SIT 316: E-Commerce

Brief history of E-commerce

History of ecommerce dates back to the invention of the very old notion of "sell and buy", electricity, cables, computers, modems, and the Internet. Ecommerce became possible in 1991 when the Internet was opened to commercial use. Since that date thousands of businesses have taken up residence at web sites.

At first, the term ecommerce meant the process of execution of commercial transactions electronically with the help of the leading technologies such as Electronic Data Interchange (EDI) and Electronic Funds Transfer (EFT) which gave an opportunity for users to exchange business information and do electronic transactions. The ability to use these technologies appeared in the late 1970s and allowed business companies and organizations to send commercial documentation electronically.

Although the Internet began to advance in popularity among the general public in 1994, it took approximately four years to develop the security protocols (for example, HTTP) and DSL which allowed rapid access and a persistent connection to the Internet. In 2000 a great number of business companies in the United States and Western Europe represented their services in the World Wide Web. At this time the meaning of the word ecommerce was changed. People began to define the term ecommerce as the process of purchasing of available goods and services over the Internet using secure connections and electronic payment services. Although the dot-com collapse in 2000 led to unfortunate results and many of ecommerce companies disappeared, the "brick and mortar" retailers recognized the advantages of electronic commerce and began to add such capabilities to their web sites.

Introduction

Electronic commerce

Electronic commerce, commonly written as E-Commerce, is the trading in products or services using computer networks, such as the Internet. Electronic commerce draws on technologies such as mobile commerce, electronic funds transfer, supply chain management, Internet marketing, online transaction processing, electronic data interchange (EDI), inventory management systems,

and automated data collection systems. Modern electronic commerce typically uses the World Wide Web for at least one part of the transaction's life cycle, although it may also use other technologies such as E-Mail.

E-Business

Electronic business, or E-Business, is the application of information and communication technologies (ICT) in support of all the activities of business. Commerce constitutes the exchange of products and services between businesses, groups and individuals and can be seen as one of the essential activities of any business. Electronic commerce focuses on the use of ICT to enable the external activities and relationships of the business with individuals, groups and other businesses or E-Business refers to business with help of Internet i.e. doing business with the help of Internet network.

Digital economy

"Digital economy refers to an economy that is (substantially) based on computing technologies. The digital economy is also sometimes called the Internet Economy, the New Economy, or Web Economy. Increasingly, the "digital economy" is intertwined with the traditional economy making a clear delineation harder.

Bricks and clicks

Also known as clicks and bricks or click and mortar is a term for a business model by which a company integrates both offline (bricks) and online (clicks) presences, sometimes with the third extra flips (physical catalogs). Additionally, many will also offer telephone ordering and mobile phone apps, or at least provide telephone sales support. The advent of mobile web has made businesses operating bricks and clicks businesses especially popular, because it means customers can do tasks like shopping when they have spare time and do not have to be at a computer. Many of these users prefer to use mobile shopping sites

Driving Forces Behind the E-commerce Evolution

The evolution of e-commerce since the turn of the century has dramatically impacted the daily lives of consumers and altered the standard operating structure of many businesses. This evolution is mainly driven by forces in four categories:

1. Demographics

In developing countries such as China, urbanization has taken place in many areas, with people demanding better living conditions and driving higher consumer spending. Another major marketplace trend is that of millennials becoming more dependent on mobile devices and the Internet to fulfill their entertainment and shopping needs.

2. Consumption

Changing consumption habits are a huge factor in the rise of e-commerce. People put an increasingly high value on convenience, customization/personalization, and simplification in their online shopping experience. They discover new products, sources of information, and different ways to access products and services to make their lives easier. One trend is increasingly efficient delivery services, such as Amazon offering two-day free delivery of orders, including weekend deliveries (offered with its Prime membership) – a service that has recently been copied by Walmart.

3. Structural Shifts

There are structural shifts in the e-commerce industry as a result of changing consumption habits. More and more companies are focusing on promoting and selling products or services directly to their target consumers on e-commerce platforms, through carefully tailored individual marketing programs. Many consolidations have taken place among businesses in order to achieve economies of scale.

4. Technology

Portable devices such as mobile phones and tablets have become more widely used by consumers both individuals and business consumers – to perform various functions such as browsing and interacting on social media platforms and searching for new information. Technologies such as advanced customer analytics help e-commerce companies improve their business operations and better understand consumer behavior and preferences. Moreover, artificial intelligence (AI) and virtual reality (VR) are becoming a trend in e-commerce because they provide an interesting and – at the moment anyway – brand new experience for customers.

Key Terms in E-commerce

Site traffic: The number of visitors to a site

Conversion rate: The percentage of customers who place an order relative to the total number of site traffic

Bounce rate: The percentage of visitors who enter the site, but then leave ("bounce") rather than going on to view other pages

Order: A single checkout transaction, which may consist of multiple items

Churn: The annual percentage of customers who stop shopping at the site

Organic search: Traffic from search engines that is not paid for

Paid search: Traffic from search engines that is paid for

Affiliates: Paid traffic from other sites

E-COMMERCE WITH THE "5-C-MODEL"

Another approach to define and explain, what E-Commerce is, comes from 5-C-model. It defines E-Commerce by five activity domains whose denominations start with the letter "C":

1. **Commerce**

In the electronic marketplaces there is a matching of customers and suppliers, an establishing of the transaction terms, and the facilitation of exchange transactions. With the broad move to the Web-enabled enterprise systems with relatively uniform capabilities as compared to the legacy systems, a universal supply-chain linkage has been created.

2. **Collaboration**

The Web is a vast nexus, or network, of relationships among firms and individuals. More or fewer formal collaborations are created or emerge on the Web to bring together individuals engaged in knowledge work in a manner that limits the constraints of space, time, national boundaries, and organizational affiliation.

3. **Communication**

As an interactive medium, the Web has given rise to a multiplicity of media products. This universal medium has become a forum for self-expression (as in blogs) and self-presentation

The rapidly growing M-Commerce (see below) enables connectivity in context, with location-sensitive products and advertising. In the communications domain, the Web also serves as a distribution channel for digital products.

4. **Connection**

Common software development platforms, many of them in the open-source domain, enable a wide spectrum of firms to avail themselves of the benefits of the already developed software, which is, moreover, compatible with that of their trading and collaborating partners. The Internet, as a

network of networks that is easy to join and out of which it is relatively easy to carve out virtual private networks, is the universal telecommunications network, now widely expanding in the mobile domain.

5. **Computation**

Internet infrastructure enables large-scale sharing of computational and storage resources, thus leading to the implementation of the decades-old idea of utility computing

M-Commerce (Mobile Commerce)

M-Commerce is commonly understood as the usage of mobile devices for business purposes, especially mobile phones and PDA's (Personal Digital Assistants).

Main features of M-Commerce are:

• Location independence of (mobile) customers,
• High availability of services through well-established mobile phone networks,
• Increasing computing power of mobile devices,
• Interactivity of mobile devices (voice and data transfer),
• Security (when using mobile phone networks),
• Localization of customers through cell structure,
• Accessibility of customers,
• Potential of personalized services/offers.

