
Privacy and security concerns as major barriers for e-commerce: a survey study

Godwin J. Udo

College of Business Administration, University of Texas at El Paso, El Paso, Texas, USA

Keywords

Internet, Commercial property, Privacy, Security

Abstract

The public lack of confidence in online information technology (IT) is not merely about security of value, but also about trust in the information society. Privacy and security concerns are the number one reason Web users are not purchasing over the Web.

Proposes to investigate the privacy and security concerns of IT users in order to establish a consensus among them. Uses data from 158 participants to come to a conclusion that the following major concerns (in the descending of importance) exist: privacy, security and threats, impersonation and forged identity, children protection, e-mail safety, and censorship. The results also show that privacy and security concerns are the main impediment to shopping on the Internet. The implication is that the successful organizations will be those who expend their resources and efforts to ensure that IT users' concerns are adequately addressed.

Introduction

In this information age, technology is invading private space and controversies about spam, cookies and the clickstream are just a few of the ongoing threats and problems experienced by online information technology (IT) users. Other bigger problems are to be fully appreciated, such as real-time person-location technologies including intelligent transportation systems, geo-location, biometrics identification, "hard" authentication techniques, and miniaturized processors embedded in plastic cards, anklets, watches, rings, products, product packaging, livestock, pets and people. There is great lack of public confidence, which in turn poses a serious impediment to full-scale electronic commerce (Lardner, 1999). The concerns are not merely about security of value, but also about trust in the information society.

According to Furger (1999), intensive data trails about each individual provide a basis for the exercise of power over them by public and private sector organizations. Profile data can be combined with sender-driven technologies to bombard individuals with customized information and hence exert an unbearable pressure on their behavior (Massey, 1999).

Hardly any day goes by without a major news item on security and privacy concerns of the IT users. A few decades ago, "love bug" referred to a Volkswagen car, but recently it refers to a costly virus that affects a great number of IT users without warning. Many articles can be found on the Web and trade journals about concerns of the IT users.

Some Internet-based studies are reported on the subject but researchers have questioned the validity of those Web-based surveys. There are very few scientific studies that

survey the IT users in order to confirm or discard their widely reported security and privacy concerns. This type of study is needed because the more online IT gains strategic importance, the more critical it becomes to protect it from catastrophic failure and from criminals, vandals, and people who would misuse its power (Martin, 1973). The purpose of this study was to investigate the privacy and security concerns of online IT users to determine if there exists an agreement among the users regarding privacy and security issues. Information technology, for the purpose of this paper, consists of e-mail and Internet shopping. Security is defined as the protection of data against accidental or intentional disclosure to unauthorized persons, or unauthorized modifications or destruction. Privacy refers to the rights of individuals and organizations to determine for themselves when, how, and to what extent information about them is to be transmitted to others (Grandinetti, 1996; Martin, 1973).

Given the rapidly expanding importance of these technologies, this study is considered timely and may be useful to companies that are doing businesses on the Internet. An average online IT user has concerns and needs answers to several questions including: access to and use of personal information; the rights of Internet users; laws that protect those rights; unauthorized access to e-mails and the possibility of sending e-mails mistakenly to unintended persons. This study surveys online IT users to establish or dismiss these concerns based on the personal views of those who took part in the study.

Protecting the privacy of consumers on the Internet is a big business, indicating that IT users are concerned about the way privacy is handled in the information age. Though



profits remain elusive, companies are producing new software and technologies at an unprecedented rate to help people preserve their anonymity, keep credit-card numbers safe and warn them about Web sites that may sell their secrets to others.

Governments and commercial organizations are investing a lot of money in establishing secured methods of transferring data over the Internet. With secured sites, consumers can entrust credit card details and rely on the information being sent in encrypted form (Crowe, 1999).

