

E-COMMERCE

B.B.A., Semester-II

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FOREWORD

Since its establishment in 1976, Acharya Nagarjuna University has been forging ahead in the path of progress and dynamism, offering a variety of courses and research contributions. I am extremely happy that by gaining 'A' grade from the NAAC in the year 2016, Acharya Nagarjuna University is offering educational opportunities at the UG, PG levels apart from research degrees to students from over 443 affiliated colleges spread over the two districts of Guntur and Prakasam.

The University has also started the Centre for Distance Education in 2003-04 with the aim of taking higher education to the door step of all the sectors of the society. The centre will be a great help to those who cannot join in colleges, those who cannot afford the exorbitant fees as regular students, and even to housewives desirous of pursuing higher studies. Acharya Nagarjuna University has started offering B.A., BBA and B.Com courses at the Degree level and M.A., M.Com., M.Sc., M.B.A., and L.L.M., courses at the PG level from the academic year 2003-2004 onwards.

To facilitate easier understanding by students studying through the distance mode, these self-instruction materials have been prepared by eminent and experienced teachers. The lessons have been drafted with great care and expertise in the stipulated time by these teachers. Constructive ideas and scholarly suggestions are welcome from students and teachers involved respectively. Such ideas will be incorporated for the greater efficacy of this distance mode of education. For clarification of doubts and feedback, weekly classes and contact classes will be arranged at the UG and PG levels respectively.

It is my aim that students getting higher education through the Centre for Distance Education should improve their qualification, have better employment opportunities and in turn be part of country's progress. It is my fond desire that in the years to come, the Centre for Distance Education will go from strength to strength in the form of new courses and by catering to larger number of people. My congratulations to all the Directors, Academic Coordinators, Editors and Lesson-writers of the Centre who have helped in these endeavours.

*Prof. P. Raja Sekhar
Vice-Chancellor (FAC)
Acharya Nagarjuna University*

Semester-II E-Commerce

Unit-I

Electronic Commerce: Definition, Types, advantages and disadvantages, E-Commerce transaction on World Wide Web. Electronic market-Online shopping, Three models of Electronic Market - e-Business.

Unit-II:

Supply Chain Management: Definition, Benefits, goals, functions, characteristics, Strategies of SCM, Electronic logistics and its implementation in business houses - Electronic Data Interchange (EDI): Benefits of EDI, applications, limitations, EDI Model.

Unit-III:

Electronic Payment Systems: Types of EPS- Traditional and Modern payment systems, electronic cash, steps for electronic payment, payment security -e-Security-cryptography, hacker, secure electronic transaction, secure-socket layer.

Unit-IV:

Customer Relationship Management Components of CRM, CRM Architecture, architectural components of a CRM solution, Electronic CRM. Need for Electronic CRM, E-CRM applications.

Unit-V:

HTML- Navigating the World Wide Web, Preparing to Publish on the Web, HTML and XHTML, Learning the basics of HTML, structure of HTML, creating simple web pages, formatting text with HTML, adding images, color and background, table creation, designing forms.

References:

1. PT Joseph SJ, E-Commerce: An Indian Perspective, Prentice Hall of India.
2. Effraim Turban, Joe Lee, David Kind-H Michael Chung, E-Commerce, A Management Perspective Pearson Education Asia.
3. Pandey US & Shukla Er.S., E-Commerce & M-Commerce Technology, S.Chand& Company New Delhi.
4. Gary P. Schneider, E-Commerce Strategy Technology & Implementation, Cengage Learning, New Delhi-2009.
5. Trepper, E-Commerce Strategies, Prentice Hall of India, New Delhi. 2006
6. Jonathan Reynolds, E-Business A Management Perspective, Oxford University Press.

B.B.A DEGREE EXAMINATION, NOVEMBER 2021

First Year - Second Semester

Part II : B.BA.

Paper-II – E-COMMERCE

Time : Three hours

Maximum : 70 marks

(SECTION A – (5 X 4 = 20 marks).

Write short answer for any FIVE of the following .

Each question carries 5 marks.

1. What do you mean by E-Commerce?
2. Write a brief note on World Wide Web.
3. Write a note on supply chain Management
4. What is E.D.I?
5. Write a brief note on Electronic payment systems.
6. Write the advantages of e-security.
7. What is CRM.
8. Write about HTML.

(SECTION B – (5 X 10 = 50 marks).

Answer the following question.

Each question carries ten marks.

9. (a) Explain the advantages and disadvantages of online shopping.
OR
(b) Explain the three models of Electronic market.
10. (a) Explain the functions of supply chain Management.
OR
(b) Explain the benefits of Electronic Data Interchange.
11. (a) Explain the steps involved in Electronic payment.
OR
(b) Explain various types of Electronic payment system.
12. (a) Explain the need for electronic customer Relationship Management.
OR
(b) Explain the architectural components of a CRM solution
13. (a) Explain the process of creating Simple web page.
OR
(b) Explain the structure of HTML.

E-COMMERCE

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E Commerce

Unit 1

Meaning of Electronic Commerce:

E-commerce is a popular term for electronic commerce or even internet commerce. The name is self-explanatory it is the meeting of buyers and sellers on the internet.

This involves the transaction of goods and services, the transfer of funds and the exchange of data.

The term electronic commerce (ecommerce) refers to a business model that allows companies and individuals to buy and sell goods and services over the Internet.

It also includes the transfer of money and data to complete the sales through internet.

It's also known as electronic commerce or internet commerce.

Nearly every imaginable product and service is available through ecommerce transactions, including books, music, plane tickets, and financial services such as stock investing and online banking.

Examples of E-Commerce:

Amazon, Flipkart, eBay, Fiverr, Upwork, Olx, Quikr, Electronic Commerce

History of Ecommerce:

Most of us have shopped online for something at some point, which means we've taken part in ecommerce. So it goes without saying that ecommerce is everywhere.

But very few people may know that ecommerce has a history that goes back before the internet began.

Ecommerce actually goes back to the 1960s when companies used an electronic system called the Electronic Data Interchange to facilitate the transfer of documents. But it wasn't until 1994 that the very first transaction took place. This involved the sale of a CD between friends through an online retail website called Net Market.

The industry has gone through so many changes since then, resulting in a great deal of evolution.

Traditional brick-and-mortar retailers were forced to embrace new technology in order to stay afloat as companies like Alibaba, Amazon, eBay, and Etsy became household names.

These companies created a virtual marketplace for goods and services that consumers can easily access.

New technology continues to make it easier for people to do their online shopping.

People can connect with businesses through smart phones and other devices and by downloading apps to make purchases.

The introduction of free shipping, which reduces costs for consumers, has also helped increase the popularity of the ecommerce industry.

An Understanding of Ecommerce:

As noted above, ecommerce is the process of buying and selling tangible products and services online.

It involves more than one party along with the exchange of data or currency to process a transaction.

It is part of the greater industry that is known as electronic business (ebusiness), which involves all of the processes required to run a company online.

Ecommerce has helped businesses especially those with a narrow reach like small businesses gain access to and establish a wider market presence by providing cheaper and more efficient distribution channels for their products or services with an online store that allows customers to purchase everything from clothes and coffeemakers to toothpaste and any other products and services.

Execution Procedure of E Commerce:



The following steps will help you understand the procedure of how a product can be ordered and received online with the use of e commerce:

Step 1: E-commerce is powered by the internet, where customers can access an online store to browse through, and place orders for products or services via their own devices.

Step 2: As the order is placed, the customer's web browser will communicate back and forth with the server hosting the online store website.

Step 3: Data pertaining to the order will then be relayed to a central computer known as the order manager.

Step 4: Then it is forwarded to databases that manage inventory levels, a merchant system that manages payment information (using applications such as PayPal), and a bank computer before circling back to the order manager.

This is to make sure that store inventory and customer funds are sufficient for the order to be processed.

Step 5: After the order is validated, the order manager will notify the store's web server, which will then display a message notifying the customer that their order has been successfully processed.

Step 6: The order manager will then send order data to the warehouse or fulfillment department, in order for the product or service to be successfully dispatched to the customer.

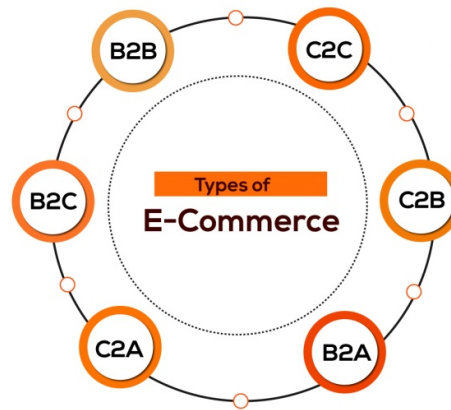
At this point tangible and/or digital products may be shipped to a customer, or access to a service may be granted.

Platforms that host e-commerce transactions may include online marketplaces that sellers simply sign up for, such as Amazon.com; software as a service (SaaS) tools that allow customers to 'rent' online store infrastructures; or open source tools for companies to use in-house development to manage.

Types of e-commerce:

The following are the different types of e-commerce platforms:

- Business-to-Business (B2B)
- Business-to-Consumer (B2C)
- Consumer-to-Consumer (C2C)
- Consumer-to-Business (C2B)
- Business-to-Administration (B2A)
- Consumer-to-Administration (C2A)

**Business-to-business (B2B):**

B2B e-commerce refers to the electronic exchange of products, services or information between businesses rather than between businesses and consumers.

Examples include online directories and product and supply exchange websites that allow businesses to search for products, services and information and to initiate transactions through e-procurement interfaces.

In 2017, Forrester Research predicted that the B2B e-commerce market will top \$1.1 trillion in the U.S. by 2021, accounting for 13% of all B2B sales in the nation.

Business-to-consumer (B2C):

B2C is the retail part of e-commerce on the internet. It is when businesses sell products, services or information directly to consumers.

The term was popular during the dot-com boom of the late 1990s, when online retailers and sellers of goods were a novelty.

Today, there are innumerable virtual stores and malls on the internet selling all types of consumer goods.

The most recognized example of these sites is Amazon, which dominates the B2C market.

Consumer-to-consumer (C2C):

C2C is a type of e-commerce in which consumers trade products, services and information with each other online.

These transactions are generally conducted through a third party that provides an online platform on which the transactions are carried out.

Online auctions and classified advertisements are two examples of C2C platforms, with eBay and Craigslist being two of the most popular of these platforms. Because eBay is a

business, this form of e-commerce could also be called C2B2C i.e., consumer-to-business-to-consumer.

Consumer-to-business (C2B):

C2B is a type of e-commerce in which consumers make their products and services available online for companies to bid on and purchase. This is the opposite of the traditional commerce model of B2C.

A popular example of a C2B platform is a market that sells royalty-free photographs, images, media and design elements, such as iStock. Another example would be a job board.

Business-to-administration (B2A):

B2A refers to transactions conducted online between companies and public administration or government bodies. Many branches of government are dependent on e-services or products in one way or another, especially when it comes to legal documents, registers, social security, fiscals and employment. Businesses can supply these electronically. B2A services have grown considerably in recent years as investments have been made in e-government capabilities.

Consumer-to-administration (C2A):

C2A refers to transactions conducted online between individual consumers and public administration or government bodies. The government rarely buys products or services from citizens, but individuals frequently use electronic means in the following areas:

- Education: Disseminating information, distance learning/online lectures, etc.
- Social security: Distributing information, making payments, etc.
- Taxes: Filing tax returns, making payments, etc.
- Health: Making appointments, providing information about illnesses, making health service payments, etc.

Mobile e-commerce (M-commerce):

This is a type of e-commerce on the rise that features online sales transactions made using mobile devices, such as smartphones and tablets.

M-commerce includes mobile shopping, mobile banking and mobile payments. Mobile chatbots also provide e-commerce opportunities to businesses, allowing consumers to complete transactions with companies via voice or text conversations.

Pros and Cons of E Commerce:

Advantages of e-commerce:

Benefits of e-commerce include its around-the-clock availability, the speed of access, the wide availability of goods and services for the consumer, easy accessibility and international reach.

Availability:

Aside from outages or scheduled maintenance, e-commerce sites are available 24x7, allowing visitors to browse and shop at any time. Brick-and-mortar businesses tend to open for a fixed number of hours and may even close entirely on certain days.

Speed of access:

While shoppers in a physical store can be slowed by crowds, e-commerce sites run quickly, which is determined by compute and bandwidth considerations on both consumer device and e-commerce site. Product pages and shopping cart pages load in a few seconds or less. An e-commerce transaction can comprise a few clicks and take less than five minutes.

Wide availability:

Amazon's first slogan was "Earth's Biggest Bookstore." They could make this claim because they were an e-commerce site and not a physical store that had to stock each book on its shelves.

E-commerce enables brands to make a wide array of products available, which are then shipped from a warehouse after a purchase is made. Customers will likely have more success finding what they want.

Easy accessibility:

Customers shopping a physical store may have a hard time determining which aisle a particular product is in. In e-commerce, visitors can browse product category pages and use the site search feature to find the product immediately.

International reach:

Brick-and-mortar businesses sell to customers who physically visit their stores. With e-commerce, businesses can sell to any customer who can access the web. E-commerce has the potential to extend a business' customer base.

Lower cost:

Exclusive e-commerce businesses avoid the cost associated with physical stores, such as rent, inventory and cashiers, although they may incur shipping and warehouse costs.

Personalization and product recommendations:

E-commerce sites can track visitors' browse, search and purchase history. They can use this data to present useful and personalized product recommendations, and obtain valuable insights about target markets.

Examples include the sections of Amazon product pages labeled "Frequently bought together" and "Customers who viewed this item also viewed."

Disadvantages of E Commerce:

The perceived disadvantages of e-commerce include sometimes limited customer service, consumers not being able to see or touch a product prior to purchase and the wait time for product shipping.

High Setting up Costs:

The start-up costs of the e-commerce portal are very high. The setup of the hardware and the software, the training cost of employees, the constant maintenance and upkeep are all quite expensive.

Risk of failure:

Although it may seem like a sure thing, the e-commerce industry has a high risk of failure. Many companies riding the dot-com wave of the 2000s have failed miserably. The high risk of failure remains even today.

Limited customer service:

If a customer has a question or issue in a physical store, he or she can see a clerk, cashier or store manager for help. In an e-commerce store, customer service may be limited.

The site may only provide support during certain hours of the day, or a call to a customer service phone number may keep the customer on hold.

Not being able to touch or see:

While images on a webpage can provide a good sense about a product, it's different from experiencing it "directly," such as playing music on speakers, assessing the picture quality of a television or trying on a shirt or dress.

E-commerce can lead consumers to receive products that differ from their expectations, which leads to returns. In some scenarios, the customer bears the burden for the cost of shipping the returned item to the retailer.

Wait time:

If a customer sees an item that he or she likes in a store, the customer pays for it and then goes home with it. With e-commerce, there is a wait time for the product to be shipped to the customer's address. Although shipping windows are decreasing as next day delivery is now quite common, it's not instantaneous.

Security:

Skilled hackers can create authentic-looking websites that claim to sell well-known products. Instead, the site sends customers counterfeit or imitation versions of those products or, simply collects customers' credit card information.

Legitimate e-commerce sites also carry risk, especially when customers store their credit card information with the retailer to make future purchases easier. If the retailer's site is hacked, hackers may come into the possession of customers' credit card information.

World Wide Web (www):

Mobilizing the power of the Web as well as continuously improvising technology is the core of the success of an organization. In order to stay ahead of the curve in the highly competitive ecommerce market, organizations must reduce costs, increase efficiency, boost productivity, and advance communications.

Integrating the Web into a strategic business plan can aid in achieving these goals efficiently.

While the World Wide Web can be used as sales and marketing tool, it can also be used to enhance the efficiency of an ecommerce business by facilitating the sales, order, tracking, and delivery processes.

Understanding World Wide Web and Electronic Transactions:

The WWW is a browser or web browser that lets users' access web pages and web programs.

The browsers include Internet Explorer, Firefox, Opera, Safari, and Google Chrome.

The first page displayed on a website is termed as the Home Page.

The web pages provide links of other web pages which is known as surfing or browsing.

A web page owns a unique address known as the Web Address or URL.

The tabbed browsing lets you open and accesses multiple Web Pages in a single browser.

There are two types of search tools, Subject Directory that classifies the Web Pages in different categories, and Search Engine that searches information regarding a specific topic.

Refreshing the meaning of ecommerce, it is a business transaction that occurs on the electronic network. An email or electronic mail is the transfer of information using the network. One can compose, send, receive, forward, save, print, and delete your emails.

This email communication is facilitated by the World Wide Web.

The history of the WWW and Ecommerce:

When the internet was first invented during the 20th century, its use was limited to government organizations, researchers, and universities for a long time.

The hidden commands were what restricted and unsuited for businesses to use the internet.

With the invention of electronic mails or e-mails, organizations started using the internet.

Earlier organizations employed the internet for internal as well as external communication in the company.

In the year 1989, an easier way to communicate and share information through a network known as the World Wide Web was invented in the CERN laboratories by Tim Berners-Lee. This was when businesses started using the internet as a way of business by sharing information for their growth.

With the trend of internet connection and web browsers becoming the new normal, businesses started purchasing domain names and aimed at creating a website.

Two of the most successful ecommerce giants today, Amazon and eBay, were established back in the year 1994. In the late 1990s, the rush in the ecommerce business investment led to the dot-com bubble and in the early 2000s, the dot-com bubble busted. Although the dot-com bubble had a few drawbacks, it helped in internet connections were laid around the globe for thousands of miles during the time.

After this was the beginning of the globalization era. With the emergence of the digital world, the threats imposed by worms and viruses through sharing increased at a dreadful pace. Later, a whole new industry of internet security and the computer emerged.

Role of World Wide Web (WWW) in Electronic Transactions:

Businesses have been using the internet as well as WWW for a decade. Majority of businesses use WWW as a tool for displaying their as well as their business' data.

With the increasing acceptance of online shopping, the ratio of companies offering online ordering and payment services are increasing day after day.

The requirement for e-commerce comes from the need inside the business to make good & efficient use of computing, which means to make use of computer technology in such a way to enhance business processes and exchange of information both inside and across an enterprise

Electronic commerce applications are quite varied. In its most common form, it is also used to denote the exchange of business information using EDI (Electronic Data Interchange), E-mail, EFT(electronic funds transfer) etc, and other similar technologies.

The business functions like payment and funds transfer, management of inventory, electronic catalogs etc act as initiators to the entire order management cycle that incorporates the more established notions of electronic commerce.

In short, what we are witnessing is the use of the term electronic commerce as an umbrella concept to integrate a wide range of new and old applications.

Key Applications of the Internet and WWW in Ecommerce:



Direct Selling

With the help of the World Wide Web, people from around the globe can visit virtual shops and malls online, browse through various product catalogues, get all the details of the products, and purchase them directly from the website.

All these functions of an ecommerce store are possible only through the multimedia functions of the World Wide Web. Also, any individual can now sell online to any part of the world without the need for visiting the place through such virtual shops using WWW.

Communication

Email or electronic mail is the most common mode of communication from businesses to customers as well as from businesses to businesses. It is a low-cost and effective way to communicate through the large network of the World Wide Web.

Ecommerce is a business that requires active communication between the sellers and customers as well as among multiple sellers. Using email, this communication can be done easily without boundary limitations or lack of target audience.

Marketing

WWW has evolved to become a medium that instils trusts on a new website. Every website is now set up on the World Wide Web. Therefore, such websites get access to millions of potential customers from around the globe.

With the help of the World Wide Web, any ecommerce website can market their services to the world within a few seconds and lower costs as compared to the traditional marketing methods.

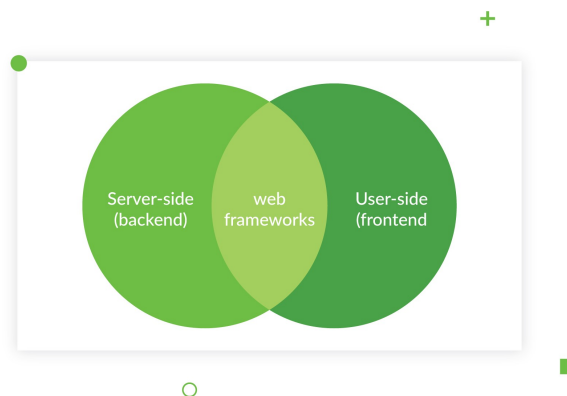
Research and Development

Ecommerce businesses that are in the niche of research and development can get additional advantage from the World Wide Web. They can collect all the information for their research and development through the WWW network. The users can get their queries resolved by businesses using online communication.

Similar to the internet, the use of WWW has significantly increased since its inception. The internet and electronic mail together have changed the way how businesses work today.

Customers now pay huge amounts to purchase expensive products online without ever having to speak to a salesperson. Moreover, customers can track their order statuses, pay bills online, and pursue degrees online, all without the need for in-person contact. All these have only been possible with the World Wide Web.

Major Entities of Web Framework:



The Web framework includes three major entities:

- The client browser
- The web browser
- The third-party services

The client browser:

It communicates with the WWW server which intermediates the communication with the third-party services.

The client browser is included in the users' device and caters to different types of content.

The client browser is rested on the user's PC or workstation and provides an interface to the various type of content.

The browser has to be smart enough to understand what file it is downloading and what browser connection it requires to activate to display the file. Browsers are also capable of manipulating local files.

The Web server can be considered useful for managing data, transaction, and security.

The third-party services can be considered as other web services that are inclusive of electronic payment systems, information processing tools, and digital library.

E commerce Transactions on World Wide Web:

Online transaction is a payment method in which the transfer of fund or money happens online over electronic fund transfer.

Online transaction process (OLTP) is secure and password protected.

Three steps involved in the online transaction are Registration, Placing an order, and, Payment.

Different Stages of Online Transaction:

Online transaction processing (OLTP) is information systems that facilitate and manage transaction-oriented applications, typically for data entry and retrieval transaction processing. So online transaction is done with the help of the internet. It can't take place without a proper internet connection.

Online transactions occur when a process of buying and selling takes place through the internet. When a consumer purchases a product or a service online, he/she pays for it through online transaction.

Stages of Online Transaction:

There are three stages of Online Transactions

Pre-purchase/Sale:

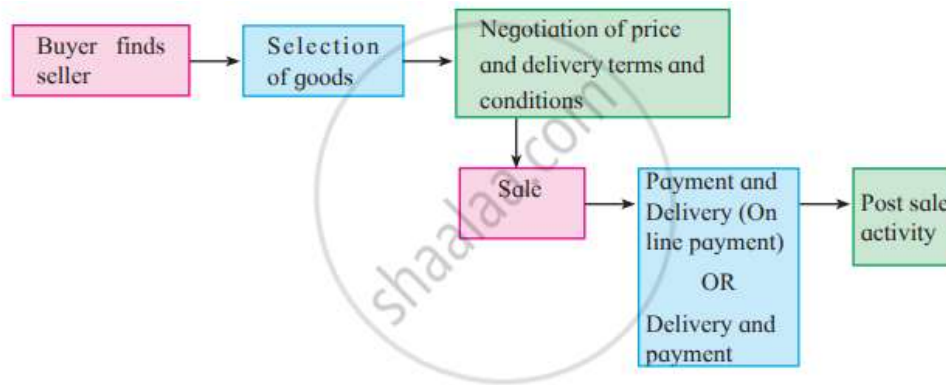
In this stage, the product or service is advertised online with some details for the customers.

Purchase/Sale:

When a customer likes a particular product or service, he/she buys it and makes the payment online

Delivery Stage:

This is the final stage where the goods bought are delivered to the consumer.



Steps Involved in Online Transactions:

The following are the steps involved in Online Transaction:

1. Registration

The consumer has to register online on the particular website to buy a particular good or service.

The customer's email id, name, address, and other details are saved and are safe with the website. For security reasons, the buyer's account and his shopping cart is password protected.

2. Placing an Order

When a customer likes a product or a service, he/she puts the product in the shopping cart. The shopping cart gives a record of all the items selected by the buyer to be purchased, the number of units or quantity desired to be bought per item selected and the price for each item.

The buyer then proceeds to the payment option after selecting the products he chooses.

3. Payment

The buyer then has to select the payment option, he/she has various payment options. These payment pages are secured with very high-level encryptions so that the personal financial information that you enter bank/card details stays completely secure.

Some ways in which you can make this payment are:

Cash on Delivery: The Cash on Delivery option lets the buyer pay when he/she receives the product. Here, the payment is made at the doorstep. The customer can pay in cash, or by debit or credit card.

Cheque: In this type of payment, the buyer sends a cheque to the seller and the seller sends the product after the realization of the cheque.

Net Banking Transfer: Here, the payment is transferred from the buyer's account to the seller's account electronically i.e. through the internet. After the payment is received by the seller, the seller dispatches the goods to the buyer.

Credit or Debit Card: The buyer has to send his debit card or credit card details to the seller, and a particular amount will be deducted from his/her account.

Digital Cash: Digital Cash is a form of electronic currency that exists only in cyberspace and has no real physical properties. Here the money in buyer's bank account is converted into a code that is saved on a microchip, a smart card or on the hard drive of his computer. When he makes a purchase, he needs to mention that particular code to the website and thereafter the transaction is duly processed.

ELECTRONIC MARKETS

E-marketing is the process of online marketing of a product, service, enterprise or brand. E-marketing not only includes marketing done on the Internet but also involves marketing through wireless media and e-mail.

Electronic marketing can include indirect and interactive marketing elements or direct response marketing.

When e-marketing strategies are implemented correctly, the return on investment (ROI) can be higher than traditional marketing.

Meaning of e Marketing :

Electronic Marketing is the process of marketing a product, service or brand using the Internet.

E-Marketing is the future of shopping today, as it has contributed to changing the ways of buying and selling services and products.

E-marketing is every activity that is done on the Internet to reach a potential or target customer, in order to market a product, service, or content and achieve the highest level of sales, and then gain the highest level of profits.

E-marketing relies mainly on the emergence of e-commerce, which helps to reduce the apparent gap between the manufacturer and the consumer.

E-Marketing manages to achieve the satisfaction of a large number of customers because it provides many options for buying online.

E-marketing can be defined as the advertisement of services and products and their sale through the Internet, through the use of websites and e-mail.

Although electronic marketing is a relatively new field, it has witnessed significant growth and development during the past few years. Moreover, it is an area that is constantly evolving, and which is always new.

E-marketing is not just a branch of marketing in general, but it represents the nature of a technological age in which we live now.

So there is no wonder that we find that electronic marketing contributed greatly to the development and formation of the concept of marketing in general.

The Evolution of E-Marketing

The concept of marketing, in general, is adaptable and changeable to keep pace with technological developments. Therefore, traditional marketing did not depend on divided customer demands according to the market sectors.

Due to the emergence of many variables such as advertising, products, distribution, and prices, e-marketing aims to increase market share and business for institutions.

The development of e-marketing requires the presence of four variables: individuals, distribution, technology, and information and all of these variables are means of developing new offer or attracting new customers.

E-marketing based on the use of the technology aims to increase the profits of enterprises and make an effort to achieve the personal needs of customers in an interactive and permanent manner.

Digital developments have made the view towards e-marketing equivalent to that of traditional marketing.

Characteristics of Electronic Marketing



There are many characteristics that distinguish e-marketing, the most important of which are:

Addressability: the ability to apply transmission is the contribution of the Internet by providing assistance to agencies in order to determine their customers even before the implementation of the purchase. The role of digital technology is to provide multiple options for website users to determine their requirements.