E-Procurement (Electronic Procurement)

E-Procurement (is the automation of an organization's procurement processes using Web-based applications. It enables widely dispersed customers and suppliers to interact and execute purchase transactions. Each step in the procurement process is captured electronically, and all transaction data is routed automatically, reducing time and cost of procurement. Properly deployed, E-Procurement can deliver tremendous value to enterprises in different ways.

E-Government (Electronic Government)

E-Government consists of the digital interactions between citizens and their government (C2G), between governments and government agencies (G2G), between government and citizens (G2C), between government and employees (G2E), and between government and businesses/commerce (G2B).This digital interaction includes all levels of government (city, state/province, national, and international), governance, information and communication technology (ICT), and business process re-engineering (BPR)."

Role of Internet in E-commerce

In the early years, E-Commerce was considered to be an aid to the business. In the meantime, it has become more or less a business. The purchase of goods and services over the World Wide Web, usually with secure connections with E-Shopping carts and with electronic payment services such as credit card payment authorizations has become an obvious activity. The emergence of E-Commerce also significantly lowered barriers to entry in the selling of many types of goods; many small home-based proprietors are able to use the Internet to sell goods.

LECTURE 2

Online shop

An online shop is a website, where you can buy products or services, e.g. books or office supplies. Traditional and similar business models are direct mail selling (no shop facility, offering of goods via a printed catalogue, ordering by letters or telephone calls) and factory outlets (producer has own shop facility, does not sell his products via merchants).Traditional and similar business models are direct mail selling (no shop facility, offering of goods via a printed catalogue, ordering by letters or telephone calls) and factory outlets (producer has own shop facility, does not sell his products via merchants

Content provider

Content providers offer content, a completely digital good, e.g. information, news, documents, music. A specific variant of a content provider is the information broker, who is a trader of information. Again, the following question has to be put: Who pays? The one, who wants to have access to an information? The one, who wants to provide an information? Traditional business models in this area are newspaper publishers, magazine publishers, radio and television broadcasting services or publishing companies.

Portal

A portal is a website, which provides a set of services to the user so that he/she sometimes thinks that he/she is using a single but very complex software system. Portals are often used in big organizations to control the access of employees to the different ICT systems; each employee gets a specific menu of “his”/ “her” applications. Also, content providers use portals, though in the narrow sense that they only deliver content and no application systems.

Online marketplace/electronic mall

An online marketplace is a website, where suppliers and potential customers can come together like on a real marketplace in a small town. An E-Mall is a set of online shops, which can be found on one website.

Examples of traditional and similar business models are shopping centers, omnibus orders (One person is customer of the shop and buys for a group of people), marketplaces and buying associations.

Ultimate goal of search engine optimization is to boost your revenue by driving traffic to your website. However, there are other important objectives:

- To establish you as an expert in your field. Visibility in search engines creates an implied endorsement effect where searchers associate quality, relevance and trustworthiness with sites that rank highly for their queries.
- To enhance product awareness. It is better to have an image or video displayed as opposed to just text since it will attract more attention.
- To increase sales leads. The goal is to drive the right traffic to your site by encouraging people to provide qualified contact information for future relationship building.
- To reduce cost per order. Free search engine traffic will help you reduce the cost of advertising compared to other media channels.
- To encourage repeat visitors. Optimized pages help customers find additional products or services more easily and quickly after they have purchased from you, thus improving customer support and service.
- To qualify visitors. Search can help you understand the stage your buyer is at—just beginning or further along.

Advantages and Disadvantages of E-Commerce

E-Commerce has a lot of advantages. But as we know it from every area of our life, there is “no free lunch”. Of course, E-Commerce has some disadvantages

Advantages for customer

- Flexible shopping hours (7·24h)
- No waiting queues (if net is available and software appropriately designed)
- Shopping at home (we don’t have to leave our apartment, refuel our car or buy a subway ticket, look for a parking place, etc.)

- Individual needs can be covered (if customization is offered)
- Global offers, more competition, pressure on prices

Advantages for provider

- Better customer service can be offered
- Fast communication with customer
- New customer potential through global visibility
- No (traditional) intermediaries, who take away margins

Disadvantages for customer

- Security risks: Data theft (e.g. stealing account or credit card numbers) Identity theft (acting under our name or user identity)
- Abuse (e.g. third person orders goods with our identity, gets them delivered and we have to pay for it)
- Crime: Bogus firm (firm does not really exist)
- Fraud (e.g. order is confirmed, invoice has to be paid, but goods are never delivered)
- Uncertain legal status (if something goes wrong, can we accuse the provider?)

Disadvantages for provider

- Higher logistics cost (goods have to be sent to the customer's location)
- Anonymity of customers (how to make targeted advertisements?)

Steps in developing e-commerce system

The steps in the analysis, design and development of an e-

commerce system:

1. Develop description of existing business model
2. Develop e-business model
3. Develop Requirements Statement
4. Choice of System Architecture and Implementation Platform(s)
5. Carry out design to develop Software Structure Model

6. Develop detailed design
7. Programming and customizing the System

Problems Relating to Implementations of E-Commerce

Technical and economic challenges

1. Technical challenges

ICT systems have to work properly not only within the boundaries of the own organization but also in combination with ICT systems of other organizations. Interfaces between the involved systems have to be defined and documented properly.

- How heterogeneous are the involved ICT systems allowed to be?
- Is our IT infrastructure fit for E-Commerce?
- How do we have to change or extend our application systems for E-Commerce?
- In the digital business ICT systems are mission critical assets. How do we have to protect an ICT system so that it is not possible to destroy it, damage it or manipulate it?
- Are our ICT systems secure?
- Are unauthorized persons able to get access to our systems?
- Are payment procedures secure enough?
- Can we protect the personal data of involved people, especially customer data?
- Finally, we have to realize, that E-Commerce depends on people. Are the people of our IT organization qualified enough?
- Can we provide the necessary and significantly high technical support?

2. Economic challenges

E-Commerce is not only a matter of technology. It is primarily, because it is commerce, a matter of management and organization. The following questions have to be answered:

- Are our business processes standardized enough – at least harmonized among the participants?
- Who is allowed to participate? Are all participants trustworthy?
- Who makes the decision which person or organization is allowed to participate?
- How much E-Commerce do we need to keep competitive?

- How do we have to change our business model?
- What is going to happen after opening a new (electronic) sales channel?
- Will traditional sales channels suffer from it?
- How can we measure the success of our E-Commerce activities? Will costs be compensated through revenues?
- Will we make profit?
- How do we have to develop our relationship with customers, suppliers and other business partners to be able to realize the advantages of E-Commerce for our organization and avoid the disadvantages?
- How do we have to develop and change our business relationships?
- How do we have to redesign our business processes? How do the roles of our employees change? Are our employees qualified for these new roles?

