Ecommerce (Elective - II)

(Diploma in Computer Engineering)

3 year / 2 part

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Unit: 1 - Introduction

Ecommerce

E-commerce is the buying and selling of goods or services via the internet, and the transfer of money and data to complete the sales. It's also known as electronic commerce or internet commerce.

Ecommerce is often used to refer to the sale of physical products online, but it can also describe any kind of commercial transaction that is facilitated through the internet.

History of E-commerce

History of E-commerce was introduced in our country just with the purpose that the Nepali residing abroad can send gifts to the one in Nepal. People outside the country.

E-commerce has been developing since the 1990 ad and its evolution is directly linked to the advancement of information technology. History of E-commerce purchasing experience has a more positive attribute toward online buying and selling. E-commerce or Electronic commerce also known as e-business refers to the transaction of goods and services.

The history of e-commerce started over 40 year ago. When the introduction of technology like electronic data interchanges and teleshopping in the 1970 ad. The history of e-commerce is closely inter-wined with the history of the internet. Online shopping became possible when the internet was open to the public in 1991.

E-Business

E-Business (electronic business) is any process that a business organization conducts over a computer-mediated network. Business organizations include any for-profit, governmental, or nonprofit entity. Their processes include production, customer and internal or management-focused business processes.

E-Business refers to business with the help of the internet. Electronic business differs from electronic commerce as it does not only deal with online transactions of selling and buying of a product and/or service but also enables the conduct of business processes within the value chain through internal or external networks.

Global trading environment & adoption of e-commerce

The Global trading environment consists of trade negotiations between nations to form agreements by giving a way some of their business parts. The trading environment is an interrelated system whose elements include potential trading objects and usable trading tools.

The world has become a global village. People of Nepal can communicate and do business with the people of the USA. All the primary groups of e-business firms are in a race to capture global business revenues. Telecommunication firms are competing to build the infrastructure in countries all over the world. It performs ISP services and software procedures like mercantile corporation ETC.

Adoption of e-commerce has been adopted because it is the overall process of buying and selling , transferring or exchanging product or service or information VIA computer networks and the internet. The purpose of this study is e-commerce, business network, ICT skill, technology qualified human resources . E-commerce is a buying and selling of goods and services or transmitting of fund data over an electronic network. The term e-business is often used interchangeability, cost of equipment and services , security system, distribution logistics.

Differences between traditional and e-Commerce

E-Commerce	**Traditional Commerce**
E-commerce is a form of online shopping where users can buy goods and services from their electronic devices such as laptop, mobile, tablet.	Traditional Commerce is a traditional approach to buy goods and services in person which involves face to face dealing.
It is used to save valuable time and money.	It is ancient and still in usage where the digital network is not reachable.
It is easier to use and operate if the customer has basic digital gadget knowledge.	It can be followed by any person irrespective of education or knowledge.

It is in electronic or digital mode only.	It can be in any form which is non electronic or manual form.
It is available round the clock.	It is available during limited time as prescribed by the law and based on the type of business.
Inspecting a product before purchasing is not possible in this type.	Inspecting a product before purchasing is possible in traditional commerce business models.

Advantages and disadvantages of e-Commerce

Advantages:

- Easy to set up: electronic business is easy to set up even from home, the only requirements are software, a device and internet connection.
- Flexible Business Hours: There are no time barriers that a location-based business can encounter since the internet is available to everyone all the time. Your products and services can be accessed by everyone with an internet connection.
- Cheaper than Traditional Business: Electronic business is less costly than a traditional business, but it is more expensive to set up. Transactions cost are also cheaper.
- No Geographical Boundaries: The greatest benefit is the possibility of geographical dispersion. Anyone can order anything from anywhere at any time.
- Government Subsidies: Digitalisation is very encouraged by the government and they provide the necessary support.
- Newmarket entry: It has a great potential to enable an entry to a previously unknown market that a traditional business could not.[22][23]
- Lower levels of inventory: Electronic business enables companies to lower their level of inventory by digitizing their assets. (i.e.: Netflix does not sell anymore physical DVD's but proposes online streaming content instead).

- Lower costs of marketing and sales: E-commerce allows the actors of the industry to advertise for their product/service offer (i.e.: house rental) at generally lower costs than by promoting physically their business.

Disadvantages

- Lack of Personal Touch: The products cannot be examined or felt before the final purchase. In the traditional model, we have a more personal customer experience, while in electronic business that is mostly not the case. Another missing factor of personal touch could also be in online transactions.
- Delivery Time: Traditional business enables instant satisfaction as you obtain the product the moment you purchase it, while in electronic business that is not possible. There will always be a waiting period before you receive the product. For example, Amazon assures one-day delivery. This does not resolve the issue completely, but it is an improvement.
- Security Issues: Scams could be mentioned as a factor for people's distrust in electronic business. Hackers can easily get customers financial and personal details. Some customers still find it hard to trust electronic businesses because of the lack of security, reliability and integrity issues.

E-commerce framework

An ecommerce framework refers to the type of software you're using to build your ecommerce store. For example, ecommerce software Magento uses an open source framework, while BigCommerce is SaaS. Both also enable a headless framework.

1. SaaS
2. Open source
3. Headless commerce

SaaS

SaaS stands for "software as a service." Users subscribe as opposed to buying software that the vendor continues to host, maintain and improve. SaaS platforms, on average, come with more out-of-the-box functionality.

Pros

- The vendor can push out real-time feature upgrades as they continue to improve the software over time.
- Total cost of ownership is typically much less than with an open source or headless commerce framework.
- SaaS can help you get to market quickly.
- Security and maintenance are included in your costs, and you won't have to worry about hosting.

Cons

- Not as customizable as open source or headless commerce frameworks.

Open Source

Open source software is software that allows users to access and change the source code on their own software instance. Open source ecommerce platforms offer a high level of customization, but it comes at a cost.

You'll need developers to not just make the customizations you want, but also to maintain the code over time. The more customization, the higher the risk of unintended consequences and ensure continued cybersecurity defenses to protect your business and your shoppers.

Pros

1. Almost limitless customization opportunities.
2. Engaged communities of developers.

Cons

1. You'll be responsible for installing software updates and security patches.
2. The ability to customize also means that the software is more complex, and you'll be more reliant on developers not just at implementation but over the lifecycle of your business.
3. The TCO is typically high once you factor in all the related extraneous costs.

Headless

Headless commerce decouples the back and front-ends so retailers can choose their own front-end presentation layer to deliver a differentiated customer experience by leveraging a

composable architecture approach. This also gives you the opportunity to take a multi-vendor approach, using one vendor for the back-end solution and something different on the front.

Pros

1. You'll have the flexibility to use the front-end of your choice, from digital experience platforms to PWAs and more.
2. You can use your back-end to power multiple front-ends for a multi-site experience.
3. When your front- and back-ends are decoupled, each can undergo development work without risking impacts to each other.

Cons

1. The total cost of ownership can be high, because you'll be paying for your back-end, front-end and development work.
2. Architectures can be complex and require developer expertise.

Unit: 2 - Business Models of e-Commerce

Business Model

Business model refers to a company's plan for making a profit. It identifies the products or services the business plans to sell, its identified target market, and any anticipated expenses. Business models are important for both new and established businesses. They help new, developing companies attract investment, recruit talent, and motivate management and staff. Established businesses should regularly update their business plans or they'll fail to anticipate trends and challenges ahead. Business plans help investors evaluate companies that interest them.

Business to Business (B2B)

Business-to-business (B2B), also called B-to-B, is a form of transaction between businesses, such as one involving a manufacturer and wholesaler, or a wholesaler and a retailer. Business-to-business refers to business that is conducted between companies, rather than between a company and individual consumer. Business-to-business stands in contrast to business-to-consumer (B2C) and business-to-government (B2G) transactions.

- Business-to-business (B2B) is a transaction or business conducted between one business and another, such as a wholesaler and retailer.
- B2B transactions tend to happen in the supply chain, where one company will purchase raw materials from another to be used in the manufacturing process.
- B2B transactions are also commonplace for auto industry companies, as well as property management, housekeeping, and industrial cleanup companies.

Business to Consumer (B2C)

The term business-to-consumer (B2C) refers to the process of selling products and services directly between a business and consumers who are the end-users of its products or services. Most companies that sell directly to consumers can be referred to as B2C companies.

B2C became immensely popular during the dotcom boom of the late 1990s when it was mainly used to refer to online retailers who sold products and services to consumers through the Internet.

As a business model, business-to-consumer differs significantly from the business-to-business (B2B) model, which refers to commerce between two or more businesses.

1. Business-to-consumer refers to the process of businesses selling products and services directly to consumers, with no middle person.
2. B2C typically refers to online retailers who sell products and services to consumers through the Internet.
3. Online B2C became a threat to traditional retailers, who profited from adding a markup to the price.

Consumer to Consumer (C2C)

Consumer to consumer (C2C) markets provide a way to allow customers to interact with each other. Traditional markets require business to customer relationships, in which a customer goes to the business in order to purchase a product or service. In customer to customer markets, the business facilitates an environment where customers can sell goods or services to each other.