Interactivity: Interactivity is the ability of customers to express their desires directly to enterprises, through their response and interaction with the marketing communications issued by these institutions.

Memory: It is the ability of electronic marketing to access databases that contain information about customers and their purchase dates.

Memory storage helps agencies that use electronic marketing to obtain customer information in a timely manner in order to provide marketing offers to them.

Control: This provides customers with the ability to control all the information provided through them; it provides customers only the information they want, and without forcing them to provide any confidential information.

Accessibility: This provides more detailed information to customers about the institutions' products and prices, while activating the ability to compare a group of products. Therefore, commercial institutions seek to develop their products based on the wishes of existing customers, and in an effort to reach new customers.

Types of e-Marketing:

E-marketing is divided into a different types serving different purposes, namely:

E-marketing targeted to end customers: It is marketing that is concerned with the use of electronic means and aims to reach customers.

E-marketing applied between institutions: It is marketing that focuses on achieving a correlation between institutions and it contributes to achieving the benefits related to them.

Dual Distribution e-Marketing Strategies: This is the marketing that seeks to achieve the goals of customer-oriented marketing and e-marketing applied between institutions.

Government e-Marketplace (GeM): It is marketing that relies on the use of electronic means in order to provide services for both business and government institutions between them, which leads to achieving benefit for all, and helps to save time, and reduces the effort dependent on routine procedures

Methods of e-Marketing



The most important e-marketing methods include:

Search engine optimization (SEO):

Search engines are relying on the use of a special type of website that contributes to providing information stored on all websites on the Internet and helps to achieve the desired goal of electronic marketing.

Search engine optimization (SEO) is an important source of attracting customers and a method used to increase the number of visitors to the website that contains the products.

Search Engine Marketing (SEM): Search engine marketing is a type of digital marketing and it is one of the electronic marketing channels.

SEM seeks to increase and improve the appearance of the site to be marketed on the search engine results page.

As the owner of a product or service, the emergence of your site to top the first results in the search engines increases the number of visitors and thus increases profits.

Paid advertising: Paid advertising rectangles come first among the methods used in electronic marketing and are considered one of the most popular advertising methods across the Internet, as many website users see them.

Affiliate Marketing: Affiliate marketing is a performance-based marketing system in which a seller of a product pays a dependent commission when someone purchases his product.

The "product" can be physical like books, clothing, jewelry, natural medicines, etc. or digital like e-books, e-reports, programs, online courses, etc.

When your visitor clicks on your affiliate link on your site, they are redirected to the seller's website, where the seller will close the sale.

When a visitor to your site purchases a seller's product, you get a commission.

Social Media Marketing (SMM): Advertising and promotion of products via social media on the Internet. This branch of electronic marketing can be considered Word-Of-Mouth Marketing (WOM Marketing) across the World Wide Web.

There are specific tools designed to help marketers know how effective social media marketing is and what improvements you might want to do to increase this effectiveness.

Email marketing: Email marketing is a highly active, cost-effective way to get your marketing message across to existing and potential customers. E-mails are very important in e-marketing. Many marketing officials are interested in designing e-mail forms that contain many different and interactive designs of products in order to reach consumers.

Email marketing mainly depends on having a valuable email list, so if you haven't had a chance to build it before, then it's time for that.

Advantages of E-marketing

Following are the major advantages of using e-marketing for products, services and brands.

Less Risky

The good thing about using e-marketing is that it doesn't involve too much risk. The online and social media marketing campaigns are much cheaper compared to TV, billboards, and newspaper advertisements. The e-marketing initiation and operational cost of online retail stores are very low compared to the establishment of physical stores. When you add all of these factors, it makes e-marketing less risky than traditional marketing.

Cost Reduction by Automation

E-marketing also provides the option of automating various processes of your business. For instance, you can send the customers orders directly to the third-party suppliers and ask them to send the order directly to the customers. Here automation is allowing you to save inventory cost, logistic cost, inventory management cost, rental cost, and product delivery costs.

Fast Response

Speed and fast response is the key to the success and widespread usage of e-marketing. It allows you to reply to your audience instantly regardless of the distance. It's because of the fast response; the world has become a global village. The speed and fast interaction is the main reason behind the technological growth and development in the past few decades. If people were using the conventional modes of communication like newspapers, books, and face-to-face interaction, then we wouldn't be able to see the current technology.

Easy Data Collection & Evaluation

When it comes to data collection to monitor the performance of your business, there's no better alternative than e-marketing tools. Consider if you have to collect through conventional and traditional way, then it would months and plethora of monetary resources. But you can do it within a day online. Whether it's data collection, evaluation, monitoring the performance of your business, or checking the analytics of your business; it's only possible through an e-marketing approach.

Personalization

Personalized marketing is the latest and modern approach in the e-marketing world. Where you treat your customers like you know them based on the shopping data you have collected from them. It's almost impossible to remember the names of hundreds of thousands of customers on the tip of your tongue. Only e-marketing allows you to follow the personalized marketing approach in your business.

More Interactions

With the combination of the e-marketing approach with social media marketing, you can increase the interaction with your target customers. You interact with your audience by using the personalized marketing approach. The more you're active in your interaction with your audience, the more you increase the chances for the success of your business. It's our human nature that we tend to visit those places where we're familiar with them.

More Exposure

The most important thing from the business point of view is that e-marketing increases the exposure of your product/service. It's the main concern of every new business owner that they want their product to be out there in the market where people could see it. More exposure to your products means that it would increase the chances of sales.

Global Accessibility

E-marketing has made it possible for the business to reach the global market. Everyone is familiar with global brands like Google, Facebook, Microsoft, Apple, and Amazon. It's because of e-marketing such brands have become global brands and reach a worldwide audience. Many new brands are rising is because of the advanced e-marketing approaches.

Disadvantages of E-marketing:

Below are the important disadvantages of using e-marketing strategy for your products and services.

Relying on Technology

Of course, e-marketing has many advantages, but it's completely reliant on technology and the internet. You can't do anything without modern technological tools like computers, the internet, operating systems, software, and applications. If anyone of the tools isn't working, your whole business would be shutdown. But it's completely reliant only on technology, and it makes e-marketing and other relevant businesses very risky.

Privacy & Security Issues

Customers' privacy and their data security are some of the major issues of our technological time. That's why customers are hesitant and reluctant to join the new platform because of the privacy and security issues. That's why it makes it very difficult for new businesses to attract customers on their platform.

Maintenance Cost

E-marketing reduces many costs, but it increases the cost of buying tech tools and maintenance costs. You have to hire developers and tech professionals to manage your web-

platform. Tech tools are also very costly to buy. When you combine all of these costs, then it becomes a significant amount of expense to run your business.

Higher Price Competition

Since any tech professional can launch an online business and he's doing all the work. Therefore, his expenses are very low compared to the person who's hiring other professionals. Resultantly, tech professionals would offer low price products/services to the customers. That's why new online businesses have to face huge price competition.

ONLINE SHOPPING

Meaning

Online shopping is a form of electronic commerce which allows consumers to directly buy goods or services from a seller over the Internet using a web browser or a mobile app.

Consumers find a product of interest by visiting the website of the retailer directly or by searching among alternative vendors using a shopping search engine, which displays the same product's availability and pricing at different e-retailers.

As of 2020, customers can shop online using a range of different computers and devices, including desktop computers, laptops, tablet computers and smart phones.

An online shop evokes the physical analogy of buying products or services at a regular "bricks-and-mortar" retailer or shopping center; the process is called business-to-consumer (B2C) online shopping.

When an online store is set up to enable businesses to buy from other businesses, the process is called business-to-business (B2B) online shopping.

A typical online store enables the customer to browse the firm's range of products and services, view photos or images of the products, along with information about the product specifications, features and prices.

Online stores usually enable shoppers to use 'search' features to find specific models, brands or items.

Online customers must have access to the Internet and a valid method of payment in order to complete a transaction, such as a credit card, an Internet-enabled debit card, or a service such as PayPal.

For physical products (e.g., paperback books or clothes), the e-tailer ships the products to the customer; for digital products, such as digital audio files of songs or software, the e-tailer usually sends the file to the customer over the Internet.

The largest of these online retailing corporations are Alibaba, Amazon.com, and eBay.

Characteristics of a good online store:



A Well-Designed Website

You could be offering the most impressive selection of products on this side of Amazon, but if your website is unpleasant to use, your potential customer base will decide that it's just not worth it.

The importance of a business website's speed often gets overlooked, but website speed is a key factor in your e-Commerce success.

A well-designed online store makes it easy for your site visitors to find what they're looking for, and it does so quickly.

The importance of a business website's speed often gets overlooked, but website speed is a key factor in your e-Commerce success.

A poorly-organized website will discourage and distract your users before they make a purchase decision. Make it easy for your customers to find what they're looking for.

A Search tool is essential, but it is a backup plan. An intuitive, as-few-clicks-as-possible layout is always good. This does not mean you should dump everything onto your home page, however.

An Easy Checkout Process

Your customers' checkout experience needs to be as easy and accommodating as possible to cut down on your abandoned cart rate. Abandoned carts are the bane of an online store's existence in 2019, Baymard Institute examined a group of 41 different e-commerce studies found that, on average, 69.57% of carts are ultimately abandoned.

However, there are a number of other steps you can take to ensure that your cart abandonment rate is as low as possible:

One-Page Checkout: Pave the way to your cash register. An easy checkout process can be managed with just a one-page checkout, a fairly common feature among shopping cart software providers.

Allow Guest Checkout: When you require customers to create an account before placing an order, you create a barrier between your customer and the purchase said customer wants to make. By allowing guests to make purchases on your site without making them register, you bypass this potential chokepoint and ease the path toward your customers completing their purchases. Of course, you still want to give customers the option of creating an account so that they can save their payment information and other preferences.

Display All Charges Before Checkout: The most common reason given by people who abandoned their carts during the checkout process was that they found the extra costs (shipping, taxes, fees) to be too high. Consider displaying all pricing information upfront before checkout, so your customers won't be hit with any unpleasant surprises.

Simple Checkout Page: Customers should not be distracted and leave your checkout page, so consider removing such things as your header/footer and your menu options during the checkout process.

Competitive Shipping:

Find out all of the shipping couriers available to you and which of them can best handle your products. Also, set up your cart to auto-send 'Order Shipped' emails when your carrier scans in your package.

While this may not be practical for all merchants, it may be worth looking into providing a free shipping option to your customers. While the upfront cost of covering shipping will initially take a bite out of your profits, with time, you may well see an increase in sales if you don't charge shipping. If you decide to go this route, highlight this policy as clearly as you can, so your customers are aware of it.

Multiple Payment Options

It's more likely that if customers are offered the chance to pay using the method they prefer, they're more likely to go through with their purchase. That's why it's important that you allow your would-be customers to choose from an assortment of different payment options.

It's a given that you should accept credit cards and debit cards but also consider other options as well, such as PayPal, Apple Pay, Google Pay, Venmo, and maybe even cash on delivery.

Good Images & Product Descriptions

The first impression online customers get of your products is from the images on your website, and you might not get the opportunity to make another impression if your photos don't match the quality of your product.

This is especially the case with online stores. In a physical store, a new customer can walk in, handle your products, maybe even try out a demo, and absolutely know the quality of your product. But an online shopper does not have this opportunity.

They rely mainly on two things: photos and reviews. Fail at either one, and the potential customer will surf away and never return. Even a great product with poor photos won't get a second glance.

The higher the quality of your product, then the higher the quality of photos it will require.

Advantages and disadvantages of online shopping:

Customers can purchase items from the comfort of their own homes or workplace. Shopping is made easier and convenient for the customer through the internet. It is also easy to cancel the transactions.

Following are the advantages of online shopping:

- Saves time and efforts
- The convenience of shopping at home
- Wide variety/range of products are available
- Good discounts / lower prices
- Get detailed information about the product.
- We can compare various models/brands
- No pressure shopping

Generally, in physical stores, the sales representatives try to influence the buyers to buy the product. While in online shopping, you're free to do as you will.

Online shopping saves time

Customers do not have to stand in queues in cash counters to pay for the products that have been purchased by them. They can shop from their home or workplace and do not have to spend time travelling.

Comparisons

There is a wide range of products online. The sellers display all the stuff they've got. This enables the buyers to choose from a variety of models after comparing the finish, features, and price of the products on display.

Availability

The online mall is open on 365 x 24 x 7. So, time does not act as a barrier, wherever the vendor and buyers are.

Online tracking

Online consumers can track the order status and delivery status tracking of shipping is also available.

Online shopping Saves Money

To attract customers to shop online, e-retailers and marketers offer discounts to the customers as they have cut down on real estate and maintenance cost the sellers won't back out in giving huge discounts.

Disadvantages of online shopping:

Ease of use is the prime reason that drives the success of e-commerce. Though the internet provides a quick and easy way to purchase a product, some people prefer to use this

technology only in a limited way. Some people also fear that they might get addicted to online shopping.

The major disadvantages of online shopping are as follows.

Delay in delivery

Long duration and lack of proper inventory management result in delays in shipment. Though the duration of selecting, buying and paying for an online product may not take more than 15 minutes, but the delivery of the product to customer's doorstep takes about 1-3 weeks.

Lack of significant discounts in online shops

Physical stores claim to give significant discounts when compared to online stores this is a huge disadvantage for the older generation.

Missing the shopping experience

The traditional shopping exercise provides a lot of fun in the form of showroom atmosphere, smart sales attendants, scent and sounds that cannot be experienced through a website. Indians generally enjoy shopping. Consumers look forward to it as an opportunity to go out and shop.

Frauds in online shopping

Sometimes, there is a disappearance of the shopping site itself. In addition to the above, the online payments are not much secured. The rate of cyber crimes has been increasing and customers' credit card details and bank details have been misused which raise privacy issues.

E-BUSINESS

Meaning

E-business (electronic business) is the conduct of business processes on the internet.

These e-business processes include buying and selling goods and services, servicing customers, processing payments, managing production control, collaborating with business partners, sharing information, running automated employee services, recruiting; and more.

E-business can comprise a range of functions and services.

They range from the development of intranets and extranets to the provision of e-services over the internet by application service providers.

Today, as corporations continuously rethink their businesses in terms of the internet specifically, the internet's availability, reach and ever-changing capabilities they are conducting e-business to buy parts and supplies from other companies, collaborate on sales promotions, and conduct joint research.

The growth of e-business in recent decades has given rise to new business requirements.

On the customer front, consumers expect organizations to offer self-service options for conducting transactions, they expect personalized experiences and they want speedy, secure interactions.

On the regulatory front, new laws and best practices for keeping electronic data secure have been instated.

As e-commerce accelerated, companies have adopted stringent security protocols and tools, including encryption and digital certificates, to protect against hackers, fraud and theft.

With the security built into browsers and with digital certificates now available for individuals and companies from various vendors providing cyber security tools and technologies, cyber security has become ingrained in e-business.

However, the security of business transactions on the web remains a pressing issue for consumers and enterprises alike, even as that concern has not slowed the growth of e-business.

E Commerce and E Business:

The terms e-commerce and e-business are often used interchangeably, however they both have different interpretations that have different impact and influence on today's businesses.

The only similarity prevailing is the electronic medium that includes use of Internet for Electronic Data Interchange (EDI) and Electronic Funds Transfer (EFT) to conduct business activities.

All e-commerce companies can be termed as subset of e-businesses but not vice versa.

Definition of E-Commerce:

E-Commerce is an abbreviation of electronic commerce where any transaction is executed over the internet. It caters for buying and selling of products and services. These transactions activities essentially involve monetary transactions are termed as “e-commerce”.

Definition of E-Business:

E-Business is an abbreviation of electronic business that includes e-commerce transactions as well as online execution of internal business processes like management of production, inventory, risk, finance etc.

It is a broader and more complex strategy that focuses on efficiency and cost savings.

**Difference between E-Commerce and E-Business**

E-Commerce covers only the outward facing operations i.e. online buying and selling of goods and services that include order receiving, dealing, delivering and paying.

It is an interactive commercial transaction where a buyer can communicate with the seller and vice versa without having to personally meet.

The e-commerce strategy aims at understanding consumer behaviour that help them provide reliable, functional and user-friendly services. I

It's a new business model that offers convenience of shopping in a better way.

It has transformed brick and mortar businesses to click and mortar businesses (those businesses that have both an online and offline presence).

E-commerce is a narrower discipline of e-business.

BASIS FOR COMPARISON	E-COMMERCE	E-BUSINESS
Meaning	Trading of merchandise, over the internet is known as E-commerce.	Running business using the internet is known as E-business.
What is it?	Subset	Superset
Is it limited to monetary transactions?	Yes	No
What they carry out?	Commercial transactions	Business transactions
Approach	Extroverted	Ambiverted
Requires	Website	Website, CRM, ERP, etc.
Which network is used?	Internet	Internet, Internet and Extranet

E-Business has emerged as a mainstream solution for many businesses.

It focuses on the business as a whole and is not restricted to commercial transactions.

It involves streamlined and automated construction and maintenance of business processes across production, development, corporate infrastructure and product management.

With internal and external connectivity through internet or intranet or extranet, an e-business strategy aims at reducing operating costs to increase productivity and improve bottom line.

It enables better responsiveness to customer needs, transparent communication with businesses and improved vendor relations.

Example:

Firms like Amazon and Flipchart are involved in practicing both e-commerce and e-business using shopping cart technology with a turnkey solution. As an e-business, they incorporate personalization, effective customer service and streamlined supply-chain management.

They use the two most common business models i.e., business to business (B2B) and business to consumer (B2C) after carefully analyzing their business and accordingly evaluating the best system to realize the benefits and ensure reduced operational costs of each model.

Importance of E-Commerce and E-Business

Momentum in the economic development due to globalization in the recent years has compelled businesses to move beyond domestic and national markets.

The penetration into international markets through technological transition provides businesses a superior competitive position that enables them to buy, sell and manage on a global scale with much speed and ease.

E-Commerce and E-Business are termed as growth intervention tool that invites intense competition among online vendors.

Hence, it has become imperative for businesses to adjust to evolving technologies, regularly integrate new systems and satisfy a broad variety of consumers.

To support this, many empirical researches and studies prove that businesses with adoption to e-commerce and e-business strategy perform better.

IBM was one of the first companies to use the term e-business when, in October 1997, it launched a thematic campaign to address the confusion many consumers had about internet-based businesses. The company spent approximately \$500 million on an advertising and marketing campaign to demonstrate the value of the e-business model and to show that IBM had the "talent, the services and the products to help customers capture the benefits of this new way of doing business," according to the company website. By 2000, IBM's e-business revenue had grown to more than \$88 billion from \$64 billion in 1994, and net income had nearly tripled

E-Commerce sales are growing more as compared to its counterpart because it facilitates efforts to improve operations that result in substantial cost savings along with the following advantages:

- Reduced transaction costs
- Lowered advertising and promotion costs
- Instant communication between buyers and sellers
- Ability to target new customers
- Shortened supply chains, including decreased transport barriers and delivery costs
- Overruled limitation of time and space

E-business model:

	Business	Consumer
Business	B2B	B2C
Consumer	C2B	C2C

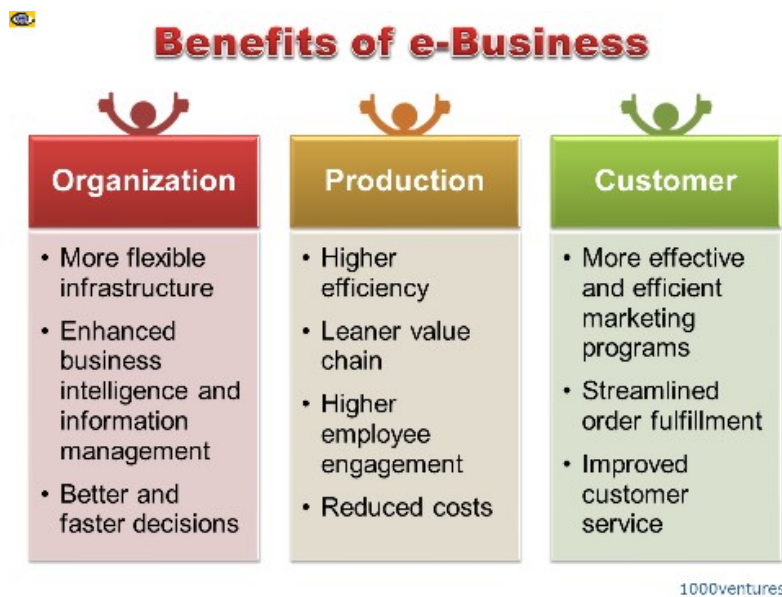
There are several types of e-business models. In the business-to-consumer (B2C) model, sellers offer products and service directly to consumers online and the buyer purchases them via the internet.

Under the business-to-business (B2B) model, companies use the internet to conduct transactions with one another. Unlike B2C transactions, B2B transactions usually involve multiple online transactions at each step of the supply chain.

The consumer-to-business (C2B) model defines a type of e-business where consumers create their own value and demand for goods and services. Reverse online auctions are examples of C2B e-business models, as are airline ticket websites, like Priceline.

Under the consumer-to-consumer (C2C) e-business model, consumers are both buyers and sellers via third-party-facilitated online marketplaces, such as eBay. These C2C e-business models generate revenue through personal ad fees, charging for memberships and subscriptions, and collecting transaction fees.

Advantages of e-business:



Ease of formation and lower investment requirements:

Unlike a host of procedural requirements for setting up an industry, e-business is relatively easy to start.

The benefits of internet technology accrue to big or small business alike.

In fact, internet is responsible for the popularity of the phrase: ‘networked individuals and firms are more efficient than networked individuals.’

This means that even if you do not have much of the investment (net worth) but have contacts (network), you can do fabulous business.

Convenience:

Internet offers the convenience of '24 hours × 7 days a week × 365 days' a year business.

Such flexibility is available even to the organizational personnel whereby they can do work from wherever they are, and whenever they may want to do it.

E-Procurement:

It involves internet-based sales transactions between business firms, including both, "reverse auctions" that facilitate online trade between a single business purchaser and many sellers, and, digital marketplaces that facilitate online trading between multiple buyers and sellers.

E-Bidding/e-Auction:

Most shopping sites have 'Quote your price' whereby you can bid for the goods and services such as airline tickets. It also includes e-tendering whereby one may submit tender quotations online.

E-Communication/e-Promotion:

Right from e-mail, it includes publication of online catalogues displaying images of goods, advertisement through banners, pop-ups, opinion polls and customer surveys, etc. Meetings and conferences may be held by the means of video conferencing.

e-Delivery:

It includes electronic delivery of computer software, photographs, videos, books (e-books) and journals (e-journals) and other multimedia content to the user's computer.

It also includes rendering of legal, accounting, medical, and other consulting services electronically.

In fact, internet provides the firms with the opportunities for outsourcing of a host of Information Technology Enabled Services (ITES) that we will be discussing under business process outsourcing.

e-Trading:

It involves securities trading, that is online buying and selling of shares and other financial instruments. For example, sharekhan.com is India's largest online trading firm.

e-business is truly a business as enabled and enhanced by electronics and offers the advantage of accessing anything, anywhere, anytime.

Speed:

As already noted, much of the buying or selling involves exchange of information that internet allows at the click of a mouse.

This benefit becomes all the more attractive in the case of information-intensive products such as software, movies, music, e-books and journals that can even be delivered online.

Cycle time, i.e., the time taken to complete a cycle from the origin of demand to its fulfillment, is substantially reduced due to transformation of the business processes from being sequential to becoming parallel or simultaneous.

We know that in the digital era, money is defined as electronic pulses at the speed of light, thanks to the electronic funds transfer technology of e-commerce.

Global reach/access:

Internet is truly without boundaries. On the one hand, it allows the seller an access to the global market; on the other hand, it affords to the buyer a freedom to choose products from almost any part of the world.

It would not be an exaggeration to say that in the absence of internet, globalization would have been considerably restricted in scope and speed.

Movement towards a paperless society:

Use of internet has considerably reduced dependence on paperwork and the attendant 'red tape.'

Even the government departments and regulatory authorities are increasingly moving in this direction whereby they allow electronic filing of returns and reports.

In fact, e-commerce tools are effecting the administrative reforms aimed at speeding up the process of granting permissions, approvals and licenses.

In this respect, the provisions of Information Technology Act 2000 are quite noteworthy.

Challenges of e-business

The level and types of challenges with electronic business vary from one organization to the next, depending on a host of factors from whether they use digital services to enable e-business in only parts of their operations, to whether digital services power their core value proposition, to whether they have legacy technology infrastructure or were born digital.

However, some common challenges exist. Those challenges include the following:

- securing e-business services against cyber attacks
- scaling services fast enough to meet demand without jeopardizing performance
- evolving their technologies fast enough to keep pace with changing market dynamics

- finding and training workers who can keep pace with skills that constantly need to evolve
- keeping pace with e-business capabilities that, by their electronic nature, are always on

Additionally, many companies struggle to progress from instances of e-business within their organization to integrating e-business services and using them to transform themselves into digital operations, where the various e-business elements converge and work seamlessly together.

Security and risks

E-business tactics offer advantages such as reaching a wider customer base and faster transactions, but they also come with associated risks.

For example, e-business creates huge data security risks, because customers are often required to provide sensitive information, such as contact information and credit card numbers, during e-business transactions.

This information is enticing to hackers and particularly vulnerable to data breaches, so e-business website owners are responsible for incorporating methods, such as data encryption, to ensure secure transactions.

Failure to ensure data integrity and incorporate appropriate data security measures creates the risk of fines and the loss of customer loyalty.

Because successful e-business relies on swift, secure online transactions, even something as simple as a bad web hosting service creates a financial risk for these companies.

Technological Risks

Crashed servers and insufficient bandwidth lead to persistent website downtime and customer dissatisfaction, so companies must invest in well-known, reliable hosting providers that can, in turn, drive up the costs associated with running a successful e-business.

Marketing Risks

There are marketing risks when it comes to e-business, as well.

All types of businesses rely on effective marketing to drive growth and sales, but online marketing techniques are much different from traditional, offline ones.

Without an effective marketing campaign specifically tailored to promote e-business, an organization creates huge financial risk by investing in marketing resources that do not drive consumer traffic to the transaction websites.

Systematic Risks

E-businesses are also vulnerable to systematic risk that influences the entire online market segment.

For example, the dot-com crash of 2000 to 2001 began after several e-business startups went public and were purchased by other e-businesses. These e-businesses had little cash flow, and many valued growth over financial stability.

This created an unsustainable economic bubble that ultimately put many of these companies out of business when it burst.

Supply Chain Management

Meaning:

Supply chain management is the management of the flow of goods and services and includes all processes that transform raw materials into final products. It involves the active streamlining of a business's supply-side activities to maximize customer value and gain a competitive advantage in the marketplace.

Supply chain management is the handling of the entire production flow of a good or service starting from the raw components all the way to delivering the final product to the consumer. A company creates a network of suppliers (“links” in the chain) that move the product along from the suppliers of raw materials to those organizations that deal directly with users.



Supply chain management (SCM) represents an effort by suppliers to develop and implement supply chains that are as efficient and economical as possible. Supply chains cover everything from production to product development to the information systems needed to direct these undertakings.

Typically, SCM attempts to centrally control or link the production, shipment, and distribution of a product. By managing the supply chain, companies can cut excess costs and deliver products to the consumer faster. This is done by keeping tighter control of internal inventories, internal production, distribution, sales, and the inventories of company vendors.