LECTURE THREE

E-Commerce business models

E-commerce models are either an extension or revision of traditional business models, such as advertising model, or a new type of business model that is suitable for the Web implementation, such as info-mediary. Merchant, brokerage, advertising,

mixed, info-mediary, subscription are the most popular e-commerce models:

1. Merchant model:

This model basically transfers the old retail model to the e-commerce world by using the Internet. There are different types of merchant models. The most common type of merchant model is similar to a traditional business model that sells goods and services over the Web. Amazon.com is a good example of this type. An e-business similar to Amazon.com utilizes the services and technologies offered by the Web to sell products and services directly to the consumers. By offering good customer service and reasonable prices, these companies establish a

brand on the Web. The merchant model is also used by many traditional businesses to sell goods and services over the Internet. Dell, Cisco Systems, and Compaq are popular examples. These companies eliminate the middleman by generating a portion of their total sale over the Web and by accessing difficult-to-reach customers. An example that uses this model is Amazon.com Corporation

2. **Brokerage model:**

The e-business brings the sellers and buyers together on the Web and collects a commission on the transactions by using this model. The best example of this type is an online auction site such as eBay which can generate additional revenue by selling
banner advertisement on their sites.

3. Advertising model:

This model is an extension of traditional advertising media, such as television and radio. Search engines and directories such as Google and Yahoo provide contents (similar to radio and TV) and allow the users to access this content for free. By creating significant traffic, these e-businesses are able to charge advertisers for putting banner ads or leasing spots on their sites.

Mixed model: This model generates revenue both from advertising and subscriptions. Internet service providers (ISPs) such as America On-line (AOL), and Super Online generate revenue from advertising and their customers' subscription fees for Internet access.

Info-mediary model: E-businesses that use this model collect information on consumers and businesses and then sell this information to interested parties for marketing purposes. For instance, bizrate.com collect information related to the performance of other sites and sells this information to advertisers. Netzero.com provides free Internet access; in behavior of customers. This

information is later sold to advertisers for direct marketing. eMachines.com offers free PCs to its customers for the same purpose.

Subscription model: An e-business might sell digital products to its customers, by using this model. The Wall Street Journal and Consumer Reports are two examples. Sreeet.com, AjansPress.com is another example of this model that sells business news and analysis based on subscription.

Major Types of E-Commerce

1. Business-To-Consumer E-Commerce (B2C)

In B2C e-commerce, businesses sell directly a diverse group of products and services to customers In these cases, e-commerce supplements the traditional commerce by offering products and services through electronic channels. Some of the advantages of these e-commerce sites and companies include availability of physical space (customers can physically visit the store), availability of returns (customers can return a purchased item to the physical store), and availability of customer service in these physical stores.

Business-to-Business E-Commerce

Business-to-Business e-commerce holds electronic transactions among and between businesses. The Internet and reliance of all businesses upon other companies for supplies, utilities, and services has enhanced the popularity of B2B e-commerce and made B2B the fastest growing segment within the e-commerce environment. In recent years extranets (more than one intranet) have been effectively used for B2B operations. B2B e-commerce creates dynamic interaction among the business partners.

Advantages of B2B model

A B2B e-commerce lowers production cost by eliminating many labor intensive

tasks.

- More timely information is achieved by the formation of a direct online connection in the supply chain.
- Accuracy is increased because fewer manual steps are involved.
- Cycle time improves because flow of information and products between business partners is made simpler. Since, raw materials are received faster and information related to customer demands is more quickly transferred.
- Naturally this close communication between the business partners improves overall communication.
- Increased communications results in improved inventory management and control.

2. Consumer-To-Consumer Ecommerce

Using C2C e-commerce, consumers sell directly to other consumers using the Internet and web technologies. Individuals sell a wide variety of services/products on the Web or through auction sites such as eBay.com, and gittigidiyor.com through classified ads or by advertising. Consumers are also able to advertise their products and services in organizational intranets and sell them to other employees

3. Consumer-To-Business E-Commerce

Consumer-to-business (C2B) e-commerce that involves individuals selling to businesses may include a service/product that a consumer is willing to sell. Individuals offer certain prices for specific products/services. Companies such as pazaryerim.com and mobshop.com are examples of C2B.

4. Non-Business and Government E-Commerce

Political, social and not-for-profit organizations also use e-commerce applications for various activities, such as fundraising and political forums. These organizations also use e-commerce for customer service and for purchasing to decrease cost and get better speed. Universities are using e-commerce applications extensively for delivering their educational products and services on a global scale. The e-commerce applications in government and many nonbusiness organizations are on the rise.

5. Intra-Business E-Commerce

The organization intranets provide the right platform for intra-business ecommerce. Intra-business e-commerce involves all the e-commerce-related activities that take place within the organization. These activities may include exchange of information, goods, or services among the employees of an organization. This may include selling organization products/services to the employees, offering human resources services, conducting training programs, and much more.

LECTURE FOUR

Internet and World Wide Web Applications.

The **World Wide Web** (**WWW**), commonly known as **the Web**, is an information system where documents and other web resources are identified by Uniform Resource Locators (URLs, such as *https://www.example.com/*), which may be interlinked by hypertext, and are accessible over the Internet. The resources of the WWW may be accessed by users by a software application called a *web browser.*

website

A *website* is a collection of related web resources including web pages, multimedia content, typically identified with a common domain name, and published on at least one web server. Notable examples are wikipedia.org, google.com, and amazon.com.

Web browser

A *web browser* (commonly referred to as a *browser*) is a software user agent for accessing information on the World Wide Web. To connect to a website's server and display its pages, a user needs to have a web browser program. This is the program that the user runs to download, format and display a web page on the user's computer.

Web server

A *Web server* is server software, or hardware dedicated to running said software, that can satisfy World Wide Web client requests. A web server can, in general, contain one or more websites. A web server processes incoming network requests over HTTP and several other related protocols

HTTP (web) cookie

An *HTTP cookie* (also called *web cookie*, *Internet cookie*, *browser cookie*, or simply *cookie*) is a small piece of data sent from a website and stored on the user's computer by the user's web browser while the user is browsing. Cookies were designed to be a reliable mechanism for websites to remember stateful information (such as items added in the shopping cart in an online store) or to record the user's browsing activity (including clicking particular buttons, logging in, or recording which pages were visited in the past). They can also be used to remember arbitrary pieces of information that the user previously entered into form fields such as names, addresses, passwords, and credit card numbers.

Search engine

A web search engine or Internet search engine is a software system that is designed to carry out web search (Internet search), which means to search the World Wide Web in a systematic way for particular information specified in a web search query.

Web caching

A web cache is a server computer located either on the public Internet, or within an enterprise that stores recently accessed web pages to improve response time for users when the same content is requested within a certain time after the original request. Most web browsers also implement a browser cache by writing recently obtained data to a local data storage device

Security

Network security consists of the policies and practices adopted to prevent and monitor unauthorized access, misuse, modification, or denial of a computer network and network-accessible resources. Network security involves the authorization of access to data in a network, which is controlled by the network administrator.

