Doing business on the Internet: marketing and security aspects

Karen A. Forcht
Professor in the Department of Information and Decision Sciences, College of Business, James Madison University, Harrisonburg, Virginia, USA
Rolf-Ascan Wex
Former MBA student at James Madison University. Majored in information management at the European Business School in Germany

Acknowledges that many prospective business users are wary of the Internet because of existing and potential security loopholes. Gives an overview of the security problems and solutions and concludes that doing business online involves some risks, like any other business transaction, but, if attention is devoted to installing secure procedures, it is no riskier than other business practices.

Introduction

The worldwide network of computers, called Internet, provides good opportunities for a company to do business in Cyberspace. Organizations find it increasingly important to represent themselves on the Internet to get more customers, increase the public's awareness of the company and its products and to sell more of its products. Security implications hinder the business. Banks, credit card companies and software producers work together to develop a World Wide Web standard for safe transactions. Hackers try to get as much information as possible, which they can sell on the black market. Companies have to follow specific guidelines to develop a successful appearance in the Web.

The growing popularity of the Internet

The ease and relative cheapness of publishing information on the Internet has led businesses and entrepreneurs alike to rush into Cyberspace. With an investment of as little as US$30 a month, most people can set up their own Web operations using a personal computer and a modem[1]. The huge potential of customers and consumers has businesses scrambling to get on to the Web. Millions of people all over the world can view these pages on the worldwide Internet. It has become affordable and easy to get access to the Internet and most potential customers like to see a company represent itself on "the Net". Customers can search the products of a company and ask questions directly without having to go to the store and waste a lot of time there.

Although the commercial market of the Internet might be small today, it is likely to grow tremendously in the future. Commerce will begin in earnest on the Web when the computer becomes as easy to use as a telephone or other household appliances. The

Net itself has to become more attractive for customers, since unresolved privacy implications might hinder customers from purchasing items on the Net. The security of transactions is one aspect and will be discussed later in this article. Another important factor is the tracking of customers. Already, companies can collect data on a person's entertainment-viewing habits, their telephone-calling patterns and their shopping behaviours. In addition, they can record the time and pages which a customer saw during his/her stay on the Web.

Old-fashioned ways of advertising and communicating with customers are no longer appropriate and cannot be used easily on the Net. Companies will have to come up with new ways of communicating with customers and employees around the world.

Some disadvantages for a company doing business on the Net include the "surfing" of employees on the Net in company time[2]. The more fascinating the World Wide Web gets, the more likely employees are to do this. Employees have to discipline themselves to avoid sitting in front of their computer surfing the Net and doing nothing worthwhile for the company. It has been calculated that the average employee spends 9.7 hours per week surfing the Net and answering his/her e-mail in company time. Furthermore, health-related topics might become important, as people working with computers are likely to develop eye-strain headaches and some form of "computer addiction"[3].

The Internet proves extremely useful for eliminating costs while dealing with customers. To provide information on the Net, and allow customers to find answers to their enquiries themselves greatly helps to reduce telephone charges based on 800 and 888 numbers. Companies can also save money by offering their software or trial versions on the Internet, as people can simply download a file. The company does not have to pay postage any more.

Different marketing aspects regarding the Internet

With the growing size of the Internet, it has become increasingly interesting for companies to offer information on the Web and to attract old and, more importantly, new customers to the company.

The real-time interaction with prospective customers is causing a rush to the Internet and specifically the World Wide Web (WWW). Instead of offering customers brochures and prospectuses in the traditional form, companies switch to the hypertext form of the documents, which the customers can read from virtually anywhere in the world at any time.

Marketers have come up with three successive reactions: disbelief, excitement and horror[4]. Once marketing managers see a demonstration of the possibilities of the Internet, they inevitably want to try something better themselves. Since, however, marketers try to make their company's page as interesting as possible, it often contains more links to other areas than it does good and exciting representations of the company. While creating a Web page, the company should not forget that the market segment of the people surfing the Net, and who might have an interest in the company's products, differs from the original market segment. Only exciting Web pages will be visited again, since the consumers have become experts in the Web and know from other sources what they can expect. It is not enough simply to offer information about a special product. A company should try to add value to its marketing efforts. The customer expects value and for this reason the company could, for example, develop discussion areas, a searchable index or could include links to other areas.

In contrast to other media, which are used to push information on the customer, the Net is more of a "pull" medium. A company cannot propel messages to masses in the hope that somebody will catch a glimpse while spending time on the Internet. The Web offers information to people who might be willing to reach in and pull information out.