SCM is based on the idea that nearly every product that comes to market results from the efforts of various organizations that make up a supply chain. Although supply chains have existed for ages, most companies have only recently paid attention to them as a value-add to their operations.

Definitions of Supply chain Management:

APICS, the global association for supply chain management professionals, defines supply chain management as: “the design, planning, execution, control, and monitoring of supply chain activities with the objective of creating net value, building a competitive infrastructure, leveraging worldwide logistics, synchronizing supply with demand, and measuring performance globally.”

Oliver and Webber:

“Supply chain management (SCM) is the process of planning, implementing, and controlling the operations of the supply chain with the purpose to satisfy customer requirements as efficiently as possible. Supply chain management spans all movement and storage of raw materials, work-in-process inventory, and finished goods from point-of-origin to point-of-consumption.”

Tan, Kannan and Hand field:

“Supply chain management encompasses materials/supply management from the supply of basic raw materials to final product (and possible recycling and re-use). Supply chain management focuses on how firms utilise their suppliers' processes, technology and capability to enhance competitive advantage.”

Bowers ox, Closs and Cooper:

“Supply chain (sometimes called the value chain or demand chain) management consists of firms collaborating to leverage strategic positioning and to improve operating efficiency. For each firm involved, the supply chain relationship reflects strategic choice. A supply chain strategy is a channel arrangement based on acknowledged dependency and relationship management. Supply chain operations require managerial processes that span across functional areas within individual firms and link trading partners and customers across organizational boundaries.”

Sweeney:

“Supply Chain Management is the systemic, strategic coordination of the traditional business function and tactics across these business functions within a particular company and across business within the supply chain, for the purpose of improving the long term performance of the individual companies and the supply chain as a whole.”

Krajewski, Ritzman and Malhotra :

“Supply Chain Management consists of developing a strategy to organize, control and motivate the resources involved in the flow of services and materials within the supply chain.”

Five Parts of SCM

In SCM, the supply chain manager coordinates the logistics of all aspects of the supply chain which consists of five parts:

- The plan or strategy
- The source (of raw materials or services)
- Manufacturing (focused on productivity and efficiency)
- Delivery and logistics
- The return system (for defective or unwanted products)

The supply chain manager tries to minimize shortages and keep costs down. The job is not only about logistics and purchasing inventory.

According to Salary.com, supply chain managers “oversee and manage overall supply chain and logistic operations to maximize efficiency and minimize cost of organization's supply chain.”

Productivity and efficiency improvements can go straight to the bottom line of a company. Good supply chain management keeps companies out of the headlines and away from expensive recalls and lawsuits.

Example of SCM

Understanding the importance of SCM to its business, Walgreens Boots Alliance Inc. decided to transform its supply chain in 2016. The company operates one of the largest pharmacy chains in the U.S. and needs to efficiently manage its supply chain to stay ahead of changing trends.

Walgreens invested in the technology portion of its supply chain. It implemented a forward-looking SCM that synthesizes relevant data and uses analytics to forecast customer purchase behavior, and then it works its way back up the supply chain to meet that expected demand.²

For example, the company can anticipate flu patterns, which allow it to accurately forecast needed inventory for over-the-counter flu remedies, creating an efficient supply chain with little waste. Using this SCM, the company can reduce excess inventory and all of the inventories' associated costs, such as the cost of warehousing and transportation.

Advantages and Disadvantages of Supply Chain Management

A supply chain begins with the procuring of goods and resources from a supplier and then moves on to the manufacturer, wholesaler, retailer, to finally end with the delivery of the manufactured product to the consumer.

Every aspect of the supply chain requires thorough monitoring and timely assessment to ensure productivity and maximized performance. This holds the power to either make or

break a business. And supply chain management executives must ensure that these operations are carried out smoothly so businesses can focus on the quality of their services.

Advantages of supply chain management:

1. Higher Efficiency

When a company's supply chain operations which include the resource procurement, logistics, and delivery are strategically planned and executed, businesses can predict demand more accurately as well as cater to them.

This enhances the efficiency of a company to adjust to disruptions, ever-evolving markets and fluctuating industry trends.

Supply chain leaders who invest in making real-time data available and have supply chain processes automated can avoid unnecessary delays in manufacturing and shipping.

Since they have backup plans in case of resource procurement or inventory issues, they can better respond to challenges, which then help improve customer experience.

2. Customer Retention and Experience

An effective supply chain management helps companies establish a strong reputation in the market.

It increases a system's effectiveness to respond to customer demands.

This doesn't just attract new consumers but also influences their loyalty to a brand.

Businesses that prioritize customer service invest in effective supply chain management to ensure a seamless flow of goods and services.

3. Better Risk Assessment and Management

Agile management in the supply chain allows companies to respond to disruptions efficiently.

It is important to deploy predictive analysis tools for risk assessment.

Responsible supply chain management also results in proactive action with respect to quality control.

Businesses that do so are not just able to predict risks but also have corrective solutions in place to dodge or cover the losses they might incur from disruptions.

As per a study, 87% of companies believe that iterative risk assessment and management can help supply chains reduce inventory by 22%.

With access to real-time, fact-based data, companies can predict demand more accurately and avoid what is known as the bullwhip effect in the supply chain.

4. Improved Relationships

Supply chain management involves fostering profitable relationships with suppliers and distributors.

Strengthening collaborations with vendors through effective communication and cooperation helps enhance productivity and cut down costs.

One of the main advantages of supply chain management is that businesses have software and performance metrics that allow them to make meaningful decisions when it comes to choosing their suppliers or vendors.

Their cost structure, quality control measures, and timeliness determine how they would contribute to your supply chain.

With analyzed and integrated data on their performance, a business can develop and retain productive relationships with vendors and reap functionality from it. This also contributes to the long-term sustainability of a business.

5. Cost-Effectiveness

Supply chain management includes inventory management, which when effectively planned and executed can help cut down costs.

To maximize the outcome of internal inventory, supply chain management has inventory management software which allows managers to benefit from an on-demand or lean inventory model.

Through this, managers can stock just enough supplies to meet demands and free up valuable warehouse space.

This has helped companies pursue precision when it comes to demands which have allowed them to shut down underproductive and unnecessary warehouses and save big bucks while doing so.

This is one of the biggest benefits of supply chain management. With insight into the frequency of orders, in-demand products and services, and a company's capacity to fulfill orders, businesses are better positioned to control costs and appropriately allocate resources.

Furthermore, with effective accounting management and automated processes, businesses can ensure maximized cost-effectiveness.

Automation also means increased accuracy, fewer errors and faster flow of information, which does not just enhance efficiency but also ensures improved cash flow.

6. Qualitative Improvements

Responsible supply chain management directly impacts the quality of a company's products and services which are produced keeping global corporate social responsibility

(CSR) standards and guidelines in mind. This compliance contributes to sustainability and customer gratification.

This is important because the cost to repair or replace an item due to quality issues is significantly high which can hurt companies on a budget.

A smooth-functioning supply chain has documentations and quality compliance guidelines in place to streamline quality control when it comes to suppliers and partners.

This usually includes ensuring that suppliers offer timely deliveries, conduct quality assessments, and provide complaint resolutions.

Based on these metrics, businesses can partner with suppliers who adequately adhere to these standards.

7. Reduces Legal Liabilities

Effective supply chain management helps companies avoid negative publicity and legal liabilities that result from violations of global CSR standards.

When businesses have indicative data of where risk might lie, they can better mitigate the liabilities, be it through any protective strategy, insurance policies, upgraded resources, new technologies or improved work processes.

8. Reduces Delays

An important advantage of supply chain management is that effective dialogue and coordination result in reduced inconsistencies in distribution, logistical errors and delays in production and shipment.

Inefficient shipping methods do not just cause hold-ups in the supply chain but also result in increased costs. As per Logistics Management's The State of Logistics Report, transportation costs had risen by 6% to 7% in just one year in 2017.

To combat the increased costs, shipping optimization is necessary to ensure goods and services are shipped faster. This in turn helps improve customer satisfaction.

9. Uninterrupted Cash Flow

One of the main benefits of supply chain management is that it contributes to data-driven decision-making and profitable partnerships.

There are also tools and technologies in place to conduct predictive analysis of potential risks to respond to changes and disruptions better.

As a result, we have a smooth-functioning supply chain where customers are satisfied and invoicing processes can be streamlined.

This does not just reduce overhead costs but also ensures improved cash flow for a company to conduct daily operations.

Effectiveness in supply chain management and uninterrupted cash flow maximizes a business's productivity and drives growth.

10. Benefits of Technologies

The role of digital technologies in enhancing the functionality of supply chain management is unmissable.

From efficiency, performance and risk management to quality and customer experience, technology plays an important role in streamlining every aspect of the supply chain.

As businesses embrace cloud-based computing, supply chain management is benefiting from upgraded systems that allow managers to stay connected to operations even when they are on the move.

With cutting-edge software and comprehensive tools in place, businesses can scale their services sustainably and in a cost-efficient manner.

It also gives them a competitive edge in the market with the quality they can manage using automation tools that allow seamless integrations of new suppliers and work processes.

There is a huge reduction in delays, errors and costs. And the result is improved customer experience and convenience.

Disadvantages of Supply Chain Management:

Expensive To Implement

Major limitation of process of supply chain management is that it is quite expensive to implement. It requires large investment in terms of time, money and other resources that become unaffordable for small businesses.

Complicated

Process of supply chain management involves numerous complexities as it involves several departments within the organization. It may lead to create confusion and hamper the normal functioning of business. Employees may feel hesitant and demotivated to accept this concept as it is new to them thereby giving rise to several other difficulties.

Lack of Co-Ordination among Departments

The concept of supply chain management functions properly only if there is better coordination among departments of departments. Establishing a coordination among several departments within big corporate is a quite difficult task where this concept may eventually fail to perform.

Requires Trained and Personalized Staff

Supply chain management requires qualified and trained human resources for its effective executive within the company. Company need to incurs heavy expenses for acquiring such taskforce that is professional and highly skilled. Small companies may find it unfavorable for their implementation.

Lack of Reliability

Supply chain management lacks of reliability as it is completely dependent upon the mode of information exchange among several departments. If there is any instance of inaccurate information sharing by any of the department, then it will have adverse effects on performance of whole supply chain.

Goals of Supply Chain Management

According to the definitions of supply chain management, it is a complicated endeavor that transcends the scope and capabilities of a single firm. A substantial amount of effort is required to establish and maintain a supply chain network.

This entails a lengthy action list requiring expertise, time, and resources. Establishing strategies, forming partnerships, deploying technology, and investing in capacity are critical things to fulfill various goals of supply chain management.

Before an organization can manage its supply chain effectively, it must first understand its precise purpose and objectives. Understand the various supply chain management goals that a business must take into consideration.

1. Fulfillment Efficiency

At its most fundamental level, supply chain management's objective is to ensure that inventory is readily available in customer-facing positions to meet demand.

Organizations must strive to match supply and demand on time by making the best use of cross-chain resources.

Partners in the supply chain must collaborate to maximize resource productivity, standardize processes, avoid duplication of effort, and reduce inventory levels.

These procedures will assist the firm in reducing waste, reducing expenses, and increasing supply chain efficiency.

Cost reduction in the supply chain is an important goal, especially during periods of economic uncertainty when businesses seek to conserve money.

Efficiency efforts can be directed at any component of supply chain operations.

However, transportation and inventory management are frequently targeted for cost reduction.

2. Customer Value Creation

Customers are the organization's lifeblood and necessitate the existence of a supply chain.

As a result, a core goal of supply chain management must be to constantly meet or exceed customer needs.

Customer value creation begins with a market-driven client service strategy founded on well-understood customer expectations.

These criteria should be the base to develop supply chain strategy, design, and capabilities.

As a result, service will be of higher quality, variability will be reduced, and fewer violations will be addressed.

3. Increase Responsiveness and Flexibility

Another critical reason to invest in supply chain management capabilities is the ability to adapt to change.

The current business environment is volatile, with numerous factors influencing how organizations run and survive.

Supply chain management can assist businesses in adapting to the challenges of globalization, economic instability, and rising consumer expectations, among other concerns.

Economic crises wreak havoc on consumer demand and manufacturing.

To minimize the impact of economic downturns, firms should develop adaptive operating models anchored by a flexible supply chain and a variable cost structure.

Additionally, the adoption of standardized procedures and systems enables the company to rapidly scale up or down operations in response to sudden variations in demand.

Additionally, shortened product life cycles, the advent of new technologies that enable supply chain innovation, and increased government regulation of supply chain operations such as transportation all serve as compelling reasons to maintain agility.

A responsive and adaptable supply chain will be able to react to these changes with minimal disturbance.

4. Make Supply Chain Network Resilient

Apart from the ongoing business issues, firms frequently face abrupt and severe supply chain interruptions.

Natural disasters, labor strikes, and supplier failures are all examples of uncommon events. These factors impede the flow of goods and expose the company to financial and reputational harm.

Given the high cost of supply chain disruptions, it is important for businesses to manage these supply chain risks. Along with risk mitigation measures, it is critical to building disruption management capabilities.

Organisations must have the capability to identify and overcome disruptions and redesign procedures to mitigate future risks.

For recognized risks, it is critical to creating robust supply chains that are adaptable enough to recover from significant accidents quickly.

Supply chain managers must plan and test different scenarios for hazards that are unlikely to occur but might be catastrophic.

5. Recognize True Competitors

The next objective of the supply chain managers is to find the right competitors.

In this digital era, true competition may not be the ones that organizations assume they are.

For example, many traditional brick-and-mortar retailers have been reluctant to recognize that their most aggressive competition is not another brick-and-mortar retailer but an online marketplace, Amazon.

To determine who their actual competitors are, organizations must shift their focus away from the product or service they provide and towards the problem they solve.

Dr Clayton Christensen of Harvard Business School coined the term ‘Jobs to Be Done’ Theory to describe this method. Consider the “task” that the product or service performs for clients and whether other products or services could do the same function better, faster, or cheaper.

These alternative sources are the organization’s true competitors, and they must build and manage their supply chains in such a way that their product performs the same function as their competitors’.

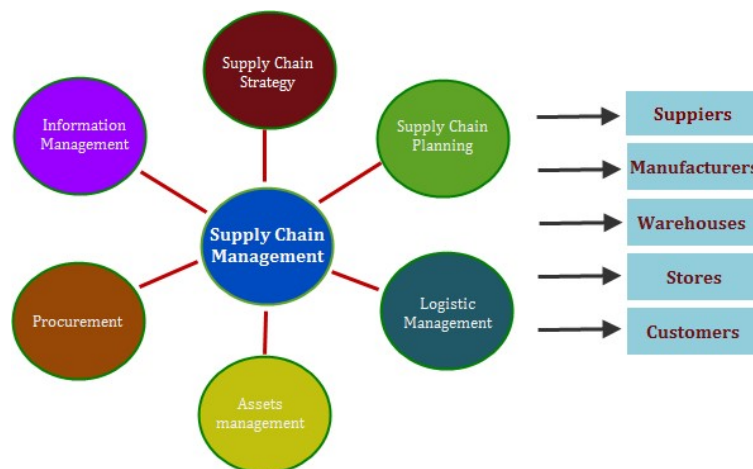
6. Increase Financial Success

One of the most obvious goals of supply chain management is to contribute to the organization’s financial performance.

Historically, cost-cutting strategies have focused on streamlining stock levels to reduce inventory carrying costs, automate fulfillment operations to reduce labor costs, and consolidate orders to reduce freight costs.

By contrast, leading firms today leverage the supply chain to increase differentiation, sales, and market penetration. Their objective is to maximize shareholder profit and competitive advantage.

Functions of Supply Chain Management



The five functions of supply chain management include the following:

1. Purchasing

The first function of supply chain management is purchasing.

In the manufacturing process, raw materials are required to produce goods and products.

It is important that these materials are procured and delivered on time so that production can begin.

For this to occur, coordination with suppliers and delivery companies will be required to avoid any potential delays.

2. Operations

Demand planning and forecasting are usually required before materials can be procured, as the demand market will dictate how many units to be produced and how much material is required for production.

This function is important in supply chain management as organizations must accurately forecast demand to avoid having too much or too little inventory that will lead to losses in revenue.

Therefore, demand planning and forecasting must be tied in with inventory management, production, and shipping to avoid such mistakes.

3. Logistics

Logistics is the part of supply chain management that coordinates all aspects of planning, purchasing, production, warehousing, and transportation so that the products will reach the end-consumer without any hindrances.

It is helpful to have adequate communication between multiple departments so that products can be shipped to customers quickly and at the lowest cost.

4. Resource Management

Production consumes raw materials, technology, time, and labor.

Resource management ensures that the right resources are allocated to the right activities in an optimized manner.

This will ensure that an optimized production schedule is created to maximize the efficiency of the operations.

When calculating the available capacity, you should consider the capabilities of each resource and determine whether they can perform the work that is scheduled on it.

This will ensure that you are not over-promising orders and that your production schedule is feasible and accurate.

5. Information Workflow

Information sharing and distribution is what keeps all of the other functions of supply chain management on track.

If the information workflow and communication are poor, it could break apart the entire chain.

Many disruptions that arise in supply chains can be prevented by increased visibility and communication.

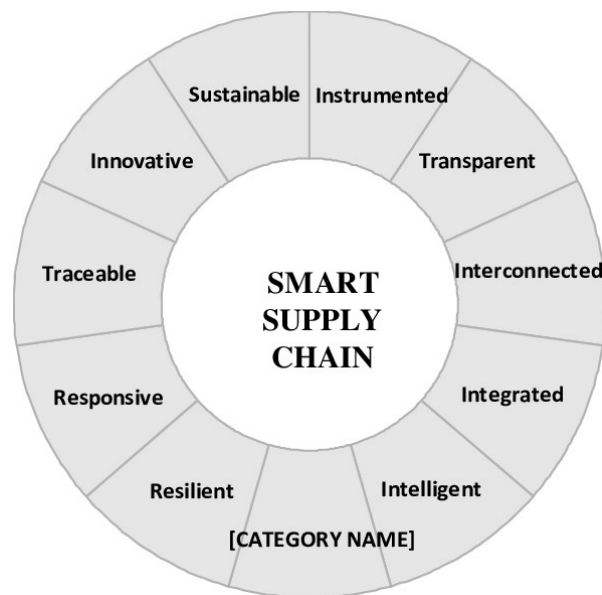
Having a consistent system that is used by all departments will ensure that everyone is working with the same set of data and will prevent miscommunications and time spent updating everyone on new developments.

Characteristics of Supply chain Management

Today's supply chains function as a result of extensive research into how a supply chain behaves, its chief concerns, successful risk management, diverse markets, widespread collaboration, and technological advances.

However, current supply chains fall victim to the problems of inefficiencies, inexcusable rigidity, and failure to recognize the growing demands of consumers.

Some of today's supply chain service providers have already taken steps to advance supply chain entities into the future.



A best-in-class supply chain will focus on these 7 key areas:

1. Proactive Use of Big Data

With the onslaught of information on the Internet and its applications, data will prove to be an important aspect of future supply chains.

Supply chain service providers and supply chain managers (SCM) will be able to use data to identify inefficiencies, create proposed solutions, and implement such solutions.

Furthermore, the use of such data can be applied to creating verifiable forecasts for needs in inventory.

2. Inventory Optimization

Having too much, or too little, of a given item is detrimental to a supply chain, and research suggests the service parts supply chain will become more prevalent than current supply chains. Inventory optimization relies on accurate, precise forecasts for needed items.

However, it also requires an extensive evaluation and rapid identification of sudden changes in the market, which will impact manufacturing, shipping, and all other aspects of the supply chain process.

3. Flexibility

As the global economy becomes more interconnected with newer, emerging markets, the number of corporate players within the supply chain will increase. This leads to one ultimate problem: how will more orders be fulfilled at today's pace? This is where flexibility will become important.

Flexibility refers to the ability of the supply chain to adapt to the changes within the market, political climates, and other events, which would otherwise affect the supply chain.

4. Rapid Fulfillment

The widespread increase in connectivity, particularly through mobile devices, has taught consumers to believe in the power of their voice and demand instant gratification.

Obviously, instant transport has not yet been invented, so the alternative remains ensuring orders are processed without error, quickly, and via the fastest method of transport.

Tomorrow's supply chains will need to combine varying methods of transports to gain a competitive advantage to giving consumers their rewards: intricate shipping and tracking details and their products.

5. Customization

Customization is a tricky aspect of a best-in-class supply chain.

At first glance, it seems most appropriate to define customization as individual ERP systems for each supplier, distributor, or retailer within the supply chain. However, customization refers to how unique supply chain processes may be implemented across the supply chain to provide consumers with what they want.

For example, an order of new mobile devices may need to be fulfilled within 24 hours and all appropriate packaging may be manufactured on-site at the shipping facility. Additionally, increases in the number of individual businesses within the supply chain will lead to a more diverse group of products to manufacture and, subsequently, repair.

As a result, the service parts supply chain will need to be able to adapt and create customized parts to meet this growing demand.

Crowd sourcing venues, such as Kick starter and Go Fund Me, have given ordinary people the power to gather funds to create new products and services, which will also influence the need to ensure customizability is a top priority for the supply chain.

6. Sustainability

Sustainability will be a driving force in a best-in-class supply chain.

The Earth has a finite amount of fossil fuels left, and future supply chains will have no option other than using renewable forms of energy. Some renewable forms of energy to use will depend on the geographic location of the varying aspects of the supply chain.

Additionally, governments may implement strict requirements for moving toward renewable sources of energy for manufacturers in the coming years.

Although some argue this will not happen, consider the recent sunset of the incandescent light bulbs. It started in manufacturing, and it has trickled down to individual homes.

The same process will occur with renewable energy resources, and tomorrow's supply chain leaders will need to be ready for a proactive role.

7. Compliance and Visibility

The last, and perhaps the most significant, aspect of a best-in-class supply chain will focus on maintaining compliance and visibility.

Compliance involves adherence to any applicable local, state, and federal laws for supply chain entities.

However, end-to-end visibility can eliminate all of the potential issues by allowing others to see into the supply chain. Essentially, this equates to a way of self-assessment and monitoring of supply chain processes, which leads to greater compliance

Strategies of Supply Chain Management:

It's no secret that today's supply chains have become more complex than ever, with socioeconomic and market dynamics underscoring organizations' need to respond to an outside-in, demand-driven world.

But companies must now factor in a host of new variables, such as rising protectionism and nationalism across the political landscape. This is forcing many to reexamine their business-continuity risks and embrace new sourcing strategies.

Here are six supply-chain strategies designed to help enterprises thrive in the current environment.

Strategy No. 1: Adopt a demand-driven planning and business operating model based on real-time demand insights and demand shaping:

Demand-prediction capabilities continue to mature as supply chain management teams utilize ever-more powerful digital tools.

Artificial intelligence technologies and internet of things (IoT) networks have gotten even better, allowing SCM teams to take action more quickly, and automatically adjust their supply chains based on real-time insights to match expected demand.

The cloud continues to play a growing role in the new supply chain.

More companies are moving data and apps to the cloud, allowing the creation of unified data models that are augmented by external sources.

This is driving a new level of predictive capability and planning accuracy not available just two years ago.

Validating the trend, more companies are seeing their supply-chain modernization investments bear fruit.

Based on a recent research, companies utilizing the cloud improved delivery performance and increased revenues by 20%-30% on average. They also cut logistics costs by 5%-25% and slashed inventories, lowering working-capital requirements by 25%-60%. Asset utilization jumped by 30-35%.

Strategy No. 2: Build an adaptive and agile supply chain with rapid planning and integrated production:

Agility is still the name of the game this year when it comes to supply-chain management. In fact, companies are getting even better at aligning planning with manufacturing, driving greater operational speed and flexibility.

A 2014 study found that 55% of businesses have only “modestly integrated planning across the company.” A mere 9% said they had a “highly integrated supply-chain planning environment.” Companies still struggle with these issues to this day.

The problem might be the sheer volume of data and analytics required to properly integrate planning with execution in real time.

But this barrier is now falling, with the introduction of cloud-based platforms that link financial and materials, planning tasks to business-execution activities such as procurement, manufacturing, and inventory management and do it directly across a common online interface. For the first time, companies can create a zero latency plan-to-produce process, allowing them to act faster and adapt seamlessly to the dynamics of their markets.



Strategy No. 3: Optimize product design and management for supply, manufacturing, and sustainability, to accelerate profitable innovation:

The days when companies ran product development and supply-chain planning as separate functions are coming to an end.

To stay competitive, the tradition of “throwing product designs over the wall” to supply chain planners, the ones who figure out how to source and build the products is no longer fast or efficient enough.

Consider the market for mobile phones, where competition is driving manufacturers to develop and launch new models every year. Increasingly the only way to do this is by merging design teams with supply-chain planners on a single (usually cloud-based) platform.

These new collaborative systems, as well as smart procurement practices such as supplier prequalification, can help product developers source the right components up front, based on factors such as parts availability, quality, and cost.

Research shows that when done right, integrating design and supply-chain planning process can lead to 10%-20% faster time to market, 10%-20% greater product revenue, and 10%-25% reduced scrap and rework expenses.

Strategy No. 4: Align your supply chain with business goals by integrating sales and operations planning with corporate business planning:

Business risks for companies have risen significantly in the last couple of years.

From Brexit to tariff wars, leaders are facing a growing array of market uncertainties. This is why companies need to integrate their tactical sales and operations planning (S&OP) programs with their strategic budget and forecasting efforts.

The goal is to create a planning capability that translates macro business priorities and risks into a set of on-the-ground execution tasks that are continually updated to reflect changing market conditions.

Integrating business planning, S&OP, and supply-and-demand planning improves business agility by creating an efficient closed loop from planning to execution to performance management.

Strategy No. 5: Embed sustainability into supply chain operations:

Sustainability in all its forms, both social and environmental, has joined growth and profitability as a top priority in the corporate world.

Putting a spotlight on sustainability places a new focus on supply-chain practices, many of which can have a sizeable impact on environmental health in areas ranging from carbon emissions to industrial waste and pollution.

Today there are myriad strategies companies can use to optimize their supply chains for sustainability:

Supply-chain teams can develop long-term targets that improve key measures of sustainability such as the company's carbon footprint, energy usage, and recycling efforts.

Teams can deploy new technologies to ensure responsible environmental practices such as optimizing truck routes to reduce fuel consumption and carbon emissions across the supply chain.

Companies can move to a shared data model to provide the end-to-end visibility and real-time insights needed to optimize supply chains and ensure they are sustainable.

Strategy No. 6: Adopt emerging technologies to ensure a reliable and predictable supply:

Businesses need a buffer to deal with unexpected shifts in demand, but too much inventory can raise costs.

By improving demand accuracy, new technology can reduce inventory requirements and speed reaction times, creating a nimbler and more reliable supply network.

With today's global trade volatility and ongoing tariff wars, it's essential to make the right decisions about where to source materials, make products, and deliver goods in order to minimize costs and ensure compliance.

What's also new is that artificial intelligence (AI), machine learning, and internet of things (IoT) are no longer just buzzwords. Today they're market-proven technologies that are streamlining supply chains and driving business agility in companies worldwide.

With these capabilities now being built directly into cloud solutions, customers can harness their potential right out of the box.

This means you can get started with truly business-changing technologies without the need to invest in complex projects or costly, hard-to-find skill sets.

ELECTRONIC LOGISTICS

In a developing economy like India, evolution of e-commerce logistics represents the latest big changes in logistics and physical distribution networks, which have evolved substantially over the past 45 years or so.

