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ORIGINAL ARTICLE

STUDY OF THE DEFENSE MECHANISMS TO CONQUER THE SECURITY RISKS IN E-COMMERCE

Sagi Rajkumar Varma

Ex-Principal, PriyadarshiniLokmanyaTilak Institute of Management Studies & Research, Digdoh Hills, Nagpur.

Abstract:

E-commerce is usually associated with buying and selling over the Internet or conducting any transaction involving the transfer of ownership or rights to use goods or services through a computer-mediated network. In other words, the buying and selling, marketing and servicing, delivery and payment of products, services information over the Internet and other networks. E-commerce has changed the nature of the value propositions that companies now offer to their customers. The convergence of content sites and social networks has resulted in emerging e-commerce business models.The study aims to analyze the security issues and provide the defense mechanisms on E-Commerce. This research explored the usage level of e-commerce technologies, benefits and barriers of e-commerce usage. The methodology used to examine the key elements is done by secondary research. The findings of thisresearch is that good security improves trust, and the perceptions of good security will ultimately increase the use of e-commerce technologies.

KEYWORDS:

E-commerce, Internet, Security, Awareness.

1.INTRODUCTION

Internet is one component which has recently become the key ingredient of quick and rapid lifestyle. Be it for communication or explorations, connecting with people or for official purposes, 'internet' has become the central-hub for all. Internet is undoubtedly beneficial to e-consumers users and other users such as social network users;it has made it possible for any person to easily collect personal information about Internet users without their consent. Consumer concerns over the safety of personal information and the violation of an individual's privacy rights are described as being the single overwhelming barrier to rapid growth of e-commerce. Recent research findings also show that the level of public concern for privacy and personal information has increased. E-commerce is one of the fastest gains of information technology leads to fundamental changes in a way to make businesses effective and efficient. The growth of e-commerce provides and highlights the various advantages to companies and businesses. These benefits include the dissemination of information, development of new technologies, promote and sell products and services. E-commerce also opens up an opportunity to promote the environment, which promotes the globalization of markets worldwide; particularly businesses on online basis. In recent years, while the use of the Internet at all levels has increased e-commerce activities are not progressing at the same speed. The cases of Internet fraud is increasing at an alarming rate, so that companies using e-commerce must have means to protect the transmission of personal data. Customers know what risks are presented and phenomena which are consequences increasingly common as identity theft or data, so they feel a combination of distrust and fear. In this situation, expect companies to protect, and most people want more conclusive evidence that information is safe and secure. However, empirical research in this area drowned

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in contradictory perceptions of trust. The research provides the effect of strengthening confidence in the development of e-commerce in different cultural contexts and configurations. Therefore, the aim of the paper is to provide a study on the impact of safety in e-commerce development.

2. LITERATURE REVIEW

E-commerce stands for electronic commerce. E-Commerce refers to the exchange of goods and services over the Internet. All major retail brands have an online presence, and many brands have no associated bricks and mortar presence. However, e-Commerce also applies to business to business transactions, for example, between manufacturers and suppliers or distributors.

E-Business probably began with electronic data interchange in the 1960s (Zwass, 1996).However, (Melao, 2008) suggests that it was only in the 1990s, primarily via the Internet, that e-Business has emerged as a core feature of many organizations. In his opinion, the hope was that e-Business would revolutionize the ways in which organizations interact with customers, employees, suppliers and partners. Some saw e- Business as part of a recipe to staycompetitive in the global economy.

Rajeev Kamineni (2004)in his study finds that World Wide Web can change human behavior and human interactions to a very large extent. Web based shopping behavior is one major example to point out the trends in this direction.

ArchanaShrivastava, UjwalLanjewar, (2011)in online buying, the rate of diffusion and adoption of the online buying amongst consumers is still relatively low in India.

Ernst & Young, 2001; Mahajan, Muller & Bass, (1990)over time the Internet buyer, once considered the innovator or early adopter, has changed. While once young, professional males with higher educational levels, incomes, tolerance for risk, social status and a lower dependence on the mass media or the need to patronize established retail channels.

