribute to the WWW also increases. **(Not Supported)**

Hypothesis 6: If non-Web users are dissatisfied with the amount of control they believe they would have over the WWW environment, the amount of information they believe they would contribute to the WWW will be reduced. **(Not Supported)**

Hypothesis 7: As non-Web users' perceived state of control they would have over disclosure of their information increases, the amount of information they believe they would contribute to the WWW also increases. **(Not Supported)**

Hypothesis 8: If non-Web users are dissatisfied with the amount of control they believe they would have over disclosure of their information, the amount of information they believe they would contribute to the WWW will be reduced. **(Not Supported)**

5.3 Analysis of Guidelines

While gaps between consumer expectations and their current privacy states on the Web were detected by studying mean responses, it was not determined that these gaps had a significant practical effect on consumer behaviour. When studying the proposed causal models, only satisfaction with control in the Web environment was determined significant in affecting the information users revealed on the Web. In that relationship, there was no evidence that they were dissatisfied with their control, just that people who

revealed less were more satisfied. These conclusions do not suggest that reducing sociotechnical gaps through social policy will have any effect on consumer behaviour in disclosing information or conducting transactions over the Web. Consequently, there is no reason to believe that changes to ethical guidelines will provide a solution for on-line consumers' privacy concerns.

The Canadian Standards Association's (CSA) Model Code for Protecting Personal Information (1997), and the Canadian Direct Marketing Association (CDMA) Code of Ethics (CDMA, 1997) as they pertain to privacy in information gathering were chosen for comparison with consumer requirements for privacy found in the study. These guidelines were selected because they are Canadian in origin and the sample of study is based in Canada's capital city. In fact, the CSA's Model Code is the basis for many other ethical guidelines developed by such associations as the CDMA. Should further study offer evidence that gaps exist that are causing privacy concerns beyond those typically associated with technology adoption, reevaluation of the CSA Model Code for Protecting Personal Privacy is suggested for assuring Canadian businesses have an edge in the electronic marketplace.

6.0 Discussion

This research not only adds to our knowledge in a number of different ways, but it offers a broad scope of findings on which to expand in the future. This section looks at the study's additions to the literature, the practical lessons from its findings, its limitations, and the many possibilities derived from it for future research.

6.2 Major Contributions to the Literature

In the past, research about the WWW has been mostly theoretical discussion. This study offers organizations and scholars an actual preliminary measure of consumer perceptions of privacy on the WWW as compared to different media. It is the first of its kind in Canada. The results offer some groundbreaking results. They suggest that the theoretical basis of consumer privacy on which much discussion of the Internet has been based is not representative of actual consumer perceptions. Further, contrary to current literature recommendations, no evidence was found to indicate that changing Web privacy policy and legislation would have any effect on consumer behaviour resulting from privacy concerns on the Web. As an exploratory study in a relatively new field, these and the many descriptive findings from this research provide many avenues for more in-depth investigation of Web privacy and use.

6.2 Major Findings

This study found interesting results surrounding users and non-users of the Web in many different areas. Not only are the groups comprised of very different types of people, those people have very different perceptions and behave in very different ways. The research results are considered on a practical level and then general themes are discussed.

The significant differences between Web users and non-users found in this study offer interesting findings for practical application. Web users were generally younger and better educated than their non-user counterparts and held more senior level occupations such as management positions. They were more aware of and less concerned with privacy issues and were more willing to disclose personal information. These differences should be considered when targeting electronic services towards on-line consumers in an effort to increase the rate of adoption of electronic commerce.

Non-users showed an inability to accurately predict their behaviour on the Web, making their responses of limited value to this study. It may be more useful to consider this group as the later adopters in Rogers' diffusion of innovation theory. In that light, users (innovators and early adopters) would set the standards for Web use before non-users even began to use the technology and thereby be the key population for research in electronic commerce.

Another key set of findings with practical applications involves the information people are willing to disclose across media and the potential for growth in Web commerce. People's higher willingness to disclose their e-mail address over the Web than to disclose their telephone number over the phone offers a unique advantage for firms offering on-line customer services. This opportunity is complemented by the fact that on-line consumers are very unlikely to provide false information over the Web. While results from hypothesis testing suggest that people are more satisfied revealing less information, other results showed a definite optimism about using the Web for purchasing in the future. Intelligent firms will use this combined information to prepare a new electronic marketing strategy for Web users.

The findings in this study have shown that the Web environment significantly affects people's behaviour in that medium. Indeed McLuhan's assertion that the medium is the message has been strongly reinforced. The reasons for the differences across media remain unclear, but possible alternatives include the age of the medium or the technological sophistication of the medium, both of which fit with diffusion of innovation theory. There is no evidence throughout many different findings, however, that any privacy gap exists that has a practical effect on their behaviour on the Web. For example, despite 77% of Web users having concerns about the WWW environment when their information is being collected 52% are still willing to make purchases using that medium. Even the gaps that were determined to

exist through studying mean responses indicated no reasons for change. The gaps involved issues surrounding disclosure of information after it has been collected through a medium. The issue of information disclosure is already thoroughly dealt with in ethical guidelines, so only information indicating that the WWW brought about new issues specific to the medium would any change be warranted. As a result, there is nothing in this study's results with which to argue for changes to existing privacy guidelines for use in electronic commerce.

This study, through methodological difficulties, also demonstrated that the Goodwin (1991) Taxonomy of Consumer Privacy States might be an inappropriate basis for privacy studies in electronic media. Consumer pre-testing comments, descriptive analysis, and measurement difficulties all support the conclusion that the taxonomy is not an appropriate basis for this type of empirical research. Because this theory is being adopted more commonly as a theoretical basis for Internet privacy discussion, it is crucial that the taxonomy be examined further to either confirm or refute this study's evidence of its inapplicability.

While results did not support the model of privacy initially proposed for the study, the results provided insights into potential new models. Because the hypotheses that Web users' perceptions about their control over their information affects the information they disclose was supported the postulation that privacy affects behaviour on the Web can not be totally

refuted. When mixed with the finding that satisfaction exists with users' control when less information is revealed, the theoretical basis seems to have some merit. As a result, the findings from this study should be viewed as a good starting point for future research.

This study offers some practical implications for firms using the WWW. Webmasters should consider people's perceptions of the Web in developing electronic services and in preparing for future growth. While no socio-technical privacy gap was confirmed to have an effect on behaviour, it is possible that a technical gap does exist that affects behaviour, meaning that security should be a more serious concern than posting privacy policies.

6.3 Limitations

Despite some very important results found in this study, two major difficulties with the research design limit the applicability of its findings. The development of the questionnaire caused one impediment and can be partially attributed to its theoretical basis. The respondent base resulting from the random sampling method posed another difficulty. Due to these obstacles, it is recommended that this study be used only as it was intended, as a preliminary basis for future research in the area of people's perceptions of and reactions to Web privacy.

Questionnaire design was the most significant impediment to the research. While accepted methods were used to develop measurement

scales, the scales ultimately developed by the researcher demonstrated validity difficulties. The scales and their resulting analysis did offer some sound preliminary findings, but need to be strengthened for future study. Some specific issues that were previously discussed as having caused problems were semantic differential scale instructions, difficulty in predicting behaviour in an unfamiliar situation, and the development of scale measures for constructs that are not perceived as being significantly different in the eyes of respondents. The difficulty suggests not only required improvement of measurement scales, but that the theoretical basis of Goodwin's privacy taxonomy is inappropriate for this study. While this, in itself, is an extremely important finding, it did cause serious difficulties in measurement and model testing.

Interestingly, expectations for response rate difficulty were unfounded. The respondent demographics, however, were not representative of its sampling frame. The two groups of users and non-users laid to either extreme of the comparable Ottawa demographics, with the exception of education levels, for which both groups surpassed the Ottawa statistics. The user response demographics were also not clearly representative of Internet users. The demographics did follow general trends in comparison to non-users, but did not demonstrate the extreme demographic effects found in WWW Surveys. As a result, while findings are a very good precursor for further study of Web privacy, they can not be said to be generalizable.

6.4 Suggestions for Further Study

These findings allow for considerable development and expansion: basic descriptive findings provide a starting point for more in-depth study while measurement difficulties can inform future tests and results.