Security comes in all shapes and sizes, ranging from problems with software on a computer, to the integrity of messages and emails being sent on the Internet

Computer data often travels from one computer to another, leaving the safety of its protected physical surroundings. Once the data is out of hand, people with bad intention could modify or forge your data, either for amusement or for their own benefit. Cryptography can reformat and transform our data, making it safer on its trip between computers. The technology is based on the essentials of secret codes, augmented by modern mathematics that protects our data in powerful ways.

• **Computer Security** - generic name for the collection of tools designed to protect data and to thwart hackers

• **Network Security** - measures to protect data during their transmission

• **Internet Security** - measures to protect data during their transmission over a collection of interconnected networks

What is eCommerce Security?

E-Commerce security refers to the principles which guide safe electronic transactions, allowing the buying and selling of goods and services through the Internet, but with protocols in place to provide safety for those involved. Successful business online depends on the customers' trust that a company has eCommerce security basics in place.

Security is an essential part of any transaction that takes place over the internet. Customers will lose his/her faith in e-business if its security is compromised. Following are the essential requirements for safe e-payments/transactions −

Confidentiality: Information should not be accessible to an unauthorized person. It should not be intercepted during the transmission.

Integrity :Information should not be altered during its transmission over the network.

Availability: Information should be available wherever and whenever required within a time limit specified.

Authenticity : There should be a mechanism to authenticate a user before giving him/her an access to the required information.

Non-Reputability: It is the protection against the denial of order or denial of payment. Once a sender sends a message, the sender should not be able to deny sending the message. Similarly, the recipient of message should not be able to deny the receipt.

Encryption: Information should be encrypted and decrypted only by an authorized user.

Auditability: Data should be recorded in such a way that it can be audited for integrity requirements.

E-commerce Security Risks Currently Faced by Online Retailers

Security risks associated with e-commerce can be as a result of human error, an accident or unauthorized access to systems. Online retailers are most likely to face credit card fraud or data errors. Their online stores are also likely to face phishing attacks, distributed denial of service (DDoS) attacks and man-in-the-middle attacks as explained below.

Credit Card Fraud

Credit card fraud is the most common security threat that online retailers face. It occurs when a hacker gains unauthorized access to customers' personal and payment information. To access this data, the hacker may penetrate the database of an e-commerce site using malicious software programs. At times, a hacker's intention when stealing customers' data is to sell it on black markets.

Distributed Denial of Service (DDoS) Attacks

This type of security threat aims at taking down an online retail store by sending overwhelming requests to its servers. The attacks originate from thousands of untraceable IP addresses. When this type of threat hits the servers, they slow down or completely shut down. An e-commerce site can also go offline temporarily when a DDoS attack affects its servers.

Man-in-the-middle Attacks

As hackers are becoming smarter with technology, they are devising ways of listening to the communications made by users of an e-commerce website. Through an approach known as a man-in-the-middle attack, these hackers maliciously trick users into connecting to a public wireless network. They gain access to people's devices once they are on public wireless networks. Hackers get to see a people's browsing history, credit card numbers, passwords and usernames if the websites they are visiting lack strong encryptions.

Bad Bots

Bots, either good or bad, are all over the worldwide web. Search engines such as Bing and Google use good bots for indexing search results. On the other hand, there are hackers that use malicious bots for gathering data such as product data, inventories and pricing data. These bots are also capable of accessing the database of an e-commerce site and listing the logins of user accounts.

Malware

In information technology, malware simply refers to malicious software programs. Attackers usually inject web pages or files with these malicious programs to help them in gaining access to online retails stores. Through means such as SQL injection, they can easily insert the malware into a website's database allowing it to compromise the data stored in the database.

Phishing Scams

E-commerce sites are also prone to phishing scams sent by known or unknown people in form of emails. These scams focus on targeting important user data like credit card numbers and login credentials. An attacker may use a scheme known as social engineering to lure online shoppers to give out their personal information. When sent in an email to an online shopper, a phishing scam may contain a link to a malicious site that resembles an e-commerce site.

Measures to ensure Security

Major security measures are following:

- **Encryption** : It is a very effective and practical way to safeguard the data being transmitted over the network. Sender of the information encrypts the data using a secret code and only the specified receiver can decrypt the data using the same or a different secret code.

- **Digital Signature**: Digital signature ensures the authenticity of the information. A digital signature is an e-signature authenticated through encryption and password.
- **Security Certificates**: Security certificate is a unique digital id used to verify the identity of an individual website or user.

LECTURE FIVE

Security protocol

In the today most e-business, many protocols are widely used such as Secure Socket Layers (SSL) and Secure Electronic Transactions (SET). So, we would like to explore about these protocols. We will discuss the various methods that are used in the e-commerce such as Digital certificates, Digital signatures, Secure Socket Layer (SSL), Secure Electronic Transactions (SET).

1. Digital Signatures and Certificates

Digital signatures meet the need for authentication and integrity. A plain text message is run through a hash function and so given a value: the message digest. This digest, the hash function and the plain text encrypted with the recipient's public key is sent to the recipient. The recipient decodes the message with their private key, and runs the message through the supplied hash function to that the message digest value remains unchanged (message has not been tampered with). Very often, the message is also time stamped by a third-party agency, which provides non-repudiation. In addition, digital certificate is also used for security purposes. The most common use of a digital certificate is to verify that a user sending a message is who he or she claims to be, and to provide the receiver with the means to encode a reply. An individual wishing to send an encrypted message applies for a digital certificate from a Certificate Authority (CA). The CA issues an encrypted digital certificate containing the applicant's public key and a variety of other identification information. The CA makes its own public key readily available through print publicity or perhaps on the Internet. The recipient of an encrypted message uses the CA's public key to decode the digital certificate attached to the message, verifies it as issued by the CA and then obtains the sender's public key and identification information held within the certificate. With this information, the recipient can send an encrypted reply. The most widely used standard for digital certificates is X.509.

2. Secure Socket Layers (SSL)

The Secure Socket Layer (SSL) was developed by Netscape to provide secure communication between Web servers and clients. Information sent over the Internet commonly uses the set of rules called TCP/IP (Transmission Control Protocol / Internet Protocol). The information is broken into packets, numbered sequentially, and an error control attached. Individual packets are sent by different routes. TCP/IP reassembles them in order and resubmits any packet showing errors. SSL uses PKI and digital certificates to ensure privacy and authentication. The procedure is something like this: the client sends a message to the server, which replies with a digital certificate. Using PKI, server and client negotiate to create session keys, which are symmetrical secret keys specially created for that particular transmission. Once the session keys are agreed, communication continues with these session keys and the digital certificates.

3. Secure Electronic Transactions (SET)

The SET Secure Electronic Transaction TM protocol is an open industry standard developed for the secure transmission of payment information over the Internet and other electronic networks. SET uses a system of locks and keys along with certified account IDs for both consumers and merchants. Then, through a unique process of "encrypting “or scrambling the information exchanged between the shopper and the online store, SET ensures a payment process that is convenient, private and most of all secure.

Advantages of SET are:

• Establishes industry standards to keep your order and payment information confidential.

• Increases integrity for all transmitted data through encryption.