Evolution of E-commerce logistics

Over the years, the module of e-commerce business has evolved. Not only did it affect the economy but also allowed various logistics industry to grow. These distribution networks have evolved massively in the last 40 years. Let's take a look at this evolution in detail.

There is a broad evolution in various phrases that are explained through different timelines.

Back in the year 1970, different retail stores were replaced and direct deliveries were carried out by the suppliers and the wholesalers.

In 1980, different retailers decided to streamline their store delivery through distribution centers that would be controlled by them.

Later in the year 1990, these retailers started shipping nonfood products and the foundation of global sourcing took place. This allowed different retailers to set up their own import and delivery centers and exchange goods in a streamlined way.

After that, from the 2000s, as the concept of e-commerce started kicking in, these retailers started developing their e-fulfillment distribution network to keep up with people's demand, all across the world.

Since then, these logistics are blooming at an equal pace as that of e-commerce and they are not slowing down. The sales and purchase ratio has increased massively and these e-commerce logistics are serving just the right purpose to make the whole concept possible.

The Amazon Effect

It all started 19 years ago. A small online book store started by Jeff Bezos is now on the largest e-commerce giant in the world. With a market share of more than 500 fortune companies, Amazon's popularity has been spread all across the world.

A simple idea to ease-out people's lives, where they will be able to buy things without going out of their house, has not only skyrocketed but has also allowed a lot of businesses to flourish. Since e-commerce has born, logistics services for e-commerce in India have also witnessed massive growth.

The low prices and convenience have become the driving forces that are catering to every kind of product in the world. It was not a smooth ride. The sector has witnessed a lot of challenges.

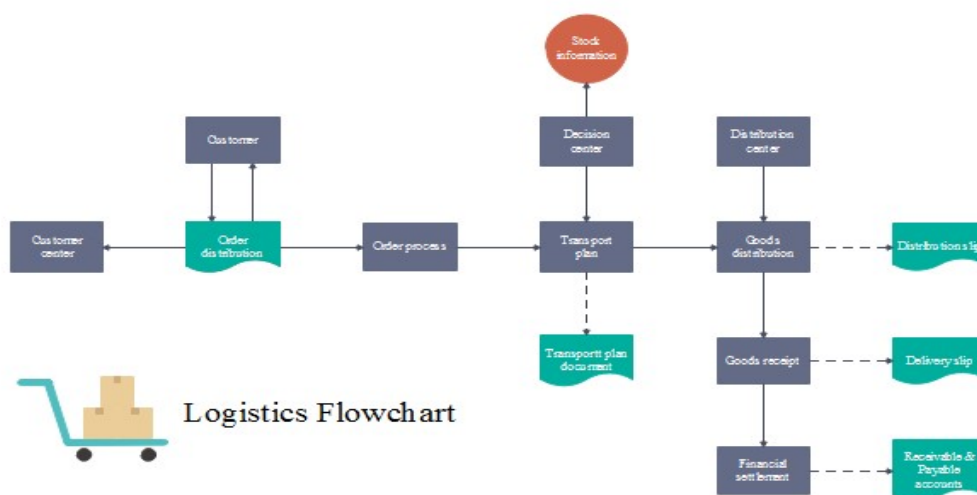


Supply chain changed to e-commerce logistics

As the e-commerce flourished, various e-commerce logistics hub were set up. Here products started moving out in bulk as well as in the single piece. They invented a streamlined strategy to deliver products in a different part of the country through a recorded system. This is how different e-commerce started growing through the ages.

The e-commerce growth has been extensively witnessed in the world of fashion, electrical goods, decorative items, and even in the food sector.

E-commerce logistics setup:



This wave has made it possible for various shipping partners in India to create a managed distribution center for different demands and has also divided the logistics functions. So as per the latest scenario, there are four different types of logistics.

Mega Fulfillment centers in e-commerce logistics

Different mega fulfillment centers in e-commerce logistics are stocked with different goods and the delivery boy picks from it at an item level. These logistics are actually huge warehouses that work on an area more than 500000 sq ft. They work 24*7 to allow delivery guys to pick up products any time they want.

The parcel hubs

These are small distribution centers that are placed in different areas. These logistics are used for sorting orders as per the area code. This allows relevant parcels to get easily distributed and prevents confusion among the operation team.

The Delivery centers

These centers take care of the last mile delivery when the product reaches the nearest location of a customer.

The logistics aggregator

These are virtual logistics centers. Their actions are based on API integration. This allows various customers to get the exact price quotations for shipping a particular product.

The logistics aggregators are a good option to go for since they allow you to manage your business better, while they take care of the entire distribution process through their internal tie-ups.

This is probably the latest technique implemented and they hold a lot of benefits for the retail markets. Not only that, but they are also beneficial for shippers, customers, and 3PL service providers.

Some of the benefits are:

Benefits of Logistics Aggregators

The technological advancements are not only building up a driving force for the entire logistics and e-commerce sector but also are transforming the way of a better living. These interconnected supply chains are letting businesses to build their online presence and outreach their products to different parts of the world. By collaborating different fields like transport, storage, and management, these logistics are providing service across the globe. There are a lot of latest trends are coming in into this sector and some of the top tech trends are given down below.

The digitization of the supply chain

Combining all the latest technologies, these logistics gave birth to the digitization and redesigned their logistics practices. This process has paced up their work process and allowed them to hold their position in this highly competitive business environment. The whole concept has not only improved the speed and dynamics but has also brought resiliency in the operations of these supply chain.

Through this method, these logistics companies not only witnessed the performance graph and but also increased their market revenue. The field is vast and there are a lot of transformative solutions available.

The digitization is helping them monitor their inventory, manage their warehouse stocks and also make detailed plans about the transport routes so that they don't have to spend on extra dead mileage.

The use of Artificial intelligence



Different logistics are currently switching to artificial intelligence to automate their daily work process. Different AI-driven technology is building up various virtual calling systems, that helps in reducing return and refund rates.

They also have a lot of other implementation in supply chain and warehouse management. By reducing human intervention they are making the logistics targets much

easier, and achievable. The robotics concept has already been implemented in the different supply chain. They are easy to operate and are pretty cost-effective and flexible.

A better risk management

It is needless to say that every logistics considers a tad bit of supply chain risk, and keeps a backup plan for any sort of unfavorable events.

The different outsourcing process includes a lot of risk factors.

The offshore transporting, maintaining product versatility, logistics security can lead to a disaster if not managed properly.

Hence logistics and supply chain nowadays are bracing themselves up with proper disaster management. Thus different logistics operations are taking up better practices to improve their supply chain management and dealing better with all the risk factors.

There are times when the disaster cant is prevented. Hence they are also laying down rule and techniques for the damage repair and take care of all the disrupted events. They are making the platform more resilient and flexible to create better transparency for the retailers, customers and for them as well.

Using sAAs for managing supply chains

E-Commerce success depends on logistics. Therefore different companies are using up the software-as-a-service model to manage their supply chain operations.

The process has gained popularity as the functionality of cloud computing came into the market. This technology allows different logistics business to stave off high fixing cost and helps in easy maintenance with timely upgrades and also looks after the infrastructure-related expenditures.

Betterment of supply chain visibility

The better visibility and a correct supply chain analysis can help a business to grow significantly and forecast its growth for the future as well. Keeping the supply chain transparent and clear can be used to optimize the resources present in the inventory and can ease out their storage and transport process.

An unclear idea about the logistics resources that affect the overall functioning and create confusion during shipment and delivery. Thus an efficient supply chain handling is extremely crucial.

An improved GPS has been a big evolution of E-commerce logistics

One of the latest tech trends in logistics is the use of improved GPS. this helps in determining the real-location of the shipped product. Not only does it helps the customer, but also helps the organization to stay updated on the detailed information of the product.

Organizations can now easily track their delivery trucks and get the necessities done during any sort of trouble. This reduces fuel utilization and helps the truck reach its desired destination in a much faster way.

E-logistics using social media platforms

Content Marketing or E-mail Marketing strategies are not enough, Social media can impact your business in more ways than you realize.

Different social media platforms are now helping a lot of e-commerce and logistics to find a suitable way to coordinate with the customers. This is also useful when it comes to sharing business news, giving out information and working on customer feedback as early as possible.

Enabling multiple Payment & Delivery system

One of the best ways to intrigue customer regarding a product is by providing enough choices and discounts for the same.

The multiple payment options & gift wrap options available for the customers just adds the cherry on the cake. With an increased option, it becomes easy for customers to carry out a hassle-free payment.

This process is not only increasing the e-commerce sales but also allowing the logistics to come to the limelight to will get the product delivered to the customer.

Understanding third-party logistics (3pl)

The third-party logistics, often abbreviated as 3PL is a form of supply chain management that helps in outsourcing a company's distribution, warehousing, and other fulfillment services.

They specialize in carrying out various integrated operations and work on the market's supply and demand. They also help in product transportation and even caters to storage and inventory management.

Over time, as the business of e-commerce flourished, there were a lot of logistics services that came to action.

The 1st party logistics (1pl), the second party logistics (2pl), etc., These logistics were called to action to trade products to different countries as well.

But a lot of management issues and other logistics constraints led to a downfall of these logistics. But as time progressed different businesses started re-evaluating with working strategies and gave birth to the third party logistics.

These third-party logistics became way more polished and eased out a lot of previously present issues

Role of 3rd party Logistics

A 3rd party logistics provides outsourced logistics and transportation services to its customers. Their supply chain management includes several functions like inventory and storage management, packing and picking goods, shipping, distribution and many more. This type of logistics are not only highly advanced and one of the most dependable forms of logistics but also has its major advantages are discussed below.

3PL have professional supply chain expertise

The people involved with 3rd party logistics are known to have the best industry knowledge. They have the most technologically advanced gadgets and manages all the operation in a smooth and seamless way. They are also capable of advanced reporting and solving all shipment and delivery related issues within a short period of time. These types of logistics allow different businesses to built a- better presence for them and also boosts their confidence to keep going with their work.

3PL have a strong resource network

The 3rd party logistics have a wide range of a network that works best for different supply chains. Their chain of management is extremely vast and they provide the most optimized and cost-effective form of logistics. The efficiency of these logistics makes it different from any other similar logistics industry. Not only they work with the best technology, but also helps in cutting down the overall cost of any e-commerce industry.

Their services are flexible and scalable

One of the major ways in which these 3rd parties stand out is by providing a scalable mode of transportation. There is no place that these 3PLs can't reach. They set up their inventory according to the location of different businesses and makes the product exchange between the buyer and seller much easier. Other than this, they help to outreach your business to new territories and allow you to grow every day.

It improves and optimizes the supply chain

Different 3rd party logistics, mostly like iThink logistics help in improving and optimizing the supply chain to ease out the work of different e-commerce businesses. They leverage high-quality virtual calling systems, to pull back the e-commerce economy from the pit and provide a seamless service. These 3rd party logistics also offers tools that will ensure cost-effective functionality.

ELECTRONIC DATA INTERCHANGE (EDI)

Meaning:

The Electronic Data Exchange or EDI is a technology that helps trading organizations and partners get more done faster by speeding up logistics timelines and eliminating manual errors through business to business communication automation.

EDI allows organizations that produce, ship, purchase, and sell goods or provide services such as retailers, manufacturers, insurers, health care providers, airlines and more.

EDI has been in use since the 1960s, though it is finding new use today by enabling supply chain automation and acting as a key part of the workflow for business process automation.

Computer-to-Computer Data Exchange

EDI is an automated computer-to-computer exchange of standard electronic business documents that occurs between business partners over a standardized and secure connection.

With computer to computer communications, there is no need to rely on manual options such as email, faxes, and postal mail.

Documents move directly from the sender's computer application to the receiver's computer application. For example, a buyer can send over a purchase order and the supplier will automatically send over an invoice.

The standard EDI format allows computers to process EDI documents.

Standards describe each piece of data and the format, such as the type of document, the parties involved, the data common and the actions to take.

The use of standards eliminates company to company variations so that each business partner's computer system speaks a common language.

EDI systems use a variety of standards for various regions, use cases, and industries. The EDI standards have different versions, so EDI partners have to use the same standard and version for the data to flow properly.

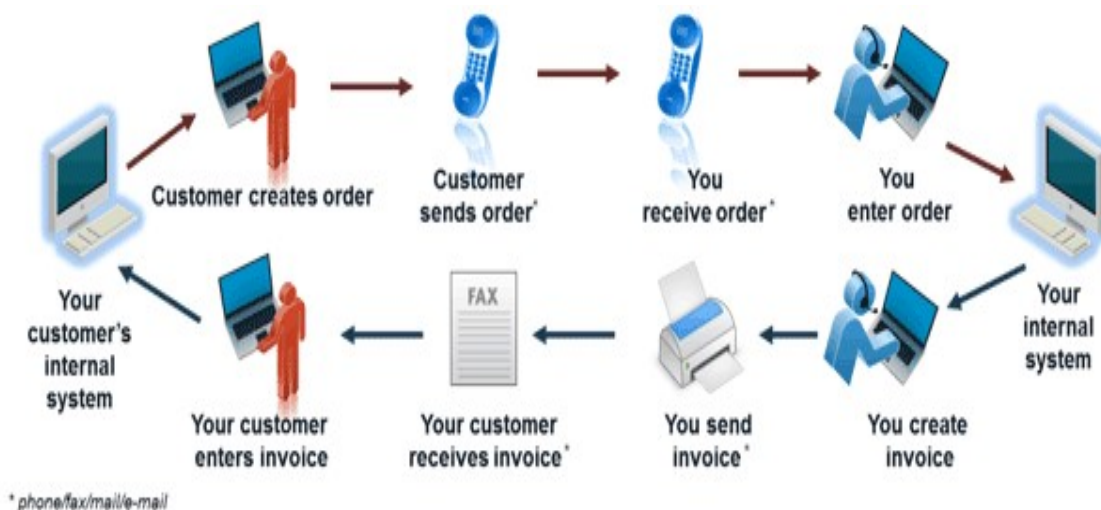
Among the most popular standards are ANSI X12 used in the United States, UN/EDIFACT which is used globally, and industry specific standards, such as HIPAA.

EDI uses a range of secure protocols for document exchange. Partners have to agree upon the protocol to use and make sure they are using the same protocol before they can exchange EDI files. If they do not, they must work with an intermediary to facilitate the exchange between the two protocols.

Certain EDI security protocols require more technology than others but using EDI software such as ESSBUS Connect can facilitate a wide variety of exchanges without a major investment.

These protocols range from the long-established file transfer protocol (FTP) or secure FTP (STFP) that is used to upload content to a host server for a website, to API-based systems such as AS4, web-based via A2, and other options, including mobile EDI.

Though EDI itself can get highly technical, investing in it for your company will pay for itself in no time. The speed at which you'll be able to process orders and invoices will dramatically improve, allowing you to cut labor costs and focus labor efforts on other value-added tasks.



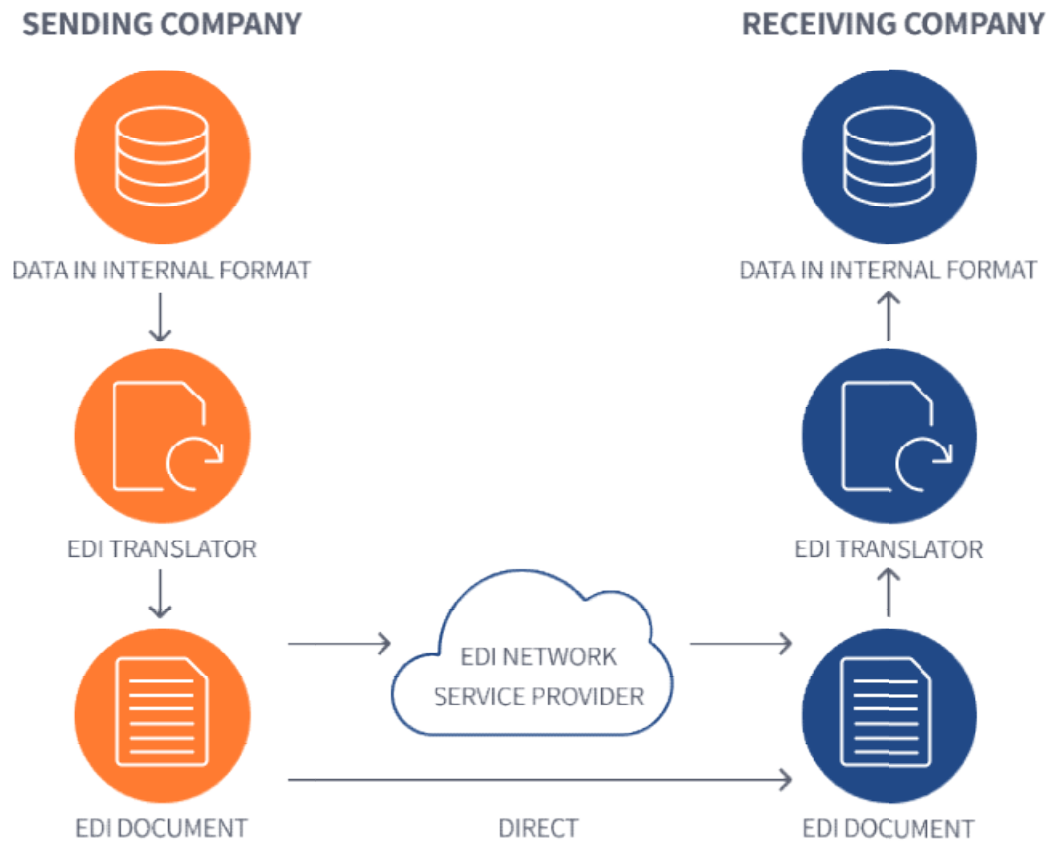
EDI and Automation

EDI messages can be automated with pre-configured workflows. For instance, as soon as a purchase order is marked shipped, the supplier can send a shipment notification, followed by an invoice.

Generally, businesses use EDI translators, either through a service provider or software to translate the EDI documents for use with internal applications to enable automated processing. Processes can be expanded to work with workflows and integrations within your company.

For instance, once a company receives a purchase order via EDI, the logistics system automatically generates a task for the warehouse staff to move the goods from inventory to

shipping. Once moved to shipping, a shipping label is automatically generated, and the shipment information is sent back to the client who placed the order.



Three Step Process of EDI:

EDI requires three steps

- Prepare the documents
- Translate them to an EDI format
- Transmit them to a partner

Step 1:

Using purchase orders as an example, the buyer prepares their purchase order by collecting and organizing all the data, so it works with EDI. Rather than printing a purchase order, the system creates an electronic file with all the information required to build an EDI document.

Step 2:

Once the document is created, it must be fed through the EDI translation software to convert the internal data into the EDI standard format. If the company doesn't have EDI software in-house, you can send the data to an EDI service provider to translate the document into the correct EDI format for you.

Step 3:

After the PO is translated to the standard EDI purchase order format, it is transmitted to the supplier. The supplier uses EDI with different documents, the advanced shipping notice and invoice, for instance, to notify the buyer the order has been shipped and to ask the buyer for payment.

Benefits and Advantages of EDI

By applying EDI to your business setup, you can add extra value to your company's process with automatic information processing, reduce clerical responsibilities, and remove data entry errors. The benefits of EDI for the end-to-end transactions use throughout the business cycle results in better use of time and resources.

Below are the benefits of EDI:

1. Better Speed

EDI decreases the time it takes for an employee to make invoices and handle purchase orders manually.

Timing is crucial when it comes to processing of an order. With EDI, businesses can speed up their cycles by 61% creating an allowance for more automation process that significantly reduces, if not eliminated, time delays related to manual processes that entail you to compare, enter, and file data.

Records management is reorganized and made more effective with simultaneous data updates.

Transferring documents electronically improves transaction speed and perceptibility while reducing the cost involved in manual approach. Stock levels are also kept regularly updated and visible.

2. Business Efficiency

For the reason that human error is lessened, businesses can profit from improved levels of proficiency. Rather than place attention on common and tedious activities, staffs can dedicate their attention to more significant value-adding tasks.

EDI transfer guarantees immediate processing and eradicates time wasting related with manual entering, receiving, and sending orders. Improved quality of data provided by EDI

lessens data entry errors, improves accounts activity times as procedures become efficient and can be made available for forecasting.

3. Collective Productivity

The EDI technology permits more business to take on more operations with less human resources. Business teams can handle tasks with advanced additional worth.

With EDI, the whole process is completed in a matter of seconds. This is due to the reason that automated process allows for instant completion of tasks like registering and balancing validation.

4. Cost Savings

This is amongst the most popular benefits of EDI. With EDI, the costs for processing business documents get at least 35% cut, but it can be much more remarkable in case of electronic invoices, with 90% savings a possibility. Then again, this extreme economic saving is due to transactions automation, and, also the less involvement of paper usage.

EDI reduces your operating outlay by removing the costs of document retrieval, filing, mailing, paper, postage, printing, recycling, reproduction, and storage. EDI significantly reduces administrative, maintenance, and resource costs.

5. Enhancing Financial Ratios.

With the Implementation of EDI, transferring and getting e-invoices takes place almost instantly. EDI also adds automatic authentication and checking procedures, which enable rapid dispensation at the endpoint, aiding estimate cash necessities.

In appreciation of this foresight, customers can take advantage of quick payment rebates and the dealer's liquidity is enhanced.

6. Environment-Friendly Services.

The movement from paper-based services to the use of electronic transactions available on EDI decreases CO2 discharges. Thus, the use of EDI encourages corporate social accountability and help organization achieve sustainable supply chain management.

7. Information Availability on Process Status.

Replacing paper with e-documents makes it easy to maintain and track data. EDI safeguards traceability and transactions inerrability like changes to purchase orders, invoices, pending payment status, receipt acknowledgment, and other similar events.

Additionally, sending data through private networks make available lasting control over message status about processing, reading, and receipt, etc.

8. Improved Accuracy

Apart from inadequacy, the manual approach is also highly susceptible to error, usually ensuing from entering and re-keying errors, indecipherable handwriting, and improper document management.

EDI considerably improves the business data quality and removes the problem of re-working orders by bringing at least a 30% to 40% drop in transactions errors.

The use of ethics acknowledged by both parties (receiver and sender), guarantees correct interpretation of data, irrespective of activity, sectors or nationalities.

9. Operations Automation

The benefits of EDI tool considerably lighten the burden on management. Several tasks, like enveloping, franking or registering, printing out business documents, would fade entirely.

EDI's adaptableness modernizes the communication flow and improves typically business relations with other trade partners.

10. Refining Service to Partners and End Users

Implementation of EDI implies the application of optimal workflows and response time. The Implementation of EDI benefits the end user most of all, as manufacture plans and distributions become much more accurate.

EDI also enlarges your customer base and managing trade partner relationship due to its quicker goods and services distribution.

11. Security

EDI boosts the level of protection for any transactions by strongly allocation data across a more extensive variation of communicating protocols and safety standards, hence, reducing supply chain risks. Your trading partners would profit from the seamless movement of data and accessibility to the technology creates prospects for newer business breaks.

Limitations of EDI:

While countless businesses enjoy the benefits of EDI, some companies are still cautious to try it out due to the following limitations of EDI.

1. Cost of Implementation

It is true that EDI provides massive cost savings benefits but for small businesses re-designing and implementing software applications to fit in EDI into current applications can be quite costly. Such limitations of EDI must be considered if you plan on implementing such system.

2. Electronic System Safety

EDI also necessitates substantial investment in computer networks and security systems for maximum security. Any EDI system installed would require protection from hacking, malware, viruses, and other cybersecurity threats.

3. Preliminary Setup Consumes Time

Not only is the implementation of EDI system expensive to install, but it also consumes a considerable amount of time to set up the essential parts. Thus, such limitations of EDI can hinder fast-tracking of services if urgently required.

4. Several Standards to Maintain.

Numerous businesses looking to implement EDI also consider the several standards involved. These limitations of EDI do not allow small businesses to exchange data with larger establishments that make use of latest edition of a document standard. Some known measures include ANSI ASC X12, GS1 EDI, HL7, TRADACOMS, and UN/EDIFACT.

5. Suitable Backup System

EDI implementation also requires regular maintenance as the business functionality is highly dependent on it. Some robust data backup system is needed in case of system crash or for statistical purpose. Such limitations of EDI can cost some substantial amount to implement.

UNIT – III: ELECTRONIC PAYMENT SYSTEMS

Electronic 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 Master card.

Credit Card Payment Process

Step	Description
Step 1	Bank issues and activates a credit card to the customer on his/her request.
Step 2	The customer presents the credit card information to the merchant site or to the merchant from whom he/she wants to purchase a product/service.
Step 3	Merchant validates the customer's identity by asking for approval from the card brand company.
Step 4	Card brand company authenticates the credit card and pays the transaction by credit. Merchant keeps the sales slip.
Step 5	Merchant submits the sales slip to acquirer banks and gets the service charges paid to him/her.
Step 6	Acquirer bank requests the card brand company to clear the credit amount and gets the payment.
Step 6	Now the card brand company asks to clear the amount from the issuer bank and the amount gets transferred to the card brand company.

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 emoney 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-Commerce - Security Systems

Ecommerce security is essential if you are to make it in this industry. Are you aware that cyber-criminals target mostly ecommerce businesses? Online businesses experienced 32.4% of all successful cyber-attacks in 2018. A serious business should, therefore, employ

Rock-solid ecommerce security protocols and measures. It will keep the business and customers free from attacks.