Trends in the findings also suggest that the degree of concern with privacy is connected to the degree of familiarity with the Web. Users are generally more informed about privacy issues and more willing to reveal information over the Web than non-users. Differences may be alternatively be attributed to the age of the technology. Application of diffusion of innovation theory to privacy concerns would provide insights into either of these alternative explanations and may offer significant practical uses as Internet technology ages.

As has been previously discussed, Goodwin's Taxonomy of Privacy States is potentially of little value as a theoretical basis for electronic privacy research. Further research will provide much benefit toward determining whether Goodwin's taxonomy should continue to be used in this context.

One of the greatest strengths of the study is its considerable allowance for future research. It is the hope of the researcher that building on the many smaller facets of this study will grow our knowledge of Internet privacy exponentially.

References

- ACM (1993) "ACM Code of Ethics and Professional Conduct", *Communications of the ACM*, 36 (2), pp. 99-105.
- Agre, Philip E. (1994) "Surveillance and Capture: Two Models of Privacy", *The Information Society*, 10, pp. 101-127.
- Ajluni, Cheryl (1995) "Security Techniques Ensure Privacy", *Electronic Design*, April 17, pp. 83-99.
- Barclay, Donald, Christopher Higgins and Ronald Thompson (1995) "The Partial Least Squares (PLS) Approach to Causal Modelling: Personal Computer Adoption and Use as an Illustration", *Technology Studies*, 2 (2), pp. 285-309.
- Boehlefeld, Sharon Polancic (1996) "Doing the Right Thing: Ethical Cyberspace Research", *The Information Society*, 12, pp. 141-152.
- Boston Consulting Group (1997) "eTrust Internet Privacy Study: Summary of Market Survey Results", eTrust, <http://www.etrust.org/consumersurvey>
- Canadian Direct Marketing Association (1997) "Code of Ethics", CDMA On-line, <http://www.cdma.org/>
- Canadian Standards Association (1997) "Model Code for the Protection of Personal Information", CSA, http://www.csa.ca/product_services/index_info.html
- Cespedes, Frank V., and H. Jeff Smith (1993) "Database Marketing: New Rules for Policy and Practice", *Sloan Management Review*, Summer, pp. 7-22.
- Compeau, Deborah R. and Darren B. Meister (1997) "Measurement of Perceived Characteristics of Innovating: A Reconsideration Based on Three Empirical Studies", <http://qsilver.queensu.ca/~dm17/>
- Conger, Sue, Karen D. Loch, and Loerine Helft (1995) "Ethics and Information Technology Use: A Factor Analysis of Attitudes to Computer Use", *Information Systems Journal*, no. 5, pp. 161-184.
- Cooper, Donald R., and C. William Emory (1995) *Business Research Methods*, 5th edition, Chicago, Richard D. Irwin.
- Culnan, Mary J. (1993) "'How Did They Get My Name?': An Exploratory Investigation of Consumer Attitudes Toward Secondary Information Use", *MIS Quarterly*, Sept., pp. 341-361.
- Davis, Fred D. (1989) "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology", *MIS Quarterly*, 13 (3), pp. 318-339.
- Davis, Fred d., Richard P. Bagozzi, and Paul R. Warshaw (1989) "User Acceptance of Computer Technology: A Comparison of Two Theoretical Models", *Management Science*, 35 (8), pp. 983-1003.
- Dillman, Don A. (1978) *Mail and Telephone Surveys: The Total Design Method*, New York, Wiley.

- Elliot, Marlene (1993) Exploring the Effectiveness of the Computer Support Function, M.M.S. Thesis Proposal, Carleton University, unpublished.
- Finkelstein, Sidney (1968) Sense and Nonsense of McLuhan, 1st edition, New York, International Publishers.
- Foxman, Ellen R., and Paula Kilcoyne (1993) "Information Technology, Marketing Practice, and Consumer privacy: Ethical Issues", Journal of Public Policy and Marketing, 12 (1), pp. 106-119.
- Gagliardi, Filippo A. (1994) The Effects of Group Presentations on Intentions to Adopt Smart Cards Technology: A Diffusion of Innovations Approach, Ottawa, Carleton University.
- Gardiner Jones, Mary (1991) "Privacy: A Significant Marketing Issue for the 1990s", Journal of Public Policy & Marketing, 10 (1), Spring, pp. 133-148.
- Goodwin, Cathy (1991) "Privacy: Recognition of a Consumer Right", Journal of Public Policy & Marketing, 10 (1), pp. 149-166.
- Herring, Susan (1996) "Linguistic and Critical Analysis of Computer-Mediated Communication: Some ethical and Scholarly Considerations", The Information Society, 12, pp. 153-168.
- Hoffman, Donna L. and Thomas P. Novak (1995) "Marketing in Hypermedia Computer-Mediated Environments: Conceptual Foundations", Vanderbilt University, <http://www2000.ogsm.vanderbilt.edu/papers/hypermedia.cme.html>
- Hoffman, Donna L. and Thomas P. Novak (1996a) "A New Marketing Paradigm for Electronic Commerce", Vanderbilt University, <http://www2000.ogsm.vanderbilt.edu/novak/new.marketing.paradigm.html>
- Hoffman, Donna L. and Thomas P. Novak (1996b) "New Metrics for New Media: Toward the Development of Web Measurement Standards", Vanderbilt University, <http://www2000.ogsm.vanderbilt.edu/novak/webstand.html>
- Hoffman, Donna L. and Thomas P. Novak (1997) "Information Privacy in the Marketspace: Implications for the Commercial Uses of Anonymity on the Web", Vanderbilt University, http://www2000.ogsm.vanderbilt.edu/papers/anonymity/anonymity2_nov10.htm
- Industry Canada/Justice Canada (1998) "The Protection of Personal Information: Building Canada's Economy and Society", <http://strategis.ic.gc.ca/SSG/pv01169e.html>
- Mathieson, Kieran (1991) "Predicting User Intentions: Comparing the Technology Acceptance Model with the Theory of Planned Behaviour", Information Systems Research, 2 (3), pp. 173-191.
- McDonald, M. ed. (1993) Ethics Reading Handbook, CGA Canada, Unit A5.
- MIDS (1996) "About the Detailed Report for MIDS ids3, October 1995: Third MIDS Internet Demographic Survey", <http://www.mids.org/ids3/detail.html>

- Milberg, Sandra J., Sandra J. Burke, H. Jeff Smith, and Ernest A. Kallman (1995) "Values, Personal Information, Privacy, and Regulatory Approaches", Communications of the ACM, 38 (12), December, pp. 65-74.
- Moore, Garry C. and Izak Benbasat (1991) "Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation", Information Systems Research, 2 (3), pp. 192-222.
- Myers, Michael D. and Leigh Miller (1996) "Ethical Dilemmas in the Use of Information Technology: An Aristotelian Perspective", Ethics & Behaviour, 6 (2), pp. 153-160.
- Neuman, B. Clifford (1995) "Security, Payment, and Privacy for Network Commerce", IEEE Journal On Selected Areas In Communications, 13 (8), October, pp. 1523-1531.
- Neumann, Peter C. (1994) "Expectations of Security and Privacy", Communications of the ACM, 37 (9), p. 138.
- Parasuraman, A., Valarie A. Zeithaml and Leonard L. Berry (1994) "Reassessment of Expectations as a Comparison Standard in Measuring Service Quality: Implications for Further Research", Journal of Marketing, 58, January, pp. 111-124.
- Pierce, Margaret Anne and John W. Henry (1996) "Computer Ethics: The Role of Personal, Informal, and Formal Codes", Journal of Business Ethics, 15, pp. 425-437.
- Pitkow, Jim and Colleen Kehoe (1996), "Fifth GVU WWW User Survey. High Level Summary and Trend Analysis: Data Privacy," April. GVU Center, College of Computing, Georgia Institute of Technology, http://www.cc.gatech.edu/gvu/user_surveys/
- RMOC (199) Demographic Fact Sheet Regional Municipality of Ottawa-Carleton, Ottawa, RMOC.
- Rogers, Everett M. (1983) Diffusion of Innovations, 3rd Edition, New York, The Free Press.
- Rogers, Everett M. (1995) "Lessons for Guidelines from the Diffusion of Innovations", Joint Commission Journal on Quality Improvement, 21 (7), pp. 324-328.
- Sipior, Janice C. and Burke T. Ward (1995) "The Ethical and Legal Quandry of Email Privacy", Communications of the ACM, 38 (12), pp. 48-57.
- Smith, H. Jeff, Sandra J. Milberg and Sandra J. Burke (1996) "Information Privacy: Measuring Individual's Concerns About Organizational Practices", MIS Quarterly, 20 (2), June, pp. 167-196.
- Statistics Canada (1994) 1991 Census Characteristics of Ottawa-Hull Region and Selected Component Census Subdivisions, 95-351, Ottawa, Government of Canada.
- Stevens, James (1996) Applied Multivariate Statistics for the Social Sciences, 3rd edition, New Jersey, Lawrence Erlbaum Associates.