Security concern is one of the main reasons Web users give for not purchasing over the Web. Consumer reluctance to Internet commerce is partly due to the fact that the barrier to shopping on the Internet is relatively high. Cambridge-based Forrester Research estimates the amount of e-commerce sales to reach \$327 billion world wide by 2002. The importance of secured online transactions has been stressed by such experts as Sydney Rubin, director of Online Privacy Alliance (OPA) who stated that every online business transaction should have a privacy policy to go with it (Reda, 1996). Companies have to establish a certain amount of trust with customers, in order to make the Internet a viable commerce medium. Tracy Mullin, president of National Retail Federation stressed that consumer privacy is one of the most far-reaching issues that must be tackled. According to her, consumer privacy pierces the heart of customer database management and target marketing efforts that retailers have spent the last decade building and expanding, and it threatens to cause expensive and disruptive change (Reda, 1996). Consumers are becoming aware of the fact that many companies are now in the business of collecting consumer information and using it for marketing purposes or monitoring consumers in a way that could be perceived as intrusive.

A lot of state and federal government officials in the USA are being forced to rethink how they present public information in the age of the Internet. Information that was always technically available but rarely accessed by the public is beginning to show up online, where it can be viewed with the click of a mouse. That is "raising a whole new set of privacy and security concerns and questions about how sometimes complex information should be presented to a wider audience" (Moad, 1997). The Internet and e-mail users are increasingly wary and concerned.

Consumer concerns

The following are some issues concerning privacy and security of consumers using information technology.

Consumer privacy

Consumer privacy issues are not new. Consumers have worried for years about how personal data are used by the government and, more recently, by businesses. Their anxiety and action have led to the passing of various privacy protection laws. The consumer privacy issue is taking on greater magnitude, as the number of people accessing the Internet's information resources grows exponentially and the public becomes more technologically savvy (Reda, 1996; Rubin, 1995). A number of news stories in the past have added to the public concern over electronic privacy, including:

- The reporter who was able to purchase a list containing the names, addresses, ages and telephone numbers of young children, while using the assumed name of a notorious convicted murderer.
- The Internet user in Oregon who paid \$222 for a copy of the state Department of Motor Vehicles' list of names and license plates and put it on the Internet, along with software for searching it.
- The *US News & World Report* subscriber who sued the publisher for renting his name, address and subscription preference, accusing him of misappropriation of personal data (Reda, 1996).

According to a 1999 report from the USA Federal Trade Commission (1999a), information is gathered on the Internet both directly and indirectly. When a user enters a chat room discussion, leaves a message on a bulletin board, registers with a commercial site, enters a contest, or orders a product, he/she directly and knowingly sends information into cyberspace. The report further states that data can be gathered indirectly, without the user's knowledge. For example, a user's travels around a Web site can be tracked by a file called a "cookie" left on your computer's hard drive on the user's first visit to that site. Because Web sites gather information directly and indirectly, they can accumulate a complete data picture of an individual and his/her family (Federal Trade Commission, 1999).

Internet users want to feel that their privacy is being protected. Privacy experts strongly advocate government intervention, while business people are calling for self-regulation. Providing consumers with

information about how their personal data are used and exploring the possibilities of offering consumers privacy preference are among the issues they think should be addressed (Rubin, 1995). The US federal government has been advocating a policy of self-regulation rather than government regulation. CNET believes that a voluntary disclosure program is preferable to one mandated by law (Barr, 1999).

Maintaining privacy and anonymity while surfing the Internet

The computer's ability to gather and sort vast amounts of data – and the Internet's ability to distribute it globally – has magnified the concern of privacy and anonymity on the Web (Boswald *et al.*, 1999; Federal Trade Commission, 1999a, 1999b, 1999c). Once an individual has ventured into cyberspace, it is hard to remain anonymous. One can expect to receive unwanted advertising e-mail. Cyberspace also has "snoopers" and con men. Maintaining privacy is partly the responsibility of the user. When visiting a site, users should look for a privacy statement. Sites that are sensitive to privacy concerns should have privacy policies clearly displayed, and should also offer the user a choice to share their personal information or restrict its use. These sites also have some declarations on how the information would be used. The following have been provided as the top 12 ways to protect the user's privacy online (EFF, 1999):

- 1 Do not reveal personal information inadvertently.
- 2 Turn on cookie notices in your Web browser.
- 3 Keep a "clean" e-mail address.
- 4 Don't reveal personal details to strangers or just-met "friends".
- 5 Realize you may be monitored at work, avoid sending highly personal e-mail to mailing lists, and keep sensitive files on your home computer.
- 6 Do not reply to spammers, for anything.
- 7 Be conscious of Web security.
- 8 Be conscious of home computer security.
- 9 Examine privacy policies and seals.
- 10 Remember that *you* decide what information about yourself to reveal, when, why, and to whom.
- 11 Use encryption!
- 12 Keep sensitive files on your home computer.