Fram& Grady, 1997; Kunz, 1997; Mehta &Sivadas, 1995; Sultan &Henrichs, 2000, For Internet buyers, gender, marital status, residential location, age, education, and household income were frequently found to be important predictors of Internet purchasing.

The major different types of e-commerce are: business-to-business (B2B); business to- consumer (B2C); business-to-government (B2G); consumer-to-consumer (C2C); and mobile commerce (m-commerce).

Several technologies are needed for e-commerce to exist. The most obvious one is the internet. Beyond that system of interconnected networks, many other sophisticated software and hardware components are needed to provide the required support structure: database software, network switches and hubs, encryption hardware and software, multimedia support, and the World Wide Web.

ELECTRONIC MONEY

E-money is the most important tool to employ digital technology in economic context and can be used as bank cards, transferring money in internet, salary and wage systems and other concepts in e-commerce.

CREDIT CARD

Credit card is a plastic card which contains name and identity of the owner in front. There exists a magnetic tape which contains identity and owner address, in the back. Computerized financial systems like ATM employ this information to obtain identity of card holder when taking money. Bank or issuing institute confirms the credit. Even if the owners have no money in their account, to a distinguished level they can buy or get money, but they have to liquidate to a certain time. Commonly customers have to pay a rate near 2% (as per condition of issuer) in month for used credit.

Debit card

A debit card (also known as a bank card or check card) is a plastic card that provides the cardholder electronic access to his or her bank account(s) at a financial institution.

The card, where accepted, can be used instead of cash when making purchases

Charging card

Credits are paid in the beginning of each period and the owner should pay back the money at the end of that period. These kinds of cards have a charging fixed cost.

Electronic check

A form of payment made via the internet that is designed to perform the same function as a conventional paper check. Because the check is in an electronic format, it can be processed in fewer steps and has more security features than a standard paper check. Security features provided by electronic checks include authentication, public key cryptography, digital signatures and encryption, among others. Using e-check reduces the costs because of no need to papers and post.

BENEFITSOF E-COMMERCE

· E-commerce allows people to carry out business without the barriers of times or distance. One can log on to the internet at any point of time and purchase or sell anything one desires at a single click of the mouse.
· The direct cost of sale for an order taken from a website is lower than through traditional means (retail, paper based), as there is no human interaction during the online electronic purchase order process. Also, electronic selling virtually eliminates processing errors as well as being faster and more convenient for the visitors.
· E-commerce can increase sales and decrease costs. A firm can use e-commerce to reach narrow market segments that are widely scattered geographically.
· The internet and the web are particularly useful in creating virtual communities that become ideal target markets. A virtual community is a gathering of people who share a common interest, but, instead of this gathering occurring in the physical world; it takes place on the internet.
· Just as e-commerce increases sales opportunities for the seller, it increases purchasing opportunities for the buyer.
· Businesses can use e-commerce in their purchasing processes to identify new suppliers and business partners.

DISADVANTAGES OF E-COMMERCE

· E-Commerce also has its disadvantages. It is difficult to conduct a few businesses electronically. For example, perishable foods and high-cost items such as jewellery or antiques may be impossible to adequately inspect from a remote location, regardless of the technologies that are devised in the future.
· However, most of the disadvantages of e-commerce today are due to the newness and rapidly developing pace of the underlying technologies.
· In addition to technology issues, many businesses face cultural and legal impediments to e-commerce. Some consumers are still somewhat fearful of sending their credit card numbers over the Internet.
· The legal environment in which e-commerce is conducted is full of unclear and confiicting laws. In many cases, government regulators have not kept up with technologies.

BUSINESS APPLICATIONS USED UNDER E-COMMERCE:

There are some common applications related to electronic commerce are the following;

Document automation in supply chain and logistics
Domestic and international payment systems
Enterprise content management
Group buying
Automated online assistants
Instant messaging
Newsgroups
Online shopping and order tracking
Online banking
Online office suites

Shopping cart software
Teleconferencing , Electronic tickets

3.RESEARCH METHODOLOGY

The methodology for this research paper is based on secondary research, which is based on differentjournals, books and web-site resources. Secondary research also includes international magazineswhich highlights the issues of adoption of e-commerce. The information is collected fromvarious sources in order to make it more concrete. Though, secondary research has severaldisadvantages like it does not involve any primary data, opinions or surveys. The nature of the studymentioned here is descriptive.