Consumer-to-consumer (or citizen-to-citizen) electronic commerce involves the electronically facilitated transactions between consumers through some third party. A common example is an online auction, in which a consumer posts an item for sale and other consumers bid to purchase it; the third party generally charges a flat fee or commission. The sites are only intermediaries, just there to match consumers. They do not have to check the quality of the products being offered.

Consumer to consumer (C2C) marketing is the creation of a product or service with the specific promotional strategy being for consumers to share that product or service with others as brand advocates based on the value of the product. The investment into conceptualizing and developing a top-of-the-line product or service that consumers are actively looking for is equitable to a retail pre-launch product awareness marketing.

Development of B2B e-Commerce

B-to B refers to the activities of buying and selling that occur between business as opposed to business. Selling to consumers. E-commerce development process project & clients. E-commerce web site design and development is creating e-commerce solutions tailored to a specific business model and audience .

E-commerce is the activity of buying or selling products on online services or over the internet. E-commerce originated as a standard for the exchanges of business documents such as orders or invoices between suppliers and their business customers. B-to-B E-commerce is offering products and services that specifically target outside business organizations. Who purchase from large suppliers then sell these products to their customers through separate business to consumer , e-commerce web sites.

B2B Vs B2C

B2B e-commerce	**B2C e-commerce**
Multiple pricing tiers and order volume discounts	Single pricing tiers for all customers
Account manager handle issues	Customer service team helps customers

Website is closer to an account dashboard	Website is built to attract and convert
Checkout process has multiple steps and options	Checkout is streamlines to avoid drop offs
Organization must be about the Product /service. Communication must be about the Individual job role.	Clear, concise and simple languages to be used in order. Can only send communication that the information and agree.

E-Procurement

E-procurement is the process of buying and selling supplies and services over the Internet. It differs from e-commerce in that it makes use of a supplier's closed system typically available only to registered users.

When implemented properly, e-procurement opens the lines of communication between a company and a supplier by creating a direct link and facilitating interactions such as bids, purchase orders and emails.

Benefits of E-Procurements

Cost Savings

Built-in monitoring tools help control costs and maximize performance, reducing overhead and paperwork. Fully automated systems streamline processes and can result in a faster cycle from creating an order to fulfillment. There also is an opportunity for a larger selection of products and services.

Shorter Purchasing Cycles

Centralized transaction tracking simplifies reporting on orders, payments, and requisitions, as well as ensuring contract compliance, all of which can reduce delivery time. Buyers have electronic access to available products, services, and prices.

Improved Inventory Control

Procurement professionals can quickly locate products from preferred suppliers and are limited to the purchases they can make, so inventory is better controlled.

Transparency

All information is centralized and can be made available to management, stakeholders, shareholders or the public, as appropriate.

Unit : 3 - The network infrastructure for e-commerce

Introduction to information superhighway (I-way)

Electronic commerce needs a network infrastructure to transport the content- data, audio, visual, text, animation and so on. This network infrastructure is provided by what is known as the I-way or information superhighway.

The information superhighway may be defined as a high capacity, electronic pipeline to a consumer or business premise that is capable of simultaneously supporting a large number of e-commerce applications and providing interactive connectivity between users and services. The I-way has emerged as the basic network infrastructure for all types of e-commerce activities due to its capability to provide integrated voice, data and video services.

Requirements of I-way

Start: The alignment should be short so as to make the road project economical.

Easy: The alignment should be such that it is easy to construct and maintain the road with problems.

Safe: safe enough for construction and maintenance from the viewpoint of satiability natural will slope cut foundation.

Economical: The road alignment could be considered economical only if the total life cycle cost considering the initial cost, maintenance cost cost and vehicle operation cost is lowest.

Utilities: The alignment should be fixed such that it provides comfort to the driver and passengers.

Natural aspect: As the road project needs large investment , the government should be clear about the requirement of the road.

The distance between two terminal stations should be short and as far as possible straight. It consists of three key elements in addition to the communication infrastructure that permit two way communication, information appliances such as TV, Telephone and computers and new products and combining elements of the internet, networking communication and transfer in an ideal highway.

Components of I-way

Network access equipment:

Network access equipment which is at the consumer end and enables the consumer to access the network. It consists of the hardware such as computers, modems, routers, switches for computer networks, set-top boxes for television networks and software platforms such as browsers and operating systems.

Access media:

Access media provide the communication backbone for the transmission of data and information. The access providers may be differentiated into four categories: telecom based, cable TV based, wireless based or computer based on-line systems.

Global information distribution networks:

It provides the infrastructure for connecting across the countries and continents.They include such networks as the long distance telephone lines, the satellite networks and internet.

Internet, Intranet, Extranet

Internet

Internet is a world wide, publicity accessible computer network of interconnected computer networks that transmitted data using the standard internet protocol. The largest internet network in the world is the internet.

The internet forms a well known component of the global information distribution network. It targets a wide range of e-commerce applications such as video on demand, home shopping, e-mail, edi, information publishing, information retrieval, video conferencing and many more.

All the components of the I-way together provide a network infrastructure for the e-commerce activities.

Intranet

An intranet is a private network that can only be accessed by authorized users. For example, a business may create an intranet to allow employees to securely share messages and files with each other.

An intranet can be defined as a private network used by an organization. Its primary purpose is to help employees securely communicate with each other, to store information, and to help collaborate.

Applications of an Intranet

- Company-wide Announcements
- A Company Directory
- Instant Messaging Feature
- Content Management System
- Automating Forms Capability
- Social Network for Employees
- Event Management
- Workgroup Scheduling and Calendars

Extranet

The extranet is the private networks that use the internet that allows people outside business . Internet protocol network connectivity and public communication system to security share part of a business information or operation with suppliers, vendors, partners, customers or other business. An extranet can be viewed as part of a company's internet that is extended to users outside the company.

An extranet is often considered part of a company's intranet extended to authorized users outside of the organization. It provides controlled access to authorized people outside of the company. An extranet can be understood as a private internet over the internet creating a private network for sharing information and programs.

Software agents

A software agent is a piece of software that functions as an agent for a user or another program, working autonomously and continuously in a particular environment. It is inhibited by other processes and agents, but is also able to learn from its experience in functioning in an environment over a long period of time.

Software agents offer various benefits to end users by automating repetitive tasks. The basic concepts related to software agents are:

1. They are invoked for a task
2. They reside in "wait" status on hosts
3. They do not require user interaction
4. They run status on hosts upon starting conditions
5. They invoke other tasks including communication

Types of software agents

Some Software Agents are:

Interface, collaborative, information, reactive, hybrid, mobile, smart agent, Corporate ,autonomously agent and learn agent

Explanation of Some Software Agents:

Interface

Interface as a "face-to-face," a place where things, or people and things meet. Any common boundary or area of convergence can be an interface. Used as a verb, communicating and working together.

Collaborative

Collaboration would be to outline it as the process of two or more people or organizations working together to complete a task or achieve a goal.

Information

Knowledge communicated or received concerning a particular fact or information concerning a knowledge gained through study, communication, research, instruction etc factual data of general information is amazing.

Mobile

Mobile phones are used for a variety of purposes, such as keeping in touch with family members, for conducting business, and in order to have access to a telephone in the event of an emergency. Some people carry more than one mobile phone for different purposes, such as for business and personal use.

ADSL, Wi-Fi, UMTS, LTE, Bluetooth

ADSL

ADSL stands for **A**symmetric **D**igital **S**ubscriber **L**ine. It is a technology that provides high transmission speeds for video and voice to homes over an ordinary copper telephone wire ADSL is a type of internet connection that uses a home landline to provide broadband. It splits the telephone connection so that frequencies not used in a voice telephone call are used for broadband. ADSL where the speed of data sent is known as upstream and data received is known as downstream.

Wi-Fi

Wi-Fi is the wireless technology used to connect computers, tablets, smartphones and other devices to the internet. Wi-Fi is the radio signal sent from a wireless router to a nearby device, which translates the signal into data you can see and use.

Currently, WiFi is available in two frequencies 2.4GHz and 5GHz. 2.4GHz has the larger distance coverage but it has interference issues in the network. While 5GHz has a shorter distance than 2.4GHz but less interference with great speed improvement.

UMTS (3G)

UMTS stands for **U**niversal **M**obile **T**elecommunications **S**ystem. It is a third generation mobile cellular system for networks based on the GSM standard. UMTS uses wideband code-division multiple access (W-CDMA) radio access technology to offer greater spectral efficiency and bandwidth to mobile network operators.

UMTS uses the static fixed carrier of frequency 5MHz. UMTS supports 3G.

LTE (4G)

Long-Term Evolution (LTE) is a standard for wireless broadband communication for mobile devices and data terminals, based on the GSM/EDGE and UMTS/HSPA standards. It improves on those standards capacity and speed by using a different radio interface and

core network improvements. LTE is the upgrade path for carriers with both GSM/UMTS networks and CDMA2000 networks. Because LTE frequencies and bands differ from country to country, only multi-band phones can use LTE in all countries where it is supported.

LTE is also called 3.95G and has been marketed as "4G LTE" and "Advanced 4G" but it does not meet the technical criteria of a 4G wireless service, as specified in the 3GPP (3rd Generation Partnership Project) Release 8 and 9 document series for LTE Advanced.