Security concerns and threats

Although much of the publicity about Internet security has focused on the potential risks to consumers who use credit cards to make purchases electronically,

payment fraud is also a major threat to Internet-based merchants (Murphy, 1998). Fraudulent or non-creditworthy orders account for as much as one-sixth of all attempted purchases on the Internet. Security threats not only consist of break-ins and technology disturbance, but also stalking, impersonation, and identity theft are serious issues that everyone should be concerned about (Janal, 1998). Computer hacking is another serious problem. Hacking can be either a benign or a malicious activity.

E-mail concerns

Electronic mail will continue to gain popularity in years to come. Corporations and individuals are now using e-mail as a major means of communication. Like other technological developments, e-mail has both advantages and disadvantages, along with controversy (Botham, 1996). E-mail privacy has been an issue of considerable debate. Despite new developments in encryption and despite new legislation, e-mail privacy has proved to be of major concern to the users.

Over the past few years there has been a rising concern over the apparent increase in unsolicited e-mail (junk e-mail), otherwise known as spam. This process of mass distribution of unsolicited e-mail advertisements has become much more common and generally accepted and tolerated, if not loved, because of many powerful corporations. Some people have estimated the amount of spam flowing through the Internet to be up to 30 percent of all e-mails, which is an indication that spam is one of the major concerns today that IT users have to deal with.

As expected, the governments of the nations are making efforts to relieve the IT users' concerns. In the USA, there is statutory privacy protection by the Electronic Communications Privacy Act, but this act is limited because an employer is not liable under the statute for reading an employee's e-mail if one of the parties to the communication consented to the monitoring. Many companies adopt e-mail policies which employees sign, agreeing that they consent to such monitoring on an ongoing basis. Again, employers are allowed to monitor e-mail if there is a legitimate business reason for the monitoring. In essence, a company that provides an e-mail service can monitor communications in order to protect itself, such as in cases where the company believes it is being defrauded. Organizations are increasingly adopting policies which address e-mail privacy concerns. Of course, there are competing interests at stake. Some

companies prohibit all non-business uses of e-mail, and expressly reserve the right to monitor any and all communications. Others, concerned about maintaining good will and trust among employees, take less stringent approaches, allowing personal use to the extent it does not interfere with company business, and reserving the right to monitor only under certain conditions. In any event, employers are increasingly seeking to protect themselves from invasion of privacy suits by adopting e-mail policies, notifying employees of the policy.

Child protection on the internet

Another serious concern among online IT users is the fact many companies routinely ask children to provide personal information about their parents and without parent consent. It is a concern because most times the parents are not aware of this practice and so cannot control what personal information their innocent children are releasing to the world. As expected, the governments are taking actions to curtail the practice (<http://www.ftc.gov/bcp/contine/puts/online/sitesee/>). For example, Robert H. Williams reported in *Boston Globe* of April 20, 2000 that the Children's Online Privacy Protection Act has become law in the USA for all commercial Web site operators that market to children under 13. The law requires Web sites where personal information is collected from children to display a prominent notice making clear their information collection practices, including an explicit description of how they use this information. Industry leaders and family advocates have debated how the Act can be enforced. Some think that e-mail notification of parental consent would be the quickest and cheapest method, while family advocates argued that children can easily intercept and falsify the consent. The Federal Trade Commission has allowed parental e-mail consent if accompanied by a digital signature or private pin number. According to Lehman (2000), most Web site operators agree that protecting kids' privacy online is a worthy endeavor, although it is a costly one.