Companies might have different reasons for investing in superior Web sites. They may want to improve their corporate image and customer service, find new prospects, increase visibility, perform transactions, expand their market, meet customer expectations, reduce costs and get up to speed before it is too late and competitors have taken over. The fierce competition forces companies to develop outstanding Web pages, since a company must be first in the industry, first with new technologies, or first with a unique service. Those companies which come up with unique services are sure to win the immediate skirmish as well as the war.

Since the customer service department within an organization takes care of customers and helps to keep them, it is important that this department is involved in the development of a company's Web page. The bottleneck in the process of customer satisfaction has often been information delivery. The Web offers a method that is faster and more direct than fax-back. E-mail is its greatest advantage, since it opens another communication channel to the customers.

A Web page should contain a "frequently asked questions" section. Customer service people hear most of the questions on a regular basis and it becomes part of their thinking and therefore part of their speech pattern. Customers might have to listen to an answer, which has been told many times before and may not sound very convincing anymore. Questions received via e-mail, as typed into the Web page, can be dealt with immediately. Customer service representatives will have pre-written answers to the questions, which they can easily send back to the customers. It is also very important to pay close attention to the information that is stored on the Web pages and is therefore available to the customers. Instead of having an 800 number and an operator providing information from a database, it is a very reasonable idea actually to let the customers have access to the database themselves.

Since the Net is a multidirectional communication medium, the company has to concentrate on three different aspects. Navigation, interaction and feedback are extremely important for a successful Web page. If Web surfers experience difficulties in surfing your page, or do not get enough audience participation, they will not come back to your page and the company does not get the feedback, which it would like to have.

The longer a Web page is, the longer it takes to transmit. Since high speed telephone lines are not readily obtainable for every person, Web sites must not be extremely large. High resolution pictures may also add to the discomfort of the users, as it takes too long to transmit them. If people have to wait too long, they are likely to leave and try their luck with another page/company.

To make a page more user-friendly a company should consider putting decorative pictures and interesting videos on the site along with navigational elements and informative components. It is an extremely good idea to keep the page as simple as possible, as complex pages tend to confuse the user. It is absolutely essential to keep the structure of

the page easy enough to attract customers' attention. Some larger corporations seem to have forgotten the KISS-rule (keep it simple, stupid). Before developing and heading for navigational ease, however, a company should think about the general purpose of the page. If a company has its Web site's aim in mind, it is much easier to install help tools, e-mail connections and database linkages.

An example of the ease of use is interaction, which some pages offer. The more interactive a page is, the more fascinated the visitor will be. Apart from interactivity, experienced events marketers can get excellent knowledge about their customers' preferences. An example might be the new BMW Web site at http://www.bmwusa.com, where customers can create their own Z3 Roadster by choosing different colours and interiors. Customers like to create their "dream car", while BMW gets first-hand knowledge of colour combinations and preferences which it could offer in the market.

This fundamental type of hearts-and-minds marketing will win customers for a company. A company could ask its customers to come up with ideas of what they would like to see in the Web site of the company. A corporation could easily include all of its customers' wishes, thus making the Web page a successful one.

Another way of getting a Web page running is by undertaking electronic surveys. Instead of producing a vast amount of paper, which it sends out to some of its customers, a company can nowadays get the opinion of each person visiting a Web page. The less time it takes to answer questions, the more likely are the consumers to respond to the company's enquiries. A company should not publish a ten-foot long questionnaire on the Internet, as it takes too much time of the customer. A customer is eager to give his/her personal opinion of a specific topic and hesitates to provide the unknown Internet company with demographic background information about him/herself. To ensure that long questionnaires are properly answered, a company could set the questionnaires up on different pages. The customer does not know how many more pages he/she has to answer and feels to be participating in the survey. This is the kind of action/interaction that keeps the user involved. Participants in surveys tend to give better answers if they have identified themselves. The e-mail address works as a distinguishable and unique identifier and can be easily stored in databases for further use.

As it becomes harder to attract people on the Web, some companies have begun to add value to the pages to persuade customers to come back to the place. "Value Added

Marketing is the evidence of your worth as a potential vendor"[4]. People can print out coupons from their computer and get to see the weirdest Web pages possible. In the long run, only those Web sites which are exciting and worth the time and effort to look up will survive in the battle for new customers.