BLUETOOTH

Bluetooth is a wireless technology standard whose purpose is to connect without a cable. The Bluetooth module is a tiny part of the chip in a device, which it wirelessly communicates with a Bluetooth module on any other devices.

Bluetooth is a short-range wireless technology standard that is used for exchanging data between fixed and mobile devices over short distances using UHF radio waves in the ISM bands, from 2.402 GHz to 2.48 GHz, and building personal area networks.

Use of Bluetooth

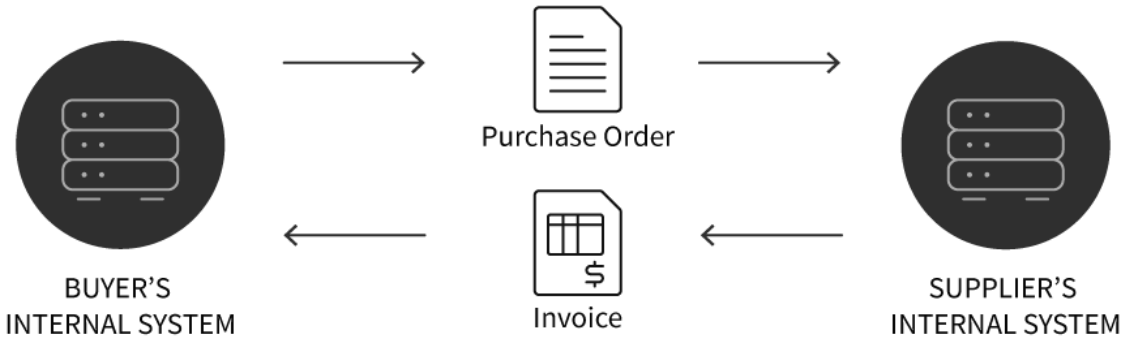
- In laptops, notebooks and wireless PCs
- In mobile phones and PDAs (personal digital assistant).
- In printers.
- In wireless headsets.
- In wireless PANs (personal area networks) and even LANs (local area networks)
- To transfer data files, videos, and images and MP3 or MP4.
- In wireless peripheral devices like mouse and keyboards.
- In data logging equipment.
- In the short-range transmission of data from sensor devices to sensor nodes like mobile phones.

Advantages of Bluetooth

- Wireless
- Availability
- Usability
- Efficiency
- Security

Unit-4: Electronic Data Interchange (EDI)

Concepts of EDI

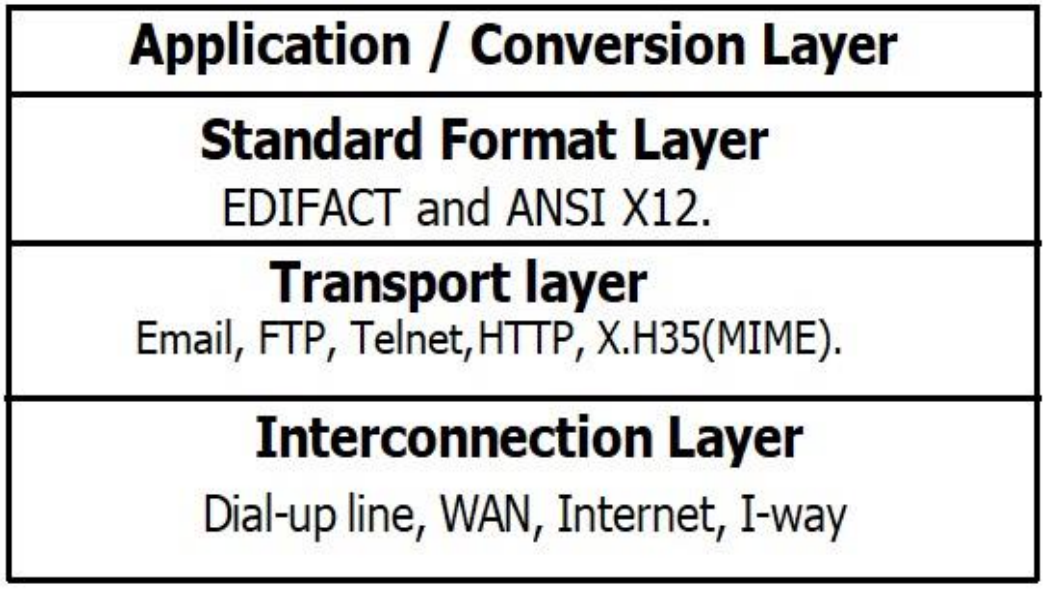


Electronic Data Interchange (EDI) is the electronic interchange of business information using a standardized format; a process which allows one company to send information to another company electronically rather than with paper. Business entities conducting business electronically are called trading partners. Electronic data interchange (EDI) is the concept of businesses electronically communicating information that was traditionally communicated on paper. EDI that will suit your business needs, technical capabilities and budget. Many larger companies adopt hybrid EDI solutions to connect with their business partners, depending on size and frequency of their transactions.

EDI Vs e-mail

EDI	EMAIL
There is typically no human involvement in the processing of the information, as the interface has software-to-software orientation.	A human-to-software interface is involved at minimum of one end of the interchange.
The data are structured in a software understandable way.	The data are not necessarily structured to be software understandable.
The interchange is composed by one software for interpretation by another software.	The message is composed by a human and/or interpreted by a human.
If a replay is involved, it is composed by a software to be interpreted by another software.	A reply is composed by a human and/or interpreted by a human.

Components of EDI



Application/ Conversion Layer

The application layer consists of actual business applications that are going to be connected through the EDI system for exchange of information. This application uses their own electronic format. They need to convert the internal company document format into a format that can be understood by other trading companies. The application layer is also called semantic layer.

Standard Format Layer

This layer of EDI architecture defines the structure of the business form. There are different formats to use EDI documents. Some of which are EDIFACT and ANSI X12.

Transport layer

The data transport layer consists of the services that automate the tasks of electronic transfer of messages. Some of the protocols used in this layer are Email, FTP, Telnet, HTTP, X.H35(MIME).

Interconnection Layer

This layer refers to the network infrastructure that is used for the exchange of information between trading partners. It consists of a dial up line, WAN. Internet. I-way etc.

Document Standard

EDIFACT

Electronic Data Interchange for Administration, Commerce and Transport (EDIFACT) is the international standard for electronic data interchange, which was developed under the auspices of the United Nations. The standard was approved as the ISO 9735 standard by the International Organization for Standardization (ISO) in 1987. The EDIFACT standard provides rules on how to structure data and standardize messages for multi-industry and multi-country exchange.

ANSI X12

ANSI X12 stands for American National Standards Institute X12 and refers to the American EDI standard developed back in 1979 by the ANSI subsidiary Accredited Standards Committee (ASC).

The goal of ANSI X12 is to uniform standards for inter-industry electronic exchange of business documents, namely EDI. ANSI X12 is a global set of rules for the intercompany electronic data exchange between two EDI Trading Partners.

ANSI X12 Standard as Part of EDI communication between Trading Partners.

By defining uniform segments and elements that describe the information in the electronic file and which are used for a wide variety of business documents (such as invoices, purchase orders, delivery notes, etc.), a common standard was invented

XML

XML (Extensible Markup Language) is used to describe data. The XML standard is a flexible way to create information formats and electronically share structured data via the public internet, as well as via corporate networks.

XML is a markup language based on Standard Generalized Markup Language (SGML) used for defining markup languages.

XML's primary function is to create formats for data that is used to encode information for documentation, database records, transactions and many other types of data. XML data may be used for creating different content types that are generated by building dissimilar types of content including web, print and mobile content that are based on the XML data.

XML Example:

<personal>

<name>Arjun</name>

<birth>

<year>2002</year>

<month>07</month>

<date>25</date>

</birth>

<address>

<permanent> Saptari </permanent>

<temporary> Kathmandu </temporary>

</address>

<email>arjun7.com.np@gmail.com</email>

</personal>

EFT

An electronic funds transfer (EFT) is the electronic transfer of money over an online network. Electronic funds transfers can be performed between the same bank or a different one, and can be accomplished with several different types of payment systems. An EFT can be initiated by a person or by an institution like a business and often doesn't require much more than a bank account in good standing.

Some types of EFT includes:

- Direct Deposit
- Wired Transfer
- ATM
- Debit Card
- Online Banking

Internet Advertising

Online advertising, also known as online marketing, Internet advertising, digital advertising or web advertising, is a form of marketing and advertising which uses the Internet to promote products and services to audiences and platform users. Online advertising

includes email marketing, search engine marketing (SEM), social media marketing, many types of display advertising (including web banner advertising), and mobile advertising. Advertisements are increasingly being delivered via automated software systems operating across multiple websites, media services and platforms, known as programmatic advertising.

Benefits of EDI

Improved operational efficiency

Automating the flow of messages with integrated EDI improves the speed and efficiency of your operations by eliminating the need to manually rekey data in multiple systems.

Fewer errors

By removing manual, paper based processes the occurrence of human errors is dramatically reduced or even eliminated.

Increased accuracy

Automated message validation ensures that errors are flagged and rectified before they impact your trading partners and data integrity in your internal systems is maintained.

Increased return on investment (ROI)

Automation through integrated EDI enables you to maximize the benefits of EDI and move beyond simply complying with your customers' EDI requirements.