In order to determine which of these concerns are experienced by online IT users, this survey study was conducted. The literature cited above formed the basis for the items used in the instrument. The online IT users were also asked to rank the concerns discussed above with the aim of identifying the severity and importance of the concerns. The method of study, results and discussion of results are given in the proceeding sectors of this paper.

Method of study

The purpose of this study was to investigate the concerns of online IT users in order to confirm or disconfirm the widely reported concerns in the press and trade journals. The different concerns as reported in this paper were identified by reviewing the literature on the issue. A 29-item questionnaire was developed and mailed to 250 online IT users in a major city in the Southeastern USA. A copy of the questionnaire is shown in the Appendix. The items were derived from the privacy and security issues, news and other literature. The survey instrument was tested on some experienced online shoppers who were also familiar with research issues on privacy and security concerns. Based on the comments received from the pretest, corrections were made to the instrument before administering it to the participants. The purpose of each of the items on the survey instrument was to give the online IT users the opportunity to express their opinions and views concerning their perception and concerns when using online IT. The items were simple statements of concerns for which the participants were asked to indicate their opinions on a scale of "strongly agree to strongly disagree." This group of participants was not hard to find since most people today seem to use e-mail and/or shop on the Internet. The participants were advised not to complete the survey if they have not used e-mail or shopped on the Internet. The data used in the study come from the 158 useable responses (out of 250 questionnaires), which is 63.2 percent of the total instrument sent out. Based on the demographics of those who participated in the study, there is no reason to believe that those who did not return the survey instrument are different from those who did. Simple descriptive statistics were obtained from the data and are discussed below.

Survey results

According to the demographics, out of 158 people surveyed, 39.2 percent were students; 34.2 percent were employees, 18.4 percent were supervisors or managers; 4.4 percent were faculty members and 3.8 percent were others. More than nine in every ten (90.5 percent) of the people surveyed have e-mail accounts or addresses. The types of e-mail accounts were calculated and the following percentages were the results: 44.9 percent of the people have home e-mail; 44.3 percent have e-mail at work and 32.3 percent have e-mail at school. Only 69.6 percent of the

participants knew with certainty that their organizations have e-mail policy statements. Some of the participants (16.5 percent) were not sure if their organizations had any e-mail policy statements. Some participants (6.3 percent) reported that there were no policy statements in their organizations. In 31 percent of the cases, the participants reported that their employers or schools monitor e-mails; 34.8 percent said they were not sure whether or not employers monitor their e-mails; and 25.9 percent of the participants believed that there was no e-mail monitoring at their place of work. In other words, the above findings show that more workplaces are publishing their e-mail and Internet policy. However, it seems the policies are not monitored, or at least the workers are not sure if the policies are monitored or not. The results also indicate that 43.7 percent of the people surveyed cannot use their work e-mail account for personal use; and 38.0 percent can.

When people were asked if they ever purchased anything online, 66.5 percent reported that they shop on the Web, while 32.9 percent said they had never bought anything on the Web. Consumers were asked if they ever had concerns about abuse of their credit cards and other personal information when they purchased things online. This resulted in over 70 percent of the people surveyed saying yes. An additional result indicated that over 70 percent of the people surveyed said that they would purchase products and services online if their concerns were addressed or eliminated.

The following concerns about the use of e-mail and the Internet were ranked in order of importance:

- privacy;
- security and threats;
- children protection on the Internet;
- e-mail safety; and
- censorship, impersonation and forged identity.

As shown in Table I, privacy concerns were ranked the most important by 55.1 percent of the participants, followed by security and threats, which was ranked the most important by 15.2 percent of the participants. The next most important concern was impersonation and forged identity, which was ranked the most important by 11.4 percent of the participants, followed by children protection which was ranked the most important by 8.9 percent of the participants. Only 3.8 percent and 1.9 percent of the participants ranked e-mail concerns and censorship the most important respectively.