A growing number of companies provide more information than customers might have hoped for when turning to a specific page. Goodyear lets you choose the correct tyre for your car based on several questions (http://www.goodyear.com/cgi-bin/car4sript). AT&T offers its 800 directory on the Web (http://att.net/dir800), just to become more attractive to the tremendous number of Internet surfers. FedEx and UPS let their customers track their parcels and most airlines offer direct reservation possibilities on their sites.

The marketer has to find out what kind of a product the customer would like to see and, in this regard, it might be a good idea to elicit customers' opinions about a prospective Web page. Further sources can be news groups, business partners and the customer service departments of a company. Companies try to publish information by transmitting messages to news groups. The public relations department of a corporation has to post these messages, as they have to conform with the public relations guidelines of the company. Wrong or massive posting can lead to overwhelming reactions by the user of mailing lists and news groups. "Flaming" has become a popular activity to show corporations that this way of dealing with users' time is not appropriate.

Posting advertisements on the Net causes huge response and the advertising company does well to have its service running and to be able to cope with these enquiries. Nothing disturbs a potential visitor to a Web page more than a busy server. It might be a good idea to have more equipment available than the company uses on average. This idea, however, is incompatible with shrinking and limited budgets.

After having spent a considerable amount of money in the development of the Web page, marketers would like to know how successful it actually is. Counting the "hits" may not represent the correct number of people visiting the page. Since a page issues a separate file transfer request for each image, sound or video to be transmitted, one would have to divide the total number of hits by the elements on that particular page. The number of hits does not represent the actual number of people who have read the page from top to bottom. The hits nevertheless provide a good idea of the kind of information that visitors are interested in. Since people can transfer

the pages of the companies to their own hard disk, the number does not provide a good estimate of the people who have read the information. Tracking down the activity of the consumer on a corporate Web page can be done fairly easily. Getting to know the person or organization behind the meaningless IP address is a different story.

How can a company be certain that its Web efforts pay off and that the company does not spend too much money on the development of the Web page? The company will have to consider consumer sales and business-to-business sales. A good survey may collect qualitative information about the customers' buying behaviour from a specific company. Print-out coupons can be a good way to measure the success of a company on the Internet.

Companies should develop forms on the Web page, where people can type in their information and comments. Visitors can make certain that their name is spelled correctly and can leave a traceable footprint, which might then be used to tie a Web site to an automated fulfilment system or a contact management system. Those companies which can link their Internet data to their sales data have a competitive edge over other competitors.

The feedback a company receives is significant in improving services or products. If information is provided on a regular basis by the customers, and if these facts can change something within the company, then it is worthwhile to maintain a Web page.

With all businesses, as regards information and customer data, the security issue of the Internet becomes a very important topic, especially as the Internet was developed as an open system.

Security aspects on the Internet

Internal network protection will be a big issue for the companies that wish to offer their services to Internet-using customers around the world. Criminals or other hackers can infiltrate company files and infect them with a virus, which is then sent to other computers to infect them. If the networks are not secured such people could also find important information about the company.

Newly publicized weaknesses in the basic structure of the Internet indicate that the worldwide computer network may need a time-consuming redesign before it can be safely used as a commercial medium.

Electronic mail and many types of documents or software programs travelling over the Internet can be altered. It is fairly easy to do this or to eavesdrop on other people's messages. The Net is open and security issues have only become more important in recent years, as the Internet was originally founded to allow academic and scientific researchers to exchange information[5]. To protect company data from intruders breaking into a system, companies use computer software to block them before they can do any harm. A so-called "firewall" is supposed to protect a network from bad influences coming from the outside and in this case from the Internet specifically. Only non-destructive messages or files can pass through such a firewall, although it is fairly difficult to recognize all the "bad" files coming from the outside.

The majority of the people using the Internet are not aware of security violations, which take place constantly. People should take greater care to protect themselves and their computers against intruders. The theft of a single password can be enough to carry out serious crimes on the Net. America Online wants to make its Network as easily accessible as possible and knows about the system's weaknesses, which intruders can use to their advantage. Although crimes against software and hardware are published, people usually believe that criminals will not affect them. However, criminals do try to seek access to confidential information and also to steal and degrade services.

Computer break-ins are not new. The technique, however, changes. Nowadays, software programs exist that can break into different systems automatically. The result is a proliferation of hacker techniques to a much larger population that does not have the hacker ethic[6].

New security holes in the Internet are uncovered almost weekly and help to alert prospective companies and customers.