- Taylor, Shirley and Peter A. Todd (1995) "Understanding Information Technology Usage: A Test of Competing Models", Information Systems Research, 6 (2), pp. 144-176.
- Thomas, Jim (1996) "Introduction: A Debate about the Ethics of Fair Practices for Collecting Social Science Data in Cyberspace", The Information Society, 12, pp. 107-117.
- Tull, Donald S., and Del I. Hawkins (1980) Marketing Research: Measurement and Method, Macmillan Publishing, New York, pp. 378-396.
- Turkheimer, Frank (1994) "Privacy and the Internet: The next step", Computer Networks and ISDN Systems, 27(3), pp. 395-401.
- Venkatraman, N. and John H. Grant (1986) "Construct Measurement in Organizational Research: A Critique and Proposal", Academy of Management Review, 11 (1), pp. 71-87.
- Walsham, Geoff (1996) "Ethical Theory, Codes of Ethics, and IS Practice", Information Systems Journal, 6, pp. 69-81.
- Weisband, Suzanne P. and Bruce A. Reinig (1995) "Managing User Perceptions of Email Privacy", Communications of the ACM, 38 (12), pp. 40-47.
- , The New Lexicon Webster's Encyclopedic Dictionary of the English Language, Canadian Edition, Lexicon Publications, New York, 1988.
- , Webster's New Collegiate Dictionary, G. & C. Merriam Company, Springfield, Massachusetts, 1977.

Appendix A: ETrust Privacy Survey (Boston Consulting Group, 1997)

Consumer Survey

Qualify to win a U.S. Robotics Pilot!

Thank you for taking an interest in our survey. It should take about 10-15 minutes to complete. All responses will be tabulated anonymously, so please answer them as truthfully as possible. At the end be sure to include your name and mailing address so you can be eligible to win a U.S. Robotics © Pilot Organizer. (This information will only be used to notify the winner.) The prize will be awarded the week of March 3.

Important Note: Throughout the survey we will make reference to privacy and security. For the purpose of this survey, consider:

Privacy to be related to how businesses use the information they collect from you (e.g. only for internal use vs. sending to a third party.)

Security to be related to measures taken to protect your info./ communications from theft (e.g. encryption, firewalls, etc.)

I: Basic Demographics

How long have you used the Internet?

less than 6 Months

6 months-1 year

1-2 years

2+ years

From where do you access the Internet? (Check all that apply.)

Home

Work

School

Do you subscribe to an online service (AOL, Prodigy, Compuserve, Microsoft Network)

Yes

No

Where are you located?

North America

Europe

Asia

South America

Africa

Australia/NZ

II: Perceptions of privacy

Throughout this survey we will ask you to make distinctions between privacy and security. For the purposes of this survey, privacy deals with how businesses use the information they collect. (e.g. for their own purposes vs. make available to third parties) Security refers to the measures a company takes to protect your information from theft (e.g. encryption, firewalls, etc).

In general, how concerned are you about the privacy of your information that you give to businesses?

Very concerned

Somewhat concerned

Neutral

Somewhat unconcerned

Very unconcerned

Are you more or less concerned about privacy of information transmitted over the Internet vs. each of the following media:

I have _____ concern about information transmitted over the Internet than telephone

Much more

Somewhat more

Similar

Somewhat less

Much less

I have _____ concern about information transmitted over the Internet than mail

Much more

Somewhat more

Similar

Somewhat less

Much less

In general, please explain how/why the Internet is different.

How often do you not give registration data to a site because of privacy concerns?

Always

Often

Sometimes

Rarely

Never

How often do you give false information?

Always

Often

Sometimes

Rarely

Never

Would a privacy assurance logo/statement displayed by a business increase your comfort with giving them information over the Internet? Such a logo/statement would disclose how the business will treat the information they collect from you. For example, it would disclose whether it retains the information only for exchanges between you and that business, makes it available to third parties, or does not keep any information at all.

A privacy assurance logo/statement displayed by a business would _____ my comfort in giving information over the Internet

Greatly increase

Somewhat increase

Not increase

Somewhat decrease

Greatly decrease

In a secure transaction, it is almost impossible for information to be stolen or intercepted. How much would an assurance of security by a business increase your comfort in giving information over the Internet?

Greatly increase

Somewhat increase

Not increase

Somewhat decrease

Greatly decrease

How much would a combined assurance of security and privacy by a business increase your comfort in giving information over the Internet?

Greatly increase

Somewhat increase

Not increase

Somewhat decrease

Greatly decrease

Which is of greater concern to you on the Internet?

PRIVACY SECURITY

Why?

How concerned are you that some Web sites track the following activities without your knowledge?

What I purchase:

Very concerned

Somewhat concerned

Neutral

Somewhat unconcerned

Not very concerned

What sites or pages I browse:

Very concerned

Somewhat concerned

Neutral

Somewhat unconcerned

Very unconcerned

Do you consider merchants/sites recording your Internet activity without your knowledge to be a violation of privacy?

YES NO

Do you consider merchants/sites recording your Internet activity with your knowledge to be a violation of privacy?

YES NO

Do concerns about the above practices prevent you from conducting transactions on the Internet?

YES NO

Only if I know they are tracking my information

If yes: Would you be more likely to conduct transactions over the Internet if sites disclosed how they monitor your activities on line?

YES NO

III: Potential impact of a privacy assurance program

The following sections attempt to measure your current level of Internet usage, as well as the degree to which an assurance of privacy would increase or decrease that level of usage. Such an assurance would include a logo or statement on the company's Web site which would disclose the following information:

- general information gathering practices
- what (if any) personally identifiable data is being gathered
- what that data will be used for
- with whom the information will be shared

A privacy program would ensure that users must be able to correct and update personally identifiable information and be able to request to be deleted from any such databases. Further, sites may not monitor personal communications such as email or instant messages, and no personally identifiable information may be displayed or made available without the user's consent, unless such information is already publicly available.

Given the above description, please indicate the condition under which you would engage in each of the following activities over the Internet

Activity	Currently Do Over Internet	Would Do Over Internet Today	Would Do Over Internet if Privacy policies were disclosed (even if information might be shared with third party)	Would do today if privacy policies were disclosed and I knew privacy was assured (e.g. NO information shared with third party)	Would NEVER do over Internet
Browsing from home					
Browsing from work					
E-mail					
Chat / Conferencing					
Shopping (e.g. purchase CDs, clothing, household items, etc.)					
Electronic banking					
Trading stocks					
Medical : Communicating with physician / providing medical information					
Other:					

IV: Sensitivity of Information

How do you feel about giving the following types of information to businesses over the Internet?

Type of Information	Would/ Do Give Over Internet Today	Would Give Over Internet if Privacy Policies were Disclosed (even if information might be shared with third party)	Would Give Over Internet if Privacy Policies were Disclosed and I knew Privacy was Assured (e.g. NO information given to third party)	Would Never Give Over Internet
Name				
Home mailing address				
Business mailing address				
Email address				
Social security #				
Date of birth				
Credit card number(s)				
Product preferences				
Banking/stock portfolio information				
Medical information				
Salary information				
Job/resume information				
Other:				

How important is the reputation of the company in your decision to give your information to them over the Internet?