Table I

Ranked concerns

Ranked no.	Frequency	%
Privacy concern		
1	87	55.1
2	36	22.8
3	15	9.5
4	13	8.2
5	1	0.6
Security and threats concern		
1	24	15.2
2	49	31.0
3	39	24.7
4	20	12.7
5	12	7.6
6	3	1.9
Children protection concern		
1	14	8.9
2	29	18.4
3	31	19.6
4	24	15.2
5	29	18.4
6	19	12.0
E-mail safety concern		
1	6	3.8
2	12	7.6
3	19	12.0
4	34	21.5
5	46	29.1
6	28	17.7
Censorship concern		
1	3	1.9
2	3	1.9
3	11	7.0
4	27	17.1
5	38	24.1
6	62	39.2
Impersonation and forged identity		
1	18	11.4
2	22	13.9
3	29	18.4
4	26	16.5
5	18	11.4
6	31	19.6

Table II is a summary of the opinions of the 158 online IT users on several of the privacy and security concerns investigated in this study. As shown, over 79 percent of the participants agreed (“strongly agree” and “agree”) that e-mail safety is an important issue. Only 39.8 percent of them agreed that employers have rights to access employees’ e-mails and the Web sites they visit. A large number of participants (53.2 percent) were either neutral or in disagreement with the statement that the right to privacy has been

Table II
Opinions on privacy/security concerns

	Frequency	%		Frequency	%
E-mail safety as important issue			Internet shopping is less secure than mail order		
Strongly agree	75	47.5	Strongly agree	12	7.6
Agree	50	31.6	Agree	51	32.3
Neutral	20	12.7	Neutral	51	32.3
Disagree	8	5.1	Disagree	31	19.6
Strongly disagree	1	0.6	Strongly disagree	9	5.7
Employers have rights to access e-mail and Internet sites used by employee			Feel safe when credit card information is released on the Internet		
Strongly agree	19	12.0	Strongly agree	5	3.2
Agree	44	27.8	Agree	18	11.4
Neutral	41	25.9	Neutral	24	15.2
Disagree	25	15.8	Disagree	47	29.7
Strongly disagree	26	16.5	Strongly disagree	60	38.0
Privacy of Internet users is violated			Most e-mails accessed by people other than owners		
Strongly agree	18	11.4	Strongly agree	12	7.6
Agree	53	33.5	Agree	37	23.4
Neutral	66	41.8	Neutral	62	39.2
Disagree	15	9.5	Disagree	38	24.1
Strongly disagree	3	1.9	Strongly disagree	5	3.2
E-mail policy to be instituted			Limited amount of information should be requested from children on the Internet		
Strongly agree	54	34.2	Strongly agree	66	42.9
Agree	67	42.4	Agree	46	29.2
Neutral	28	17.7	Neutral	18	11.4
Disagree	4	2.5	Disagree	11	7.0
Strongly disagree	1	0.6	Strongly disagree	13	8.2
Internet and e-mails not safe despite safety precautions			Children should not be asked for parents' personal information		
Strongly agree	35	22.2	Strongly agree	92	58.2
Agree	64	40.5	Agree	34	21.5
Neutral	45	28.5	Neutral	17	10.8
Disagree	7	4.4	Disagree	9	5.7
Strongly disagree	4	2.5	Strongly disagree	3	1.9
Personal information disclosed if companies deem necessary			Stalking and impersonation are common on the Internet		
Strongly agree	11	7.0	Strongly agree	22	13.9
Agree	34	21.5	Agree	51	32.3
Neutral	24	15.2	Neutral	67	42.4
Disagree	32	20.3	Disagree	11	7.0
Strongly disagree	53	33.5	Strongly disagree	4	2.5
Current laws and regulations sufficient for protection of IT users			Some e-mails do not come from people who appear to send them		
Strongly agree	5	3.2	Strongly agree	20	12.7
Agree	22	13.9	Agree	55	34.8
Neutral	55	34.8	Neutral	68	43.0
Disagree	56	35.4	Disagree	9	5.7
Strongly disagree	16	10.1	Strongly disagree	3	1.9
Current encryption and passwords are sufficient for security and safety when on the Internet			Security and privacy concerns are barriers for shopping online		
Strongly agree	7	4.4	Strongly agree	50	31.6
Agree	33	20.9	Agree	50	31.6
Neutral	41	25.9	Neutral	33	20.9
Disagree	60	38.0	Disagree	15	9.5
Strongly disagree	10	6.3	Strongly disagree	7	4.4
E-mail is less safe than regular mail					
Strongly agree	11	7.0			
Agree	45	28.5			
Neutral	53	33.5			
Disagree	37	23.4			
Strongly disagree	9	5.7			