Enhanced visibility

EDI provides full transparency of the ordering and invoicing process for you and your trading partners. This end-to-end visibility enables more informed decisions to be made and ultimately improves the service delivered to consumers.

Reduced inventory cost: Increased visibility within the supply chain eliminates unknowns and can therefore enable you to reduce the levels of inventory you need to hold.

How EDI works

EDI optimizes workflow by replacing previous order processes such as mail, fax or email and electronically exchanges documents between two companies with different business systems. A translator will convert the business application data between the sender and receiver, such as trading partners.

An EDI Billing is an electronic version of a paper invoice that sellers send to buyers to request payment for products delivered. An electronic invoice is one of the most fundamental documents in an automated EDI system.

Security and privacy issues of EDI

Password Guessing Attacks

Most of the present day systems rely on passwords to gain access but, passwords are easy to guess and this makes the system vulnerable to password guessing attacks. Users are very poor at choosing good passwords. An intruder can capture a quantity X that is derived from a password in a known Way.

Cross Vulnerability

A potential exposure or cross-vulnerability due to technical limitations in one EDI system can compromise the integrity of the other dependent EDI systems. Cross-vulnerabilities exist between systems that rely on common values for user identification and authentication, such as IDs and passwords.

Multiple Standards

Trading partners usually work on a variety of standards such as UN/EDIFACT, ANSI X12, ODETTE etc.

Problems arise when the two trading partners adhere to different standards. The security features offered in a particular standard may not be comparable to the other standard.

Authentication

The extensive use of open networks and distributed systems poses serious threats to the security of end-to-end communications and network components themselves. A necessary foundation for securing a network is the ability to reliably authenticate communication partners and other network entities.

Authentication is the most important of the security services, because all other security services depend upon it.

Non-Repudiation

Non-repudiation services provide a communication user with protection against another user who later denies that some communication exchange took place. While these

services do not prevent a user from repudiating another user's claim that something occurred, they provide evidence to resolve any such disagreement. In general, the evidence must be proved convincingly to the third party arbitrator.

Disclosure of Information

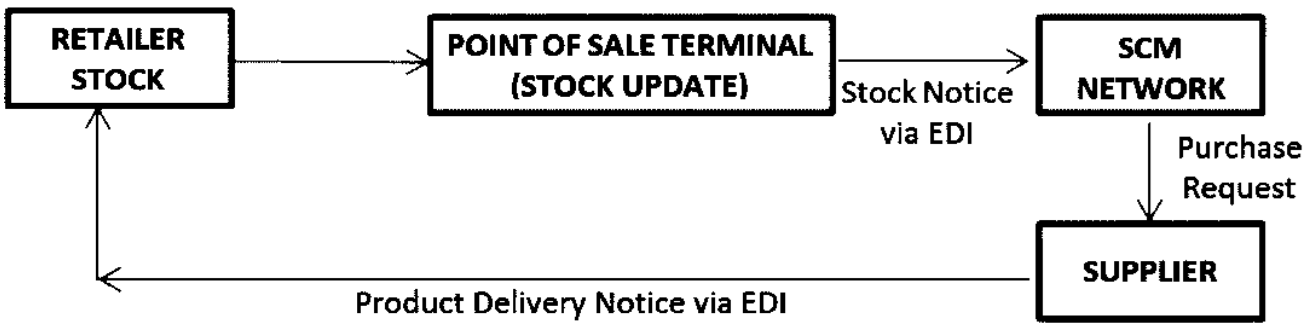
With the introduction and use of EDI, additional security risks arise apart from those which exist for the conventional electronic information systems.

The computers of a trading partner can initiate transactions inside another partner's accounting systems which are processed in a totally automatic environment. By its very nature, EDI requires that the system be continuously open to receive incoming transactions.

Advantages of EDI

1. It is less costly than traditional system
2. It aids in improved customers service and delivery
3. It reduces error and clerical work.
4. It improves business cycle
5. It has a faster response time
6. It aids in better planning and forecasting.

Applications of EDI



Retail Sector

In the retail sector profit margins usually depend upon efficient inventory management. EDI provides a structured way to maintain and replenish goods stocked at a retail outlet. Retailers use a common model stock for each shop location and the point of sale stock position is updated continuously and data is fed via EDI enabled SCM (supply chain management) network. The EDI software monitors all the logistics and makes updates in the original stock.

Manufacturing Sector

EDI ensures effective and efficient management of materials required for production of a commodity. In the manufacturing sector EDI facilitates Material requirement planning and just in time manufacturing. The Inventory position of OEM is constantly updated through EDI and the supplier is notified about the shortage of materials. This helps the supplier to plan and schedule supply according to requirements of the manufacturer.

Automobile Sector

In the automobile sector EDI is used to keep customers updated with the current product and pricing information during the purchase cycle. An advance shipping notice is transmitted through EDI to the customers to prepare a loading schedule and to ensure proper receipt of the product. The customer may also make payment on receipt of goods via EDI to speed up the payment process.

Financial Sector

In the financial sector EDI replaces the labor intensive activities of collecting, processing and dispersing payments with an electronic system. It facilitates the flow of payment between the bank accounts of trading partners without requiring any human intervention. A payee's bank account is electronically credited and the payer's account is electronically credited on the scheduled day of payment; such an exchange is known as electronic fund transfer (EFT).

Unit-5: Mobile Commerce

Definition

Mobile commerce, also known as m-commerce. It involves using wireless handheld devices like cellphones and tablets to conduct commercial transactions online, including the purchase and sale of products, online banking, and paying bills.

Application Of M-Commerce

1. Mobile Banking:

   Using a mobile website or application to perform all your banking functions. It is one step ahead of online banking and has become commonplace these days. For example, in Nigeria, the majority of banking transactions happen on mobile phones.

2. Mobile Ticketing and Booking:

   Making bookings and receiving your tickets on the mobile. The digital ticket or boarding pass is sent directly to your phone after you make the payment from it. Even in India now IRTC and other services provide m-ticketing services.

3. E-bills:

   This includes mobile vouchers, mobile coupons to be redeemed and even loyalty points or cards.

4. Auctions:

   Online auctions having now been developed to be made available via mobile phones as well.

5. Stock Market Reports and even stock market trading over mobile applications.

Advantages of M-commerce

- It provides a very convenient and easy to use the system to conduct business transactions.
- Mobile commerce has a very wide reach. A huge part of the world's population has a mobile phone in their pocket. So the sheer size of the market is tremendous.
- M-commerce also helps businesses target customers according to their location, service provider, the type of device they use and various other criteria. This can be a good marketing tool.
- The costs of the company were also reduced. This is due to the streamlined processes, now transaction cost, low carrying cost and low order processing cost as well.

Wireless application protocol

WAP stands for Wireless Application Protocol. It is a protocol designed for micro-browsers and it enables the access of the internet in mobile devices. It uses the markup language WML (Wireless Markup Language), WML is defined as an XML 1.0 application. It enables creating web applications for mobile devices. In 1998, WAP Forum was founded by Ericson, Motorola, Nokia and Unwired Planet whose aim was to standardize the various wireless technologies via protocols.

WAP protocol was a result of the joint efforts of the various members of WAP Forum. In 2002, WAP forum was merged with various other forums of the industry resulting in the formation of Open Mobile Alliance (OMA).

WAP Browser

A wireless access protocol (WAP) browser allows mobile devices such as older cellular phones to access compatible web content. The mini-browser can use multiple Internet protocols to render web pages into plain text or simplified versions of the original web page. In order for a WAP browser to be effective, web developers usually create separate WAP web pages for mobile devices. Otherwise without WAP optimization, web content will usually take longer to load and may not render correctly in older mobile devices.

During the early days of the Internet, mobile devices had limited system resources and screen size, which made loading Internet-based content such as email, instant messaging and newsgroups a challenge.

Mobile Commerce architecture

Mobile commerce applications need a reliable wireless network, different protocols for business services, mobile payment models and security and encryption techniques.

The architecture of mobile commerce is drawn below:

<table>
<tr><td rowspan="4">Information Dissemination and distribution (middleware) protocol.
WAP
iMode</td><td>Mobile Commerce Application</td><td rowspan="4">Mobile device compatible publishing language. Eg: WML, Voice, XML</td></tr>
<tr><td>Business Service Infrastructure, legal framework and Protocol/ Network standards.</td></tr>
<tr><td>Mobile Payment Model</td></tr>
<tr><td>Security and Encryption Techniques</td></tr>
<tr><td colspan="3">Wireless Network infrastructure</td></tr>
</table>

Wireless Network Infrastructure

For successful m-commerce there must be strong wireless network infrastructure. Wireless networks have evolved from voice-only radio-based analog transmission to digital voice and data transmission.

Security and Encryption

Mobile commerce can be made secure by using different kinds of security protocols. Encryption and decryption take place algorithm can be adapted for extra security. SSL and TLS security measures can be adapted.

Mobile Payment Models

Online payment is a fundamental necessity of mobile commerce. Some examples of mobile payment are mobile wallet, debit card, credit card, paypal, esewa, khalti. There are three main mobile payment model:

a) Acquirer Centric model
b) Issuer Centric model
c) Mobile Network Operator

Mobile Commerce Application

It is the rise of the high speed internet. There are different opportunities to generate revenue with the help of different mobile applications. These apps can be uploaded to the app store or play store by a mobile developer and the user can download the apps from the apps the developer can earn money through advertisement or mobile payment. For Example: daraz.