Very important

Somewhat important

Neutral

Somewhat not important

Not very important

How comfortable are you in giving basic demographic data over the Internet to each of the following entities? (Basic demographic data would include things like your zip code, your age, race, and sex.)

Company type	Very comfortable	Comfortable	Neutral	Somewhat uncomfortable	Very uncomfortable
A company I current do business with (e.g. my bank)					
A company I've heard of (e.g. General Motors)					
A company I've never heard of before					
A company I've never heard of before but that discloses accredited privacy practices					

How comfortable are you in giving personal information (e.g. name, address, credit card number, product preferences) over the Internet to each of the following entities

Company type	Very comfortable	Comfortable	Neutral	Somewhat uncomfortable	Very uncomfortable
A company I current do business with (e.g. my bank)					
A company I've heard of (e.g. General Motors)					
A company I've never heard of before					
A company I've never heard of before but that discloses accredited privacy practices					

How comfortable are you in giving more sensitive personal information (e.g. social security number, bank account number, stock portfolio information, medical history, etc.) over the Internet to each of the following entities

Company type	Very comfortable	Comfortable	Neutral	Somewhat uncomfortable	Very uncomfortable
A company I current do business with (e.g. my bank)					
A company I've heard of (e.g. General Motors)					
A company I've never heard of before					
A company I've never heard of before but that discloses accredited privacy practices					

Given two equivalent web sites offering the same products and/or services, but one discloses privacy policies and the other does not, how much more would you be willing to pay for the products on the site where privacy policies were disclosed?

nothing

less than .5% of purchase price

.5-1% of purchase price

1-2% of purchase price

Given two equivalent web sites offering the same products and/or services, but one has privacy assurance (e.g. NO information shared with third party) and the other does not, how much more would you be willing to pay for the products on the site where privacy is assured?

nothing

less than .5% of purchase price

.5-1% of purchase price

1-2% of purchase price

V: Acceptance

How important is it for a privacy assurance program to have the following endorsements to be credible?

Factor	Essential	Good to have	Not necessary
Endorsed by federal/ state government entity			
Endorsed by well-known corporate sponsors (e.g. companies like Microsoft, Citibank, etc.)			
Endorsed by <u>privacy</u> groups (e.g. Electronic Frontier Foundation, etc.)			
Endorsed by well-known auditing firm (e.g. Coopers and Lybrand, KPMG Peat Marwick)			
Endorsed by business groups (Better Business Bureau, etc.)			
Endorsed by personal contacts (family, friends, etc.)			
Other:			

How important is it for a privacy assurance program to have the following processes to be credible?

Factor	Essential	Good to have	Not necessary
Established procedures for regulating & auditing member companies			
Process for resolving & arbitrating customer complaints			
Disclosure of how my information is used			
Ability to choose how my information is used			

What percent of member businesses should be audited annually to make a privacy assurance program credible?

1-2%

2-5%

6-10%

11-20%

21-50%

51-100%

Who do you think should conduct these audits?

Businesses should audit themselves (self audits)

Employees from the agency assuring the privacy should perform the audits

Professional third party auditors like KPMG should perform the audits

No preference on who performs the audits

VI. Additional demographics (optional)

Age:

under 22

22-30

31-45

46-60

60+

Occupation:

Annual salary:

0-30

31-60

61- 90

91-120

120-150

150+

END

Thank you for participating.

May we follow-up with a phone call at a later time if we wish to clarify your responses?

YES NO

Phone #:

Contact Information

Please provide us with contact information so that we can get in touch with you if you're selected as the winner in our U.S. Robotics Pilot drawing! (Only individuals giving us some way of contacting them will be eligible for the drawing. This information will be confidential, and specifics will NOT be distributed to any other party.) As long as there is some reasonable way for us to reach you, you will be entered in our drawing. Typical methods include email, mailing address, telephone number, or fax number. Please include enough information for us to reach YOU.

Appendix B: Instrument Measuring Individuals' Concerns About Organizational Information Privacy Practices (Smith et al., 1996)

Here are some statements about *personal information*. From the standpoint of personal privacy, please indicate the extent to which you, as an *individual*, agree or disagree with each statement by circling the appropriate number.*

- A. It usually bothers me when companies ask me for personal information.
- B. All the personal information in computer databases should be double-checked for accuracy - no matter how much it costs
- C. Companies should not use personal information for any purpose unless it has been authorized by the individuals who provide the information.
- D. Companies should devote more time and effort to preventing unauthorized access to personal information.
- E. When companies ask me for personal information, I sometimes think twice before providing it.
- F. Companies should take more steps to make sure that the personal information in their files is accurate.
- G. When people give personal information to a company for some reason, the company should never use the information for any other reason.
- H. Companies should have better procedures to correct errors in personal information.
- I. Computer databases that contain personal information should be protected from unauthorized access - no matter how much it costs.
- J. It bothers me to give personal information to so many companies.
- K. Companies should never sell the personal information in their computer databases to other companies.
- L. Companies should devote more time and effort to verifying the accuracy of the personal information in their databases.
- M. Companies should never share personal information with other companies unless it has been authorized by the individuals who provided the information.
- N. Companies should take more steps to make sure that unauthorized people cannot access personal information in their computers.
- O. I'm concerned that companies are collecting too much personal information about me.

* Each of the items is followed by a seven-point Likert scale anchored by "Strongly disagree" (1) and "Strongly agree" (7)

Items A, E, J, and O comprise the "Collection" subscale; Items B, F, H, and L comprise the "Errors" subscale; Items C, G, K, and M comprise the "Unauthorized Secondary Use" subscale; and Items D, I, and N comprise the "Improper Access" subscale. Subscale scores are calculated by averaging the responses to the items for each subscale; an overall score is then calculated by averaging the subscale scores.

**Appendix C: “Appendix 1- Items used in the Three Studies” from
 “Measurement of Perceived Characteristics of Innovating: A
 Reconsideration Based on Three Empirical Studies” (Compeau and
 Meister, 1997)**

Information relevant to Study 3 (WWW) only.

Notes:

- 1) ____ replaced by the following phrase:
 Study 3 (WWW) - “*the WWW for business information gathering*” or
 “*the WWW to gather business information*”
- 3) Study 3 was pre-implementation and used the future tense for items.
- 4) Items marked with an asterisk were those recommended by Moore and Benbasat for inclusion in short scales.

Item	Text (generic)
RA1*	Using ____ enables me to accomplish tasks more quickly.
RA2*	Using ____ improves the quality of work I do.
RA3*	Using ____ makes it easier to do my job.
RA7*	Using ____ enhances my effectiveness on the job.
RA8*	Using ____ gives me greater control over my work.
COM1*	Using ____ is compatible with all aspects of my work.
COM3*	I think that using ____ fits well with the way I like to work.
COM4*	Using ____ fits into my work style.
EOU5*	My interaction with ____ is clear and understandable.
EOU6*	I believe that it is easy to get ____ to do what I want it to do.
EOU7*	Overall, I believe that ____ is easy to use.
EOU8*	Learning to operate ____ is easy for me.
IMAGE3*	People in my organization who use ____ have more prestige than those who do not.
IMAGE4*	People in my organization who use ____ have a high profile.
IMAGE5*	Having ____ is a status symbol in my organization.
RD1*	I would have no difficulty telling others about the results of using ____.
RD2*	I believe I could communicate to others the consequences of using ____.
RD3*	The results of using ____ are apparent to me.
RD4*	I would have difficulty explaining why using ____ may or may not be beneficial.

TRIAL4*	Before deciding whether to use any _____ applications, I was able to properly try them out.
TRIAL5*	I was permitted to use _____ on a trial basis long enough to see what it could do.
TRIAL6	I am able to experiment with _____ as necessary.
TRIAL8	I did not have to expend very much effort to try out _____.
TRIAL10	A proper on-the-job tryout of the various uses of _____ is not possible.
TRIAL11	There are enough people in my organization to help me try various uses of _____.
VIS3	I have seen _____ in use outside my firm.
VIS4*	_____ are <i>not</i> very visible in my organization.
VIS5	It is easy for me to observe others using _____ in my firm.
VOL1	My superiors expect me to use _____.
VOL2	My use of _____ is voluntary (as opposed to required by my superiors or job description).
VOL3*	My boss does not require me to use _____.
VOL4*	Although it might be helpful, using _____ is certainly not compulsory in my job.