• Provides authentication that a cardholder is a legitimate user of a branded payment card account.

• Provides authentication that a merchant can accept branded payment card transactions through its relationship with an acquiring financial institution.

Payment systems

E-commerce sites use electronic payment, where electronic payment refers to paperless monetary transactions. Electronic payment has revolutionized the business processing by reducing the paperwork, transaction costs, and labor cost. Being user friendly and less time-consuming than manual processing, it helps business organization to expand its market reach/expansion. Listed below are some of the modes of electronic payments −

Credit Card, Debit Card, Smart Card, E-Money, Electronic Fund Transfer (EFT)

Credit Card

Payment using credit card is one of most common mode of electronic payment. Credit card is small plastic card with a unique number attached with an account. It has also a magnetic strip embedded in it which is used to read credit card via card readers. When a customer purchases a product via credit card, credit card issuer bank pays on behalf of the customer and customer has a certain time period after which he/she can pay the credit card bill. It is usually credit card monthly payment cycle. Following are the actors in the credit card system.

The card holder: Customer

The merchant: seller of product who can accept credit card payments.

The card issuer bank: card holder's bank

The acquirer bank: the merchant's bank

The card brand: for example, visa or Mastercard.

Debit Card

Debit card, like credit card, is a small plastic card with a unique number mapped with the bank account number. It is required to have a bank account before getting a debit card from the bank. The major difference between a debit card and a credit card is that in case of payment through debit card, the amount gets deducted from the card's bank account immediately and there should

be sufficient balance in the bank account for the transaction to get completed; whereas in case of a credit card transaction, there is no such compulsion.

Debit cards free the customer to carry cash and cheques. Even merchants accept a debit card readily. Having a restriction on the amount that can be withdrawn in a day using a debit card helps the customer to keep a check on his/her spending.

Smart Card

Smart card is again similar to a credit card or a debit card in appearance, but it has a small microprocessor chip embedded in it. It has the capacity to store a customer's work-related and/or personal information. Smart cards are also used to store money and the amount gets deducted after every transaction.

Smart cards can only be accessed using a PIN that every customer is assigned with. Smart cards are secure, as they store information in encrypted format and are less expensive/provides faster processing. Mondex and Visa Cash cards are examples of smart cards.

E-Money

E-Money transactions refer to situation where payment is done over the network and the amount gets transferred from one financial body to another financial body without any involvement of a middleman. E-money transactions are faster, convenient, and saves a lot of time.

Online payments done via credit cards, debit cards, or smart cards are examples of e-money transactions. Another popular example is e-cash. In case of e-cash, both customer and merchant have to sign up with the bank or company issuing e-cash.

Electronic Fund Transfer

It is a very popular electronic payment method to transfer money from one bank account to another bank account. Accounts can be in the same bank or different banks. Fund transfer can be done using ATM (Automated Teller Machine) or using a computer.

Nowadays, internet-based EFT is getting popular. In this case, a customer uses the website provided by the bank, logs in to the bank's website and registers another bank account. He/she then places a request to transfer certain amount to that account. Customer's bank transfers the amount

to other account if it is in the same bank, otherwise the transfer request is forwarded to an ACH (Automated Clearing House) to transfer the amount to other account and the amount is deducted from the customer's account. Once the amount is transferred to other account, the customer is notified of the fund transfer by the bank.

E-banking

Online banking, also known as internet banking, is an electronic payment system that enables customers of a bank or other financial institution to conduct a range of financial transactions through the financial institution's website. The online banking system will typically connect to or be part of the core banking system operated by a bank and is in contrast to branch banking which was the traditional way customers accessed banking services. Some banks operate as a "direct bank" (or “virtual bank”), where they rely completely on internet banking. Internet banking software provides personal and corporate banking services offering features such as viewing account balances, obtaining statements, checking recent transaction and making payments.

The internal control and security requirements.

The support of internal electronic banking services may be selected optionally by financial organization but alternatively, organizations may outsource any aspect of their electronic banking systems to third parties. Firms that could host electronic banking-related services for financial organizations are:

- ISP (internet Service providers)
- A managed security service provider
- An internet banking software processor and a core banking vendor
- Other financial institution
- Credit sorting firm and a credit bureau
- A bill payment service provider

These elements work together in harmony to deliver a great achievement in electronic banking services and each element representing a considerable point of control.

Through a combination of both internal and external solutions, management has various options when shaping the overall system formation for the various elements of an e-banking system.

Nevertheless, putting simplicity into consideration, one or more technology service provider can host the e-banking application and various network components. The organization's ISP hosts the organization's internet banking server, firewall, website and all necessary security detection system.

There are some processes e-banking rely on in order to work as expected and some, if not all of the processes can be seen in operation anytime e-banking is in services and operation where each element represent a considerable control point. Some of these processes seen in a typical e-banking system include:

- Internal network server
- A core processing system
- Security management
- Network Administration
- Website design and hosting
- Firewall configuration and management
- E-business application (e.g., lending, bill/goods payment)

LECTURE SIX

Internet Protocols Supporting E-Commerce

A protocol is a collection of rules for formatting, ordering, and error checking data sent across a network. For example, protocols determine how the sending device indicates that it has finished sending a message and how the receiving device indicates that it has received (or not received) the message. A protocol also includes rules about what is allowed in a transmission and how it is formatted. Computers that communicate with each other must use the same protocol for data transmission.

Four key rules for message handling:

• Independent networks should not require any internal changes to be connected to the network.

• Packets that do not arrive at their destinations must be retransmitted from their source network.

• Router computers act as receive-and-forward devices; they do not retain information about the packets that they handle.

• No global control exists over the network.

1. **TCP/IP (Transmission Control Protocol/Internet Protocol)**.

TCP/IP describes the transportation of data in the Internet as a standard for heterogeneous networks.

IPv4 (Internet Protocol version 4) is the fourth version of the Internet Protocol (IP). It is one of the core protocols of standards-based internetworking methods in the Internet.

IPv4 is a connectionless protocol for use on packet-switched networks. No permanent physical link between participants of the network is necessary. It operates on a best effort delivery model, in that it does not guarantee delivery, nor does it assure proper sequencing or avoidance of duplicate delivery.

IPv6 (Internet Protocol version 6) is the most recent version of the Internet Protocol (IP), the communications protocol that provides an identification and location system for computers on networks and routes traffic across the Internet. IPv6 was developed by IETF to deal with the long-anticipated problem of IPv4 address exhaustion. IPv6 uses a 128-bit address, allowing 2128 addresses, or more than 7.9×1028 times as many as IPv4. The main advantage of IPv6 over IPv4 is its larger address space. The two protocols are not designed to be interoperable, complicating the transition from IPv4 to IPv6. However, several IPv6 transition mechanisms have been devised to permit communication between IPv4 and IPv6 hosts.

2. FTP (File Transfer Protocol)

FTP is a standard network protocol used to transfer computer files from one host to another host over a TCP-based network, such as the Internet. FTP is built on a client-server architecture and uses separate control and data connections between the client and the server.