Unit-6: Network Security

E-Commerce Security Issues

1. Lack of trust in privacy and eCommerce security

Businesses that run eCommerce operations experience several security risks, such as

Counterfeit sites

Hackers can easily create fake versions of legitimate websites without incurring any costs. Therefore, the affected company may suffer severe damage to its reputations and valuations.

Malicious alterations to websites

Some fraudsters change the content of a website. Their goal is usually to either divert traffic to a competing website or destroy the affected company's reputation.

Theft of clients data

The eCommerce industry is full of cases where criminals have stolen the information about inventory data, personal information of customers, such as addresses and credit card details.

Damages to networks of computers

Attackers may damage a company's online store using worm or virus attacks.

Denial of service

Some hackers prevent legit users from using the online store, causing a reduction in its functioning.

Fraudulent access to sensitive data

Attackers can get intellectual property and steal, destroy, or change it to suit their malicious goals.

2. Malware, viruses, and online frauds

These issues cause losses in finances, market shares, and reputations. Additionally, the clients may open criminal charges against the company. Hackers can use worms, viruses, Trojan horses, and other malicious programs to infect computers and computers in many different ways. Worms and viruses invade the systems, multiply, and spread. Some hackers may hide Trojan horses in fake software, and start infections once the users download the software. These fraudulent programs may:

- hijack the systems of computers
- erase all data
- block data access
- forward malicious links to clients and other computers in the network.

3. Uncertainty and complexity in online transactions

Online buyers face uncertainty and complexity during critical transaction activities. Such activities include payment, dispute resolution, and delivery. During those points, they are likely to fall into the hands of fraudsters.

Businesses have improved their transparency levels, such as clearly stating the point of contact when a problem occurs. However, such measures often fail to disclose fully the collection and usage of personal data.

Risks Involved in e-Commerce

ONLINE SECURITY BREACHES

E-commerce businesses are constantly exposed to cyber security threats. Some risks that online businesses face are phishing attacks, website hacking, malware, credit card fraud, ransomware attacks and unprotected web services.

PRIVACY ISSUES

E-commerce businesses have to collect information about visitors and existing customers. This information can help to identify potential customers, provide great customer service, ensure personalized communication, and process payment transactions. However, to avoid legal problems, the information must be collected without interfering with rights of privacy.

INTELLECTUAL PROPERTY INFRINGEMENT

Violation of intellectual property is a common threat that can result in huge losses. Businesses in the e-commerce industry face the risk of copyright, patent and trademark infringement. Even when you have adequately protected your intellectual property, you may end up violating someone else's intellectual property. This could cost your online business a fortune.

PRODUCT LIABILITY ISSUES

E-commerce businesses are concerned about product liability issues. The products or services you sell online can be defective, result in some type of injury or cause damage to property. This could be due to design flaws, manufacturing defects or marketing defects. When this happens, your online business may face third party claims.

PROFESSIONAL LIABILITY CONCERNS

Even with through record keeping and clear communication, mistakes can happen when shipping items to customers. Because purchases are made online, e-commerce businesses typically make promises and enter into contracts before the actual transaction

takes place. However, there are times when you will run out of stock, orders will be misplaced, the wrong items are sent and orders will get lost in transit. This could be due to errors or warehouse and logistics challenges.

HUMAN ERROR

Apart from exposing you to professional liability, human error can also cause data loss. In fact, about 95 percent of cyber security breaches are caused by human error. An innocent mistake such as deleting a file, poor password hygiene, poor access control, or email misdelivery can present serious cyber risks.

To minimize the risk of losing important customer, employee, and business data, invest in a reliable backup and recovery solution.

PLATFORM DOWNTIME

Even a few minutes of system downtime can be disastrous for an online business. Outages may occur due to coding errors, a surge in traffic, problems with online payment systems, or scheduled downtime to update servers and security. Platform downtime will lead to business interruption and loss of productivity. When the outages are frequent and lengthy, they will damage your reputation and impact your bottom line.

NON-COMPLIANCE

E-commerce businesses must adhere to certain regulations relating to data privacy and protection. Business owners who operate without regard to the applicable laws run the risk of paying hefty financial penalties, serving time in prison or having their company shut down altogether. With this strict regulatory environment, non-compliance could jeopardize your business continuity.

Whether you sell locally or internationally, you should understand your obligations under these laws. This way, you will take statutory compliance seriously, something that will help you to protect your business, employees, and customers.

PROPERTY AND INVENTORY DAMAGE

Disasters happen, and they can take many different forms. Whether natural or man-made, these unforeseen events can have adverse effects on your online business. One of the potential risks that e-commerce businesses face is loss of premises and inventory damage due to disaster. Inventory can be damaged while in the warehouse or when in transit.

To ensure your online business survives and carries on after such disasters, you should have the right protection in place. Having adequate insurance coverage will minimize your financial loss and help you get your business back up and running.

Concept of network

A network can be defined as a group of computers and other devices connected in some ways so as to be able to exchange data. Each of the devices on the network can be thought of as a node. Each node has a unique address.

Addresses are numeric quantities that are easy for computers to work with, but not for humans to remember. Example: 204.160.241.98

Some networks also provide names that humans can more easily remember than numbers.

Computer Security

Computer security is also called cybersecurity. The protection of computer systems and information from harm, theft, and unauthorized use. Computer hardware is typically protected by the same means used to protect other valuable or sensitive equipment—namely, serial numbers, doors and locks, and alarms. The protection of information and system access, on the other hand, is achieved through other tactics, some of them quite complex.

Data and message security

Electronic data security is important at a time when people are considering banking and other financial transaction by PCs. One major threat to data security is unauthorized network monitoring also called packet sniffing.

Messaging Security is a program that provides protection for companies messaging infrastructure. It protects all the personal messages of the company which are related to company's vision and mission.

Types of Message

1. Message Confidentiality
2. Message and System Integrity
3. Message Authentication

Firewall

A Firewall is a network security device that monitors and filters incoming and outgoing network traffic based on an organization's previously established security policies. At its

most basic, a firewall is essentially the barrier that sits between a private internal network and the public Internet. A firewall's main purpose is to allow non-threatening traffic in and to keep dangerous traffic out.

Functions Of Firewall

A firewall acts as a barrier or gatekeeper between your computer and another network like the internet. It works like a traffic controller, monitoring and filtering traffic that wants to gain access to your operating system.

Types of Firewalls

Packet filtering

A small amount of data is analyzed and distributed according to the filter's standards.

Proxy service

Network security system that protects while filtering messages at the application layer.

Stateful inspection

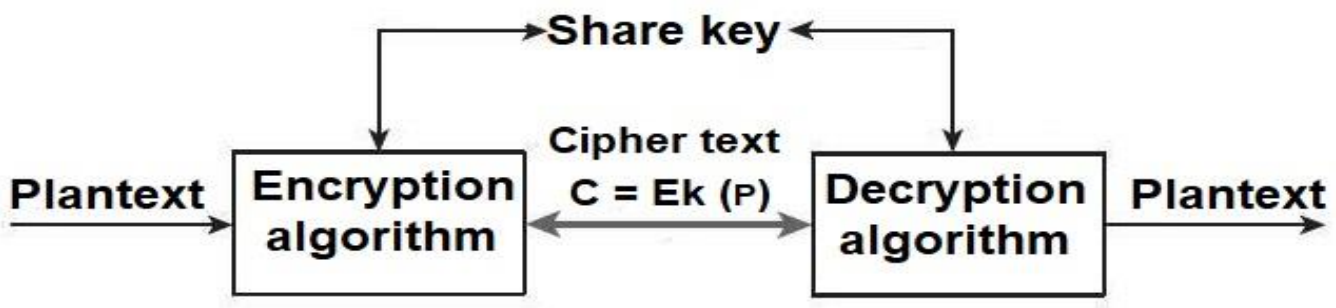
Dynamic packet filtering that monitors active connections to determine which network packets to allow through the Firewall.

Next-Generation Firewall (NGFW)

Deep packet inspection Firewall with an application-level inspection.

Cryptography

Cryptography is the method of protecting information and communication through the use of codes. So that only those for whom the information is intended can read and process. A plain text or message is converted in an unreadable text known as ciphertext using a mathematical algorithm this is known as encryption. At the receiver, the ciphertext is converted back to the original message which is known as decryption therefore cryptography is the combination of encryption and decryption.



Features Of Cryptography

Confidentiality:

Information can only be accessed by the person for whom it is intended and no other person except him can access it.

Integrity:

Information cannot be modified in storage or transition between sender and intended receiver without any addition to information being detected.

Non-repudiation:

The creator/sender of information cannot deny his or her intention to send information at a later stage.

Authentication:

The identities of sender and receiver are confirmed. As well as destination/origin of the information is confirmed.

Types of cryptography

Symmetric Key Cryptography:

It is an encryption system where the sender and receiver of a message use a single common key to encrypt and decrypt messages. Symmetric Key Systems are faster and simpler but the problem is that sender and receiver have to somehow exchange keys in a secure manner. The most popular symmetric-key cryptography system is Data Encryption System(DES).