Traditional and Modern Payment Systems

- Traditional payment methods include cash, checks, credit and debit cards.
- These methods have several shortcomings
 - Checks and cash cannot be exchanged in real time
 - Credit and debit card info exchanged over the phone or by email entails security risks
 - Credit/debit cards do not support individual-to individual payment transactions
 - Some individuals do not have access to credit cards or checking accounts because of credit history
 - The overhead of all but cash do not support low value transactions (micropayments)

Comparison of Selected Instruments

	Cash	Credit Card	Travellers Checks	Prepaid Card
Easily Exchangeable	Yes	No	Yes	No
Acceptable to users	Yes	Yes	?	?
Small Transaction Cost	Low	High	High	?
Large Transaction Cost	Low	Low	Low	Low
Non-refutable	No	Yes	No	No
Transferable	Yes	No	No	No
Buyer Anonymous	Yes	No	No	Yes
Secure against unauthorized use	No	Some	Some	?
Retrievable	Yes	Yes	Yes	Yes
Tamper resistant	Yes	No	Yes	No
Monetary Value	Yes	No	Yes	Yes

Cash

- Cash remains the dominant form of payment because of:
 - Lack of consumer trust in banking system
 - Inefficient clearing/settlement of non-cash transactions
 - Negative real interest rates on bank deposits

Electronic Payments

- E-commerce requires payment methods that are:
 - Widely used by consumers and accepted by merchants and banks.
 - Real time, i.e. transactions are completed when consumer hits the pay button
 - Provide support for micropayments

Required Properties of Electronic Cash

- Must have a monetary value
- Must be interoperable or exchangeable for other digital cash, paper cash, goods or services
- Must be storable and retrievable

- Must be tamper resistant while being exchanged

Approaches to Electronic Tokens/Digital Cash

- Tokens or digital cash are forms of payment backed by a bank/financial institution and offer:
 - Transaction privacy and confidentiality
 - Support for micropayments, or small fee transactions
 - Real time exchange between buyer and seller

Web Services

- Ecash
- Mondex
- Millicent
- Cyber cash
- www.webcharge.com
- www.clickshare.com
- www.netchex.com

www.digicash.com

- E-cash or electronic cash
 - Provided to consumers and merchants through financial institutions around the world
 - Uses digital signature technology based on public key cryptography for security
 - Buyer remains anonymous and does not need to provide personal information over the internet
 - Ecash usage cannot be tracked
 - Easily transferable: money can be transferred to a merchant, or friends/family by email
 - No charge to consumers

www.mondex.com

- Provides a digital cash service
- Uses phones, smartcards, wallets, and pos devices
- Cards can be loaded over mondex phones
- Money can be transferred using wallets
- Money can be spent at POS terminals
- Certificates back transactions

Mondex Smart Card

- Like a credit card

- Stores its value electronically in a microchip
- Holds up to five different currencies at one time
- Money can be transferred by telephone/internet to a retailer or merchant as well as other individuals
- Can be used for purchases of any size
- User remains anonymous -- no record of transaction
- Secure in difficulty of duplicating the microchip

www.millicent.com

- Users can fund their account by:
 - Online credit or debit card
 - Directly billing ISP statement or telephone bill
 - Anonymous, prepaid cards
- Account can hold any currency
- Millicent will handle refunds, currency conversions, delivery problems, actual payments

www.cybercash.com

- Cyber cash offers services for businesses
- Cyber cash also offers a wallet for users
- Everything is authenticated

Services to Vendors

- A variety of organizations provide services to vendors
- These include:
 - Credit card support
 - Digital cash support
 - Transaction management and reporting
- Suppliers include
 - Cyber cash
 - Millicent

www.cybercash.com

- Cyber Cash Cash Register
 - Supports major credit cards as well as debit and purchase cards
 - Flexibility to process offline orders
 - Automatically logs every transaction including sales, credits, and voids
 - Fast transaction processing speed for large volumes

www.cybercash.com

- Cyber Cash Cash Register (cont)
 - All transactions are encrypted and digitally signed
 - Customers are notified in “real time” of rejection/approval of transactions

www.millicent.com

- Must have a website to participate
- Vendor can be apart of the Millicent network or
- Can integrate Millicent software directly into their own website to eliminate fees
- Offers pay-per-click, earn-per-click, and subscriptions

Banking Services

- Banking Services
 - Offers 24 hour, seven day a week online banking
 - Uses encryption customers security
 - Password protection
 - No transaction fees
- Major online banks include:
 - www.compubank.com
 - www.sfnb.com
 - www.citibank.com/us/

What is ecommerce or electronic commerce security?

Ecommerce security is the guidelines that ensure safe transaction through the internet. It consists of protocols that safeguard people who engage in online selling and buying of goods and services. You need to gain your customers’ trust by putting in place commerce security basics. Such basics include:

Privacy Integrity Authentication Non-repudiation

Privacy

Privacy includes preventing any activity that will lead to the sharing of customers’ data with unauthorized third parties. Apart from the online seller that a customer has chosen, noon else should access their personal information and account details.

A breach of confidentiality occurs when sellers let others have access to such information. An online business should put in place at least a necessary minimum of anti-virus, firewall, encryption, and other data protection. It will go a long way in protecting credit card and bank details of clients.

Integrity

Integrity is another crucial concept of ecommerce Security. It means ensuring that any information that customers have shared online remains unaltered. The principle states that the online business is utilizing the customers’ information as given, without changing anything. Altering any part of the data causes the buyer to lose confidence in the security and integrity

of the online enterprise.

Authentication

The principle of authentication in ecommerce security requires that both the seller and the buyer should be real. They should be who they say they are. The business should prove that it is real, deals with genuine items or services, and delivers what it promises. The clients should also give their proof of identity to make the seller feel secure about the online transactions. It is possible to ensure authentication and identification. If you are unable to do so, hiring an expert will help a lot. Among the standard solutions include client logins information and credit card Pins.

Non-repudiation

Repudiation means denial. Therefore, Non-repudiation is a legal principle that instructs players not to deny their actions in a transaction. The business and the buyer should follow through on the transaction part that they initiated. Ecommerce can feel less safe since it occurs in cyberspace with no live video. Non-repudiation gives ecommerce security another layer. It confirms that the communication that occurred between the two players indeed reached the recipients. Therefore, a party in that particular transaction cannot deny a signature, email, or a purchase.

Cryptography

Major security measures are following –

Encryption—Encryption is a means of securing digital data using one or more mathematical techniques, along with a password or "key" used to decrypt the information. The encryption process translates information using an algorithm that makes the original information unreadable. The process, for instance, can convert an original text, known as plaintext, into an alternative form known as cipher text. When an authorized user needs to read the data, they may decrypt the data using a binary key. This will convert cipher text back to plaintext so that the authorized user can access the original information.

Encryption is an important way for individuals and companies to protect sensitive information from hacking. For example, websites that transmit credit card and bank account numbers should always encrypt this information to prevent identity theft and fraud. The mathematical study and application of encryption is known as cryptography.

Digital Signature – Digital signature ensures the authenticity of the information. A digital signature is an e-signature authenticated through encryption and password.

A digital signature is a mathematical technique used to validate the authenticity and integrity of a message, software or digital document. It's the digital equivalent of a handwritten signature or stamped seal, but it offers far more inherent security. A digital signature is intended to solve the problem of tampering and impersonation in digital communications.

Digital signatures can provide evidence of origin, identity and status of electronic documents, transactions or digital messages. Signers can also use them to acknowledge informed consent.

Security Certificates – Security certificate is a unique digital id used to verify the identity of an individual website or user.

Security Protocols in Internet

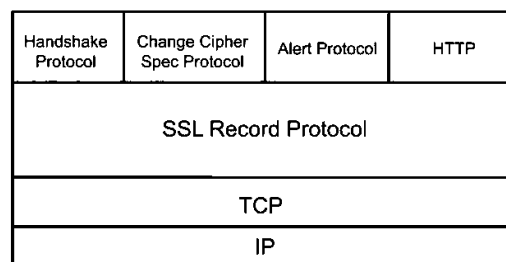
We will discuss here some of the popular protocols used over the internet to ensure secured online transactions.

Secure Socket Layer (SSL) provides security to the data that is transferred between web browser and server. SSL encrypts the link between a web server and a browser which ensures that all data passed between them remain private and free from attack.

Secure Socket Layer Protocols:

- SSL record protocol
- Handshake protocol
- Change-cipher spec protocol
- Alert protocol

SSL Protocol Stack:

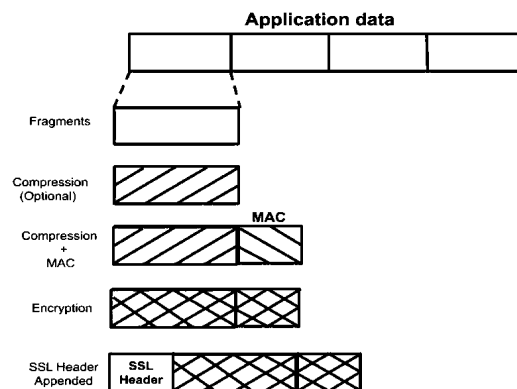


SSL Record Protocol:

SSL Record provides two services to SSL connection.

- Confidentiality
- Message Integrity

In the SSL Record Protocol application data is divided into fragments. The fragment is compressed and then encrypted. MAC (Message Authentication Code) generated by algorithms like SHA (Secure Hash Protocol) and MD5 (Message Digest) is appended. After that encryption of the data is done and in last SSL header is appended to the data.



Handshake Protocol:

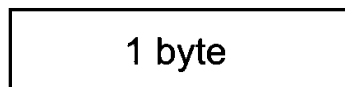
Handshake Protocol is used to establish sessions. This protocol allows the client and server to authenticate each other by sending a series of messages to each other. Handshake protocol uses four phases to complete its cycle.

- **Phase-1:** In Phase-1 both Client and Server send hello-packets to each other. In this IP session, cipher suite and protocol version are exchanged for security purposes.
- **Phase-2:** Server sends his certificate and Server-key-exchange. The server end phase-2 by sending the Server-hello-end packet.
- **Phase-3:** In this phase Client reply to the server by sending his certificate and Client-exchange-key.
- **Phase-4:** In Phase-4 Change-cipher suite occurred and after this Handshake Protocol ends.

Change-cipher Protocol:

This protocol uses the SSL record protocol. Unless Handshake Protocol is completed, the SSL record Output will be in a pending state. After handshake protocol, the Pending state is converted into the current state.

Change-cipher protocol consists of a single message which is 1 byte in length and can have only one value. This protocol's purpose is to cause the pending state to be copied into the current state.



Alert Protocol: This protocol is used to convey SSL-related alerts to the peer entity. Each message in this protocol contain 2 bytes.



The level is further classified into two parts:

Warning: This Alert has no impact on the connection between sender and receiver.

Fatal Error: This Alert breaks the connection between sender and receiver.

Silent Features of Secure Socket Layer:

- The advantage of this approach is that the service can be tailored to the specific needs of the given application.
- Secure Socket Layer was originated by Netscape.
- SSL is designed to make use of TCP to provide reliable end-to-end secure service.
- This is a two-layered protocol.

Secure Hypertext Transfer Protocol (SHTTP)

SHTTP extends the HTTP internet protocol with public key encryption, authentication, and digital signature over the internet. Secure HTTP supports multiple security mechanism, providing security to the end-users. SHTTP works by negotiating encryption scheme types used between the client and the server.

Secure Electronic Transaction

It is a secure protocol developed by MasterCard and Visa in collaboration. Theoretically, it is the best security protocol. It has the following components.

Card Holder's Digital Wallet Software – Digital Wallet allows the card holder to make

secure purchases online via point and click interface.

Merchant Software – this software helps merchants to communicate with potential customers and financial institutions in a secure manner.

Payment Gateway Server Software – Payment gateway provides automatic and standard payment process. ``It supports the process for merchant's certificate request.

Certificate Authority Software – this software is used by financial institutions to issue digital certificates to card holders and merchants, and to enable them to register their account agreements for secure electronic commerce.

UNIT – IV: CUSTOMER RELATIONSHIP MANAGEMENT

Components of CRM:

Customer relationship management (CRM) software is the gateway from your customers into the business. It's the component part of your business software suite which manages interactions with potential customers through your sales pipeline. From **lead to prospect, a prospect to opportunity and from an opportunity to close**. This process (typically referred to as sales force automation) is controlled by the salespeople in the organisation and should be the main tool of their trade.

However, a really great customer relationship management (CRM) software doesn't just stop at sales force automation.

The 3 main components of successful CRM software, from marketing automation to customer service solutions.

If you are in the market for a new CRM software and would like to find out more or where to begin, then why not sign up for our free CRM Webinar. Hosted by experts in the field, ready to provide your business with all the CRM answers you could need, from the best CRM software.

Component 1 – Marketing Automation

Before your salespeople even get their hands on a prospect, it is likely that your marketing team are working hard to identify the best leads and warm them up for the sales force.

However, many marketing responsibilities are boring and repetitive. Tasks such as customer segmentation and profiling, email marketing and data cleansing can be laborious and tedious. Marketing automation exists to help systemise many of these tasks and to enable the marketing agents to invest their time in more meaningful work – like creating collateral or organising events.

A good marketing software will have these key features:

Effective multi-channel campaign management – to help you streamline marketing campaigns across your website, email, events and social

- **Collaborative tools like task allocation and reporting** – to enable better working between sales and marketing departments
- **Lead reporting and analytics**
- **Landing pages and forms** – so that anyone completing a form on your site posts directly into your system for follow up
- **Delivers full email marketing automation** – from creation to execution

Component 2 – Sales Force Automation

Neither marketing nor sales operate in isolation, so why should your software? If marketing automation and sales force automation are completed in the same system then the marketing team can push successfully warmed up leads straight through to the sales team. Sales teams can analyse campaign outcomes and crucially access campaigns directly from the customer record so they know what information the customer has been served.

Territory management – to help your salespeople make the most out of their sales territories

- **Opportunity management** – to track prospects through the various opportunity statuses through to closed-won
- **Forecasting** – assigning % probability to each prospect in order to accurately forecast sales values and successes
- **Quote generation** – right through to order creation
- **Incentive management** – to calculate commissions
- **Intuitive Upsell** – allow salespeople to maximise their success by offering to upsell based upon previously purchased items or typical combinations

Component 3 – Customer Service Solutions / Case Management

Of course, your relationship with the customer doesn't end after you have closed the deal. There will be order fulfillment, customers services to be completed and often, issues to resolve.

In order to get the full 360-degree picture of your customer journey from marketing and sales to experience right through to after-sales care, you really need your CRM software to handle case management and customer service solutions as well.

A great case management solution will allow your customers to:

- Log cases themselves via email, phone or website
- Track responses from request to resolve
- Reorder products or services from a customer portal

Great case management software will allow you to:

- Effectively and speedily respond to customers
- Track interactions back and forth between customer and service rep within one system and against the customer record
- Track time and materials incurred against cases
- Reporting based on outcomes

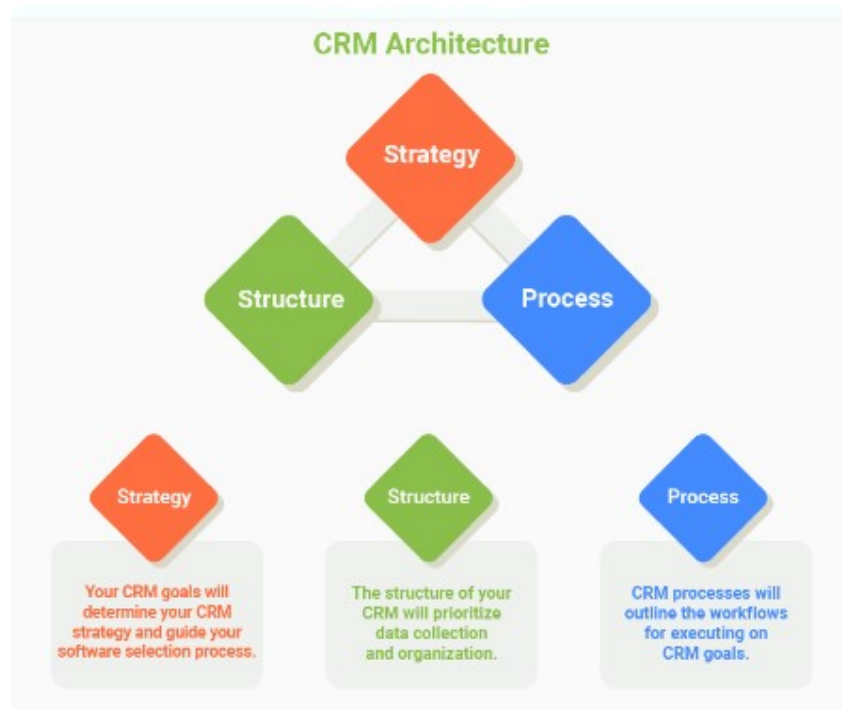
Imagine the power behind running all three components from a single unified system. You would instantly increase customer satisfaction, reduce costs by allowing customers to self-serve where possible. Increase staff engagement and collaboration, increase efficiency and productivity, increase profitability through quicker sales close and better upsell management.

CRM Architecture:

A CRM architecture outlines the strategy, structure, and processes necessary for successful customer relationship management. CRM software plays a central role in implementing this architecture.

Strategy: Your CRM goals will determine your CRM strategy and guide your software selection process. **Structure:** The structure of your CRM will prioritize data collection and organization. **Processes:** CRM processes will outline the workflows for executing on CRM goals.

In other words, a company's customer relationship management strategy will be the backbone for adopting CRM software. The structure and processes will be its practical implementation.



CRM Strategy

THE RISK: Without a strategy, data doesn't have a home

Customer relationship management is a strategy that reinforces the continuous nurturing of customer relationships to increase revenue and profitability. Despite a standard focus on building customer relationships, every company will have its own slightly different take on what its CRM strategy should look like. What won't change is the role of CRM strategy as the high-level, big-picture outline of a CRM architecture.

Spelling out the reason behind adopting a CRM lays the groundwork for the structure and processes that will help execute on goals. This includes considering the role that CRM software will play in aiding with customer relationship management.

Questions to ask when developing a CRM strategy

- Is our goal for customer acquisition or customer retention (or something else altogether)?
- What are the biggest pain points in our current customer management process?
- What are the biggest opportunities for improving our customer experience ?

CRM Structure

THE RISK: Without a structure, data is disorganized

If strategy is the big picture, a CRM structure is a more detailed map of the components that make up that strategy. The structure will be tailored to a company's sales cycle, customer journey, and customer profiles to provide a practical roadmap for achieving CRM goals.

In terms of software, a CRM will be structured with specific fields, modules, and integrations that support customer contact, service delivery, and data collection.

The structure itself will lay out different stages of the customer journey and consider any marketing or customer service touch points that a customer may encounter along the way. Having integration with other software will be especially important here to get a holistic view of a customer.

The structure is also where a company decides on the types of data that it wants to collect, as well as the logic and structural rules for making sure that the data remains clean (i.e., not duplicated or outdated). Data that can be used for analysis and recommendations should be prioritized for collection.

Questions to consider when developing a CRM structure

- What does our sales cycle look like?
- What type of data will help me learn more about my customers?
- What data can be integrated from other software to provide a more holistic view of the customer?

CRM Process

THE RISK: Without a process, data falls through the cracks

Processes are the final pieces of the CRM architectural puzzle. Processes outline the more practical considerations and actionable aspects of executing on customer relationship management, including the how and when of dealing with customers on an individual level. Think of these as the "if this, then that" scenarios of the customer journey.

Processes ensure that employees are leading customers along the appropriate journey based on previous actions or interactions. CRM software aids in this process with the help of

rules, triggers, and automation, which notify employees of pending actions or opportunities to connect with customers.

Processes also ensure that employees are taking the right steps to collect data or record interactions with customers when necessary. Processes can also apply to lead sourcing and scoring as a way to capture data before the lead becomes a full-fledged customer.

The data collected during this part of the journey will form the basis for creating customer personas, monitoring sales performance, and making forecasts of future sales outcomes.

Questions to consider when developing CRM processes

-
- How did this customer reach me?
 - What actions can I automate to help move customers through the pipeline?
 - How can I interpret the customer data that's being collected?

Architectural components of a CRM solution:

There are a number of different components of Customer Relationship Management that are essential to run an organization towards success. Every component is unique in itself and plays a major undeniable role in the process.

Components of Customer Relationship Management

Sales Force Automation

Sales Force Automation is the most essential components of customer relationship management. This is one such component that is undertaken by the maximum business organizations. It includes forecasting, recording sales processing as well as keeping a track of the potential interactions.

It helps to know the revenue generation opportunities better and that makes it very significant. The component also includes analyzing the sales forecasts and the performances by the workforce. To achieve an overall improvement in the development and growth of the industry, numerous components work hand in hand to form sales force automation as a consequent unit. Some of the major elements of the same are Lead Management, Account Management, Opportunity Management, Forecasting, Pipeline Analysis, Contact Management, Activity Management, Email Management and Reporting.

Human Resource Management

Human Resource Management involves the effective and correct use of human resource and skills at the specific moment and situation. This requires to be make sure that the skills and intellectual levels of the professionals match the tasks undertaken by them according to their job profiles. It is an essential component not only for the large scale corporations but the medium industries as well. It involves adopting an effective people strategy and studying the skills or the workforce and the growth being generated thereby designing and implementing the strategies needed accordingly with the aim of achieving development.

Lead Management

Lead Management as the name suggests, refers to keeping the track of the sales leads as well as their distribution. The business that are benefitted by this component of CRM the most are the sales industries, marketing firms and customer executive centres. It involves an efficient management of the campaigns, designing customized forms, finalizing the mailing lists and several other elements. An extensive study of the purchase patterns of the customers as well as potential sales leads helps to capture the maximum number of sales leads to improve the sales.

Customer Service

Customer Relationship Management emphasizes on collecting customer information and data, their purchase information's and patterns as well as involves providing the collected information to the necessary and concerned departments. This makes customer service an essential component of CRM.

Almost all the major departments including the sales department, marketing team and the management personnel are required to take steps to develop their awareness and understanding of the customer needs as well as complaints. This undoubtedly makes the business or the company to deliver quick and perfect solutions and assistance to the customers as well as cater to their needs which increases the dependability and trust of the customers and people on the organization.

Marketing

Marketing is one of the most significant component of Customer Relationship Management and it refers to the promotional activities that are adopted by a company in order to promote their products. The marketing could be targeted to a particular group of people as well as to the general crowd. Marketing involves crafting and implementing strategies in order to sell the product. Customer Relationship Management assists in the marketing process by enhancing and improving the effectiveness of the strategies used for marketing and promotion.

This is done by making an observation and study of the potential customers. It is a component that brings along various sub-elements or aspects. Some of the major elements of marketing are List Management, Campaign Management, Activity Management, Document Management, Call Management, Mass Emails and Reporting. The use of the aforesaid elements varies from business to business according to its nature and requirements as well as the target crowd.

Workflow Automation

A number of processes run simultaneously when it comes to the management and this requires an efficient cost cutting as well as the streamlining of all the processes. The phenomenon of doing so is known as Workflow Automation. It not only reduces the excess expenditure but also prevents the repetition of a particular task by different people by reducing the work and work force that is getting wasted for avoidable jobs. Routing out the paperwork and form filling are some of the elements of the process and it aims at preventing the loss of time and excess effort.

Business Reporting

CRM comes with a management of sales, customer care reports and marketing. The customer care reports assist the executives of a company to gain an insight into their daily work management and operations. This enables one to know the precise position of the company at any particular instance. CRM provides the reports on the business and that makes it play a major role here. It is ensured that the reports are accurate as well as precise. Another significant feature is the forecasting and the ability to export the business reports on other systems. In order to make comparisons, one can save historical data as well.

Analytics

Analytics is the process of studying and representing the data in order to observe the trends in the market. Creating graphical representations of the data in the form of histograms, charts, figures and diagrams utilizing the current data as well as the one generated in the past is essential to achieve a detailed understanding and study of the trends. Analytics is an extremely significant element of Customer Relationship Management as it allows to make in-depth study of information that is required to calculate the progress in the business.

Different components of Customer Relationship Management are associated with different elements mainly, the customer acquisition, improved customer value and customer retention. Various marketing applications are carved out to acquire more customers whereas data warehousing and analytical tools help the business to hold customers with a better communication and relationship. In order to enhance the customer value among the existing and future customers, there is a number of data warehousing and analytical tools.

Overall, each of the discussed components of Customer Relationship Management is very essential to improve the work structure as well as the market response to the business and their products.

Electronic CRM:

Electronic Customer Relationship Management- e CRM

It is integration between the traditional CRM and e-business application. This small has full potential to act as a gigantic E, boosting the organizations performance and the overall structure of business. Essentially, e- enables an organization to extend its infrastructure to customers and partners in a way that offers new opportunities to learn customer needs, add value, gain new economies, reach new customers, and do all of this in real time.

e-CRM is not just customer service, self-service web applications, sales force automation tools or the analysis of customers' purchasing behaviors on the internet. e-CRM is all of these initiatives working together to enable an organization to respond more effectively to its customers' needs and to market to them on a one-to-one basis.

Reason for e-CRM

Globalization brought in its spate a new emerging trend of e-business reinforcing further the customer centric approach. Customers now-a-days hold supremacy as the de-facto rulers of the market since they drive the market trends, with their rational approach. This emerging scenario impelled companies to take a U-turn in their thought process and follow a customer-

oriented methodology. At present companies cannot leap ahead on the basis of their capabilities and services, as it is the customers who matter at the end of the day.

According to industry research, it is 10 times more expensive to pursue new customers than to sell to existing ones. CRM can help gain a greater share of a loyal customer's business. Customers have always been at the core of business. The Internet economy has empowered the customer with more information and choice than ever before. In the digital economy, your empowered customer will:

- ◆ Value time, convenience, choice, flexibility, and simplicity
- ◆ Permit access to their information on their terms
- ◆ Expect you to learn from their interactions
- ◆ Look for customized, relevant & usable value at competitive price
- ◆ Demand consistent treatment across all modes of interaction - at the store, over the phone, on the web, at their home or business. Insist on every interaction to be a pleasant fulfilling experience.

Need for Electronic CRM:

e-CRM Features

Integrated Real-Time Information

The comprehensive Intelbiz CRM system captures every order, every payment transaction, every shipment, every communication, and every aspect involving customer relationship, all in real-time. Our E-CRM is integrated with its multi-channel sales, order engines and marketing engine. Customer support is made easy by virtue of having all relevant information in a single unified view.

Prioritization and Personalization

The application tracks all valuable customers and encourages them to do more business with company. It provides loyalty program, special offers, special pricing, special products and other exclusive services.

Buying Groups and Organizations

The system supports groups and other form of buying organizations that receive special pricing, aggregate their orders to a sum benefit, and need cumulative reporting.

Activity Management

The system has a configurable activity management system with a complete calendar, notations, categorized issue tracking, and resolution management.

Customer Communications- Trouble Ticket and Live Chat

Customer communications enables all email communications as well as trouble tickets and live chat supported by a configurable communications engine. Customers can easily submit a trouble ticket. A system events engine automates communications in step with order management workflow.

Customer Service and Self-Service

Our integrated service tools increase customer loyalty while reducing support costs. Customers can log in anytime to view their order histories, track packages, request refunds or view quotes. Customers can also submit trouble tickets while reviewing responses to their previous inquiries, or read through a published knowledge base.

New Customer Acquisition and Prospecting

This functionality enables tracking of all prospects according to stage of development and likeliness to make a purchase. Prospect records seamlessly convert into customer records with password protection and entitlements.

Attributes

The attribution system enables the definition and storage of any number of aspects of each customer for use in prioritization, loyalty programs, determining customer acquisition sources, entitlements, and contractual obligations. Configuration of attributes is user-driven including the data type, display type, the universe of acceptable values, and behaviors, including whether or not ranges of values are accepted and whether the attribute is visible to customer.

Pricing Tiers, Volume Pricing, and Customer Specific Pricing

The pricing engine enables any number of pricing tiers (for loyalty programs and wholesale/distributor/retail pricing) and enables volume pricing (discounts for bulk purchases) within each tier. The pricing engine is connected to Customer Relationship Manager (CRM) such that customers can sign-in and get access to their own special pricing.

Benefits of e-CRM

Most of the organizations are investing huge amount of money in defining and automating their core business processes. No doubt, they have benefited by standardizing the processes, yet there are some unpredictable and unforeseen circumstances, wherein the expertise of the individuals is called for. This is where e-CRM comes into the picture.

- ◆ Captures and Reuses past experiences
- ◆ Ensures Knowledge Management- A strategy to organize and use available information, experience and expertise
- ◆ Focus on customers across organization
- ◆ Linking employees with customers
- ◆ Lower cost of service as servicing a customer online costs less because all functional areas of servicing a customer (sales, marketing and services)
- ◆ Help to capitalize on your most profitable customers
- ◆ Ability to increase marketing capabilities through gathering enhanced demographic data, e-CRM allows organizations to profitable consumer profiles for new customer acquisition

e-CRM is an essential tool for any organization's high performance and depends on worker's effectiveness more than their efficiency. By doing so, companies can engage their customers in an ongoing knowledge exchange in which the company can learn more about market and customer needs and work to develop and deliver the products and services that can exceed the customers' expectations and leap ahead of market trends. Effective customer relation

management through customer knowledge management

Customer relationship management starts with in depth knowledge of customers, their habits, desires and this needs, by analyzing their cognitive, affect behavior and attributes. CRM applies this knowledge to develop and design-marketing strategies, to develop and cultivate, long lasting mutually beneficial interaction and relationship with the customer. Customer knowledge and customer interaction on the basis of this knowledge are the two pillars on which any CRM design and its successful implementation rests.