4.E-COMMERCE IN INDIA

For developing countries like India, e-commerce offers considerable opportunity. E-commerce in India is still in growing stage, but even the most-pessimistic projections indicate a boom. It is believed that low cost of personal computers, a growing installed base for Internet use, and an increasingly competitive Internet Service Provider (ISP) market will help fuel e-commerce growth in Asia's second most populous nation. The first e-commerce site in India was rediff.com. It was one of the most trafficked portals for both Indian and non-residents Indians. It provided a wealth of Indian-related business news a reach engine, e-commerce and web solution services. The past few years have seen a rise in the number of companies enabling e-commerce technologies and the internet in India. Major Indian portal sites have also shifted towards e-commerce instead of depending on advertising revenues.

FUTURE OF E-COMMERCE IN INDIA

Today, we are talking about e-commerce progress level of India, the seventh-largest by geographical area, the second-most populated country, and the most populous democracy in the world. Indian E-commerce space percentage is getting higher as more and more online retailers enter the market. Although this level of entry in the e-commerce market is good from a long term perspective, the challenge is that most entrepreneurs don't have the resources or capital to wait for years before they can get profits.

A new report by the Boston Consulting Group says online retail in India could be $84-billion industry by 2016 more than 10 times its worth in 2010 and will account for 4.5 per cent of total retail. The e-commerce platforms maximize its reach to the potential customers and provide them with a convenient, satisfying & secure shopping experience.

5.REASONS FOR NOT SHOPPING ONLINE:

The majority of the Internet audience is still averse to the idea of making online purchases due to the following reasons:

Source: www.imediaconnection.in

Trust and Security are the major reasons with 99% people not using online Shopping. So there are maximum peoples has fear of loss of fund while transaction through internet. Besides for all these reasons, the consumer should be aware about easy transactions through internet. The Internet users in India have time and again adopted the advancements in the online space and are always seeking out to include digital interactions into their daily activities - making purchases and indulging in transactions being one of them. The e-commerce industry on its own is poised to be one of the biggest markets in India. It will be interesting to see how and when the e-commerce industry will shape itself into a mainstream giant being accepted by the masses in the online space.

3.SECURITY OVERVIEW

There are many ways in which the India can combat the security issues that exist in the company. This is how they can make sure that the information that is held with the company is safe and secure. The confidentiality of the data should be ensured by the people of the company so that the customers can provide information without any fear of data theft. These ways will also ensure the companies that the data that are useful for them is safe and kept confidential. Earning the trust of customers has a value incalculable, and spending on technology needed to protect them is minimal compared with the advantages that reports and the overall costs of a company.

In the software industry, security has two different perspectives. In the software development community, it describes the security features of a system. Common security features are ensuring passwords that are at least six characters long and encryption of sensitive data. For software consumers, it is protection against attacks rather than specific features of the system. Your house may have the latest alarm system and windows with bars, but if you leave your doors unlocked, despite the number of security features your system has, it is still insecure. Hence, security is not a number of features, but a system process. The weakest link in the chain determines the security of the system.

Security has three main concepts: Confidentiality, Integrity, and Availability. Confidentiality allows only authorized parties to read protected information. For example, if the postman reads your mail, this is a breach of your privacy. Integrity ensures data remains as is from the sender to the receiver. If someone added an extra bill to the envelope, which contained your credit card bill, he has violated the integrity of the mail. Availability ensures you have access and are authorized to resources. If the post office destroys your mail or the postman takes one year to deliver your mail, he has impacted the availability of your mail.

Encryption

Encryption is techniques whereby the data is transformed into information that can only be unintelligible decipher its rightful recipient (Pavlou, 2003). Protection integrity and confidentiality are achieved with this method are fundamental to EC, and that partners and customers of an enterprise share information or make purchases on a website if they feel that do not pose any danger. The solution for who want to provide these guarantees is to adopt trust infrastructure based on technology encryption.