Hash Functions:

There is no usage of any key in this algorithm. A hash value with a fixed length is calculated as per the plain text which makes it impossible for the contents of plain text to be recovered. Many operating systems use hash functions to encrypt passwords.

Asymmetric Key Cryptography:

Under this system, a pair of keys is used to encrypt and decrypt information. A public key is used for encryption and a private key is used for decryption. The public key and Private Key are different. Even if the public key is known by everyone the intended receiver can only decode it because he alone knows the private key.

Public Key in Cryptography

In cryptography, a public key is a large numerical value that is used to encrypt data. The key can be generated by a software program, but more often, it is provided by a trusted, designated authority and made available to everyone through a publicly accessible repository or directory.

Private Key in Cryptography

A private key, also known as a secret key, is a variable in cryptography that is used with an algorithm to encrypt and decrypt data. Secret keys should only be shared with the key's generator or parties authorized to decrypt the data. Private keys play an important role in symmetric cryptography, asymmetric cryptography, and cryptocurrencies.

A private key is typically a long, randomly, or pseudo-randomly generated sequence of bits that cannot be easily guessed. The complexity and length of the private key determine how easily an attacker can execute a brute-force attack, where they try out different keys until the right one is found.

Antivirus

Antivirus is a kind of software used to prevent, scan, detect and delete viruses from a computer. Once installed, most antivirus software runs automatically in the background to provide real-time protection against virus attacks.

Comprehensive virus protection programs help protect your files and hardware from malware such as worms, Trojan horses, and spyware, and may also offer additional protection such as customizable firewalls and website blocking.

Digital Signature

A digital signature is a unique cryptographic code that is attached to the documents, email, software, and digital certificate. It can be used to prove ownership of the certificate.

When a digital signed file is present it can use key pair linked with that signature to verify it. There is also a hash function. The hash function performs while signing that serves as a checksum. The digital signature is that. Let clients know that the entity is trusted and that what is signed is authentic.

Digital Certificate

A digital certificate is a cryptographic file that binds key pairs to validate an entity. When digital is issued, it is signed by a certificate authority (CA) that is issuing it. When the client is digitally certified by a certificate authority, this means that the client can be trusted. SSL Certificate is an example of a digital certificate.

Certificate Authority

A certificate authority (CA), also sometimes referred to as a certification authority, is a company or organization that acts to validate the identities of entities (such as websites, email addresses, companies, or individual persons) and bind them to cryptographic keys through the issuance of electronic documents known as digital certificates.

Third party authentication

Third-party authentication is based on the fact that virtually everyone on the Internet has an account on at least one top social networking site, such as Google, Facebook, Twitter or LinkedIn. All these platforms provide authentication and identification your users by using their media accounts.

Third-party authentication is often called federated authentication or delegated authentication. These terms are mostly interchangeable, although federated authentication is usually associated with the Security Assertion Markup Language (SAML) and OpenID, and delegated authentication is often associated with OAuth.

Secure Socket Layer (SSL)

SSL stands for Secure Sockets Layer. It is the standard technology for keeping an internet connection secure and safeguarding any sensitive data that is being sent between two systems, preventing criminals from reading and modifying any information transferred, including potential personal details. The two systems can be a server and a client (for example, a shopping website and browser) or server to server (for example, an application with personal identifiable information or with payroll information).

VPN (Virtual Private Network)

A virtual private network (VPN) extends a private network across a public network and enables users to send and receive data across shared or public networks as if their

computing devices were directly connected to the private network. The benefits of a VPN include increases in functionality, security, and management of the private network. It provides access to resources that are inaccessible on the public network and is typically used for remote workers. Encryption is common, although not an inherent part of a VPN connection.

A VPN is created by establishing a virtual point-to-point connection through the use of dedicated circuits or with tunneling protocols over existing networks. A VPN available from the public Internet can provide some of the benefits of a wide area network (WAN). From a user perspective, the resources available within the private network can be accessed remotely.

Unit-7: Electronic payment system (EPS)

Online banking

Online banking allows a user to conduct financial transactions via the Internet. Online banking is also known as Internet banking or web banking.

Online banking offers customers almost every service traditionally available through a local branch including deposits, transfers, and online bill payments. Virtually every banking institution has some form of online banking, available both on desktop versions and through mobile apps.

Online banking requires a computer or other device, an Internet connection, and a bank or debit card. In order to access the service, clients need to register for their bank's online banking service. In order to register, they need to create a password. Once that's done, they can use the service to do all their banking.

Advantage:

1. Online banking is fast and efficient.
2. Consumers can also monitor accounts regularly allowing them to keep their account safe.
3. The online banking service is 24hrs.

EPS

An electronic payment system is a way of making financial transactions or paying for goods and services through electronic medium without the use of cheque or cash. It is also known as an online payment system / E-payment system.

The EPS has grown increasingly over the last year due to the growing spread of internet based banking and shopping.

Types of EPS

Credit Payment System

a) Credit Card:

A form of electronic payment system which requires the use of a credit card issued by a financial institution to the card without the use of cash.

b) E-wallet:

It is the form of a prepaid account that stores users financial information, like debit and credit card information to make an online transaction easier.

c) Smart Card:

A plastic card with a microprocessor that can be loaded with funds to make transactions. They are also named as chip card.

Cash Payment System

a) Direct debit:

A financial transaction in which the account holder instructs the bank to collect a specific amount of money from his account electronically to pay for goods or services.

b) E-cheque:

It is a digital version of an old paper check. It is an electronic transfer of money from a bank account, usually a checking account without the use of a paper cheque. E-cheque uses digital signatures.

c) E-cash:

E-cash is a form of electronic payment system where a certain amount of money is stored in a client device and is available for online transactions.

Security Requirement of EPS

1. **Authentication**

   It is necessary to verify the consumer's identity before the payment is authorized.

2. **Encryption**

   Encryption is a process of making messages unreadable except by those who has

authorized decryption keys. Different mathematical algorithms are used for encryption and decryption of messages.

3. **Integrity**

   Ensuring that information is not intentionally or unintentionally changed or destroyed during transmission.

4. **Non-repudiation**

   Protection against customer's denying the order placed and against merchant's denying the payment made.

5. **Availability and reliability**

   The network and services like cellular network, internet provider should be available for the consumers and merchants. These services must be reliable in order to make electronic transactions easy.

6. **Privacy**

   A consumer's information should be confidential when he or she visits ecommerce websites. The account information of the customer should be made private and only available to that customer.

Secure electronic transaction (SET)

Secure electronic transaction or SET is a system which ensures security and integrity of electronic transactions. It uses different encryption and hashing techniques to secure payments over the internet done through credit cards. SET protocol was supported by different payment processors like VISA, Mastercard etc.

SET protocol restricts revealing of credit card details to merchants which keeps hackers and thieves out. SET protocol include standard digital certificate like X.509

SSL	SET
SSL stands for secure socket layer.	SET stands for secure electronic transaction.
SSL is a bit simpler than the SET.	SET is a complex mechanism.
SSL is a protocol for general purpose secure message exchange.	SET is tailored to the credit card payment.
SSL protocol can use a digital certificate but there is no payment gateway.	SET protocol hides the customer credit card information from the merchant and hides the info to the bank to protect privacy.

Payment System

A payment system is an electronic payment technology that contains several procedures including a payment processor which can be divided into two parts.

1. Front End processors:
   They have connections to various card associations and supply the merchant bank.
2. Backend processors:
   These processors accept settlement from frontend processors.

Payment Gateway

A payment gateway is a merchant service provided by an e-commerce application for service providers that authorizes credit card or direct payment processing for e-commerce. A payment gateway facilitates payment transactions by the transfer of information between a payment transaction by the transfer of information between a payment protocol like chrome, websites and front end processor for acquiring a bank.

Payment Processing

A payment processor, or payment facilitator acts as a mediator between a merchant and a financial institution, authorizing transactions and facilitating the transfer of funds. Some options for providers include Shopify, Square, Paysafe.

Payment Processing Network

For the payment system, it is important to handle the transaction between a merchant and the customer. There can be a series of interconnections to the payment processing network. The payment network sets the interchanging fees charred during payment processing. Within the electronic that the transactions are processed correctly including SET guidelines and qualifications requirements for member institutions.

Digital wallet

A digital wallet (or e-wallet) is a software-based system that securely stores users payment information and passwords for numerous payment methods and websites. By using a digital wallet, users can complete purchases easily and quickly with near-field communications technology. They can also create stronger passwords without worrying about whether they will be able to remember them later.

Digital wallets can be used in conjunction with mobile payment systems, which allow customers to pay for purchases with their smartphones. A digital wallet can also be used to store loyalty card information and digital coupons.

Online banking facilities of banks (Nepali banks)

Here are some facilities provided by the banks in nepal:

1. Money Transactions (Send / Receive)
2. Bill Payment
3. Online Ticketing
4. Bank Statement
5. Amount Inquiry

Unit-8: Legal and Ethical Issues

Issues related to e-Commerce

Abandoned carts

The e-commerce marketplace affords even the smallest retailer a global presence, yet the vast choice and blurring between online and offline experiences makes the buying process for the customer much more complicated. As it is essentially your sales funnel, understanding the exact process that a customer goes through when they're researching, deciding, and purchasing is key to knowing which buttons you may need to push along the way.