E-CRM applications:

- With the creation of Sales Force Automation (SFA), the trend of the upcoming Internet can be seen as the foundation of what we know as E- CRM today.
- **Data collection, aggregation and customer interaction is easy due to its application because customer preference information is gathered quickly using website, email questionnaire and after proper analysis they are able to satisfy their needs accordingly.**
- Due to improved communication technology, different departments in company implement (intra-organizational) or work with business partners (inter organizational) more efficiently by sharing information.
- Companies use the Internet to acquire products or supplies for in-house production. This is known as e procurement used to achieve cost efficiency.
- Usage electronic chat as a means of technical support and customer support. This helps any company to save time and effort.
- Maintain a central server or email list as a method of distributing information. Building sales and sales revenue by increasing the area of operation and reducing operating costs, hikes the efficiency of the supply chain management.
- The customer-centric information store consolidates information about millions of customers together with preferences, permissions, and information that may be useful to them.
- The analysis and segmentation engine helps in leveraging this customer information to build a business campaign strategy and evaluate its success. The personalization engine helps in personalizing the entire customer experience, configuring unique sets of messages and offers to each customer.
- The broadcast engine helps to proactively deliver information and offers to every customer via the media of his or her choice. The transaction engine helps to facilitate the interactions between customer and the company, either exchanging information or driving transactions.
- Equipped with such infrastructure, companies can continually create significant customer value at Internet speed, automating the who, what, when, where, and how of sales and marketing.

UNIT-V

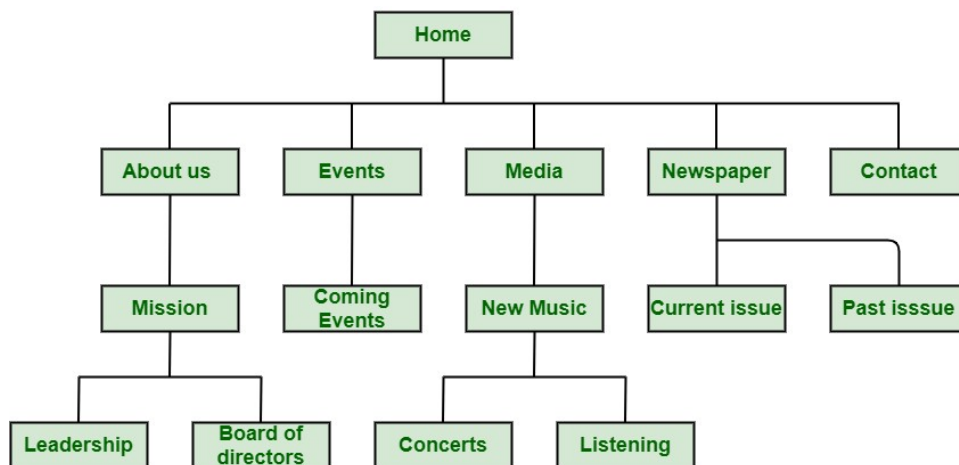
HTML- Navigating World wide web, preparing to publish on the Web, HTML and XHTML, Learning the basics of HTML, structure of HTML, creating simple web pages, formatting text with HTML, adding images, color and background, table creation, designing forms.

Website Navigation

Website Navigation, as name suggests, is a way to showing importance and relevance of pages, content, and information on website. It is way that helps users or visitors to find content that they want to see. It is simply a way of navigating pages, content and information on website using internet. It can be presented in different ways such as sider bars, menus in header or footer, etc. Simplicity is very essential and important for good website navigation.

Structure of Website Navigation

Structure of website navigation is very important as it have a greater impact on sales, user experience and SEO (Search Engine Optimization) rankings. It not only includes sketching pages but also include greater level of abstraction. It is not at all easy to design and organize website. Let us see an example:



In above diagram, about us, events, media, contact, newspaper, etc., are all linked to home menu. To have access to other pages such as mission, coming events, new music, etc., you have to first visit about us, events, media, etc. Then you can open whatever you want to.

Importance of website Navigation

Website navigation is way by which one can easily increase audience or number of visitors on website. If website navigation is not good and effective, there is not point of having a creative website because users won't be able to navigate easily around it to find information they want. So, it's very important to keep to simple, effective to increase user experience and keep clients and visitors happy. Below are given some reasons that will tell you why website navigation is important. Let's have a look.

1. **Increase duration of visit:** Website navigation helps people to find information they want to see very easily and effectively. Good website navigation provides clear and simple navigation bars and links that encourages visitors or peoples to explore more and more. This in turn increase duration of their visit on website because navigation is very easy to use and understand and nowadays everyone wants it easy to get things.
2. **Increased chance of sales:** Website navigation generally helps in showing visitors what website is actually about without any wastage of time. This in turn increase time spent by visitors on website and visitors stays on website for longer time. Visitors then go through website and purchase product effortlessly and easily. This will automatically increase purchase of products and sale.
3. **Improved user experience:** Navigation is very important for website because without navigation, websites won't look good, and appear unorganized. Nowadays, no one to waste their time on determining how website works. Everyone wants to easily find what they want. Good navigation generally helps visitors to find information they want to search and increase speed of visitors search. Clear and simple navigation is simply to understand that in turn increase user experience.
4. **Good Design:** Good navigation make website look more attractive, effective and good. Navigation has a greater impact on how website is viewed by users or visitors and how longer they will stay on website. Design of website navigation have a greater impact on success of website. It almost affects traffic, SEO ranking, user experience, conversions, sales, etc. So, good navigation is very useful to boost website design and brand of company or business. Good navigation keeps visitors happy and satisfied.

Preparing to Publish on the Web

The key to a streamlined web design process is simplifying the tasks. We're going to discuss everything you need to know to create and launch your next website in just five steps.

5 steps to prepare and publish your website

1. Prepare your website content

The structure and layout of a web design converges around content. The communication of ideas informs everything from navigation to the arrangement of writing and visuals. When you don't work with the actual text and images, your design is only an approximation. Go over your content and make sure that it's in great shape before you place a single element in your design.

Make sure your content says something meaningful

In one of the funniest scenes in *Billy Madison*, Adam Sandler's namesake character delivers a long-winded answer in an academic decathlon. The judge of the contest responds with, "At no point in your rambling, incoherent response were you even close to anything that could be considered a rational thought. Everyone in this room is now dumber for having listened to it."

Don't let your web content leave people dumber.

Your content needs to be more than marketing buzzwords and empty generalities. People should leave having learned something or taken away a deeper understanding.

Quality content is guided by research, consulting with experts, and giving your audience the answers to questions they may have.

Map your content

Figuring out a content plan should come before you put together a sitemap or a wireframe. Content maps let you diagram out the major categories of content, as well as the branches of related topics and subcategories.

A content map serves as a framework to base a design on. It lets you take what would otherwise be a pile of docs and notes and gives them order. You get all of the raw materials, placed in a logical succession, showing what you have to build your website with at every step of the way.

Optimize your content for SEO

You can always add in some SEO polish after the fact, but having the content optimized before it goes up takes care of this important job ahead of time. It may also change content length and how the headers are worded. Having SEO in place makes the content you're working with even more accurate.

Some SEO best practices include:

- Avoid repeating the same exact content throughout a website (this includes everything from meta description to body content).
- Using informative titles instead of broad and generic titles.
- Integrating words and phrases that are common when talking about a given subject.
- Not cramming keywords into every available title, paragraph, or sentence. Not only does this affect readability, but you might get dinged by web crawlers.

Of course, SEO goes beyond these bullet points, and it's a science all its own. If you'd like to read more about SEO, please check out "[SEO and Webflow: the essential guide,](#)" which covers what you need to know.

2. Design and build your website

OK, this is the biggest step in this process. We're going to discuss the basics, while pointing you to other resources where you can learn more. Let's go!

Come up with a layout

F-patterns and Z-patterns, split screens, asymmetric schemes — there are many ways to arrange your pages. Whether your content is more text heavy or you're going to rely on images, you need to find a layout that will tell your story in the optimal way and highlight what's important.

This split screen layout from the food subscription box service [Ono](#) works well in rolling out a long block of content with visuals that change with each section of content.

Check out our blog post "[Web page layout: website anatomy every designer needs to learn.](#)" It's focused on business websites but has plenty of great information that applies to all web designs. We've also put together a variety of prebuilt templates to help get you started.

Select appropriate typography

For body copy and other longer blocks in a design, the focus should be legibility. Overly decorative or ornate typography only works well in small amounts. Choose practical

typography for the more informative sections of your design. Of course you can use custom and more decorative fonts sparingly to help liven up the layout.

Made in Webflow, this design for the scooter company [UJET](#) utilizes typography that's both contemporary and optimized for readability.

Learn more about typography [in this chapter](#) from our [Web Design 101 ebook](#), which is packed with tons of great information to help you understand how to use typography better.

Create a user experience

A website without a user experience (UX) is a lot like a cake that hasn't been baked. All of the ingredients are there. But unless they're put together with care, with the end user in mind, it's going to be an unappetizing mess. A user experience brings together all of the elements in a way that's appealing to someone navigating through it.

The color palette, content, visuals, fonts, as well as the architecture all have a higher calling than being just utilitarian elements. They come together to make a user feel something about what they're looking at. UX allows a website to transcend being a scroll of text and a set of navigational options.

Develop a consistent and usable user interface

User interface (UI) gives people what they need to connect and engage with a design. They are the controls and elements that make navigating through it an active experience. Whether it's the left or right swipe of profiles in the search for romance on Bumble, the card layout on Pinterest, or the swirled arrows to retweet something on Twitter, UI encompasses these points of interactivity.

The functionality of every interactive element should be clear, from the top navigation menu to the call-to-action button. Recognizing what elements do should be almost immediate. UI elements need to be consistent and follow a consistent logic.

Before you publish your website, make sure that the UI provides an easy way to engage with it and that every interactive element makes sense.

3. Find web hosting

You've put together a solid layout, your content is tight, and you're almost ready to launch. Just as you put the time and effort into building your web design, you should also put some thought into finding web hosting. When looking for hosting you need to consider the speed, reliability, level of security, as well as the ease of scalability to accommodate future traffic growth.

Speed

People landing on your website expect fast load times. If you're going with hosting that's limited to a single server, your website is going to be sluggish for people located farther away geographically. The key to snappy load times, no matter where someone is, is to have your website hosted through a provider that utilizes a content distribution network (CDN).

CDNs spread your website and its files across multiple data centers. Wherever someone is accessing the website from, it will transmit your website from the data center

that's closest in proximity. This ensures that no matter the location, the user will get speedy load times.

Web hosting services that utilize CDN platforms like Amazon Web Services (AWS) CloudFront, Cloudflare, Fastly, and MaxCDN are essential if you want people to have an efficient experience with your website — no matter where they are on the globe.

If you decide to go with Webflow to design and host your website, you'll get the power that comes from our hosting, which utilizes both Amazon Web Services and Cloud flare in distributing your website across 100-plus servers for both speed and reliability.

Scalability

For start-ups, ecommerce sites, and others who see a bright future where they grow bigger and gain a larger audience, finding hosting that will accommodate increased traffic is essential.

Hosting that utilizes Amazon EC2 or Fastly (Web flow uses both) works by assessing traffic minute by minute, adjusting the capacities of a website and its needs in any given moment, and enlisting server power accordingly.

Don't get boxed in by hosting that can't keep up with fluctuations in visitors.

Reliability

Cheap hosting is like a cheap car. Unreliable. Prone to stalling. And ends up costing more in the form of lost revenue.

A website that goes down for any amount of time doesn't look good. Your brand's reputation depends on it being up and running at every moment.

And psst ... want to go with hosting that offers 99.99% reliability? That's what you get when you go with Web flow.

4. Do a quality assurance audit

OK, your website is done, you found web hosting, and you're ready to put it out into the world. Before you hit the publish button, make sure to do a thorough QA before going live. The process of creating a website can be a long one, with many changes and edits that may have happened along the way. Do a thorough walkthrough to make sure that nothing is amiss.

Proofread the content

Note that we used the word "proofread." This doesn't mean editing. Copyediting-in which every sentence is meticulously scanned for correct punctuation, syntax, misspellings, and proper grammar-should have been done long before the content made its way into the design. Proofreading should be one final pass. Both copyediting and proofreading involve editing the copy but at two different degrees.

Before you launch, proofreading is the final analysis to ensure that everything flows and no mistakes were made.

Check the spelling

Doing a manual read through of the copy and run it through the spell-checker of your choice to identify spelling mistakes. One thing you need to do on your own is to make

sure that proper nouns, like the names of people or product names, are all spelled correctly, as spell-checkers won't likely be able to identify them if they're not.

Do a grammar check

Even the best writers have their grammatical shortcomings. Some cram their copy with adverbs. Others fall into sentence fragments, while some people's inconsistency with tenses makes for writing that exists neither in the past, present, nor future, which is confusing for everybody.

Before you publish your website, run all of the copy through a grammar checker like Grammarly, Hemingway, or Pro Writing Aid.

Leave no sentence spliced and no participles dangled, and may your sentences be free from running on.

Check all the text

Words occupy many parts of a design. They're in the headers, body content, captions for images, meta descriptions, page URLs, as well as other spots throughout a design. It's important to make sure every word is spelled correctly wherever it may be.

Optimize images

An otherwise stellar layout can be blemished by images that aren't optimized. Pixelated visuals and images that are out of proportion or otherwise not set up to display correctly can really bring down how people perceive a web design.

Image optimization is an essential part of responsive design. Whatever screen your website is being viewed on, it should offer a consistent experience. What looks good on mobile may not look great on a higher-definition screen, so check all of the images and make sure that they're set up to display correctly on any screen.

Follow proper semantic structure

Semantic structure factors into how web crawlers analyze the content. For it to pack the most SEO punch, semantic structure must follow the proper format. It also functions in accessibility, giving the instructions needed to make your content viewable on devices like screen readers for people who are visually impaired.

Correct semantic structure includes using only one H1 tag, following the correct order in utilizing subcategories like H1–H6 tags (with the general rule of sticking to H1–H3), and using the correct tags, like paragraph tags, to identify given content. Semantic structure follows the content hierarchy, making it easier for both humans and web crawlers alike to make sense of the information.

If you want to go above and beyond, use [HTML semantic elements](#) to add even more information that could be used to better rank your page and bring in organic traffic.

Test links and integrations

Anything that involves user interactions and links needs to be tested to make sure that it's functional and that the link goes to the right place.

This includes:

- Email newsletter signup forms

- Social media blocks
- Ecommerce product listings
- Navigational and footer links

Any link or visual that brings someone to another place in or out of the website needs to be double-checked.

5. Publish your website using Webflow

Hitting publish may be the most satisfying part of the web design process —and it's certainly the easiest step.

If you built your website using Webflow, there are two ways of making your website appear instantaneously on your chosen domain. You can either publish in the designer or do it straight from the project settings. All of this happens with the same big blue button.

Publish in designer

Publish your website straight from Webflow's designer by clicking on the blue publish button. All you need to do is select your domain, hit publish, and voila — your website is up and running. Keep in mind the default is a Webflow subdomain, but you can always add in your own custom domain if you have one.

Publish from Web flow's product settings

As you edit your website, you can publish straight from the editor. There's no switching between screens. Go in, make your changes, and publish as you go, making anything you've done go live immediately. It all starts by hitting the blue button in your project settings.

HTML

HTML stands for **H**ypertext **M**arkup **L**anguage, and it is the most widely used language to write Web Pages.

- **Hypertext** refers to the way in which Web pages (HTML documents) are linked together. Thus, the link available on a webpage is called Hypertext.
- As its name suggests, HTML is a **Markup Language** which means you use HTML to simply "mark-up" a text document with tags that tell a Web browser how to structure it to display.

Originally, HTML was developed with the intent of defining the structure of documents like headings, paragraphs, lists, and so forth to facilitate the sharing of scientific information between researchers.

Now, HTML is being widely used to format web pages with the help of different tags available in HTML language.

HTML is a **MUST** for students and working professionals to become a great Software Engineer specially when they are working in Web Development Domain. I will list down some of the key advantages of learning HTML:

- **Create Web site** - You can create a website or customize an existing web template if you know HTML well.

- **Become a web designer** - If you want to start a career as a professional web designer, HTML and CSS designing is a must skill.
- **Understand web** - If you want to optimize your website, to boost its speed and performance, it is good to know HTML to yield best results.
- **Learn other languages** - Once you understand the basic of HTML then other related technologies like java script, php, or angular are become easier to understand.

Hello World using HTML.

Just to give you a little excitement about HTML, I'm going to give you a small conventional **HTML Hello World** program, You can try it using [Demo link](#).

```
<!DOCTYPE html>
<html>
<head>
<title>This is document title</title>
</head>
<body>
<h1>This is a heading</h1>
<p>Hello World!</p>
</body>
</html>
```

Applications of HTML

As mentioned before, HTML is one of the most widely used language over the web. I'm going to list few of them here:

- **Web pages development** - HTML is used to create pages which are rendered over the web. Almost every page of web is having html tags in it to render its details in browser.
- **Internet Navigation** - HTML provides tags which are used to navigate from one page to another and is heavily used in internet navigation.
- **Responsive UI** - HTML pages now-a-days works well on all platforms, mobile, tabs, desktop or laptops owing to responsive design strategy.
-
- **Offline support** HTML pages once loaded can be made available offline on the machine without any need of internet.
- **Game development-** HTML5 has native support for rich experience and is now useful in gaming development arena as well.

Basic HTML Document

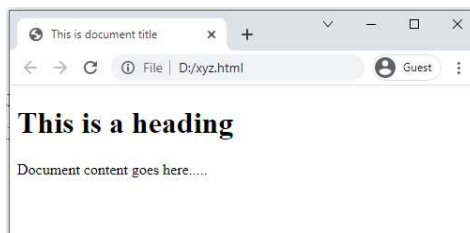
In its simplest form, following is an example of an HTML document:

```

<!DOCTYPE html>
<html>
<head>
<title>This is document title</title>
</head>
<body>
<h1>This is a heading</h1>
<p>Document content goes here.....</p>
</body>
</html>

```

This will produce the following result:



HTML Tags

As told earlier, HTML is a markup language and makes use of various tags to format the content. These tags are enclosed within angle braces **<Tag Name>**. Except few tags, most of the tags have their corresponding closing tags. For example, **<html>** has its closing tag **</html>** and **<body>** tag has its closing tag **</body>** tag etc.

Above example of HTML document uses the following tags: Tag	Description
<code><!DOCTYPE...></code>	This tag defines the document type and HTML version.
<code><html></code>	This tag encloses the complete HTML document and mainly comprises of document header which is represented by <code><head>...</head></code> and document body which is represented by <code><body>...</body></code> tags.
<code><head></code>	This tag represents the document's header which can keep other HTML tags like <code><title></code> , <code><link></code> etc.
<code><title></code>	The <code><title></code> tag is used inside the <code><head></code> tag to

	mention the document title.
<code><body></code>	This tag represents the document's body which keeps other HTML tags like <code><h1></code> , <code><div></code> , <code><p></code> etc.
<code><h1></code>	This tag represents the heading.
<code><p></code>	This tag represents a paragraph.

To learn HTML, you will need to study various tags and understand how they behave, while formatting a textual document. Learning HTML is simple as users have to learn the usage of different tags in order to format the text or images to make a beautiful webpage.

World Wide Web Consortium (W3C) recommends to use lowercase tags starting from HTML 4.

HTML Document Structure

A typical HTML document will have the following structure:

Document declaration tag

```
<html>
```

```
<head>
```

Document header related tags

```
</head>
```

```
<body>
```

Document body related tags

```
</body>
```

```
</html>
```

We will study all the header and body tags in subsequent chapters, but for now let's see what is document declaration tag.

The `<!DOCTYPE>` Declaration

The `<!DOCTYPE>` declaration tag is used by the web browser to understand the version of the HTML used in the document. Current version of HTML is 5 and it makes use of the following declaration:

```
<!DOCTYPE html>
```

There are many other declaration types which can be used in HTML document depending on what version of HTML is being used. We will see more details on this while discussing `<!DOCTYPE...>` tag along with other HTML tags.

HTML – BASIC TAGS

Heading Tags

Any document starts with a heading. You can use different sizes for your headings. HTML also has six levels of headings, which use the elements `<h1>`, `<h2>`, `<h3>`, `<h4>`, `<h5>`, and `<h6>`. While displaying any heading, browser adds one line before and one line after that heading.

Example

```
<!DOCTYPE html>
<html>
<head>
<title>Heading Example</title>
</head>
<body>
<h1>This is heading 1</h1>
<h2>This is heading 2</h2>
<h3>This is heading 3</h3>
<h4>This is heading 4</h4>
<h5>This is heading 5</h5>
<h6>This is heading 6</h6>
</body>
</html>
```

This will produce the following result:

This is heading 1

This is heading 2

This is heading 3

This is heading 4

This is heading 5

This is heading 6

Paragraph Tag

The `<p>` tag offers a way to structure your text into different paragraphs. Each paragraph of text should go in between an opening `<p>` and a closing `</p>` tag as shown below in the example:

Example

```
<!DOCTYPE html>
<html>
<head>
<title>Paragraph Example</title>
</head>
<body>
<p>Here is a first paragraph of text.</p>
<p>Here is a second paragraph of text.</p>
<p>Here is a third paragraph of text.</p>
</body>
</html>
```

This will produce the following result:

Here is a first paragraph of text.

Here is a second paragraph of text.

Here is a third paragraph of text.

Line Break Tag

Whenever you use the **
** element, anything following it starts from the next line. This tag is an example of an **empty** element, where you do not need opening and closing tags, as there is nothing to go in between them.

The **
** tag has a space between the characters **br** and the forward slash. If you omit this space, older browsers will have trouble rendering the line break, while if you miss the forward slash character and just use **
** it is not valid in XHTML.

Example

```
<!DOCTYPE html>
<html>
<head>
<title>Line Break Example</title>
</head>
<body>
<p>Hello<br />
You delivered your assignment on time.<br />
Thanks<br />
Mahnaz</p>
```

```
</body>
```

```
</html>
```

This will produce the following result:

Hello You delivered your assignment on time. Thanks Mahnaz

Centering Content

You can use `<center>` tag to put any content in the center of the page or any table cell.

Example

```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```
<title>Centring Content Example</title>
```

```
</head>
```

```
<body>
```

```
<p>This text is not in the center.</p>
```

```
<center>
```

```
<p>This text is in the center.</p>
```

```
</center>
```

```
</body>
```

```
</html>
```

This will produce the following result:

This text is not in the center.

This text is in the center.

Horizontal Lines

Horizontal lines are used to visually break-up sections of a document. The `<hr>` tag creates a line from the current position in the document to the right margin and breaks the line accordingly.

For example, you may want to give a line between two paragraphs as in the given example below:

Example

```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```
<title>Horizontal Line Example</title>
```



```
</head>
<body>
<p>This is paragraph one and should be on top</p>
<hr />
<p>This is paragraph two and should be at bottom</p>
</body>
</html>
```

This will produce the following result:

This is paragraph one and should be on top

This is paragraph two and should be at bottom

Again `<hr />` tag is an example of the **empty** element, where you do not need opening and closing tags, as there is nothing to go in between them.

The `<hr />` element has a space between the characters **hr** and the forward slash. If you omit this space, older browsers will have trouble rendering the horizontal line, while if you miss the forward slash character and just use `<hr>` it is not valid in XHTML

Preserve Formatting

Sometimes, you want your text to follow the exact format of how it is written in the HTML document. In these cases, you can use the preformatted tag `<pre>`.

Any text between the opening `<pre>` tag and the closing `</pre>` tag will preserve the formatting of the source document.

Example

```
<!DOCTYPE html>
<html>
<head>
<title>Preserve Formatting Example</title>
</head>
<body>
<pre>
function testFunction( strText ){
alert (strText)
}
</pre>
</body>
</html>
```

This will produce the following result:

```
function testFunction( strText ){  
alert (strText)  
}
```

Try using the same code without keeping it inside `<pre>...</pre>`tags

Nonbreaking Spaces

Suppose you want to use the phrase "12 Angry Men." Here, you would not want a browser to split the "12, Angry" and "Men" across two lines:

An example of this technique appears in the movie "12 Angry Men."

In cases, where you do not want the client browser to break text, you should use a nonbreaking space entity ` ` instead of a normal space. For example, when coding the "12 Angry Men" in a paragraph, you should use something similar to the following code:

Example

```
<!DOCTYPE html>  
<html>  
<head>  
<title>Nonbreaking Spaces Example</title>  
</head>  
<body>  
<p>An example of this technique appears in the movie "12 Angry Men."</p>  
</body>  
</html>
```

HTML – ELEMENTS

An **HTML element** is defined by a starting tag. If the element contains other content, it ends with a closing tag, where the element name is preceded by a forward slash as shown below with few tags:

Start Tag	Content	End Tag
<code><p></code>	This is paragraph content.	<code></p></code>
<code><h1></code>	This is heading content.	<code></h1></code>
<code><div></code>	This is division content.	<code></div></code>
<code>
</code>		

So here `<p>...</p>` is an HTML element, `<h1>...</h1>` is another HTML element. There are some HTML elements which don't need to be closed, such as `<img.../>`, `<hr />` and `
` elements. These are known as **void elements**.

HTML documents consist of a tree of these elements and they specify how HTML documents should be built, and what kind of content should be placed in what part of an HTML document.

HTML Tag vs. Element

An HTML element is defined by a *starting tag*. If the element contains other content, it ends with a *closing tag*.

For example, `<p>` is starting tag of a paragraph and `</p>` is closing tag of the same paragraph but `<p>This is paragraph</p>` is a paragraph element.

Nested HTML Elements

It is very much allowed to keep one HTML element inside another HTML element:

Example

```
<!DOCTYPE html>
<html>
<head>
<title>Nested Elements Example</title>
</head>
<body>
<h1>This is <i>italic</i> heading</h1>
<p>This is <u>underlined</u> paragraph</p>
</body>
</html>
```

This will display the following result:

This is *italic* heading

This is underlined paragraph

HTML – ATTRIBUTES

We have seen few HTML tags and their usage like heading tags `<h1>`, `<h2>`, paragraph tag `<p>` and other tags. We used them so far in their simplest form, but most of the HTML tags can also have attributes, which are extra bits of information.

An attribute is used to define the characteristics of an HTML element and is placed inside the element's opening tag. All attributes are made up of two parts: a **name** and a **value**:

- The **name** is the property you want to set. For example, the paragraph `<p>` element in the example carries an attribute whose name is **align**, which you can use to indicate the alignment of paragraph on the page.

- The **value** is what you want the value of the property to be set and always put within quotations. The below example shows three possible values of align attribute: **left**, **center** and **right**.

Attribute names and attribute values are case-insensitive. However, the World Wide Web Consortium (W3C) recommends lowercase attributes/attribute values in their HTML 4 recommendation.

Example

```
<!DOCTYPE html>
<html>
<head>
<title>Align Attribute Example</title>
</head>
<body>
<p align="left">This is left aligned</p>
<p align="center">This is center aligned</p>
<p align="right">This is right aligned</p>
</body>
</html>
```

This will display the following result:

This is left aligned

This is center aligned

Core Attributes

The four core attributes that can be used on the majority of HTML elements (although not all) are:

- Id
- Title
- Class
- Style

The Id Attribute

The **id** attribute of an HTML tag can be used to uniquely identify any element within an HTML page. There are two primary reasons that you might want to use an id attribute on an element:

- If an element carries an id attribute as a unique identifier, it is possible to identify just that element and its content.
- If you have two elements of the same name within a Web page (or style sheet), you can use the id attribute to distinguish between elements that have the same name.