3. SMTP (Simple Mail Transfer Protocol)

SMTP is an Internet standard for electronic mail transmission. First defined by RFC 821 in 1982, it was last updated in 2008 with the Extended SMTP additions by RFC 5321, which is the protocol in widespread use today. Although electronic mail servers and other mail transfer agents use SMTP to send and receive mail messages, user-level client mail applications typically use SMTP only for sending messages to a mail server for relaying.

WWW (World Wide Web)

WWW is an open-source information space where documents and other Web resources are identified by URLs (URL = Uniform Resource Locator), interlinked by hypertext links, and

can be accessed via the Internet. It has become known simply as “the Web”. WWW is the primary tool billions of people use to interact on the Internet.

Essential technologies: a system of globally unique identifiers for resources on the Web and elsewhere, the universal document identifier (UDI), later known as uniform resource locator (URL) and uniform resource identifier (URI), the publishing language Hypertext Markup Language (HTML), the Hypertext Transfer Protocol (HTTP).

HTML (Hypertext Markup Language)

HTML 5 is a markup language used for structuring and presenting content on the World Wide Web Its core aims are to improve the language with support for the latest multimedia while keeping it easily readable by humans and consistently understood by computers and devices (Web browsers, parsers, etc.)

XML (Extended Markup Language)

XML is a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable

XML database

An XML database is a data persistence (a data structure that always preserves the previous version of itself when it is modified) software system that allows data to be stored in XML format. These data can then be queried, exported and serialized into the desired format.

XML databases are usually associated with document-oriented databases.

Two categories of XML databases are available:

• **XML enabled data bases**: These may either map XML to traditional database structures (such as a relational database), accepting XML as input and rendering XML as output, or more recently support native XML types within the traditional database. This term implies that the database processes the XML itself (as opposed to relying on middleware).

• **Native XML data bases**: The internal model of such databases depends on XML and uses XML documents as the fundamental unit of storage, which are, however, not necessarily stored in the form of text files.

Middleware

Middleware consists of technologies building the link between hardware and application software. The boundaries between middleware and hardware as well as between middleware and application software are changing over time due to the technological development. Middleware

normally is a category of general and not application specific software. In general, there is a trend to replace hardware functionality by middleware thus allowing the usage of highly standardized hardware components which can be provided at low cost.

CORBA (Common Object Request Broker Architecture)

CORBA is a standard defined by the Object Management Group (OMG) designed to facilitate the communication of (software) systems that are deployed on diverse platforms. CORBA enables collaboration between systems on different operating systems, programming languages, and computing hardware. The CORBA specification dictates there shall be an ORB (Object Request Broker) through which an application would interact with other objects. Java Native Interface (JNI) is an alternative to CORBA. It is a programming framework that enables Java code running in a Java Virtual Machine (JVM) to call and be called by native applications (programs specific to a hardware and operating system platform) and libraries written in other languages such as C, C++ and assembly. However, there is a significant disadvantage: An application that relies on JNI loses the platform portability Java offers.

Database systems

In a business environment we often use a relational database system, which is optimally suited to store and process structured data as we find it in typical business transactions.

Typical examples for structured data are:

• Address data, Orders, Shipping documents, Invoices, Tax declarations.

Together with the growing usage of unstructured data (text documents, graphical information, multimedia data) new types of databases become relevant for business purposes: NoSQL databases (Not only SQL) and XML databases.

Directory services

We need directory services for the following purposes:

• Address lists,

• User management: A common usage of a directory service is to provide a “single sign on” where one password for a user is shared between many services, such as applying a company login code to Web pages (so that staff log in only once to company computers, and then are automatically logged into the company intranet),

• Authentication.

There are two standards widespread used:

LDAP (Lightweight Directory Access Protocol) is an open, vendor-neutral, industry standard application protocol for accessing and maintaining distributed directory information services over an Internet Protocol (IP) network. LDAP is documented in RFC 4510 and RFC 4511. It has become the de-facto-standard in industry for authentication, authorization as well as user and address management. LDAP is based on a subset of the standards contained within the X.500 standard. Because of this relationship, LDAP is sometimes called X.500-lite.

X.500 is a series of computer networking standards covering electronic directory services. These directory services were developed in order to support the requirements of X.400 electronic mail exchange and name lookup. However, X.500 is too complex to support on desktops and over the Internet, so LDAP was created to provide this service 'for the rest of us'.

LECTURE SEVEN

Webserver

A Webserver is a virtual computer (a piece of software), which helps to deliver Web content that can be accessed through the Internet. Well-known products are:

• Apache HTTP Server,

• Microsoft Internet Information Services (IIS).

WSDL (Web Services Description Language)

The actual version is WSDL 2.0 (2007). WSDL has been developed by W3C (World Wide Web Consortium).WSDL is an XML-based interface definition language that is used for describing the functionality offered by a Web service. WSDL describes services as collections of network endpoints, or ports. The abstract definitions of ports and messages are separated from their concrete use or instance, allowing the reuse of these definitions. WSDL is often used in combination with SOAP and an XML Schema to provide Web services over the Internet.

SOAP (Simple Object Access Protocol)

SOAP is a protocol specification for exchanging structured information in the implementation of Web services in computer networks. It uses XML Information Set for its message format, and relies on other application layer protocols, most notably HTTP or SMTP, for message negotiation and transmission.

LECTURE EIGHT

Creating an effective web presence

In the physical world, businesses have always created a presence by building stores, factories, warehouses, and office buildings. An organization's presence is the public image it conveys to its stakeholders. The stakeholders of a firm include its consumers, suppliers, employees, stockholders, neighbors, and the general public. Many companies tend not to worry much about the image they project until they grow to a significant size - until then, they are too focused on just surviving to spare the effort. On the web, presence can be much more important. Many consumers and other stakeholders of a web business know the company only through its web presence. Creating an effective web presence can be critical even for the smallest and newest firms operating on the web.

Identifying web presence goals on the web, businesses and other organizations have the luxury of building their websites intentionally to create distinctive presences. Often, a firm's physical location needs to satisfy so many other business priorities before it can concentrate on conveying a good presence. However, online, a potential customer needs to interact with a firm's website to access their goods or services, so the website helps instantly create a first impression of the business. A good website design can provide many image-creation and image enhancing features very effectively - it can serve as a sales brochure, a product showroom, a financial report, an employment ad, and a consumer contact point. Each entity that establishes a web presence should decide: which task they wish their website to accomplish; which features the website can provide; and which of those features are the most important to include.

Goals associated with the establishment of an effective WWW presence include:

• Creating a website that is attractive to many visitors.

• Creating a website with a positive image that is consistent with a company's established brand.

• Creating a website to reinforce already held positive images regarding a company.

However, businesses must not forget what online users want in return. In the early days of the internet many companies failed to recognize that consumers wanted the same level of reassurance when conducting electronic commerce that they got from dealing with real companies in the real world. Often details were not placed on websites regarding contacting the companies and

prospective consumers often found that emailed queries did not receive a reply. This situation led to a loss of trust between online shoppers and companies.