Lack of repeat purchases

In the pursuit of growth, encouraging previous shoppers to buy again should be a no brainer, but many get it wrong. Was their purchase a necessity? Did they have a good experience? How do you know?

Poorly designed images and website

Looks mean everything in the world of e-commerce. According to a survey by Marketingsignals.com, 61% of respondents said insufficient or poor-quality product imagery puts them off making a purchase.

Not communicating with customers

From weather patterns affecting package delivery times to suppliers falling behind in their orders, things don't always run to plan.

In the era of instant gratification, timely communication of good and bad news is critical. Autopilot allows you to easily let your customers know of any changes to their orders via follow-up emails and SMS reminders.

Legal issues

Intellectual Properties

Intellectual property is the creations of the mind such as inventions, literary, and artistic works, symbols, images, designs, used in e-commerce. This can be removed by copyright, trademark and patient.

Copyright

An exclusive grant from the government that allows the owner to reproduce partial or whole part to distribute performance or display it to the public.

Some of the copyrights are software, music, videos, and other similar types of digital resources.

Trademark

Registered symbols used by the businessman are called Trademarks. It is approved by the government and no-one other can use it.

Patent

Legal documents that grant the holder for the use of ideas or technologies.

Censorship

It is an attempt to control the material on the web. Censorship refers to the government's attempt to control in one way to another.

Ethical issues

Web tracking

Every time someone visits the web, the website system retains some trails of the users that can be referred to later, these trails are normal call logs. These logs contain all the records pertaining to what the users perform in the site. Logs as records mean, they can be retrieved or saved for later use.

Analysis of log files means turning log data into application service or installing software that can pluck relevant information from files in-house. Companies track individual's movements through tracking software and cookie analysis. Programs such as cookies raise a batch of privacy concerns. The tracking history is stored on your PC's hard disk, and any time you revisit a website, the computer knows it.

Online Privacy

It is necessary to protect the identity of a buyer who uses the Electronic Payment System. A privacy issue related to the employees of the company is tracking. Monitoring systems are installed in many companies to monitor e-mail and other web activities in order to identify employees who extensively use business hours for non-business activities. The e-commerce activities performed by a buyer can be tracked by organizations. These activities of monitoring customers raise ethical issues on how secure and anonymous information are being handled by the e-commerce providers.

Web Spoofing

Web spoofing is an electronic deception related to the Internet. It occurs when the attacker sets up a fake website which is almost totally the same as the original website in order to lure consumers to give their credit card number or other personal information. For example, the attacker setup a site called www.jumiaa.com using the addition of later 'a' at the end, which many users sometimes type by mistake. Users might find themselves in a situation that they do not notice they are using a bogus web-site and give their credit card details or other information.

Cybersquatting

Cybersquatting is an activity which a person or firm register, purchase and uses the existing domain name belong to the well-known organization for the purpose of infringing its trademarks. This type of person or firm, called cybersquatters, usually infringed the trademarks to extort the payment from the original trademark's owner. The extortion of payment occur when they offers the prices far greater than they had purchased the organization's domain name upon. Some cyber-squatters put up offensive remarks about the person or company which the domain is meant to represent in an effort to encourage the subject to re-buy their domain from them.

Privacy Invasion

The privacy invasion occurs when the personal details belonging to consumers are exposed to the unauthorized party. These can be seen in the following ways.

The personal information of consumers being transmitted may be intercepted by anyone other than the person whom it is intended for. Protecting the privacy of communication is a great challenge, due to the very nature of the online medium, an open network of digital telecommunications. It is technically and economically impossible to patch all the holes through which unauthorized intruders may gain access.

Email Spamming & phishing

E-mail spamming involved unsolicited commercial e-mail (UCE) sent or broadcast unwanted advertisement or correspondence over the Internet. The use of email spammers is meant to lure consumers to enter their personal information on a fake website using e-mail, forged to look like it is from an authorized organization such as a bank. The content of e-mail often directs the consumers to the fake website in order to lure them to fill in their personal information such as credit card or bank account's details. This technique is called phishing. And these illegal processes easily compromise the user's right and expose them to danger.

Taxation

The rapid growth of e-commerce, especially the sale of goods and services over the internet, has fuelled a debate about the taxation regimes to be used. The shift from a physically oriented commercial environment to a knowledge-based electronic environment poses serious and substantial issues in relation to taxation and taxation regimes. Tax administrations throughout the world face the formidable task of protecting their revenue base without hindering either the development of new technologies or the involvement of the business community in the evolving and growing e-market place. Concerns of governments center on the impact of e-commerce on the state and local revenue. Whereas states can impose a tax on residents' purchases from out-of-state vendors, they cannot impose an obligation on those vendors to collect the tax unless the vendor has a substantial presence, or nexus, in the state. These problems will be greater for developing countries. The shrinking of the tax base will have a disproportionate effect and further jeopardize the already fragile economy of the developing world.

Unit-9: Cyber law

Concept of Cyber Law

Modem says Internet technologies are vulnerable. The attackers are easily influenced by the system in order to protect the Internet from these possibilities cyber law is made.

Cyber law is the area of law that deals with the Internet relationship to technological and electronic elements including computers, software, hardware and information systems. It is also known as cyber law or Internet law.

Cyber law prevents or reduces large scale damage from cyber criminal activities by protecting information action, privacy, communication , intellectual properties, freedom of speech and so on related to the use of the Internet , websites, email, software , hardware etc. The increase in internet traffic has yet to have a higher proportion of legal issues world wide . Cyber law also varies by jurisdiction and country. Enforcement is challenging and restitution ranges from fines to imprisonment.

Some of the emerging trends of cyber law are listed below::

1. Strict regulatory rules are put in place by many countries to prevent unauthorized access to the network.
2. The mobile companies we call upon the governments of the world to reinforce cyber legal systems and administrations to regulate the emerging mobile threats and crimes.
3. Cloud computing is a major drawing trend with more advancement of technologies and volumes of data will flow into the cloud which is not free from cyber law.

Aims of cyber law

1. To promote growth of jurisprudence of cyber, security and law.
2. To do various research base activities which examine the emerging cutting-edge legal trends concerning the growth of cyber security law.
3. To create effective cyber crime laws.
4. To generate better awareness to battle the latest kinds of cyber crimes impacting all individuals or investors in digital and mobile networks.

5. Due to the implication of cyber law, there is a need to train the government authorities like police and cyber crime.
6. To emphasize the users of the Internet in any nation through a secure and legal environment.
7. To prevent assistance to law enforcement agencies and contribute to the fight against cyber crimes in the country.

Salient features of Cyber law

Cyber law is important because it touches almost all the asPects of transactions involving the internet, www, cyberspace etc. Every action and reaction in cyberspace have some legal and cyber legal perspectives. Cyber law encompasses laws relating to compass cyber crimes, electronic and digital signatures, intellectual properties/ copyright and trademark, data protection and privacy.

As an example. The government of Nepal has approved the Electronic Transaction Act-2006 on 4th December-2006. This law doesn't only legalize all sorts of electronic transactions and digital signatures but also has computer based mechanisms and penalizes cyber crimes . Apart from the Act, there are the terms of controller of certification authority which are further divided into 12-sections and 80-clauses. According to cyber law of Nepal,if any individual is found in cyber crimes like hacking the intellectual properties of others, he/she will be punished for minimums of 6-months to 3-years* of prison and has to pay minimum pay up to Rs.50,000 to 3-Lakhs.

Unit-10: Introduction to Entrepreneurship

Entrepreneur

An Entrepreneur is one who creates new business in the face of risk and uncertainty for the purpose of achieving profit and growth by identifying significant opportunities and assembling the necessary resources to capitalize them. Although many people form great business ideas must never act on their ideas but entrepreneurs do.

Entrepreneurship

Entrepreneurship is traditionally defined as the process of designing , launching, and running a new business offering a product process or service for sale or hire. PC It also

has been defined as "the capacity and willingness to develop, organize and manage business ventures along with any of its risks in order to make a profit".

Entrepreneurship typically operates within the entrepreneur ecosystem which upon includes government programs and services that promote entrepreneurship and support entrepreneur and small business associations entrepreneurial drive is the inbuilt encouragement. Some people possess the ability to make some things happen. It is the energy that possesses one forward as founder and force not to give-up in the case/fact of failure ultimately leading to success.

Entrepreneurship Development

Entrepreneurship Development also known as Entrepreneurship Development Program (EDP). The EDP is a program meant to develop entrepreneurial abilities among tech people. In other word, ENTREPRENEURSHIP DEVELOPMENT refers to tech development and polishing of Entrepreneurial skills into a person needed to establish and successfully run his / her enterprises .

Thus the concept of ENTREPRENEURSHIP DEVELOPMENT involves equipping a person with the required skills and knowledge needed for starting and running the enterprise. The main purpose is to widen the base of ENTREPRENEURSHIP by developing achievement motivation and ENTREPRENEURIAL skills among less privileged sections of the society.