Secure Socket Layer (SSL) Certificates

SSL technology, the global standard security Internet, encrypts and protects the information transmitted in the network via the https protocol, whose use is greatly extended. With this system (compatible with all major operating systems, browsers and Web applications as well as server hardware), data in transit is protected, otherwise, data could be intercepted and manipulated. An SSL certificate is an electronic file that allows the encrypted communication and clearly establishes the identity an individual or website (Lee, et. al. 2006).

Certificates with Extended Authentication Validation (EV)

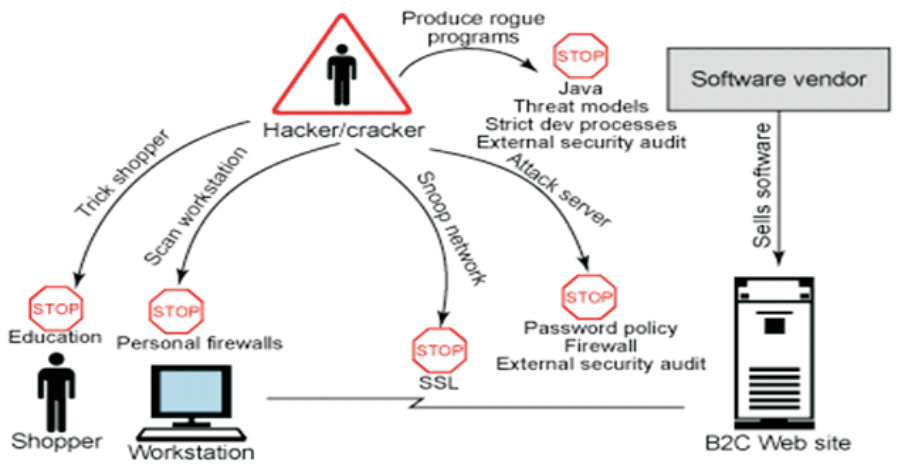
Certificates with Extended Validation (EV) offersan Authentication higher than any other SSL certificate, more structured and tight controls.The contact person of the company must provide a signed document confirming the request. In case that the certifying authority could not confirm identifying information of the company in a database official data, you may request documentation commercial registration (Laudon and Traver, 2009, pp. 84).

Trustmark

To earn the trust of their customers and enhance their income, E-Commerce companies not only need to protect data transmitted on their sites web, but also show how they are being done. The seals of certification authorities (also called trust marks) are a way to show customers that they are protected and gain their trust by a visible sign of security. The VeriSign seal is the most widely used security badge and recognized worldwide. Clicking on it shows the name of the certificate owner, the period of validity of this, information on services including security and other data on the validation process that follows VeriSign before issuing the certificate.

4.ATTACKS AND THEIR DEFENSEMECHANISM

Despite the existence of hackers and crackers, e-Commerce remains a safe and secure activity. The resources available to large companies involved in e-Commerce are enormous. These companies will pursue every legal route to protect their customers. Figure shows a high-level illustration of defenses available against attacks.



At the end of the day, your system is only as secure as the people who use it. Education is the best way to ensure that your customers take appropriate precautions:

Install personal firewalls for the client machines.
Store confidential information in encrypted form.
Encrypt the stream using the Secure Socket Layer (SSL) protocol to protect information flowing between the client and the e-Commerce Web site.
Use appropriate password policies, firewalls, and routine external security audits.
Use threat model analysis, strict development policies, and external security audits to protect ISV software running the Web site.

SECURITY POLICIES AND STANDARDS

There are many established policies and standards for avoiding security issues. However, they are not required by law. Security best practices remain largely an art rather than a science, but there are some good guidelines and standards that all of e-Commerce software should follow.

Some basic rules include:

· Make sure of the website address. The website address is reflected in the address bar of your Internet browser. This check is recommended every time you access any website from a link given elsewhere. Always type the website address into the address bar or bookmark the websites that you use frequently.
· Never enter, confirm or update your account-related details in a pop-up window.