For such trust to be re-established companies wishing to create a WWW presence should include:

1. A detailed history of the company including its aims, objectives and personnel.
2. A mission statement outlining the strategic objectives of the company and how these objectives will be met.
3. A brief statement of the financial position of the company and also its product portfolio.
4. Several methods for contacting the organization. These methods should include traditional communication channels such as a telephone number and postal addresses.

What is crucial for companies to remember is that consumers require an unrestricted online dialogue with a firm and its other stakeholders. It is imperative that companies provide meaningful ways for two-way communication to take place between themselves and their consumers.

Website usability

Research indicates that few businesses accomplish all of their goals for their websites in their current web presences. Even sites that succeed in achieving most of these goals often fail to provide sufficient interactive contact opportunities for site visitors. Most firms' websites give the general impression that the firm is too important and its employees are too busy to respond to inquiries. One of the main benefits to e-commerce consumers is the ability to quickly compare businesses offering similar services. If a consumer has a frustrating experience on one firm's website, within seconds they will go to another and the firm has lost a customer. Therefore, it is beneficial for businesses to consider usability testing.

Usability testing is when a website is evaluated in terms of how easy it is to navigate to a particular piece of information. Usability testing can also be used to establish whether a particular feature on a website is easy to understand and efficient to use. Companies often aim to limit the number of clicks required to access a particular piece of information to a set number such as three. A group of test users are then asked to navigate through the site to establish, for example, whether more than three clicks are required to access a product or service. If they are, the navigation path to that product or service is redesigned. Although usability testing will vary from website to website the following rules should be adhered to:

1. A website should be designed around how visitors will want to travel through it, rather than
2. around a company's organizational structure.
   A website should be designed to allow quick and easy access to as much information as possible.
3. A website should not contain over exaggerated marketing claims or unproved comparisons between products offered on the website and those available elsewhere.
4. So that it is accessible to various levels of browser software, the website should be designed so that browser software from older computers using slower connections can take advantage of its content - even if it means making multiple versions of the website.

5. When designing a website, navigation and user controls should have a clear and consistent design - and where possible be supported by visual clues. It is also advisable to test the website using various color combinations for text and graphics.

Meeting the needs of website visitors

Businesses that are successful on the web realize that every visitor to their websites is a potential

consumer. People who visit a website seldom arrive by accident; they are there for a reason. However, the reasons people do visit may vary considerably and this needs to be remembered when building the site. Thus, an important concern for businesses crafting web presences is the variation in visitor characteristics. Although there are many reasons why visitors come to websites it is clear that a policy that aims to cater for different stakeholders is an effective policy. Companies must aim to have websites that are highly flexible, providing text and graphic versions that support frame-based browsers and multiple information file formats. It is also important that the website allows users to access multiple levels of detail and information.

Trust and loyalty

When consumers buy any product from a seller, they are also buying an element of service. A seller can create value in a relationship with a consumer by nurturing consumers' trust and developing it into loyalty. Recent studies by business researchers have found that a 5 percent increase in consumer loyalty (measured for example in terms of the proportion of returning consumers) can yield profit increases ranging from 25 percent to 80 percent. Thus, establishing customer loyalty can vastly increase revenue. When a consumer has an experience with a seller who provides good service, that consumer begins to trust the seller. When a consumer has multiple good experiences with a seller, that consumer feels loyal to the seller. Thus, the repetition of satisfactory service can build consumer loyalty that helps prevent a consumer from seeking alternative sellers who offer lower prices. They may also recommend the seller to other potential customers.

Consumer-centric website design

Putting the consumer at the center of all site designs is called a consumer-centric approach to website design. Web designers can follow consumer-centric guidelines when creating a website that is intended to meet the specific needs of consumers, as opposed to all website visitors. These guidelines include the following:

Consumer-Centric Guidelines:

Design the site around how visitors will navigate the links, not around the company's organizational structure.

1. Allow visitors to access information quickly.
2. Avoid using inflated marketing statements in product or service descriptions.
3. Avoid the use of business jargon and terms that visitors might not understand.

4. Build the site to work for visitors who are using the oldest browser software on the oldest computer connected through the lowest bandwidth connection even if this means creating multiple versions of web pages.
5. Be consistent in use of design features and colors.
6. Make sure that navigation controls are clearly labelled or otherwise recognizable.
7. Test text visibility on smaller monitors.
8. Check to make sure that color combinations do not impair viewing clarity for color-blind visitors.
9. Conduct usability test research by having potential site users navigate through several versions of the site.

Connecting with consumers

An important element of a corporate web presence is communicating with site visitors who are consumers or potential consumers. In this section, you will learn how websites can help firms identify and successfully connect to consumers.

The nature of communication on the web

In business, there are two general ways of identifying and reaching consumers: personal contact and mass media. These two approaches are often called communication modes because they each involve a characteristic way (or mode) of conveying information from one person to another (or communicating).

In the personal contact model, the firm's employees individually search for, qualify, and contact potential consumers. This personal contact approach to identifying and reaching consumers is sometimes called prospecting.

In the mass media approach, firms prepare advertising and promotional materials about the firm and its products or services. They then deliver these messages to potential consumers by broadcasting them on television or radio, printing them in newspapers or magazines, posting them on highway billboards, or mailing them. An effective website is a combination of the mass media and personal contact models.

Measuring website effectiveness

In traditional commerce, there are many different established methods for measuring how effective businesses are when communicating with potential consumers. Approaches include estimates of audience size, response rate, enquiry rate and sales. However, in e-commerce, such measurements are far more difficult to establish. This is because people may visit a site for many different reasons. The visitor is in control over which messages are viewed as they choose which links to follow. Recently, however, several different methods have been used to determine the amount of traffic generated by a website.

These measurements include:

• **A visit** is defined to be when a user requests a page from a website. Further pages requested by the user over a given period of time (i.e., five minutes) are counted as part of the visit.

• **A trial visit** is defined to be the first time a user loads a website. After this initial visit all other visits are referred to as repeat visits.

• **An advertising view** is defined as being when a page is loaded that contains an advertisement or promotional banner.

• **The click through rate** is defined by the number of times an advertisement is clicked in order to view further details of the product or service being advertised.

LECTURE NINE

Legal and Constraints to Implementation of E-Commerce

Incorporation Problem

If you are a company operated merely via a website, not being incorporated is a crucial problem. Any purchase and selling activity related to your products will be considered illegal and you can't claim your right in case of any fraud and corruption. Without incorporation, your business has no shelter.

Trademark Security Problem

Not getting your trademark protected is one of the main legal issues in the field of e-commerce. Since trademark is your company's logo and symbol, the representation of your business all over the web, it must be protected. If you don't secure it, it won't take long before you'll realize your trademark is being infringed upon. This is very common legal issue and can become a deadly threat to your e-business. With the hackers on loose and cybercrime so common, trademark infringement of your business or by your business can be a serious legal matter and may hinder your business's progress.