violated if employers monitor employees' e-mails. The majority of the participants (76.6 percent) agreed that organizations should have an e-mail policy statement clearly spelt out. Table II also shows that 62.7 percent of the participants agreed that the present technical safety precautions are largely insufficient, while 80.3 percent were of the opinion that the present laws and regulations do not protect the online IT users enough. Many participants (53.8 percent) maintained that no matter how necessary a company considers it, personal information should not be disclosed. A good number of the participants (39.9 percent) indicated that Internet shopping is less safe than mail order, while over 32 percent of the people were neutral about it. Only 14.4 percent of the people indicated that they feel safe when releasing their credit card information on the Web. It was also largely agreed (73.4 percent) that only a limited amount of information should be obtained from children on the Internet and that information about the parents should not be obtained. Many participants (46.2 percent) agreed that impersonation is a major and common problem on the Web. Table II also indicates the opinion of the participants that is central to the theme of this study: security and privacy concerns as barriers to shopping online. The majority of the people (62.2 percent) agreed that these concerns act as barriers to e-commerce while only 13.9 percent disagreed. The large number (20.9 percent) of neutral people might be an indication that there are other barriers or hindrances to e-commerce that were not included in this study. This is to be expected since the present study was not intended to include all factors.

Discussion and conclusions

The purpose of this study was to investigate the privacy and security concerns of online IT users in order to establish a consensus among them. The survey data used in this study came from 158 participants. As indicated by the study findings, the majority of the online IT users today have serious concerns about their privacy and security while shopping on the Internet. They are also concerned about the safety and confidentiality of their e-mails. IT users do not only lose confidence in the technology but they also have very little hope that the government is capable of significantly reducing their concerns in the near future. For example, when the participants were asked if they thought their privacy is

violated in the information age, only 11 percent said no. When asked if they thought the current laws and regulations were enough to protect the IT users, only 17 percent said yes. In fact, the majority of the online IT users who participated in this study believed that the advancements in such technology as encryption and other security features are not sufficient to reduce their privacy and security concerns.

Based on the responses of those who took part in the study, an overwhelming majority of employees prefer the organization to have policies for e-mail and Internet use and to also notify the employees of the policies. It is believed that such policies and employees' awareness would reduce risks and liability. However, a good number of the employees who took part in this study indicated that they were not aware of such policies. Organizations have a major part to play if IT users' concerns are to be properly addressed. Organizations have to take lead responsibilities in educating their IT users and in providing the necessary hardware and software that can enhance users' privacy and security. For example, if an organization informs its employees of its policy and intention to monitor e-mails, and the consequence of sending and/or receiving e-mails, considered to be inappropriate, then the employees may cut down on the number of such e-mails and the organization would achieve its goal.

This study further concludes that for every three Internet shoppers today, there are seven others who are too concerned to shop on the Internet. This is evidenced by the fact that 70 percent of the participants indicated that if privacy and security were to be assured on the Web, they would certainly shop online. The message here is simple and clear: for a Web-based business to survive and thrive, it has to assure its customers that their privacy and safety are protected. This barrier to e-commerce has to be addressed by all parties including the government, vendors, and organizations. With this study, we have confirmed the widely reported news and trade journal-based facts that today's online IT users are extremely concerned with privacy and security issues.