If you tend to use your credit cards for online shopping frequently, make sure that you sign up for the Verified by VISA and/or MasterCard Secure Code program(s).
Confirm that the website is a secure one. Make sure any Internet purchase activity you engage in is secured by encryption to protect your account information. Look for "secure transaction" symbols.
Shop only from reputed websites.
Beware of online offers that require you to provide your account details “for verification”.
Make sure your computer has a firewall installed and keep your browser software and anti-virus program updated
When you're done using a public computer, log off and shut down the browser program completely. This will prevent the next user from being able to hit the back button and discover your personal information.
Never respond to suspicious emails or click on links inside questionable messages. If an offer sounds too good to be true, it probably is. Get more information about email safety and learn how to spot fraudulent messages and websites.
Seek out safety symbols, including the padlock icon in your browser's status bar and “s” after “http” in the URL, or the words "Secure Sockets Layer (SSL)." These are your assurance that only you and the merchant can view your payment data.
Craft strong passwords with more than six characters and try to mix numbers and letters. Use a new password for each siteand keep it to yourself.
Never store a user's password in plain text or encrypted text on the system.

Watch for spyware:

Spyware is software that consumers unknowingly install on their computers. Once installed, it can be used to track online usage and personal information. You can do a number of things to keep spyware off your system.
Keep your computer current with the latest operating system, install updates and patches, and select the highest security setting possible on your browser to prevent unauthorized downloads.
Download only from sites you know and trust; some free applications may be fronts for getting spyware onto your system. Take time to read the fine print too. If you can't understand the licensing agreement, don't download the software.
Enable a pop-up blocker on your browser. Don't click any links inside a pop-up window, as they can install unwanted software. Instead, get rid of pop-ups by clicking the “X” icon on the title bar.
Buy anti-virus and anti-spyware software from a reputable vendor, keep it up-to-date, and use it to do regular scans of your computer.

3.PRIVACY AND DATA RIGHTS IN INDIA

The concepts of privacy rights and data rights have acquired great significance in the contemporary world where the boundaries of all nations have vanished due to the inevitable and essential presence of Internet. Thus, the solution lies in techno-legal solutions of the privacy and data violations rather than a pure legal action or avoidance of technology.Provisions of the IT Act, 2000 reflect India's concern for protection of privacy rights of its citizens. The proprietary rights, in the form of data property, are available under both the Trade Related Aspects of Intellectual Property Rights (TRIPS) Agreement and the Indian Copyright Act, 1957.The TRIPS Agreement recognizes the protection of data property in Article 10(2) of the TRIPS Agreement. Article 10(2) of the Agreement provides that compilation of data or other material, whether in machine-readable or other form, which by reason of the selection or arrangement of their contents constitute intellectual creations shall be protected as such.The TRIPS Agreement, the Copyright Act, 1957 and the IT Act, 2000 provide sufficient safeguards for preventing violations of electronic and paper based databases of MNCs. Thus, we must not feel shy and hesitant to use the existing provisions to enforce the rights of data protection, which are sufficient from all aspects.

4.CONCLUSION AND RECOMMENDATION

The e-commerce industry is slowly addressing security issues on their internal networks. There are guidelines for securing systems and networks available for the ecommerce systems personnel to read and implement. Educating the consumer on security issues is still in the infancy stage but will prove to be the most critical element of the e-commerce security architecture. The research reveals the significance of trust and security problems associated with the adoption of e-commerce. The major finding of this research confirmed that security and trust factor is the crucial issues affecting the development of e-commerce. E-

commerce has a significant impact on customer loyalty and acts as an intermediary for each part of the quality of the user interface and data quality, and customer satisfaction. However, low consumer confidence in e-commerce affects the purchasing decisions.The user interface and the quality of information on e-commerce sites were observed indirectly affect consumer loyalty. The enforcement aspect of data protection is also adequately covered under the IT Act, 2000. For instance, the IT Act, 2000 provides for both civil and criminal liabilities in the form of contraventions and offenses. Thus, the present framework of the data protection regime is sufficient to accommodate the mandates of both the Constitution of India and the TRIPS Agreement. In addition, the risk level of security and confidentiality of customer perceived e-commerce are important matters for our customers' confidence.The high confidence level of users can change the current scenario of e-commerce. The research shows that companies can overcome the issue of security and confidentiality of the data by adopting sophisticated security measures such as Encryption, Secure Socket Layer (SSL) Certificates, Certificates with Extended Authentication Validation (EV) and Trustmark.

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