Netscape Communications Corp., a leading maker of Internet software, faced problems, as students had found two security problems in the software within one year. With the lack of security on the Internet, it might be possible to alter copies of Internet-related software packages. If a package's security routines were secretly gutted any other program that the corrupt package touched – perhaps while copying the new program from a remote Internet computer – could be compromised too.

As alarming as these aspects might be, other more fundamental security loopholes exist on the Internet. As long as technology companies, software makers, banks and major credit card companies have not developed a common protocol to make financial transactions over the Internet safe, many unsolved issues still exist. Would-be cyber-

merchants are not at all sure which payment scheme to back. The Net needs to have a level of safety that businesses and consumers can live with.

The data and information sent over the Internet can be read by almost anybody who is willing to interfere with the flow of information. On the way from the sender to the receiver the information has to pass several computers and might be read there. Cryptographic software can scramble the information and a specific key is required to decrypt it.

For credit card numbers the following scheme might occur; in future the consumer types in his/her credit card number, which is encrypted immediately; the vendor of the item passes the encrypted number to the bank, which has to decrypt the number itself; and the bank would then authorize the merchant to proceed with the transaction.

Firewall software could again prevent unauthorized Internet traffic from entering and it is possible to make the Internet secure. NASA, for example, transfers some of its data over the Internet quite happily and it has spent money on specific software products to make the Internet more secure[7].

Different kinds of firewall software packages exist on the market today. Application-level security looks inside a packet and reads the data to make sure they are safe. Packet filters make sure that the package itself is satisfactory[8].

Firewalls alone might not be sufficient to keep intruders out and a company should concentrate on other security aspects, too. User authentication systems are strongly recommended to allow only authenticated users to have access to a system. The development of secure ID smart cards might be a first step in the right direction to identify the user of a specific service. These cards are embedded with microchips and generate unique passwords that confirm a person's identity. Each password gets used only once and it is extremely difficult to find out such computer-created passwords.

It becomes a question of awareness, since people have to become aware of the security loopholes which exist on the Internet. Computer security specialists find it increasingly important to set up rules and guidelines for the correct use of computers on the Internet.

Interoperability among different platforms is necessary for a true digital economy to develop. However, it is not enough to encrypt and authenticate flows of information, since e-mail also needs to be protected by these

methods to ensure a safe way of conducting electronic commerce.

Hackers can easily get access to different companies and can cover their traces without any major concerns. They like to trade data illegally and sell data to the hacker community. Calling-card numbers from long-distance telephone service providers, cellular service activation codes, stolen credit-card numbers, security-penetrating algorithms and pirated software codes are among the data most frequently traded on the Internet[9].

Hackers might also bombard a company with thousands of mail messages using automatic remailer tools. The posting of messages can knock out communications at a critical time in a competitive situation and even firewalls cannot protect a company well against these attacks.

Information security is based on three foundations:

1 *Data integrity*. A company must be sure that its data have not been changed.
2 *Confidentiality of data*. Companies have to be able to keep to themselves what you/they do not want others to know, such as their customer database, credit card numbers, etc.
3 *Authenticity*. Companies need to be sure that messages they receive from the Net are from the people they claim to be.

If one of these factors can be worked around by hackers the company is no longer secure.

Another threat is the growing number of information brokers who use online communications to match buyers and sellers. Criminals always seem to be one step ahead of law-enforcement agencies.

An online Internet company also faces other challenging threats. Since employees can find all sorts of information on the Internet, they may tend to download adult material, which they might show around within the company. Such employees can create a hostile working environment. Other employees might feel sexually harassed within the company and could press charges against the company. The company will have to ensure that employees cannot download such pictures or other offensive material from the Internet[10]. It will have to develop strict guidelines to protect its own interests and the uncontrolled surfing habits of its employees.

To do business on the Internet successfully, companies will have to ensure that the customer is indeed the person he or she claims to be. Verification and confirmation, written with an e-mail system, will work well enough for the time being.

Other business aspects on the Internet

Organizations offering their products on the Internet might incur a channel conflict with their existing distributors. A company should work with its partners to come up with a fair product price. It might not be worthwhile to compete with a company's partners, since an organization might need them again in the future.

The territory also needs to be considered. The Internet is a global marketplace and it might be difficult to transport products to the customers. Customers get frustrated if they cannot buy the product immediately and generally turn away from the purchase.

International pricing also seems to be an important factor. Whereas companies used to be able to obtain different prices for their products, they are pretty much bound to the prices quoted on their Web pages. It might be a solution to quote a price after the buyer has entered some information regarding his or her wishes and country of origin.