Copyright Protection Issue

While publishing content for your e-commerce website, using content of any other company can be a severe legal problem. This might mark an end to your e-business. There are many sites online which are royalty free and allow you to access their content and images. You may use those sites for creating web content for your business site.

Privacy Issues

When it comes to online businesses, privacy is the major issue that can create problems both for the business and customers. Consumers share information with businesses online and they expect the sellers to keep their information confidential. By just one minor mistake and leakage of valuable information of a customer, you'll not only lose your potential customer but your image and reputation will become a question mark.

These 3 Legal Issues Can Make or Break Your E-Commerce Startup

1. Liability and contractual information

As a first step, always ensure your terms of use section is as detailed as possible, making sure customers understand, among other things, your relationship with vendors on the site. Also, ensure you've clearly defined all the technical means available to customers in case they want to cancel or return purchases and make sure you have a mechanism of notifying customers of their purchases within 24 hours of the purchase.

2. Data protection and privacy

Most e-commerce platforms are reservoirs of sensitive customer information, which is often collected via contact forms, customer registration, and during payment for purchases. In many regions around the globe, e-commerce platforms are obliged to protect their customers' data as a requirement for legal compliance.To ensure your e-commerce website is compliant with data protection rules, start by creating a comprehensive data protection policy in addition to your cookies policy. The links to both these policies should be clearly visible on your website and should give your visitors information about who is responsible for storing their data and how they can access, cancel, or modify any of their information.

3. Managing fraud and securing electronic transactions

Payments fraud and other issues related to online security have become quite popular over the past few years, coinciding with the growth of the ecommerce industry. One report projected that card-not-present (CNP) fraud will grow by 14 percent annually up to 2023, which is a significant figure

for e-commerce platforms that accept on--site payments. But when you do get hacked, you're legally obliged to inform the public. Many countries require businesses to report any breach to the public, especially one that deals with personal and sensitive user data. Just because your customers don't walk through a physical store doesn't mean your e-commerce platform is above the law. Take time to ensure your online store meets stipulated legislation across all jurisdictions that your products or services are available to potential customers. These measures, while simple, might save your business from costly litigation and eventual loss of brand reputation when you're found on the wrong side of the law.

privacy policy

Also known as a "privacy statement "or "privacy declaration," a privacy policy is a statement that explains how a company collects, handles, stores, shares, and protects customer's personal and often sensitive information gathered through their interactions with a website.

Every single website interacts with and collects data about their visitors in one way or another, but this is even more applicable when it comes to an ecommerce store. Ecommerce sites typically collect personal data such as names, email addresses, IP addresses, session activity and payment details, just to name a few examples.

Because of this, a privacy policy is crucial as it's not only seen as a sign of credibility and trust, but also ensures that website owners are protected, along with their customers, while also adhering to their legal obligations.

At its core, a privacy policy is meant to serve four basic functions:

- Inform users about private data collection and how it's used
- Provide users with the choice to opt out of data collection
- Let users access the collected data or contest its accuracy
- Reassure users that their data is safe and secure

For site visitors and customers, a privacy policy assures them that their private data won't be sold to third parties or put to malicious use.

Why you need to create a privacy policy

Before we get into how to craft your privacy policy, let's first get into the why. Here are the top reasons a privacy policy is necessary for ecommerce businesses.

1. It's required by law

First and foremost, a privacy policy is legally required by law in the United States, Canada, the European Union, Australia, and other jurisdictions around the world which is further explained below. In addition, ecommerce store owners need to both limit their risk as well as manage the expectations of their customers to avoid any misunderstandings.

2. It builds trust with customers

As an ecommerce store, you will undoubtedly be collecting personal information from customers and visitors to your site such as name, age, address, email and credit card details. For obvious reasons, many will want to know that this information is in safe hands, so an accessible privacy policy on the website will demonstrate your commitment to security while helping to build confidence in your website and business.

3. You need a privacy policy to use certain apps or services

Not only is a privacy policy critical to ensuring that you gain customer trust and that legal requirements are met, but many third-party apps and services also require it like Google. In order to access certain services and tools like AdSense, Google Analytics, etc., Google requires that you have an up-to-date, comprehensive privacy policy in place on your website.

According to the Google Analytics terms of use:

"You must post a Privacy Policy and that Privacy Policy must provide notice of Your use of cookies that are used to collect traffic data, and You must not circumvent any privacy features (e.g., an opt-out) that are part of the Service."

4. It gives you legal protection

Finally, a privacy policy also serves as protection from potential lawsuits from customers as well as other businesses. If your ecommerce site is sued, you can show that you have in place a publicly stated privacy policy that clearly declares what you do with the sensitive information collected.

The circumstances in which data may be released

In certain occasions, you may have to comply with lawful requests (e.g., court orders, subpoenas, or warrants) to hand over user data. As such, your privacy policy must discuss the situations in which visitor or customer data may be released. Walmart, once again, is doing this well. The company's privacy policy explains that Walmart may share users' personal information in special circumstances, and it even lists some examples of situations in which they may share user data.

Electronic Commerce and the Law in Kenya:

E-Commerce Law is the area of law that regulates trading of information, money or goods and services wholly or partially through electronic means, including e-government services. In this context we are particularly interested in several types of electronic trading relationships including: Business to business (B2B e-commerce), Business to consumer (B2C e-commerce), Consumer to consumer (C2C), Employer to employee (workplace communications), Government to business (e-procurement) and Government to citizen, among others.

As a starting point, it is important to note that the terms "electronic commerce" or "electronic transaction" are not defined in the Kenya Information and Communications Act (KICA) and that there are currently no standalone regulations or statutory framework governing e-commerce in Kenya. A proposed definition of 'e-commerce' is that it is 'the buying and selling of goods and services over an electronic network.' Whereas a proposed definition of an 'electronic transaction' is that it is 'the sale or purchase of goods or services, whether between businesses, households, individuals, governments, and other public or private organizations, conducted over electronic networks. The goods and services are ordered over those networks, but the payment and the ultimate delivery of the good or service may be conducted on or off-line. 'However, KICA states that "electronic" means relating to technology having electrical, digital, magnetic, wireless, optical, electromagnetic, or similar capabilities. Whereas KICA states that "e-Government services" means public services provided electronically by a Ministry or Government department,

local authority, or anybody established by or under any law or controlled or funded by the Government.

Despite the lack of a clear definition of e-commerce under KICA, the Communications Authority of Kenya (CA) which is established under KICA, has a clear mandate in the regulation of e-commerce which includes:

1) To facilitate electronic transactions and cyber security by ensuring the use of reliable electronic records;

2) To facilitate electronic commerce and eliminating barriers to electronic commerce such as those resulting from uncertainties over writing and signature requirements;

3) To promote public confidence in the integrity and reliability of electronic records and electronic transactions;

4) To foster the development of electronic commerce through the use of electronic signatures to lend authenticity and integrity to correspondence in any electronic medium;

5) To promote and facilitating the efficient delivery of public sector services by means of reliable electronic records.

6) To develop sound frameworks to minimize the incidence of forged electronic records and fraud in electronic commerce and other electronic transactions.