Appendix D: Measure of Attitudes Toward Smart Card Technology

(Gagliardi, 1994)

Section C

This section of questions is interested in your general attitude towards smart cards. Please circle only one number for each pair of words.

Overall My Using a Smart Card would be:

	Extremely	Quite	Slightly	Neither	Slightly	Quite	Extremely	
Pleasant	1	2	3	4	5	6	7	Unpleasant
Good	1	2	3	4	5	6	7	Bad
Likable	1	2	3	4	5	6	7	Dislikable
Harmful	1	2	3	4	5	6	7	Beneficial
Wise	1	2	3	4	5	6	7	Foolish
Negative	1	2	3	4	5	6	7	Positive
Valuable	1	2	3	4	5	6	7	Worthless

Appendix E: Pre-Test Questionnaire³

Questionnaire: Consumer Privacy Concerns on the Internet

Thank you for taking the time to participate in this study examining consumer privacy concerns on the Internet. The data you provide will be of use in gaining a better understanding of what information consumers are willing to provide over the Internet. Further, the information will be used to analyze existing guidelines for information use and storage on the Internet to see if they need to be changed to better meet consumer needs.

Section 1: World Wide Web Usage

1) Have you ever used the World Wide Web before? (circle number)

<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">1</div> <div>YES</div> </div> <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">2</div> <div>NO</div> <div style="margin-left: 10px;">→</div> <div style="border: 1px solid black; padding: 5px;">Please go to Question 4 at the bottom of the page</div> </div>
--

2) Do you currently use the WWW?

<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">1</div> <div>YES</div> </div> <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">2</div> <div>NO</div> <div style="margin-left: 10px;">→</div> <div style="border: 1px solid black; padding: 5px;">Please go to Question 4 at the bottom of the page</div> </div>
--

3) a) For how long have you been using the World Wide Web? (circle number)

- 1 LESS THAN ONE YEAR
- 2 OVER 1 YEAR - 2 YEARS
- 3 OVER 2 YEARS - 4 YEARS
- 4 OVER 4 YEARS

B) How often do you use the World Wide Web? (circle number)

1 AT LEAST ONCE A DAY 2 AT LEAST ONCE A WEEK 3 AT LEAST ONCE A MONTH 4 AT LEAST ONCE A YEAR	}	→	Please go on to Section 2 on page 2

4) How likely are you to adopt the World Wide Web in the future?

NOT AT ALL LIKELY	NOT LIKELY	SOMEWHAT LIKELY	LIKELY	VERY LIKELY
<div style="border: 1px solid black; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center;">1</div>	<div style="border: 1px solid black; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center;">2</div>	<div style="border: 1px solid black; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center;">3</div>	<div style="border: 1px solid black; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center;">4</div>	<div style="border: 1px solid black; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center;">5</div>

³ Formatting has been changed to conform to binding requirements. An original copy of the questionnaire can be obtained from the author.

Section 2: Perceptions of the World Wide Web

This section is intended to measure your beliefs about the WWW *whether you have used the WWW before or not*.

- 5) Please indicate the extent to which you, as an individual, agree or disagree with each statement about personal use of the WWW. (circle number)

	STRONGLY DISAGREE	DISAGREE	NO OPINION	AGREE	STRONGLY AGREE
	☐	☐	☐	☐	☐
	1	2	3	4	5
Using the WWW enables or would enable me to accomplish tasks more quickly.	1	2	3	4	5
Using the WWW makes it easier or would make it easier for me to do things.	1	2	3	4	5
The disadvantages of using the WWW far outweigh the advantages.	1	2	3	4	5
Overall, I believe the WWW to be advantageous.	1	2	3	4	5
Using the WWW enhances or would enhance my effectiveness at doing things.	1	2	3	4	5
Using the WWW gives or would give me greater control in doing things.	1	2	3	4	5
Using the WWW increases or would increase my productivity.	1	2	3	4	5

6) Overall I believe my using the WWW is or would be: (circle one number per pair of words)

	Extremely	Somewhat	Neither	Somewhat	Extremely	
Pleasant	1	2	3	4	5	Unpleasant
Good	1	2	3	4	5	Bad
Likeable	1	2	3	4	5	Not Likeable
Harmful	1	2	3	4	5	Beneficial
Wise	1	2	3	4	5	Foolish
Negative	1	2	3	4	5	Positive
Valuable	1	2	3	4	5	Worthless

Section 3: Dissemination of Personal Information

The following questions ask for your opinions about giving information during exchanges and transactions (e.g. registering for a web site, putting your name on a mailing list, etc.). All of your opinions are valuable **whether you have used the WWW before or not.**

For the purposes of answering these questions the meaning of **exchanges or transactions** includes **purchases AND any exchange of information between you and an organization** of some type.

Personal Information is defined here as any type of information such as name, income, or gender, which you may feel to be personal.

- 7) In your role as a consumer, how personal do you consider each of these individual pieces of information to be during general exchanges or transactions? (circle number)

	NOT AT ALL PERSONAL	SLIGHTLY PERSONAL	SOMEWHAT PERSONAL	VERY PERSONAL	EXTREMELY PERSONAL
	1	2	3	4	5
Name	1	2	3	4	5
Age	1	2	3	4	5
Address	1	2	3	4	5
Telephone Number	1	2	3	4	5
E-mail Address	1	2	3	4	5
Gender	1	2	3	4	5
Marital Status	1	2	3	4	5
Income	1	2	3	4	5
Credit Card Number	1	2	3	4	5
Information About Your Household	1	2	3	4	5
Information About Past or Future Purchases	1	2	3	4	5

- 8) Would you ever purchase something using any of the following media:
(circle one number per medium)

	YES	NO
	☐	☐
Through the Mail	1	2
Over the Phone	1	2
Through the WWW	1	2

- 9) Please indicate whether you would give out the following types of information using each of the three media listed below (mail, phone, WWW) during general exchanges or transactions. (circle one number per medium)

	THROUGH THE MAIL		OVER THE PHONE		THROUGH THE WWW	
	YES	NO	YES	NO	YES	NO
	☐	☐	☐	☐	☐	☐
Name	1	2	1	2	1	2
Age	1	2	1	2	1	2
Address	1	2	1	2	1	2
Telephone Number	1	2	1	2	1	2
E-mail Address	1	2	1	2	1	2
Gender	1	2	1	2	1	2
Marital Status	1	2	1	2	1	2
Income	1	2	1	2	1	2
Credit Card Number	1	2	1	2	1	2
Information About Your Household	1	2	1	2	1	2
Information About Past or Future Purchases	1	2	1	2	1	2
Personal Information	1	2	1	2	1	2
False Information	1	2	1	2	1	2

Section 4: Personal Information Privacy Concerns

This section asks about your overall views on privacy.

10) How well informed do you consider yourself to be in the area of computer privacy? (circle number)

NOT AT ALL INFORMED	POORLY INFORMED	SOMEWHAT INFORMED	WELL INFORMED	EXTREMELY WELL INFORMED
<input type="text" value="1"/>	<input type="text" value="2"/>	<input type="text" value="3"/>	<input type="text" value="4"/>	<input type="text" value="5"/>

11) Compared to other subjects on your mind, how important is personal privacy? (circle number)

NOT AT ALL IMPORTANT	NOT VERY IMPORTANT	SOMEWHAT IMPORTANT	IMPORTANT	EXTREMELY IMPORTANT
<input type="text" value="1"/>	<input type="text" value="2"/>	<input type="text" value="3"/>	<input type="text" value="4"/>	<input type="text" value="5"/>

12) How concerned are you about threats to your personal privacy today? (circle number)

NOT AT ALL CONCERNED	NOT VERY CONCERNED	SOMEWHAT CONCERNED	CONCERNED	EXTREMELY CONCERNED
<input type="text" value="1"/>	<input type="text" value="2"/>	<input type="text" value="3"/>	<input type="text" value="4"/>	<input type="text" value="5"/>

13) How often have you personally been the victim of what you felt was an improper invasion of privacy of any kind? (circle number)

0	NEVER	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> Please go to Question 15 on page 6 </div>
1	ONCE	
2	TWICE	
3	THREE TIMES	
4	FOUR OR MORE TIMES	

14) To what extent do you believe this or these past privacy invasion(s) affect(s) your current behaviour in conducting exchanges or transactions?