We will discuss style sheet in separate tutorial. For now, let's use the id attribute to distinguish between two paragraph elements as shown below.

Example

```
<p id="html">This para explains what is HTML</p>
```

```
<p id="css">This para explains what is Cascading Style Sheet</p>
```

The title Attribute

The **title** attribute gives a suggested title for the element. The syntax for the **title** attribute is similar as explained for **id** attribute:

The behavior of this attribute will depend upon the element that carries it, although it is often displayed as a tooltip when cursor comes over the element or while the element is loading.

Example

```
<!DOCTYPE html>
<html>
<head>
<title>The title Attribute Example</title>
</head>
<body>
<h3 title="Hello HTML!">Titled Heading Tag Example</h3>
</body>
</html>
```

This will produce the following result:

Titled Heading Tag Example

Now try to bring your cursor over "Titled Heading Tag Example" and you will see that whatever title you used in your code is coming out as a tooltip of the cursor.

The class Attribute

The **class** attribute is used to associate an element with a style sheet, and specifies the class of element. You will learn more about the use of the class attribute when you will learn Cascading Style Sheet (CSS). So for now you can avoid it.

The value of the attribute may also be a space-separated list of class names. For example:

```
class="className1 className2 className3"
```

The style Attribute

The style attribute allows you to specify Cascading Style Sheet (CSS) rules within the element.

```
<!DOCTYPE html>
<html>
<head>
<title>The style Attribute</title>
</head>
<body>
<p style="font-family:arial; color:#FF0000;">Some text...</p>
</body>
</html>
```

This will produce the following result:

Some text...

At this point of time, we are not learning CSS, so just let's proceed without bothering much about CSS. Here, you need to understand what are HTML attributes and how they can be used while formatting content.

Internationalization Attributes

There are three internationalization attributes, which are available for most (although not all) XHTML elements.

- dir
- lang
- xml:lang

The dir Attribute

The dir attribute allows you to indicate to the browser about the direction in which the text should flow. The dir attribute can take one of two values, as you can see in the table that follows: Value	Meaning
ltr	Left to right (the default value)
rtl	Right to left (for languages such as Hebrew or Arabic that are read right to left)

This is how IE 5 renders right-to-left directed text.

When *dir* attribute is used within the <html> tag, it determines how text will be presented within the entire document. When used within another tag, it controls the text's direction for just the content of that tag.

The lang Attribute

The **lang** attribute allows you to indicate the main language used in a document, but this attribute was kept in HTML only for backwards compatibility with earlier versions of HTML. This attribute has been replaced by the **xml:lang** attribute in new XHTML documents.

The values of the *lang* attribute are ISO-639 standard two-character language codes. Check **HTML Language Codes: ISO 639** for a complete list of language codes.

Example

```
<!DOCTYPE html>
<html lang="en">
<head>
<title>English Language Page</title>
</head>
<body>
This page is using English Language
</body>
</html>
```

HTML – FORMATTING

If you use a word processor, you must be familiar with the ability to make text bold, italicized, or underlined; these are just three of the ten options available to indicate how text can appear in HTML and XHTML.

Bold Text

Anything that appears within **...**element, is displayed in bold as shown below:

Example

```
<!DOCTYPE html>
<html>
<head>
<title>Bold Text Example</title>
</head>
<body>
<p>The following word uses a <b>bold</b> typeface.</p>
</body>
</html>
```

This will produce the following result:

The following word uses a **bold** typeface.

Italic Text

Anything that appears within `<i>...</i>` element is displayed in italicized as shown below:

Example

```
<!DOCTYPE html>
<html>
<head>
<title>Italic Text Example</title>
</head>
<body>
<p>The following word uses a italicized typeface.</p>
</body>
</html>
```

This will produce the following result:

The following word uses an *italicized* typeface.

Underlined Text

Anything that appears within `<u>...</u>` element, is displayed with underline as shown below:

Example

```
<!DOCTYPE html>
<html>
<head>
<title>Underlined Text Example</title>
</head>
<body>
<p>The following word uses a underlined typeface.</p>
</body>
</html>
```

This will produce the following result:

The following word uses an underlined typeface.

Strike Text

Anything that appears within `...` element is displayed with strikethrough, which is a thin line through the text as shown below:

Example


```
<!DOCTYPE html>
<html>
<head>
<title>Strike Text Example</title>
</head>
<body>
<p>The following word uses a <strike>strikethrough</strike> typeface.</p>
</body>
</html>
```

This will produce the following result:

The following word uses a strikethrough typeface.

Monospaced Font

The content of a `<tt>...</tt>` element is written in monospaced font. Most of the fonts are known as variable-width fonts because different letters are of different widths (for example, the letter 'm' is wider than the letter 'i'). In a monospaced font, however, each letter has the same width.

Example

```
<!DOCTYPE html>
<html>
<head>
<title>Monospaced Font Example</title>
</head>
<body>
<p>The following word uses a <tt>monospaced</tt> typeface.</p>
</body>
</html>
```

This will produce the following result:

The following word uses a monospaced typeface.

Superscript Text

The content of a `^{...}` element is written in superscript; the font size used is the same size as the characters surrounding it but is displayed half a character's height above the other characters.

Example

```
<!DOCTYPE html>
```

```
<html>
<head>
<title>Superscript Text Example</title>
</head>
<body>
<p>The following word uses a <sup>superscript</sup> typeface.</p>
</body>
</html>
```

This will produce the following result:

The following word uses a superscript typeface.

Subscript Text

The content of a **_{...}** element is written in subscript; the font size used is the same as the characters surrounding it, but is displayed half a character's height beneath the other characters.

Example

```
<!DOCTYPE html>
<html>
<head>
<title>Subscript Text Example</title>
</head>
<body>
<p>The following word uses a <sub>subscript</sub> typeface.</p>
</body>
</html>
```

This will produce the following result:

The following word uses a subscript typeface.

Inserted Text


Anything that appears within **<ins>...</ins>** element is displayed as inserted text.

Example

```
<!DOCTYPE html>
<html>
<head>
<title>Inserted Text Example</title>
```

```
</head>
<body>
<p>I want to drink <del>cola</del><ins>wine</ins></p>
</body>
</html>
```

This will produce the following result:



I want to drink ~~cola~~ wine

Deleted Text

Anything that appears within `...` element, is displayed as deleted text.

Example

```
<!DOCTYPE html>
<html>
<head>
<title>Deleted Text Example</title>
</head>
<body>
<p>I want to drink <del>cola</del><ins>wine</ins></p>
</body>
</html>
```

This will produce the following result:



I want to drink ~~cola~~ wine

Larger Text

The content of the `<big>...</big>` element is displayed one font size larger than the rest of the text surrounding it as shown below:

Example

```
<!DOCTYPE html>
<html>
<head>
<title>Larger Text Example</title>
</head>
```

```
<body>
<p>The following word uses a <big>big</big> typeface.</p>
</body>
</html>
```

This will produce the following result:

The following word uses a **big** typeface.

Smaller Text

The content of the **<small>...</small>** element is displayed one font size smaller than the rest of the text surrounding it as shown below:

Example

```
<!DOCTYPE html>
<html>
<head>
<title>Smaller Text Example</title>
</head>
<body>
<p>The following word uses a <small>small</small> typeface.</p>
</body>
</html>
```

This will produce the following result:

The following word uses a small typeface.

Grouping Content

The **<div>** and **** elements allow you to group together several elements to create sections or subsections of a page.

For example, you might want to put all of the footnotes on a page within a **<div>** element to indicate that all of the elements within that **<div>** element relate to the footnotes. You might then attach a style to this **<div>** element so that they appear using a special set of style rules.

Example

```
<!DOCTYPE html>
<html>
<head>
<title>Div Tag Example</title>
</head>
```

```
<body>
<div id="menu" align="middle" >
<a href="/index.htm">HOME</a> |
<a href="/about/contact_us.htm">CONTACT</a> |
<a href="/about/index.htm">ABOUT</a>
</div>
<div id="content" align="left" bgcolor="white">
<h5>Content Articles</h5>
<p>Actual content goes here.....</p>
</div>
</body>
</html>
```

This will produce the following result:

HOME | CONTACT | ABOUT

CONTENT ARTICLES

Actual content goes here.....

The `` element, on the other hand, can be used to group inline elements only. So, if you have a part of a sentence or paragraph which you want to group together, you could use the `` element as follows

Example

```
<!DOCTYPE html>
<html>
<head>
<title>Span Tag Example</title>
</head>
<body>
<p>This is the example of <span style="color:green">span tag</span> and the <span
style="color:red">div tag</span> alongwith CSS</p>
</body>
</html>
```

This will produce the following result:

This is the example of span tag and the div tag along with CSS

These tags are commonly used with CSS to allow you to attach a style to a section of a page.

HTML - Images

Images are very important to beautify as well as to depict many complex concepts in simple way on your web page. This tutorial will take you through simple steps to use images in your web pages.

Insert Image

You can insert any image in your web page by using **** tag. Following is the simple syntax to use this tag.

```
<img src = "Image URL" ... attributes-list/>
```

The **** tag is an empty tag, which means that, it can contain only list of attributes and it has no closing tag.

Example

To try following example, let's keep our HTML file test.htm and image file test.png in the same directory –

```
<!DOCTYPE html>
<html>
<head>
<title>Using Image in Webpage</title>
</head>
<body>
<p>Simple Image Insert</p>
<imgsrc="/html/images/test.png"alt="Test Image"/>
</body>
</html>
```

This will produce the following result –



You can use PNG, JPEG or GIF image file based on your comfort but make sure you specify correct image file name in **src** attribute. Image name is always case sensitive.

The **alt** attribute is a mandatory attribute which specifies an alternate text for an image, if the image cannot be displayed.

Set Image Location

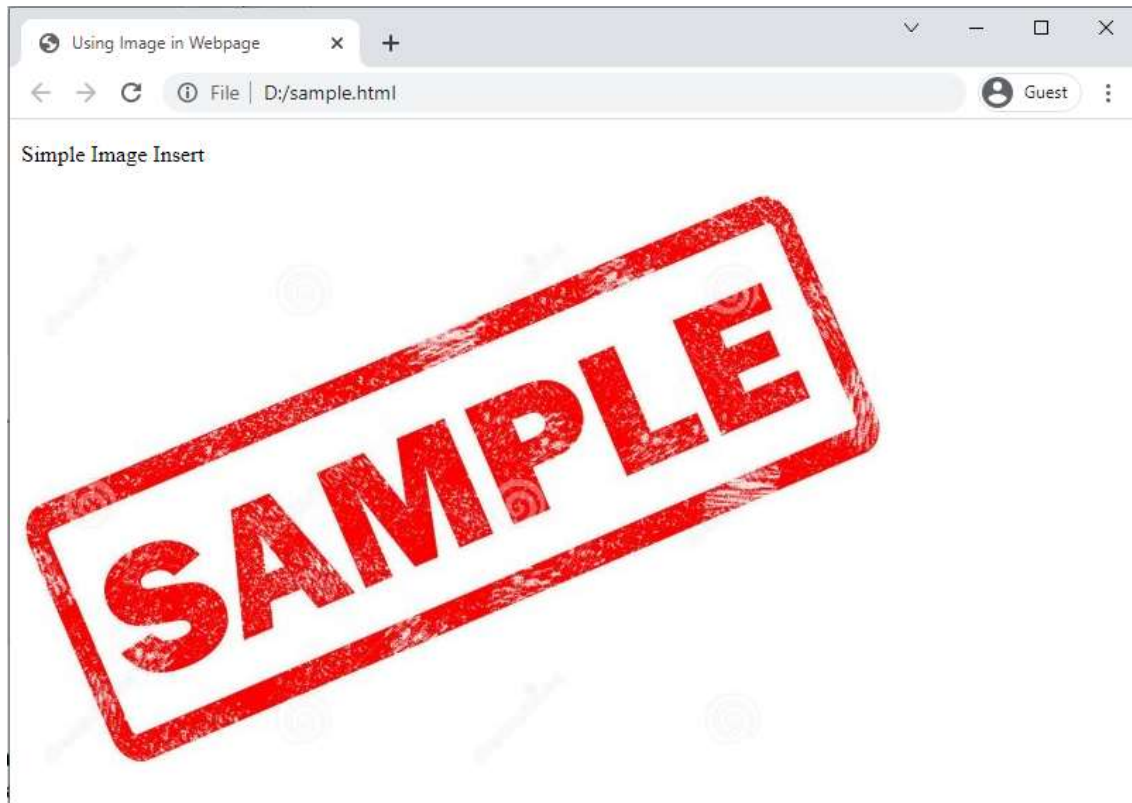
Usually we keep all the images in a separate directory. So let's keep HTML file test.htm in our home directory and create a subdirectory **images** inside the home directory where we will keep our image test.png.

Example

Assuming our image location is "image/test.png", try the following example –

```
<!DOCTYPE html>
<html>
<head>
<title>Using Image in Webpage</title>
</head>
<body>
<p>Simple Image Insert</p>
<imgsrc="/html/images/test.png"alt="Test Image"/>
</body>
</html>
```

This will produce the following result –



Set Image Width/Height

You can set image width and height based on your requirement using **width** and **height** attributes. You can specify width and height of the image in terms of either pixels or percentage of its actual size.

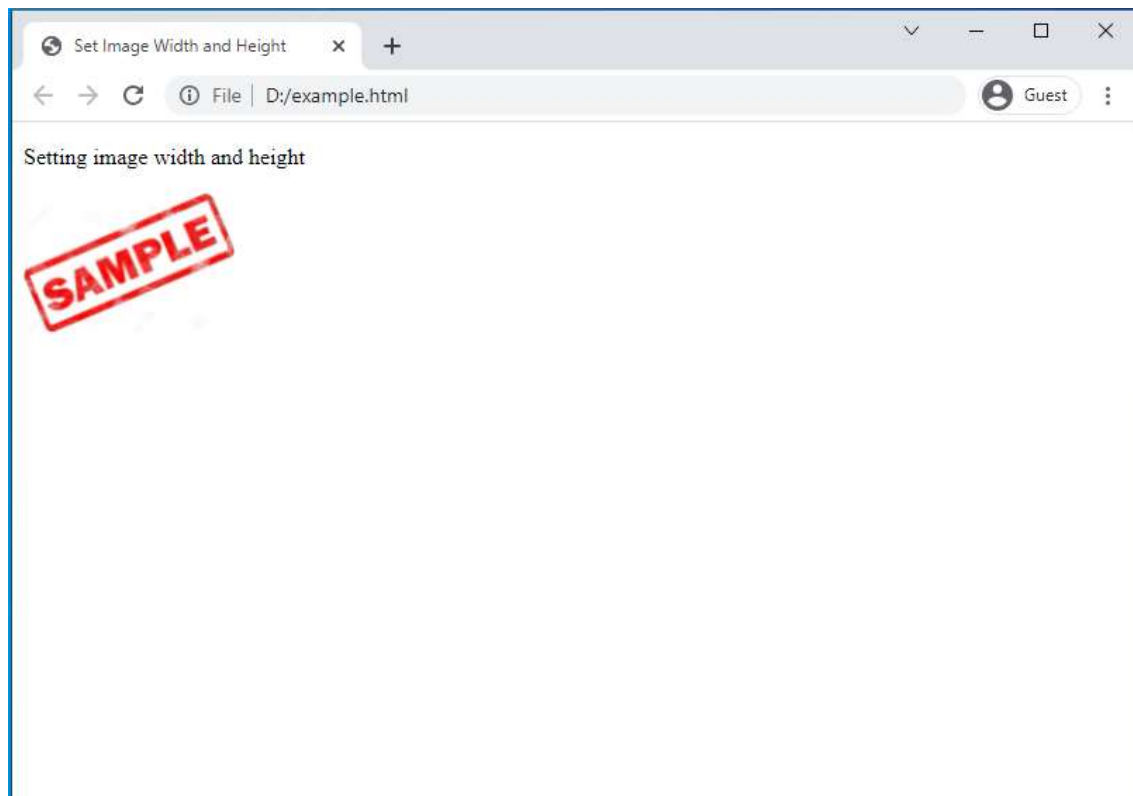
Example

```
<!DOCTYPE html>
<html>

<head>
<title>Set Image Width and Height</title>
</head>

<body>
<p>Setting image width and height</p>
<imgsrc="/html/images/test.png"alt="Test Image"width="150"height="100"/>
</body>
</html>
```

This will produce the following result –



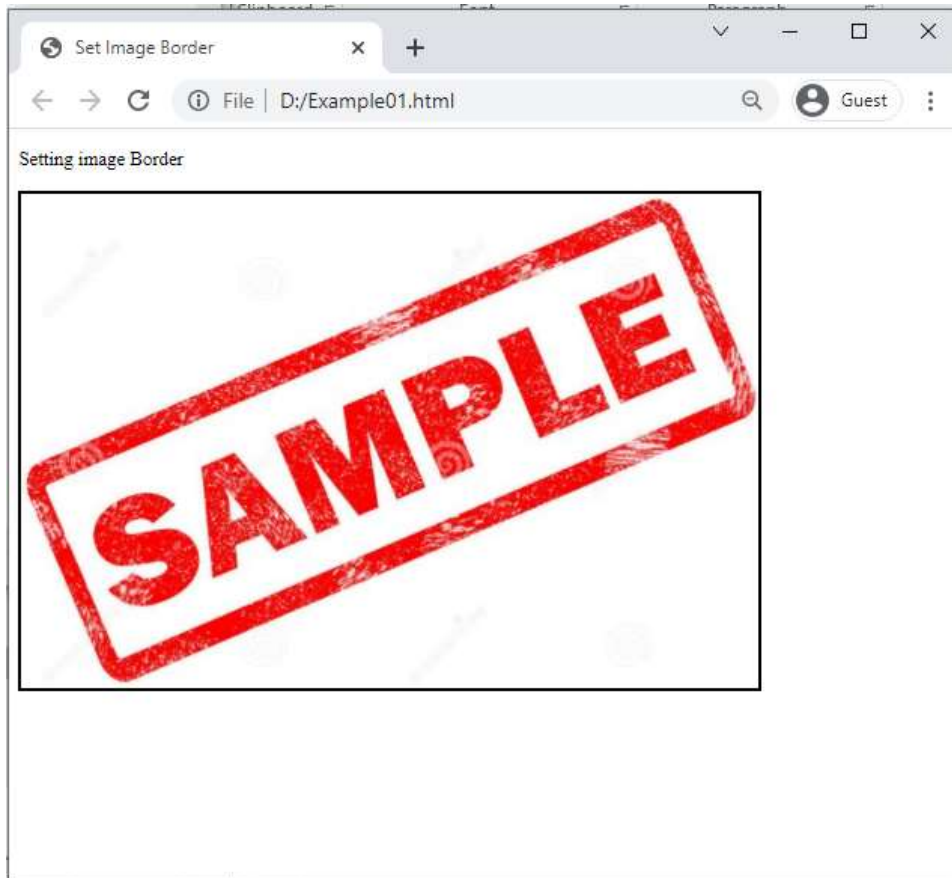
Set Image Border

By default, image will have a border around it, you can specify border thickness in terms of pixels using border attribute. A thickness of 0 means, no border around the picture.

Example

```
<!DOCTYPE html>
<html>
<head>
<title>Set Image Border</title>
</head>
<body>
<p>Setting image Border</p>
<imgsrc="/html/images/test.png"alt="Test Image"border="3"/>
</body>
</html>
```

This will produce the following result –



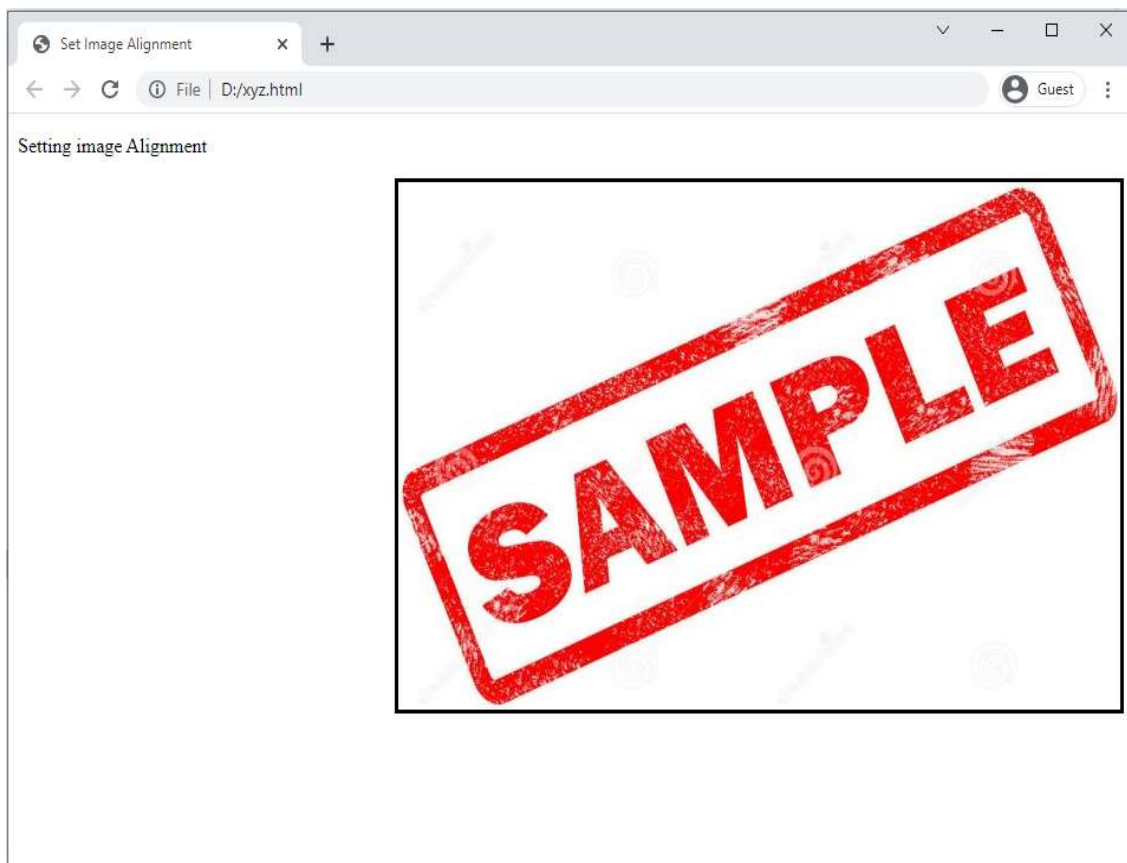
Set Image Alignment

By default, image will align at the left side of the page, but you can use **align** attribute to set it in the center or right.

Example

```
<!DOCTYPE html>
<html>
<head>
<title>Set Image Alignment</title>
</head>
<body>
<p>Setting image Alignment</p>
<imgsrc="/html/images/test.png"alt="Test Image"border="3"align="right"/>
</body>
</html>
```

This will produce the following result –



HTML – Colors

Colors are very important to give a good look and feel to your website. You can specify colors on page level using <body> tag or you can set colors for individual tags using **bgcolor** attribute.

The <body> tag has following attributes which can be used to set different colors –

- **bgcolor** – sets a color for the background of the page.
- **text** – sets a color for the body text.
- **alink** – sets a color for active links or selected links.
- **link** – sets a color for linked text.
- **vlink** – sets a color for *visited links* – that is, for linked text that you have already clicked on.

HTML Color Coding Methods

There are following three different methods to set colors in your web page –

- **Color names** – You can specify color names directly like green, blue or red.
- **Hex codes** – A six-digit code representing the amount of red, green, and blue that makes up the color.
- **Color decimal or percentage values** – This value is specified using the rgb() property.

Now we will see these coloring schemes one by one.













HTML Colors - Color Names

You can specify direct a color name to set text or background color. W3C has listed 16 basic color names that will validate with an HTML validator but there are over 200 different color names supported by major browsers.

Note – Check a complete list of [HTML Color Name](#).

W3C Standard 16 Colors

Here is the list of W3C Standard 16 Colors names and it is recommended to use them.

	Black		Gray		Silver		White
	Yellow		Lime		Aqua		Fuchsia
	Red		Green		Blue		Purple



Example

Here are the examples to set background of an HTML tag by color name –

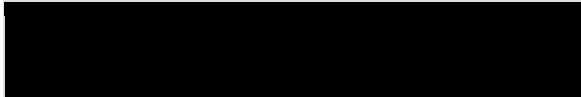
```
<!DOCTYPE html>
<html>
<head>
<title>HTML Colors by Name</title>
</head>
<bodytext="blue"bgcolor="green">
<p>Use different color names for for body and table and see the result.</p>
<tablebgcolor="black">
<tr>
<td>
<fontcolor="white">This text will appear white on black background.</font>
</td>
</tr>
</table>
</body>
</html>
```

HTML Colors - Hex Codes

A hexadecimal is a 6 digit representation of a color. The first two digits(RR) represent a red value, the next two are a green value(GG), and the last are the blue value(BB).

A hexadecimal value can be taken from any graphics software like Adobe Photoshop, Paintshop Pro or MS Paint.

Each hexadecimal code will be preceded by a pound or hash sign #. Following is a list of few colors using hexadecimal notation.

Color	Color HEX
	#000000

	#FF0000
	#00FF00
	#0000FF
	#FFFF00
	#00FFFF
	#FF00FF
	#C0C0C0
	#FFFFFF

Example

Here are the examples to set background of an HTML tag by color code in hexadecimal –

```
<!DOCTYPE html>
<html>
<head>
<title>HTML Colors by Hex</title>
</head>
<bodytext="#0000FF"bgcolor="#00FF00">
<p>Use different color hexa for for body and table and see the result.</p>
<tablebgcolor="#000000">
<tr>
<td>
<fontcolor="#FFFFFF">This text will appear white on black background.</font>
</td>
</tr>
</table>
```

```
</body>
```

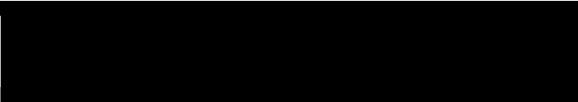








```
</html>
```

HTML Colors - RGB Values

This color value is specified using the **rgb()** property. This property takes three values, one each for red, green, and blue. The value can be an integer between 0 and 255 or a percentage.

Note – All the browsers does not support rgb() property of color so it is recommended not to use it.

Following is a list to show few colors using RGB values.

Color	Color RGB
	rgb(0,0,0)
	rgb(255,0,0)
	rgb(0,255,0)
	rgb(0,0,255)
	rgb(255,255,0)
	rgb(0,255,255)
	rgb(255,0,255)
	rgb(192,192,192)
	rgb(255,255,255)

Example

Here are the examples to set background of an HTML tag by color code using rgb() values –

```
<!DOCTYPE html>
```

```
<html>
```

```

<head>
<title>HTML Colors by RGB code</title>
</head>
<bodytext="rgb(0,0,255)"bgcolor="rgb(0,255,0)">
<p>Use different color code for for body and table and see the result.</p>
<tablebgcolor="rgb(0,0,0)">
<tr>
<td>
<fontcolor="rgb(255,255,255)">This text will appear white on black background.</font>
</td>
</tr>
</table>
</body>
</html>

```

Browser Safe Colors

Here is the list of 216 colors which are supposed to be safest and computer independent colors. These colors vary from hexa code 000000 to FFFFFFFF and they will be supported by all the computers having 256 color palette.