Objectives of ENTREPRENEURSHIP DEVELOPMENT are:

- To develop and strengthen the ENTREPRENEURIAL quality that is the motivation needed for achievement.
- To understand the process and procedure involved in setting up the start-up phase.
- Formulate proportional for the product.
- Know the pros and cons of becoming an ENTREPRENEUR.
- To prepare him/her to accept the uncertainty in running of a business and to take decision
- according to them.
- To develop a broad vision about the business.

MANAGER

By the term "manager", we mean a person who gets things through his surrounding subordinates with the aim of accomplishing business objectives efficiently and effectively. The five primary concerns of a manager are planning, organizing, directing, motivating,

coordinating and controlling. The manager is in charge of the particular division unit or department of the company. He may directly command to offer or he may direct to the supervisors who will command the workers. Therefore, he is the one under whose supervisors, his subordinates work and report to him/her. a manager can be top-level, middle level and low-level.

Entrepreneur vs Entrepreneurship

Entrepreneur	Entrepreneurship
An entrepreneur is a person, or a team of individuals, having a vision, which not just generates money, but can also ease the way in which things are done, by providing such products and services that have value to the customer, while taking all the risks, which comes in the way.	Entrepreneurship is an art of turning an idea into reality, which is not only about arranging the resources to give shape to the idea but constantly making efforts in that direction, to earn profit in future and bearing all the risks or rewards.
An entrepreneur is just a person having a unique and practical idea in his/her mind.	Entrepreneurship is the process of starting and running a business of providing creative products and services.
An entrepreneur is an innovator, as he/she conceives an innovative idea, which is not yet introduced by anyone else in the market.	Entrepreneurship is the way through which one can make innovations.
An entrepreneur establishes the business venture, in order to convert the idea, into a product or service, which can help many by easing the way work is performed previously.	Entrepreneurship is all about undertaking the business and bearing all the risks that come in the way, to give a proper shape to the entrepreneur's vision.

Entrepreneur vs Manager

Entrepreneur	Manager
Owner: An entrepreneur is the owner of his own business.	**Servant:** A manager is a servant of his employer.
Profits: An entrepreneur earns profits from his business which is uncertain and unlimited.	**Salary:** A manager earns a salary which is generally certain and limited.
Full Risk Bearing: An entrepreneur is a person who has to take high risks for starting and running a venture.	**Less or No Risk Bearing:** A manager takes less or no risk while performing his job.
All Functions: An entrepreneur has to look	**Selective Functions:** A manager looks

after all the functions of his organization.	after selective functions of an organization.
Innovator: An entrepreneur is always an innovator, in the lookout for new products and services.	**Executor:** A manager is simply an executor who is responsible for executing the decisions of the owner and entrepreneur.

Entrepreneurial Culture

Virtually anyone has potential to become an entrepreneur. So an entrepreneurial culture is necessary to motivate the people towards their achievements. For many businesses, the reason behind their success is to institutionalize the values of its founders. It helps the entrepreneur to understand overall strategies of the business and helps to grow organizations established by the entrepreneur. Building a culture that encourages autonomy, risk-taking and entrepreneurial behavior is challenging for the companies that want to out-think the competition, an entrepreneurial culture is not optional, it is absolutely necessary.

Aspects of entrepreneurial culture:

1. Authenticity: An entrepreneur should be sincere and should be enthusiastic about entrepreneurial strategies and actions perceived by the business. An entrepreneur culture is based on the idea that each individual can be of powerful force for change in the organization.
2. Commitment of business
3. Continuous effort

Characteristics of entrepreneurs:

1. Attitude to risk and failure.
2. Opportunistic minded: It means not any opportunities should be lost by them.
3. Persistent: they should fully hope to do something.
4. Passionate and Focused: They should be focused on any passion or aim.
5. Seek out niches: Always curious to find out any gap opportunities in the market and just grasp them.
6. Living what you believe is also one of the characteristics of the entrepreneur.
7. Tolerance of risk.

Unit-11: Online marketing

Definition

Online marketing is a set of tools and methodologies used for promoting products and services through the internet. Online marketing includes a wider range of marketing elements than traditional business marketing due to the extra channels and marketing mechanisms available on the internet.

Concept of online marketing

- Growth in potential
- Reduced expenses
- Elegant communications
- Better control
- Improved customer service
- Competitive advantage

Advantages of online marketing

1. **Low Costs**

   Large audiences are reachable at a fraction of traditional advertising budgets, allowing businesses to create appealing consumer ads. Many advertising platforms also allow for scalable ads with different levels of reach that are proportioned to the advertising budget. Rather than committing a large amount of money to advertising, smaller companies can spend a small amount and still increase their reach.
2. **Flexibility and convenience**

   Consumers may research and purchase products and services at their leisure. Business blogs can be used to let consumers and prospects conduct their own research on the business's products as well as provide their feedback and reviews.
3. **Analytics**

   Efficient statistical results are facilitated without extra costs. Many advertising tools include their own analytics platforms where all data can be neatly organized and observed. This facilitates business intelligence efforts and data-driven decision making.
4. **Multiple options**

   Advertising tools include pay-per-click advertising, email marketing, interstitial ads

and banners, social media advertising, and local search integration (like Google Maps). Digital marketing companies usually offer their services across various online advertising channels by tuning their offer to the individual client's needs.

5. **Demographic targeting**

   Consumers can be demographically targeted much more effectively in an online rather than an offline process. Coupled with the increased analytics potential explained above, organizations can improve their targeting over time, have a clearer understanding of their customer base, and create specific offers that are shown only to certain demographics.

Online marketing Vs Offline marketing

Online Marketing	Offline Marketing
Online marketing is generally focused on content.	Offline marketing is generally focused on products.
Online marketing includes third parties like media, web content, search email, social media.	Offline marketing includes mass media, phone center, telephone.
Online marketing communicates customers with emails, chat, and social media .	Offline marketing communicates with customers with their mobile number and staff.
Target audience met at one place.	Target audience is scattered.
It is cost effective.	It has a high marketing cost.
It directly reaches out to the professionals of the industry and market.	It does not directly reach out to the professionals due to some barriers.
Prospective buyers cannot be visible.	It is directly visible to their prospective buyer.
Less people to manage.	Large people to manage.

Tools for online marketing

1. Email marketing
2. Social media marketing
3. Search engine optimization (SEO)
4. Display advertising like LinkedIn ads or Google Display Network

5. Search engine marketing (SEM)
6. Online events & webinars
7. A/B testing & website optimization
8. Content marketing
9. Video marketing
10. Marketing analytics like Google Analytics
11. Marketing automation
12. Customer relationship management (CRM)
13. Content management system (CMS)
14. Pay-per-click (PPC) advertising like Google Ads
15. Affiliate marketing

Tools for offline marketing

1. **Business Cards**

   Business cards coincide with personal interaction that company leaders and employees have with people in the community. Whenever someone at your business is out in public and the topic of the company comes up, he should take the opportunity to pass on a business card that prominently features your web address. This is an easy tool someone can stick in a wallet or card file and refer to at any point.

2. **Traditional Media**

   You can use traditional media to promote your business and website. Companies often close television commercials with the "www" address to direct people for more information or products. Print ads in newspapers and magazines are also great visual mechanisms to put your web address in front of readers. In radio commercials, commonly used by smaller companies, you can repeat your web address strategically throughout a commercial.

3. **Promotional Items**

   Giveaways are a great offline marketing tool that are as useful for a web-based business as they are for a brick-and-mortar company. You can give out low-cost items such as pens, pencils, notepads, calendars, stress balls and t-shirts with your website emboldened on them. This not only gives you exposure, but if the recipient reuses the item regularly, he gets ongoing recall of your brand and domain.

4. **Direct Mail**

   You can send direct mail pieces to prospects and customers to go along with any email marketing you use online. Direct mail has a relatively low response rate, but if you include magnets for the fridge or other little trinkets with your website, you may get more exposure and business. If someone stalks your magnet on the fridge, she may catch your site anytime she walks by. This can lead to a curious visit to your site or a customer opportunity when a need arises related to what you sell.

Issues with online marketing

1. **Social Media Management**

   Chances are you do not have your social media strategy figured out. Social media is still so young, that businesses are much more likely to have failed on social media than succeeded. This includes brands of all sizes - from the mom and pop shops to global brands with billions of dollars and seemingly unlimited manpower.

2. **Getting Value From SEO**

   We've written repeatedly on the challenges facing SEO firms today. From the changing algorithms to the lack of keyword data, it's become harder to get results and even harder to see results. Not a fun combination. The biggest losers were the companies that relied on these search engine rankings for the majority of their online revenue. Once the rankings disappeared, the revenue stopped.

3. **Multi-Device Usage**

   As a data-driven agency, one of our biggest challenges is how to track the visitor experience across multiple devices over the course of the consumer buying cycle.

4. **Optimizing The Mobile Experience**

   For years you've been hearing about the mobile revolution. I've watched client's mobile traffic go from 5% to 30% in the last couple years. With this shift in traffic comes drops in conversion rates, less time spent on site, and higher bounce rates.

5. **Competing With The Noise**

   As businesses continue to build out their online presence, consumers are provided with more and more choices. The streets have become crowded and everyone wants a piece of the action. Staying on the front end of the curve and rising above the noise is harder than ever. If you are selling the same thing at the same price to the same people, how can you expect to win more market share and grow your business?