References

- Barr, C. (1998), "CNET's privacy policy", *CNET Personalities*, <http://www.cnet.com/Content/Voices/Barr/040698/index.html>, April.
- Boswald, M., Hagin, C. and Markwiz, W. (1999), "Methods and standards for privacy and authentication in communications networks:

- an overview", *International Journal of Electronics and Communications*, June, p. 234.
- Botham, K. (1996), "Electronic mail can haunt employee, company", *Business Journal Serving Jacksonville & Northeast Florida*, Vol. 11 No. 40, p. 11.
- Crowe, J. (1999), "Is it safe to send credit card information over the Web?", *Sending Credit Card Information*, <http://www.stand.ac.uk/ITS/faq/security/creditcard.html>, January.
- EFF (1999), "Top 12 ways to protect your privacy", http://www.eff.org/pub/privacy/eff_privacy_top_12.html.
- Federal Trade Commission (1999a), "Information - the currency of cyberspace", *Site Seeing On the Internet*, November, p. 2, <http://www.ftc.gov/bcp/online/pubs/online/sitesee/>
- Federal Trade Commission (1999b), "Maintaining privacy when you travel", *Site Seeing On the Internet*, November, pp. 2-3. <http://www.fte.gov/bcp/online/pubs/online/sitesee/>
- Federal Trade Commission (1999c), "Traveling with children", *Site Seeing On the Internet*, November, p. 4. <http://www.ftc.gov/bcp/contine/puts/online/sitesee/>
- Furger, R. (1999), "On the Web you have no secrets", *PC World*, Vol. 17 No. 7, p. 29.
- Grandinetti, M. (1996), "Establishing and maintaining security on the Internet", *Sacramento Business Journal*, Vol. 13 No. 25, p. 22.
- Janal, D.S. (1998), *Risky Business: Protect Your Business From Being Stalked, Conned, or Blackmailed on the Web*, John Wiley & Sons, New York, NY.
- Lardner, J. (1999), "I know what you did last summer and fall", *US News & World Report*, Vol. 126 No. 15, p. 55.
- Lehman, D. (2000), "Protecting kids' privacy is costly", *ComputerWorld*, April, p. 97.
- Martin, J. (1973), *Security, Accuracy, and Privacy in Computer Systems*, Prentice-Hall, Englewood Cliffs, NJ.
- Massey, A. (1999), "Privacy in the digital age", *Houston Business Journal*, Vol. 29 No. 50, p. 1b.
- Moad, J. (1997), "Privacy issues surrounding the Internet", *PC Week*, October, p. 83. "MSN wants to help you maintain your privacy on the Internet", MSN.COM. Private Statement, p. 1, <http://go.ms.com/>
- Murphy, P. (1998), "New programs help counter Internet payment fraud", *Stores*, January, p. 60.
- Reda, S. (1996), "Growing privacy debate", *Stores*, December, p. 21.
- Rubin, M.R. (1995), *Private Rights, Public Wrongs: The Computer and Personal Privacy*, John Wiley and Sons, New York, NY.

Appendix. Survey instrument for online IT user's concerns

Kindly complete this questionnaire as candidly as possible.

- 1 Check the blank that closely identifies your current status:
 Supervisor/Manager Employee Faculty Student Other

- 2 Do you have an e-mail account/address?
 Yes No

(If you answered "Yes" continue with no. 3; if you answered "No" skip to no. 8)

- 3 What kind of e-mail account do you have?
 Home Work School Other _____

- 4 Does your company/university have an Internet-use policy?
 Yes No Don't know

- 5 Does your employer or school monitor your e-mail usage?
 Yes No Don't know

(If you answered "Yes" continue with no. 6; if you answered "No" or "Don't know" skip to no. 7)

- 6 How does your employer or school monitor your e-mail usage?
 Intercepting and reading e-mail
 By monitoring your usage time
 By filtering out or blocking certain mails
 Other _____

- 7 Are you allowed to use your work e-mail account for personal use?
 Yes No

- 8 Have you ever purchased anything online?
 Yes No

(If you answered "No" skip to no. 10; if you answered "Yes" continue to question no. 9)

- 9 How frequently do you purchase things online?
 More than once a month
 Once a month
 At least once in six months
 At least once a year
 Never

- 10 Have you ever been concerned about abuse of your credit card and other personal information when/if you purchase things online?
 Yes No

- 11 Would you purchase anything online if your concerns are addressed or eliminated?
 Yes No