NOT AT ALL	NOT SIGNIFICANTLY	SOMEWHAT	SIGNIFICANTLY	EXTREMELY
<input type="text" value="1"/>	<input type="text" value="2"/>	<input type="text" value="3"/>	<input type="text" value="4"/>	<input type="text" value="5"/>

15) In your role as a consumer, to what extent do you agree or disagree with the following statement: (circle number)

"I believe I have or would have some control over my personal information **while conducting exchanges or transactions**:

	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE
IN A STORE."	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
OVER THE TELEPHONE."	1	2	3	4	5
OVER THE WORLD WIDE WEB."	1	2	3	4	5

16) Overall I believe the control I have or would have over my personal information **while conducting exchanges** over the WWW is: (circle one number per pair of words)

	Extremely	Somewhat	Neither	Somewhat	Extremely	
High	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	Low
Reasonable	1	2	3	4	5	Unreasonable
Relevant	1	2	3	4	5	Irrelevant
Necessary	1	2	3	4	5	Unnecessary
Adequate	1	2	3	4	5	Inadequate
Valuable	1	2	3	4	5	Worthless
Satisfactory	1	2	3	4	5	Unsatisfactory

17) In your role as a consumer, to what degree do you agree with the following statement: (circle number)

"I believe I have or would have some control over my personal information **once I have released it**:

	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE
IN A STORE."	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
OVER THE TELEPHONE."	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
OVER THE WORLD WIDE WEB."	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

18) Overall I believe the control I have or would have over my personal information **once I have released it** over the WWW is: (circle one number per pair of words)

	Extremely	Somewhat	Neither	Somewhat	Extremely
High	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5 Low
Reasonable	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5 Unreasonable
Relevant	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5 Irrelevant
Necessary	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5 Unnecessary
Adequate	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5 Inadequate
Valuable	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5 Worthless
Satisfactory	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5 Unsatisfactory

19) In your role as a consumer, to what extent do you agree or disagree with the following statement: (circle number)

"I would like _____ control over my personal information while conducting exchanges or transactions:

	LESS	NEITHER MORE NOR LESS	MORE
IN A STORE."	☐ 1	☐ 2	☐ 3
OVER THE TELEPHONE."	☐ 1	☐ 2	☐ 3
OVER THE WORLD WIDE WEB."	☐ 1	☐ 2	☐ 3

20) Overall I **would like** the control I have or would have over my personal information **while conducting exchanges** over the WWW to be: (circle one number per pair of words)

	Extremely	Somewhat	Neither	Somewhat	Extremely	
	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	
Higher	1	2	3	4	5	Lower
More Reasonable	1	2	3	4	5	Less Reasonable
More Relevant	1	2	3	4	5	Less Relevant
More Necessary	1	2	3	4	5	Less Necessary
More Adequate	1	2	3	4	5	Less Adequate
More Valuable	1	2	3	4	5	Less Valuable
More Satisfactory	1	2	3	4	5	Less Satisfactory

21) In your role as a consumer, to what degree do you agree with the following statement: (circle number)

"I would like _____ control over my personal information **once I have released it**:

	LESS	NEITHER MORE NOR LESS	MORE
IN A STORE.*	1	2	3
OVER THE TELEPHONE.*	1	2	3
OVER THE WORLD WIDE WEB.*	1	2	3

22) Overall I **would like** the control I have or would have over my personal information **once I have released it** over the WWW to be: (circle one number per pair of words)

	Extremely	Somewhat	Neither	Somewhat	Extremely	
	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	
Higher	1	2	3	4	5	Lower
More Reasonable	1	2	3	4	5	Less Reasonable
More Relevant	1	2	3	4	5	Less Relevant
More Necessary	1	2	3	4	5	Less Necessary
More Adequate	1	2	3	4	5	Less Adequate
More Valuable	1	2	3	4	5	Less Valuable
More Satisfactory	1	2	3	4	5	Less Satisfactory

23) Here are some statements about personal information. From the standpoint of personal privacy, please indicate the extent to which you, as an individual, agree or disagree with each statement by circling the appropriate number.

	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE
	☐	☐	☐	☐	☐
It usually bothers or would bother me when companies ask me for personal information on the WWW.	1	2	3	4	5
Companies on the WWW should not use personal information for any purpose unless it has been authorized by the individuals who provide the information.	1	2	3	4	5
Companies on the WWW should devote more time and effort to preventing unauthorized access to personal information.	1	2	3	4	5
When companies on the WWW ask me for personal information, I sometimes think or would think twice before providing it.	1	2	3	4	5
When people give personal information to a company on the WWW for some reason, the company should never use the information for any other reason.	1	2	3	4	5
Computer databases that contain personal information from the WWW should be protected from unauthorized access - no matter how much it costs.	1	2	3	4	5
It bothers or would bother me to give personal information to so many companies on the WWW.	1	2	3	4	5
Companies on the WWW should never sell the personal information in their computer databases to other companies.	1	2	3	4	5
Companies on the WWW should never share personal information with other companies unless it has been authorized by the individuals who provided the information.	1	2	3	4	5

Companies on the WWW should take more steps to make sure that unauthorized people cannot access personal information in their computers.

1 2 3 4 5

I am or would be concerned that

companies on the WWW are collecting too much personal information about me.

1 2 3 4 5

I don't or would not like it when companies ask me for personal information on the WWW.

1 2 3 4 5

I do not or would not like to give personal information to so many companies on the WWW.

1 2 3 4 5

Section 5: Demographic Information

This section will provide some comparison information with which to establish the generalizability of the overall respondent base. Please note that individual response will not be reported and that only a compilation of respondent answers will be studied.

24) What is your gender? (circle number)

- 1 MALE**
- 2 FEMALE**

25) What is your age in years? _____

26) What is your current marital status? (circle number)

- 1 Single (Never Married)**
- 2 Common Law Couple**
- 3 Married**
- 4 Divorced / Separated**
- 5 Remarried**
- 6 Widowed / Widower**
- 7 Other (please specify): _____**

27) What is the highest level of education you possess? (circle number)

- 1 Less than a high school diploma**
- 2 High school diploma**
- 3 Some university or college**
- 4 Technical certification**
- 5 College diploma**
- 6 Undergraduate degree**
- 7 Some graduate study**
- 8 Graduate degree**
- 9 Other (please specify): _____**

28) Please state your occupation: _____

Section 6: Pre-Testing Information

This is the first time this questionnaire has been used. Your responses to this section will be used to determine the quality of the questionnaire and to make any changes that may be required.

This section asks you to provide your opinions about the questionnaire itself. Please feel free to make comments throughout the questionnaire itself and in the space provided below.

29) I would appreciate any suggestions you may have for making this questionnaire clearer or easier. For instance, were any of the questions confusing? Why?

Section 7: Optional Follow-up Information

Thank you for participating in this survey. I believe the results of this study will be enlightening to market researchers and many organizations gathering information over the Internet.

Please note that this section is optional:

If you would like to receive a summary of the results of this study, please fill in the bottom portion of this page.

If you prefer to keep your responses anonymous but would still like a summary of the results, please detach this page and return to:

Mail: Lisa Watson
School of Business
Carleton University
1125 Colonel By Drive
Ottawa, Ontario
K1S 5B6

Fax: (613) 520-4427

Email: lwatson@internaut.org

To: Lisa Watson, School of Business
Re: **Privacy Study Result Summary Request**

Please send a summary of the results of your study by:

To: ☐ Mail ☐ Fax ☐ Email

NAME: _____

ADDRESS: _____

POSTAL CODE: _____

FAX: _____

EMAIL: _____

Appendix F: Questionnaire⁴

Questionnaire: Consumer Privacy Concerns on the Internet

Thank you for taking the time to participate in this study examining consumer privacy concerns on the Internet. The data you provide will be of use in gaining a better understanding of what information consumers are willing to provide over the Internet. Further, the information will be used to analyze existing guidelines for information use and storage on the Internet to see if they need to be changed to better meet consumer needs.