Summary and outlook

Doing business on the Internet will become even more important in the future. More companies will have access to the Internet and, with a reduction in communication prices, more customers will come to the Internet as well. The Internet offers tremendous possibilities and could, in the long run, outperform conventional distribution channels. It is very easy to get connected to the Internet and people can surf and shop the Internet 24 hours a day, if they want to.

The security aspects of the Internet will diminish in the future, as the software companies, banks and credit card institutions follow joint efforts to improve the security issues mentioned in this text.

The Internet offers an excellent way to get in touch with the customers on a one-to-one basis. Better technologies will help companies to represent themselves better and sell more products.

A company should try to get as much benefit from customers' feedback as possible. At the same time, customers might want to receive some sort of acknowledgement to ensure that their time and efforts were not wasted.

A continuous connection to the Internet will become a common feature in the households of the future and customers will be able to do more and more interactively. Information will be provided and it will be even easier to communicate using the Web. Live video

sessions will be available and a prospective customer may be able to talk to a customer representative directly over the Net.

Companies should not hesitate to connect themselves to the Internet, as they are likely to be overlooked by customers in the future if they do not. They might also fall behind the technological trend and it will be difficult for them to catch up again.

Security on the Internet is a very important issue, and some good solutions are beginning to form. Companies need to protect themselves in three areas: data integrity, confidentiality of data and authenticity. It becomes more and more important to prevent hackers from stealing or tampering with data stored in companies' systems. This can be done by installing firewalls or routers. When data travel on the Net they are normally intended to be read only by sender and recipient, which can be ensured with encryption systems. Finally, a company wants to be sure that the parties it is communicating with are really who they say they are. Authenticity can be obtained with digital signatures.

Doing business online involves some risks, like any other business transaction. But if attention is devoted to installing secure procedures, it is no more risky than other business practices. In fact, it is risky not to be represented on the Web if you are related to the technology industry in any way: the Web will be the first place prospective customers will look for you, expecting to find you there. There are unique opportunities on the Web for marketing a company's services, selling products and gathering information.

References
1 Egan, J. and Pollack, K., "Gold rush in cyberspace", *US News & World Report*, 13 November 1995, pp. 72-83.
2 Jones, D., "On-line surfing costs firms time and money", *USA Today*, 8 December 1995, pp. 1-2.
3 DeLoughry, T.J., "Snared by the Internet", *The Chronicle of Higher Education – Information Technology*, 1 March 1996, p. A25-6.
4 Sterne, J., *World Wide Web Marketing – Integrating the Internet into Your Marketing Strategy*, John Wiley, New York, NY, 1995.
5 Brewer, E., "Internet flaws a setback for commerce", *New York Times – Personal Technology*, 15 October 1995, p. R7.
6 Lewis, P., "Security of personal data is lost in cyberspace", *Computer Information Systems*, 22 February 1995, p. 10.
7 Verity, J.W., "Bullet-proofing the Net", *Business Week*, 13 November 1995, pp. 98-9.

8 Cafasso, R., "When security isn't what it seems", *Enterprise Systems & Network Management*, March 1996, pp. 72-84.
9 Wilder, C. and Violino, B., "Online theft. Trade in black-market data is a growing problem for both business and the law", *Information Week*, 28 August 1995, pp. 31-40.
10 Weiss, B.D., "Four black holes in cyberspace", *Management Review*, January 1996, pp. 30-3.

Further reading

"ConnectSoft: RSA Licensee Spotlight", *Cipher-text – The RSA Newsletter*, Vol. 3 No. 1, Winter 1995, p. 6.

Cronin, M.J., *Doing Business on the Internet – How the Electronic Highway Is Transforming American Companies*, Von Nostrand Reinhold, New York, NY, 1994.

Jenkins, L., "Doing business in a global marketplace: secure electronic commerce", *Ciphertext – The RSA newsletter*, Vol. 3 No. 1, Winter 1995, pp. 1, 8.

Maney, K. and Meredith, R., "Few feel safe making on-line transactions", *USA Today*, 20 September 1995, pp. 1-2.

Martin, B., "New information businesses on the superhighway: an Australian perspective", *IRMA Conference Proceedings – Managing Information & Communications,* Atlanta, GA, May 1995, pp. 176-7.

Mohan, S., "Stalled on the I-way", *Computerworld*, 26 December 1995/2 January 1996, p. 68.

Wilson, D.L., "Flaw found in popular computer-security system", *The Chronicle of Higher Education – Information Technology*, 1 March 1996, p. A29.