000000	000033	000066	000099	0000CC	0000FF
003300	003333	003366	003399	0033CC	0033FF
006600	006633	006666	006699	0066CC	0066FF
009900	009933	009966	009999	0099CC	0099FF
00CC00	00CC33	00CC66	00CC99	00CCCC	00CCFF
00FF00	00FF33	00FF66	00FF99	00FFCC	00FFFF
330000	330033	330066	330099	3300CC	3300FF

333300	333333	333366	333399	3333CC	3333FF
336600	336633	336666	336699	3366CC	3366FF
339900	339933	339966	339999	3399CC	3399FF
33CC00	33CC33	33CC66	33CC99	33CCCC	33CCFF
33FF00	33FF33	33FF66	33FF99	33FFCC	33FFFF
660000	660033	660066	660099	6600CC	6600FF
663300	663333	663366	663399	6633CC	6633FF
666600	666633	666666	666699	6666CC	6666FF
669900	669933	669966	669999	6699CC	6699FF
66CC00	66CC33	66CC66	66CC99	66CCCC	66CCFF
66FF00	66FF33	66FF66	66FF99	66FFCC	66FFFF
990000	990033	990066	990099	9900CC	9900FF
993300	993333	993366	993399	9933CC	9933FF
996600	996633	996666	996699	9966CC	9966FF
999900	999933	999966	999999	9999CC	9999FF
99CC00	99CC33	99CC66	99CC99	99CCCC	99CCFF

99FF00	99FF33	99FF66	99FF99	99FFCC	99FFFF
CC0000	CC0033	CC0066	CC0099	CC00CC	CC00FF
CC3300	CC3333	CC3366	CC3399	CC33CC	CC33FF
CC6600	CC6633	CC6666	CC6699	CC66CC	CC66FF
CC9900	CC9933	CC9966	CC9999	CC99CC	CC99FF
CCCC00	CCCC33	CCCC66	CCCC99	CCCCCC	CCCCFF
CCFF00	CCFF33	CCFF66	CCFF99	CCFFCC	CCFFFF
FF0000	FF0033	FF0066	FF0099	FF00CC	FF00FF
FF3300	FF3333	FF3366	FF3399	FF33CC	FF33FF
FF6600	FF6633	FF6666	FF6699	FF66CC	FF66FF
FF9900	FF9933	FF9966	FF9999	FF99CC	FF99FF
FFCC00	FFCC33	FFCC66	FFCC99	FFCCCC	FFCCFF
FFFF00	FFFF33	FFFF66	FFFF99	FFFFCC	FFFFFF

HTML - Backgrounds

By default, your webpage background is white in color. You may not like it, but no worries. HTML provides you following two good ways to decorate your webpage background.

- HTML Background with Colors
- HTML Background with Images

Now let's see both the approaches one by one using appropriate examples.

Html Background with Colors

The **bgcolor** attribute is used to control the background of an HTML element, specifically page body and table backgrounds.

Note – The *bgcolor* attribute deprecated in HTML5. Do not use this attribute.

Following is the syntax to use bgcolor attribute with any HTML tag.

```
<tagname bgcolor = "color_value"...>
```

This color_value can be given in any of the following formats –

```
<!-- Format 1 - Use color name -->
```

```
<table bgcolor = "lime" >
```

```
<!-- Format 2 - Use hex value -->
```

```
<table bgcolor = "#f1f1f1" >
```

```
<!-- Format 3 - Use color value in RGB terms -->
```

```
<table bgcolor = "rgb(0,0,120)" >
```

Example

Here are the examples to set background of an HTML tag –

```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```
<title>HTML Background Colors</title>
```

```
</head>
```

```
<body>
```

```
<!-- Format 1 - Use color name -->
```

```
<table bgcolor="yellow"width="100%">
```

```
<tr>
```

```
<td>
```

This background is yellow

```
</td>
```

```
</tr>
```

```
</table>
```

```
<!-- Format 2 - Use hex value -->
```

```
<table bgcolor="#6666FF"width="100%">
```

```
<tr>
```

```
<td>
    This background is sky blue
</td>
</tr>
</table>
<!-- Format 3 - Use color value in RGB terms -->
<table bgcolor="rgb(255,0,255)"width="100%">
<tr>
<td>
    This background is green
</td>
</tr>
</table>
</body>
</html>
```

This will produce the following result –



Html Background with Images

The **background** attribute can also be used to control the background of an HTML element, specifically page body and table backgrounds. You can specify an image to set background of your HTML page or table.

Note – The *background* attribute deprecated in HTML5. Do not use this attribute.

Following is the syntax to use background attribute with any HTML tag.

Note – The *background* attribute is deprecated and it is recommended to use Style Sheet for background setting.

```
<tagname background = "Image URL"...>
```

The most frequently used image formats are JPEG, GIF and PNG images.

Example

Here are the examples to set background images of a table.

```
<!DOCTYPE html>
```

```

<html>
<head>
<title>HTML Background Images</title>
</head>
<body>
<!-- Set table background -->
<tablebackground="/images/html.gif"width="100%"height="100">
<tr><td>
        This background is filled up with HTML image.
</td></tr>
</table>
</body>
</html>

```

This will produce the following result –



Patterned & Transparent Backgrounds

You might have seen many pattern or transparent backgrounds on various websites. This simply can be achieved by using patterned image or transparent image in the background.

It is suggested that while creating patterns or transparent GIF or PNG images, use the smallest dimensions possible even as small as 1x1 to avoid slow loading.

Example

Here are the examples to set background pattern of a table –

```

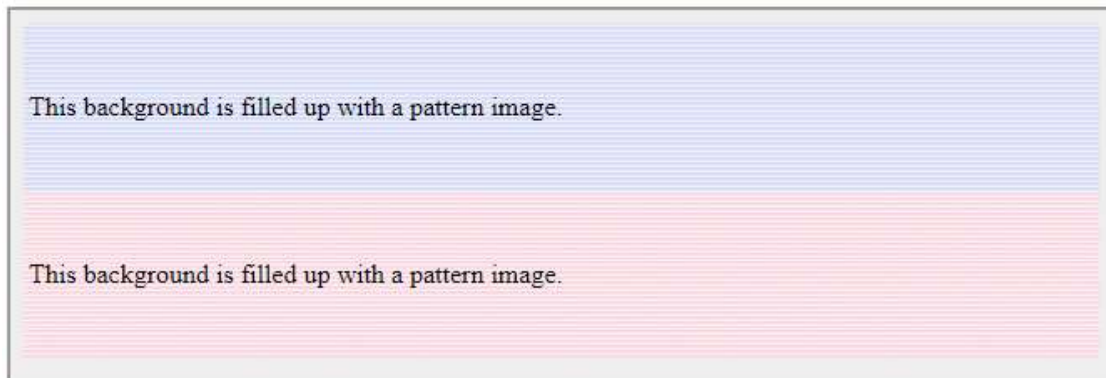
<!DOCTYPE html>
<html>
<head>
<title>HTML Background Images</title>
</head>
<body>
<!-- Set a table background using pattern -->

```

```
<tablebackground="/images/pattern1.gif"width="100%"height="100">  
<tr>  
<td>  
    This background is filled up with a pattern image.  
</td>  
</tr>  
</table>
```

```
<!-- Another example on table background using pattern -->  
<tablebackground="/images/pattern2.gif"width="100%"height="100">  
<tr>  
<td>  
    This background is filled up with a pattern image.  
</td>  
</tr>  
</table>  
</body>  
  
</html>
```

This will produce the following result –



HTML - Tables

The HTML tables allow web authors to arrange data like text, images, links, other tables, etc. into rows and columns of cells.

The HTML tables are created using the **<table>** tag in which the **<tr>** tag is used to create table rows and **<td>** tag is used to create data cells. The elements under **<td>** are regular and left aligned by default

Example

```
<!DOCTYPE html>
<html>

<head>
<title>HTML Tables</title>
</head>

<body>
<tableborder="1">
<tr>
<td>Row 1, Column 1</td>
<td>Row 1, Column 2</td>
</tr>

<tr>
<td>Row 2, Column 1</td>
<td>Row 2, Column 2</td>
</tr>
</table>

</body>
</html>
```

This will produce the following result –

Row 1, Column 1	Row 1, Column 2
Row 2, Column 1	Row 2, Column 2

Here, the **border** is an attribute of **<table>** tag and it is used to put a border across all the cells. If you do not need a border, then you can use `border = "0"`.

Table Heading

Table heading can be defined using `<th>` tag. This tag will be put to replace `<td>` tag, which is used to represent actual data cell. Normally you will put your top row as table heading as shown below, otherwise you can use `<th>` element in any row. Headings, which are defined in `<th>` tag are centered and bold by default.

Example

```
<!DOCTYPE html>
<html>

<head>
<title>HTML Table Header</title>
</head>

<body>
<tableborder="1">
<tr>
<th>Name</th>
<th>Salary</th>
</tr>
<tr>
<td>Ramesh Raman</td>
<td>5000</td>
</tr>

<tr>
<td>Shabbir Hussein</td>
<td>7000</td>
</tr>
</table>
</body>
</html>
```

This will produce the following result –

Name	Salary
Ramesh Raman	5000
Shabbir Hussein	7000

Cellpadding and Cellspacing Attributes

There are two attributes called *cellpadding* and *cellspacing* which you will use to adjust the white space in your table cells. The *cellspacing* attribute defines space between table cells, while *cellpadding* represents the distance between cell borders and the content within a cell.

Example

```
<!DOCTYPE html>
<html>

<head>
<title>HTML Table Cellpadding</title>
</head>

<body>
<tableborder="1" cellpadding="5" cellspacing="5">
<tr>
<th>Name</th>
<th>Salary</th>
</tr>
<tr>
<td>Ramesh Raman</td>
<td>5000</td>
</tr>
<tr>
<td>Shabbir Hussein</td>
<td>7000</td>
</tr>
</table>
</body>
```


</html>

This will produce the following result –

Name	Salary
Ramesh Raman	5000
Shabbir Hussein	7000

Colspan and Rowspan Attributes

You will use **colspan** attribute if you want to merge two or more columns into a single column. Similar way you will use **rowspan** if you want to merge two or more rows.

Example

```
<!DOCTYPE html>
<html>
<head>
<title>HTML Table Colspan/Rowspan</title>
</head>
<body>
<tableborder="1">
<tr>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
</tr>
<tr>
<td rowspan="2">Row 1 Cell 1</td>
<td>Row 1 Cell 2</td>
<td>Row 1 Cell 3</td>
</tr>
<tr>
<td>Row 2 Cell 2</td>
<td>Row 2 Cell 3</td>
</tr>
```

```
<tr>
<td colspan="3">Row 3 Cell 1</td>
</tr>
</table>
</body>

</html>
```

This will produce the following result –

Column 1	Column 2	Column 3
Row 1 Cell 1	Row 1 Cell 2	Row 1 Cell 3
	Row 2 Cell 2	Row 2 Cell 3
Row 3 Cell 1		

Tables Backgrounds

You can set table background using one of the following two ways –

- **bgcolor** attribute – You can set background color for whole table or just for one cell.
- **background** attribute – You can set background image for whole table or just for one cell.

You can also set border color also using **bordercolor** attribute.

Note – The *bgcolor*, *background*, and *bordercolor* attributes deprecated in HTML5. Do not use these attributes.

Example

```
<!DOCTYPE html>
<html>

<head>
<title>HTML Table Background</title>
</head>

<body>
<table border="1" bordercolor="green" bgcolor="yellow">
<tr>
<th>Column 1</th>
```

```
<th>Column 2</th>
<th>Column 3</th>
</tr>
<tr>
<td rowspan="2">Row 1 Cell 1</td>
<td>Row 1 Cell 2</td>
<td>Row 1 Cell 3</td>
</tr>
<tr>
<td>Row 2 Cell 2</td>
<td>Row 2 Cell 3</td>
</tr>
<tr>
<td colspan="3">Row 3 Cell 1</td>
</tr>
</table>
</body>

</html>
```

This will produce the following result –

Column 1	Column 2	Column 3
Row 1 Cell 1	Row 1 Cell 2	Row 1 Cell 3
	Row 2 Cell 2	Row 2 Cell 3
Row 3 Cell 1		

Here is an example of using **background** attribute. Here we will use an image available in /images directory.

```
<!DOCTYPE html>
<html>

<head>
<title>HTML Table Background</title>
</head>
```

```
<body>
<tableborder="1"bordercolor="green"background="/images/test.png">
<tr>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
</tr>
<tr>
<td rowspan="2">Row 1 Cell 1</td>
<td>Row 1 Cell 2</td><td>Row 1 Cell 3</td>
</tr>
<tr>
<td>Row 2 Cell 2</td>
<td>Row 2 Cell 3</td>
</tr>
<tr>
<td colspan="3">Row 3 Cell 1</td>
</tr>
</table>
</body>

</html>
```

This will produce the following result. Here background image did not apply to table's header.

Column 1	Column 2	Column 3
Row 1 Cell 1	Row 1 Cell 2	Row 1 Cell 3
Row 2 Cell 1	Row 2 Cell 2	Row 2 Cell 3
Row 3 Cell 1		

Table Height and Width

You can set a table width and height using **width** and **height** attributes. You can specify table width or height in terms of pixels or in terms of percentage of available screen area.

Example

```
<!DOCTYPE html>
<html>

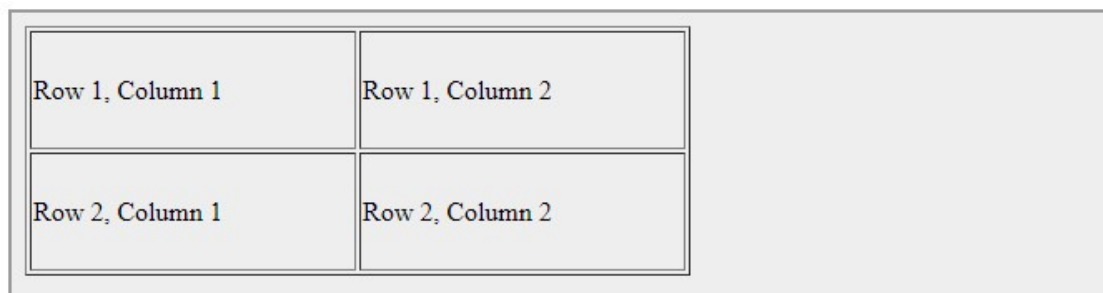
<head>
<title>HTML Table Width/Height</title>
</head>

<body>
<tableborder="1"width="400"height="150">
<tr>
<td>Row 1, Column 1</td>
<td>Row 1, Column 2</td>
</tr>

<tr>
<td>Row 2, Column 1</td>
<td>Row 2, Column 2</td>
</tr>
</table>
</body>

</html>
```

This will produce the following result –



Row 1, Column 1	Row 1, Column 2
Row 2, Column 1	Row 2, Column 2

Table Caption

The **caption** tag will serve as a title or explanation for the table and it shows up at the top of the table. This tag is deprecated in newer version of HTML/XHTML.

Example

```
<!DOCTYPE html>
<html>

<head>
<title>HTML Table Caption</title>
</head>

<body>
<tableborder="1"width="100%">
<caption>This is the caption</caption>

<tr>
<td>row 1, column 1</td><td>row 1, columnn 2</td>
</tr>

<tr>
<td>row 2, column 1</td><td>row 2, columnn 2</td>
</tr>
</table>
</body>

</html>
```

This will produce the following result –

row 1, column 1	row 1, column 2
row 2, column 1	row 2, column 2

Table Header, Body, and Footer

Tables can be divided into three portions – a header, a body, and a foot. The head and foot are rather similar to headers and footers in a word-processed document that remain the same for every page, while the body is the main content holder of the table.

The three elements for separating the head, body, and foot of a table are –

- **<thead>** – to create a separate table header.
- **<tbody>** – to indicate the main body of the table.
- **<tfoot>** – to create a separate table footer.

A table may contain several `<tbody>` elements to indicate *different pages* or groups of data. But it is notable that `<thead>` and `<tfoot>` tags should appear before `<tbody>`

Example

```
<!DOCTYPE html>
<html>

<head>
<title>HTML Table</title>
</head>

<body>
<tableborder="1"width="100%">
<thead>
<tr>
<tdcolspan="4">This is the head of the table</td>
</tr>
</thead>

<tfoot>
<tr>
<tdcolspan="4">This is the foot of the table</td>
</tr>
</tfoot>

<tbody>
<tr>
```

```
<td>Cell 1</td>
<td>Cell 2</td>
<td>Cell 3</td>
<td>Cell 4</td>
</tr>
</tbody>

</table>
</body>

</html>
```

This will produce the following result –

This is the head of the table			
Cell 1	Cell 2	Cell 3	Cell 4
This is the foot of the table			

Nested Tables

You can use one table inside another table. Not only tables you can use almost all the tags inside table data tag <td>.

Example

Following is the example of using another table and other tags inside a table cell.

```
<!DOCTYPE html>
<html>

<head>
<title>HTML Table</title>
</head>

<body>
<tableborder="1"width="100%">

<tr>
<td>
```



```
<tableborder="1"width="100%">
<tr>
<th>Name</th>
<th>Salary</th>
</tr>
<tr>
<td>Ramesh Raman</td>
<td>5000</td>
</tr>
<tr>
<td>Shabbir Hussein</td>
<td>7000</td>
</tr>
</table>
</td>
</tr>

</table>
</body>

</html>
```

This will produce the following result –

Name	Salary
Ramesh Raman	5000
Shabbir Hussein	7000

HTML - Forms

HTML Forms are required, when you want to collect some data from the site visitor. For example, during user registration you would like to collect information such as name, email address, credit card, etc.

A form will take input from the site visitor and then will post it to a back-end application such as CGI, ASP Script or PHP script etc. The back-end application will perform required processing on the passed data based on defined business logic inside the application.

There are various form elements available like text fields, textarea fields, drop-down menus, radio buttons, checkboxes, etc.

The HTML **<form>** tag is used to create an HTML form and it has following syntax –

```
<form action = "Script URL" method = "GET|POST">
```

form elements like input, textarea etc.

```
</form>
```

Form Attributes

Apart from common attributes, following is a list of the most frequently used form attributes –

Sr.No	Attribute & Description
1	<p>action</p> <p>Backend script ready to process your passed data.</p>
2	<p>method</p> <p>Method to be used to upload data. The most frequently used are GET and POST methods.</p>
3	<p>target</p> <p>Specify the target window or frame where the result of the script will be displayed. It takes values like <code>_blank</code>, <code>_self</code>, <code>_parent</code> etc.</p>
4	<p>enctype</p> <p>You can use the enctype attribute to specify how the browser encodes the data before it sends it to the server. Possible values are –</p> <p>application/x-www-form-urlencoded – This is the standard method most forms use in simple scenarios.</p> <p>multipart/form-data – This is used when you want to upload binary data in the form of files like image, word file etc.</p>

Note – You can refer to [Perl & CGI](#) for a detail on how form data upload works.

HTML Form Controls

There are different types of form controls that you can use to collect data using HTML form-

- Text Input Controls

- Checkboxes Controls
- Radio Box Controls
- Select Box Controls
- File Select boxes
- Hidden Controls
- Clickable Buttons
- Submit and Reset Button

Text Input Controls

There are three types of text input used on forms –

- **Single-line text input controls** – This control is used for items that require only one line of user input, such as search boxes or names. They are created using HTML `<input>` tag.
- **Password input controls** – This is also a single-line text input but it masks the character as soon as a user enters it. They are also created using HTML `<input>` tag.
- **Multi-line text input controls** – This is used when the user is required to give details that may be longer than a single sentence. Multi-line input controls are created using HTML `<textarea>` tag.

Single-line text input controls

This control is used for items that require only one line of user input, such as search boxes or names. They are created using HTML `<input>` tag.

Example

Here is a basic example of a single-line text input used to take first name and last name –

```
<!DOCTYPE html>
<html>

<head>
<title>Text Input Control</title>
</head>

<body>
<form>
    First name: <input type="text" name="first_name"/>
<br>
    Last name: <input type="text" name="last_name"/>
```

```
</form>
```

```
</body>
```

```
</html>
```

This will produce the following result –

First name:	<input type="text"/>
Last name:	<input type="text"/>

Attributes

Following is the list of attributes for `<input>` tag for creating text field.

Sr.No	Attribute & Description
1	type Indicates the type of input control and for text input control it will be set to text .
2	name Used to give a name to the control which is sent to the server to be recognized and get the value.
3	value This can be used to provide an initial value inside the control.
4	size Allows to specify the width of the text-input control in terms of characters.
5	maxlength Allows to specify the maximum number of characters a user can enter into the text box.

Password input controls

This is also a single-line text input but it masks the character as soon as a user enters it. They are also created using HTML `<input>` tag but type attribute is set to **password**.

Example

Here is a basic example of a single-line password input used to take user password –

```
<!DOCTYPE html>
<html>

<head>
<title>Password Input Control</title>
</head>

<body>
<form>
    User ID : <input type="text" name="user_id"/>
<br>
    Password: <input type="password" name="password"/>
</form>
</body>

</html>
```

This will produce the following result –



User ID :

Password:

Attributes

Following is the list of attributes for `<input>` tag for creating password field.

Sr.No	Attribute & Description
1	type Indicates the type of input control and for password input control it will be set to password .
2	name

	Used to give a name to the control which is sent to the server to be recognized and get the value.
3	value This can be used to provide an initial value inside the control.
4	size Allows to specify the width of the text-input control in terms of characters.
5	maxlength Allows to specify the maximum number of characters a user can enter into the text box.

Multiple-Line Text Input Controls

This is used when the user is required to give details that may be longer than a single sentence. Multi-line input controls are created using HTML `<textarea>` tag.

Example

Here is a basic example of a multi-line text input used to take item description –

```
<!DOCTYPE html>
<html>

<head>
<title>Multiple-Line Input Control</title>
</head>

<body>
<form>
  Description : <br/>
  <textarearows="5"cols="50"name="description">
    Enter description here...
  </textarea>
</form>
</body>
```

```
</html>
```

This will produce the following result –

A screenshot of a web browser window showing a form. The form has a label "Description:" above a text area. The text area contains the placeholder text "Enter description here...". The text area is a rectangular box with a thin border and a small cursor icon at the bottom right corner.

Attributes

Following is the list of attributes for `<textarea>` tag.

Sr.No	Attribute & Description
1	name Used to give a name to the control which is sent to the server to be recognized and get the value.
2	rows Indicates the number of rows of text area box.
3	cols Indicates the number of columns of text area box

Checkbox Control

Checkboxes are used when more than one option is required to be selected. They are also created using HTML `<input>` tag but type attribute is set to **checkbox**.

Example

Here is an example HTML code for a form with two checkboxes –

```
<!DOCTYPE html>
<html>

<head>
<title>Checkbox Control</title>
```

```
</head>

<body>
<form>
<input type="checkbox" name="maths" value="on"> Maths
<input type="checkbox" name="physics" value="on"> Physics
</form>
</body>

</html>
```

This will produce the following result –



Maths Physics

Attributes

Following is the list of attributes for `<checkbox>` tag.

Sr.No	Attribute & Description
1	type Indicates the type of input control and for checkbox input control it will be set to checkbox .
2	name Used to give a name to the control which is sent to the server to be recognized and get the value.
3	value The value that will be used if the checkbox is selected.
4	checked Set to <i>checked</i> if you want to select it by default.

Radio Button Control

Radio buttons are used when out of many options, just one option is required to be selected. They are also created using HTML `<input>` tag but type attribute is set to **radio**.

Example

Here is example HTML code for a form with two radio buttons –

```
<!DOCTYPE html>
<html>

<head>
<title>Radio Box Control</title>
</head>

<body>
<form>
<input type="radio" name="subject" value="maths"> Maths
<input type="radio" name="subject" value="physics"> Physics
</form>
</body>

</html>
```

This will produce the following result –



Maths Physics

Attributes

Following is the list of attributes for radio button.

Sr.No	Attribute & Description
1	type Indicates the type of input control and for checkbox input control it will be set to radio.

2	name Used to give a name to the control which is sent to the server to be recognized and get the value.
3	value The value that will be used if the radio box is selected.
4	checked Set to <i>checked</i> if you want to select it by default.

Select Box Control

A select box, also called drop down box which provides option to list down various options in the form of drop down list, from where a user can select one or more options.

Example

Here is example HTML code for a form with one drop down box


```
<!DOCTYPE html>
<html>

<head>
<title>Select Box Control</title>
</head>

<body>
<form>
<selectname="dropdown">
<optionvalue="Maths"selected>Maths</option>
<optionvalue="Physics">Physics</option>
</select>
</form>
</body>

</html>
```

This will produce the following result –



Attributes

Following is the list of important attributes of `<select>` tag –

Sr.No	Attribute & Description
1	name Used to give a name to the control which is sent to the server to be recognized and get the value.
2	size This can be used to present a scrolling list box.
3	multiple If set to "multiple" then allows a user to select multiple items from the menu.

Following is the list of important attributes of `<option>` tag –

Sr.No	Attribute & Description
1	value The value that will be used if an option in the select box box is selected.
2	selected Specifies that this option should be the initially selected value when the page loads.
3	label An alternative way of labeling options

File Upload Box

If you want to allow a user to upload a file to your web site, you will need to use a file upload box, also known as a file select box. This is also created using the `<input>` element but type attribute is set to **file**.

Example

Here is example HTML code for a form with one file upload box –

```
<!DOCTYPE html>
<html>

<head>
<title>File Upload Box</title>
</head>

<body>
<form>
<input type="file" name="fileupload" accept="image/*"/>
</form>
</body>

</html>
```

This will produce the following result –



Attributes

Following is the list of important attributes of file upload box –

Sr.No	Attribute & Description
1	name Used to give a name to the control which is sent to the server to be recognized and get the value.
2	accept

Specifies the types of files that the server accepts.

Button Controls

There are various ways in HTML to create clickable buttons. You can also create a clickable button using `<input>` tag by setting its type attribute to **button**. The type attribute can take the following values –

Sr.No	Type & Description
1	submit This creates a button that automatically submits a form.
2	reset This creates a button that automatically resets form controls to their initial values.
3	button This creates a button that is used to trigger a client-side script when the user clicks that button.
4	image This creates a clickable button but we can use an image as background of the button.

Example

Here is example HTML code for a form with three types of buttons –

```
<!DOCTYPE html>
<html>
<head>
<title>File Upload Box</title>
</head>
<body>
<form>
<input type="submit" name="submit" value="Submit"/>
<input type="reset" name="reset" value="Reset"/>
<input type="button" name="ok" value="OK"/>
```

```
<input type="image" name="imagebutton" src="/html/images/logo.png"/>
</form>
</body>
</html>
```

This will produce the following result –



Hidden Form Controls

Hidden form controls are used to hide data inside the page which later on can be pushed to the server. This control hides inside the code and does not appear on the actual page. For example, following hidden form is being used to keep current page number. When a user will click next page then the value of hidden control will be sent to the web server and there it will decide which page will be displayed next based on the passed current page.

Example

Here is example HTML code to show the usage of hidden control –

[Live Demo](#)

```
<!DOCTYPE html>
<html>
<head>
<title>File Upload Box</title>
</head>
<body>
<form>
<p>This is page 10</p>
<input type="hidden" name="pagename" value="10"/>
<input type="submit" name="submit" value="Submit"/>
<input type="reset" name="reset" value="Reset"/>
</form>
</body>
</html>
```

This will produce the following result –

This is page 10