Section 1: World Wide Web Usage

4) Have you ever used the World Wide Web before? (circle number)

- 1 NO
2 YES

Please go to Question 4 at the bottom of the page

5) Do you currently use the WWW?

- 1 NO
2 YES

Please go to Question 4 at the bottom of the page

6) a) For how long have you been using the World Wide Web? (circle number)

- 1 LESS THAN ONE YEAR
2 OVER 1 YEAR - 2 YEARS
3 OVER 2 YEARS - 4 YEARS
4 OVER 4 YEARS

b) How often do you use the World Wide Web? (circle number)

- 1 AT LEAST ONCE A DAY
2 AT LEAST ONCE A WEEK
3 AT LEAST ONCE A MONTH
4 AT LEAST ONCE A YEAR

Please go on to Question 5 on page 2

7) How likely are you to adopt the World Wide Web in the future?

NOT AT ALL
LIKELY

1

NOT
LIKELY

2

SOMEWHAT
LIKELY

3

LIKELY

4

VERY
LIKELY

5

⁴ Formatting has been changed to conform to binding requirements. An original copy of the questionnaire can be obtained from the author.

Section 2: Perceptions of the World Wide Web

This section is intended to measure your beliefs about the WWW *whether you have used the WWW before or not*.

- 8) Please indicate the extent to which you, as an individual, agree or disagree with each statement about personal use of the WWW. (circle number)

	STRONGLY DISAGREE	DISAGREE	NO OPINION	AGREE	STRONGLY AGREE
	☐	☐	☐	☐	☐
Using the WWW enables or would enable me to accomplish tasks more quickly.	1	2	3	4	5
Using the WWW makes it easier or would make it easier for me to do things.	1	2	3	4	5
The disadvantages of using the WWW far outweigh the advantages.	1	2	3	4	5
Overall, I believe the WWW to be advantageous.	1	2	3	4	5
Using the WWW enhances or would enhance my effectiveness at doing things.	1	2	3	4	5
Using the WWW gives or would give me greater control in doing things.	1	2	3	4	5
Using the WWW increases or would increase my productivity.	1	2	3	4	5

- 9) Please circle the number that best indicates how closely one adjective or the other describes your opinion.

Overall, I believe using the WWW is or would be:

	Extremely	Somewhat	Neither	Somewhat	Extremely	
Pleasant	<input type="text" value="1"/>	<input type="text" value="2"/>	<input type="text" value="3"/>	<input type="text" value="4"/>	<input type="text" value="5"/>	Unpleasant
Good	1	2	3	4	5	Bad
Likeable	1	2	3	4	5	Not Likeable
Harmful	1	2	3	4	5	Beneficial
Wise	1	2	3	4	5	Foolish
Negative	1	2	3	4	5	Positive
Valuable	1	2	3	4	5	Worthless

Section 3: Dissemination of Personal Information

The following questions ask for your opinions about giving information during exchanges and transactions (e.g. registering for a web site, putting your name on a mailing list, etc.). All of your opinions are valuable **whether you have used the WWW before or not**.

For the purposes of answering these questions the meaning of **exchanges or transactions** includes **purchases AND any exchange of information between you and an organization** of some type.

Personal Information is defined here as **any type of information** such as name, income, or gender, which **you may feel to be personal**.

10) In your role as a consumer, how personal do you consider each of these individual pieces of information to be during general exchanges or transactions? (circle number)

	NOT AT ALL PERSONAL	SLIGHTLY PERSONAL	SOMEWHAT PERSONAL	VERY PERSONAL	EXTREMELY PERSONAL
	1	2	3	4	5
Name	1	2	3	4	5
Age	1	2	3	4	5
Address	1	2	3	4	5
Telephone Number	1	2	3	4	5
E-mail Address	1	2	3	4	5
Gender	1	2	3	4	5
Marital Status	1	2	3	4	5
Income	1	2	3	4	5
Credit Card Number	1	2	3	4	5
Household Information	1	2	3	4	5
Purchasing Habits	1	2	3	4	5

11) Would you ever purchase something using any of the following media:
(circle one number per medium)

	YES	NO
	☐	☐
Through the Mail	1	2
Over the Phone	1	2
Through the WWW	1	2

12) How likely would you be to give out the following types of information using each of the three media listed below (mail, phone, WWW) during general exchanges or transactions? (circle one number per medium)

	THROUGH THE MAIL					OVER THE PHONE					OVER THE WWW				
	<i>NOT AT ALL LIKELY</i>	<i>SLIGHTLY LIKELY</i>	<i>SOMEWHAT LIKELY</i>	<i>VERY LIKELY</i>	<i>EXTREMELY LIKELY</i>	<i>NOT AT ALL LIKELY</i>	<i>SLIGHTLY LIKELY</i>	<i>SOMEWHAT LIKELY</i>	<i>VERY LIKELY</i>	<i>EXTREMELY LIKELY</i>	<i>NOT AT ALL LIKELY</i>	<i>SLIGHTLY LIKELY</i>	<i>SOMEWHAT LIKELY</i>	<i>VERY LIKELY</i>	<i>EXTREMELY LIKELY</i>
Name	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Age	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Address	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Telephone Number	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
E-mail address	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Gender	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Marital Status	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Income	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Credit Card Number	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Household Information	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Purchasing Habits	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Personal Information	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
False Information	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5

Section 4: Personal Information Privacy Concerns

This section asks about your overall views on privacy.

13) How well informed do you consider yourself to be in the area of computer privacy? (circle number)

NOT AT ALL INFORMED	NOT VERY INFORMED	SOMEWHAT INFORMED	INFORMED	EXTREMELY INFORMED
1	2	3	4	5

14) Compared to other subjects on your mind, how important is personal privacy? (circle number)

NOT AT ALL IMPORTANT	NOT VERY IMPORTANT	SOMEWHAT IMPORTANT	IMPORTANT	EXTREMELY IMPORTANT
1	2	3	4	5

15) How concerned are you about threats to your personal privacy today? (circle number)

NOT AT ALL CONCERNED	NOT VERY CONCERNED	SOMEWHAT CONCERNED	CONCERNED	EXTREMELY CONCERNED
1	2	3	4	5

16) How often have you personally been the victim of what you felt was an improper invasion of privacy of any kind? (circle number)

0	NEVER	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> Please go to Question 15 on page 6 </div>
1	ONCE	
2	TWICE	
3	THREE TIMES	
4	FOUR OR MORE TIMES	

17) To what extent do you believe this or these past privacy invasion(s) affect(s) your current behaviour in conducting exchanges or transactions?

NOT AT ALL	NOT SIGNIFICANTLY	SOMEWHAT	SIGNIFICANTLY	EXTREMELY
1	2	3	4	5

Section 5: Perceptions of Privacy on the World Wide Web

The following set of questions deals with your opinions about your privacy on the WWW.

Questions 15-17 ask about your privacy **while actually conducting exchanges or transactions** (ex. While paying for a meal in a restaurant). Questions 18-20 ask about your privacy **once you have released information to others** (ex. After a transaction is over and you are on a company's mailing list).

18) In your role as a consumer, to what extent do you agree or disagree with the following statement: (circle number)

"I believe I have or would have some control over my personal information **while conducting exchanges or transactions**:

	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE
IN A STORE."	<input type="text"/> 1	<input type="text"/> 2	<input type="text"/> 3	<input type="text"/> 4	<input type="text"/> 5
OVER THE TELEPHONE."	<input type="text"/> 1	<input type="text"/> 2	<input type="text"/> 3	<input type="text"/> 4	<input type="text"/> 5
OVER THE WORLD WIDE WEB."	<input type="text"/> 1	<input type="text"/> 2	<input type="text"/> 3	<input type="text"/> 4	<input type="text"/> 5

19) Please circle the number that best indicates how closely adjective one or the other describes your opinion.

Overall I believe the control I have or would have over my personal information **while conducting exchanges** over the WWW is:

	Extremely	Somewhat	Neither	Somewhat	Extremely	
	<input type="text"/> 1	<input type="text"/> 2	<input type="text"/> 3	<input type="text"/> 4	<input type="text"/> 5	
Low	<input type="text"/> 1	<input type="text"/> 2	<input type="text"/> 3	<input type="text"/> 4	<input type="text"/> 5	High
Unreasonable	<input type="text"/> 1	<input type="text"/> 2	<input type="text"/> 3	<input type="text"/> 4	<input type="text"/> 5	Reasonable
Adequate	<input type="text"/> 1	<input type="text"/> 2	<input type="text"/> 3	<input type="text"/> 4	<input type="text"/> 5	Inadequate
Unsatisfactory	<input type="text"/> 1	<input type="text"/> 2	<input type="text"/> 3	<input type="text"/> 4	<input type="text"/> 5	Satisfactory

20) In your role as a consumer, to what extent do you agree or disagree with the following statement: (circle number)

	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE
I would like more control over my personal information while conducting exchanges over the WWW	☐	☐	☐	☐	☐
	1	2	3	4	5
I am not concerned about my personal information while conducting exchanges over the WWW	☐	☐	☐	☐	☐
	1	2	3	4	5
I have the expected amount of control over my information while conducting exchanges over the WWW	☐	☐	☐	☐	☐
	1	2	3	4	5
I am satisfied with the amount of control I have over my information while conducting exchanges over the WWW	☐	☐	☐	☐	☐
	1	2	3	4	5

21) In your role as a consumer, to what degree do you agree with the following statement: (circle number)

"I believe I have or would have some control over my personal information once I have released it (ex. Once you are on a company's mailing list):

	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE
IN A STORE."	☐	☐	☐	☐	☐
	1	2	3	4	5
OVER THE TELEPHONE."	☐	☐	☐	☐	☐
	1	2	3	4	5
OVER THE WORLD WIDE WEB."	☐	☐	☐	☐	☐
	1	2	3	4	5

22) Please circle the number that best indicates how closely one adjective or the other describes your opinion.

Overall I believe the control I have or would have over my personal information **once I have released it** over the WWW is:

	Extremely	Somewhat	Neither	Somewhat	Extremely	
	☐	☐	☐	☐	☐	
Low	1	2	3	4	5	High
Unreasonable	1	2	3	4	5	Reasonable
Adequate	1	2	3	4	5	Inadequate
Unsatisfactory	1	2	3	4	5	Satisfactory

23) In your role as a consumer, to what degree do you agree with the following statement: (circle number)

	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE
	☐	☐	☐	☐	☐
I would like more control over my personal information once I have released it over the WWW	1	2	3	4	5
I am not concerned about my personal information once I have released it over the WWW	1	2	3	4	5
I have the expected amount of control over my information once I have released it over the WWW	1	2	3	4	5
I am satisfied with the amount of control I have over my information once I have released it over the WWW	1	2	3	4	5

24) Please circle the number that best indicates how closely one or the other adjective describes your opinion.

Overall I believe the ideas of privacy **while conducting exchanges or transactions** and **once information has been released to others** are:

	Extremely	Somewhat	Neither	Somewhat	Extremely	
	☐	☐	☐	☐	☐	
Dissimilar	1	2	3	4	5	Similar

25) Here are some statements about personal information. From the standpoint of personal privacy, please indicate the extent to which you, as an individual, agree or disagree with each statement by circling the appropriate number.

	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE
	☐	☐	☐	☐	☐
It usually bothers or would bother me when companies ask me for personal information on the WWW.	1	2	3	4	5
Companies on the WWW should not use personal information for any purpose unless it has been authorized by the individuals who provide the information.	1	2	3	4	5
Companies on the WWW should devote more time and effort to preventing unauthorized access to personal information.	1	2	3	4	5
When companies on the WWW ask me for personal information, I sometimes think or would think twice before providing it.	1	2	3	4	5
When people give personal information to a company on the WWW for some reason, the company should never use the information for any other reason.	1	2	3	4	5

Computer databases that contain personal information from the WWW should be protected from unauthorized access - no matter how much it costs.	1	2	3	4	5
It bothers or would bother me to give personal information to so many companies on the WWW.	1	2	3	4	5
Companies on the WWW should never sell the personal information in their computer databases to other companies.	1	2	3	4	5
Companies on the WWW should never share personal information with other companies unless it has been authorized by the individuals who provided the information.	1	2	3	4	5
Companies on the WWW should take more steps to make sure that unauthorized people cannot access personal information in their computers.	1	2	3	4	5
I am or would be concerned that companies on the WWW are collecting too much personal information about me.	1	2	3	4	5

Section 6: Demographic Information

This section determines whether the overall set of participants in this study have the same characteristics as World Wide Web users.

This is the *only* purpose for which this information will be used. Please note that individual responses will not be reported and that only a *compilation* of demographics will be studied.

26) What is your gender? (circle number)

- 1 MALE**
- 2 FEMALE**

27) What is your age in years? _____

28) What is your current marital status? (circle number)

- 1 Single (Never Married)**
- 2 Common Law Couple**
- 3 Married**
- 4 Divorced / Separated**
- 5 Remarried**
- 6 Widowed / Widower**
- 7 Other (please specify): _____**

29) What is the highest level of education you possess? (circle number)

- 1 Less than a high school diploma**
- 3 High school diploma**
- 3 Some university or college**
- 4 Technical certification**
- 5 College diploma**
- 6 Undergraduate degree**
- 7 Some graduate study**
- 8 Graduate degree**
- 9 Other (please specify): _____**

30) Please state your occupation: _____

Section 7: Optional Follow-up Information

Thank you for participating in this survey. I believe the results of this study will be enlightening to market researchers and many organizations gathering information over the Internet.

Please note that this section is optional:

If you would like to receive a summary of the results of this study, please fill in the bottom portion of this page.

If you prefer to keep your responses anonymous but would still like a summary of the results, please detach this page and return to:

Mail: Lisa Watson
School of Business
Carleton University
1125 Colonel By Drive
Ottawa, Ontario
K1S 5B6
Fax: (613) 520-4427
Email: lwatson@internaut.org

To: Lisa Watson, School of Business
Re: **Privacy Study Result Summary Request**

Please send a summary of the results of your study by:

☐ Mail

☐ Fax

☐ Email

To:

NAME: _____

ADDRESS: _____

POSTAL CODE: _____

FAX: _____

EMAIL: _____

Appendix G: Reminder Flyer

Oops!

Sorry I missed you!

**I hope you found your Internet
Privacy Questionnaire interesting.**

**Your response is very important to
me!**

**If you leave the survey in your
mailbox...**

I'll be back again on Sunday.

Oops!

Sorry I missed you!

**I hope you found your Internet
Privacy Questionnaire interesting.**

**Your response is very important to
me!**

**If you leave the survey in your
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Oops!

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**I hope you found your Internet
Privacy Questionnaire interesting.**

**Your response is very important to
me!**

**If you leave the survey in your
mailbox...**

I'll be back again on Sunday.

Appendix H: Questionnaire Cover Letter
(Carleton University Letterhead)

November 13, 1998

To Whom It May Concern:

My name is Lisa Watson and I am a Masters' student in the School of Business at Carleton University. For my thesis research, I am conducting a study about **Consumer Privacy on the Internet**.

I would greatly appreciate it if you would take some time to fill out the following questionnaire. Your responses are important to making my research a success. Please note that **you do not have to use the Internet** to answer this survey. In fact, an equal number of Internet users and non-users are required to complete my research.

As a way of saying thank you for your participation, I am offering you a **Lotto 6/49** ticket upon the return of your completed questionnaire. Simply leave the questionnaire in your mailbox by 6 o'clock two evenings from now. I (or my representative) will pick it up and replace it with an envelope containing your ticket for the next draw!

The questionnaire itself takes approximately 45 minutes to answer. Anyone in the household 18 years of age or over can respond. Your individual responses will, naturally, be kept completely **confidential** and only overall findings will be reported.

If you have any questions or concerns about this study, please feel free to contact the School of Business at the above number and ask to speak to either myself or my thesis advisor, Professor George Haines.

I thank you in advance for your time and interest. If you would like to receive a summary of the results of this study, please fill in the last page of the questionnaire and one will be sent to you when the thesis has been successfully completed.

Sincerely,

Lisa Watson
Graduate Student
Masters of Management Studies