COURSE GUIDE

**ENT 401
E - BUSINESS**

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INTRODUCTION

The course E-Business (ENT 414) is a core course, which carries two (2) credit units. It is prepared and made available to all undergraduate students in the Entrepreneurship Programme, in the Faculty of Management Sciences/Department of Entrepreneurial Studies. This course is useful material to you in your academic pursuit as well as in your workplace as managers and administrators.

WHAT YOU WILL LEARN IN THIS COURSE

The course is made up of Eighteen (18) units, covering areas such as;
- The concept and definitions
- an overview of Internet and mobile telecommunication
- importance of e-business
- website design
- Internet advertisements
- achieving competitive advantages using E-adverts
- online sales
- E-payments
- ATM,
- debit and credit cards

The Course Guide is meant to provide you with the necessary information about the course, the nature of the materials you will be using and how to make the best use of them towards ensuring adequate success in your programme as well as the practice of E-business in the society. Also included in this course guide is information on how to make use of your time and information on how to tackle the tutor-marked assignment (TMA). There will be tutorial sessions during which your facilitator will take you through your difficult areas and at the same time have meaningful interaction with your fellow learners.

COURSE CONTENTS

The course consists of:
- Internet, Mobile Telecommunication, Overview of E-Business and Website Design
- Overview of Internet Advertisement, Online Shopping and E-Payments

- Overview of E-Marketing, E-Market Opportunity Analysis For Firms, Developing An E-Marketing Plan, Online Strategy Formulation Plan, Market Communication and Branding, Financial Appraisal and Implementation and Control of E-Marketing Plan
- Introduction to E-Business Security, Business Security Challenges, Network Security and Management, Copyright Law and Electronic Access To Information and Internet Firewall and Fraud Prevention

COURSE AIMS

The main aim of this course is to arm you with adequate information on the concept and nature of E-Business, its components and its roles in businesses and the society as a whole. The course also aims at making you have a greater understanding of the fundamentals of marketing, business security challenges, copyright law, fraud prevention and the role of E- Business in the society.

COURSE OBJECTIVES

After completing this course, you should be able to;

- Explain Internet, Mobile Telecommunication, Overview of E-Business and Website Design
- Write an Overview of Internet Advertisement, Online Shopping and E-Payments
- Discuss E-Marketing, E-Market Opportunity Analysis for Firms, Developing An E- Marketing Plan, Online Strategy Formulation Plan, Market Communication and Branding, Financial Appraisal and Implementation and Control of E-Marketing Plan
- Introduce E-Business Security, Business Security Challenges, Network Security and Management, Copyright Law and Electronic Access to Information and Internet Firewall and Fraud Prevention

COURSE MATERIALS

Major components of the course are;

- Course Guide
- Study Units
- Textbooks
- Assignment Guide

STUDY UNITS

There are four modules of 18 units in this course, which should be studied carefully.

Module 1   Overview of the Internet
Unit 1   Internet
Unit 2   Mobile Telecommunication
Unit 3   Overview of E-Business
Unit 4   Website Design

Module 2   Internet Advertisement
Unit 1   Overview of Internet Advertisement
Unit 2   Online Shopping
Unit 3   E-Payments

Module 3   Concept of E-Marketing
Unit 1   Overview of E-Marketing
Unit 2   E-Market Opportunity Analysis for Firms
Unit 3   Developing an E-Marketing Plan
Unit 4   Online Strategy Formulation Plan
Unit 5   Market Communication and Branding
Unit 6   Financial Appraisal, Implementation and Control of E-Marketing Plan

Module 4   E-Business Security
Unit 1   Introduction to E-Business Security
Unit 2   Business Security Challenges
Unit 3   Network Security and Management
Unit 4   Copyright Law and Electronic Access to Information
Unit 5   Internet Firewall and Fraud Prevention

ASSIGNMENT

There are many assignments in this course and you are expected to do all of them by following the schedule prescribed for them in terms of when to attempt them and submit it for grading your Tutor.

TUTOR-MARKED ASSIGNMENTS (TMAS)

You are expected to submit all the TMAs to your Tutor for grading on or before the stated deadline. If for any reason you cannot complete your assignment on time, contact your tutor before the assignment is due, to discuss the possibility of extension. Extension may not be granted after the deadline, unless on exceptional cases. The TMAs usually constitute 30% of the total score for the course.

FINAL EXAMINATION AND GRADING

At the end of the course, you will write the final electronic examination. It will attract the remaining 70%. This makes the total final score to be 100%.

CONCLUSION

This course, E-Business (ENT414) exposes you to issues and components involved in E- business, and its roles in businesses and the global market. On the successful completion of the course, you will have been armed with materials, expertise and skills necessary for the use of E-Business and how to overcome the security challenges involving E-business.

**MAIN
COURSE**

MODULE 1   OVERVIEW OF THE INTERNET
Unit 1   Internet
Unit 2   Mobile Telecommunication
Unit 3   Overview of E-Business
Unit 4   Website Design

MODULE 2   INTERNET ADVERTISEMENT
Unit 1   Overview of Internet Advertisement
Unit 2   Online Shopping
Unit 3   E-Payments

MODULE 3   CONCEPT OF E-MARKETING
Unit 1   Overview Of E-Marketing
Unit 2   E-Market Opportunity Analysis for Firms
Unit 3   Developing an E-Marketing Plan
Unit 4   Online Strategy Formulation Plan
Unit 5   Market Communication and Branding
Unit 6   Financial Appraisal, Implementation and Control of E-Marketing Plan

MODULE 4   E-BUSINESS SECURITY
Unit 1   Introduction to E-Business Security
Unit 2   Business Security Challenges
Unit 3   Network Security and Management
Unit 4   Copyright Law and Electronic Access to Information
Unit 5   Internet Firewall and Fraud Prevention

MODULE 1

UNIT 1   OVERVIEW OF THE INTERNET
UNIT 2   MOBILE TELECOMMUNICATION
UNIT 3   OVERVIEW OF E-BUSINESS
UNIT 4   WEB DEVELOPMENT

UNIT 1   INTERNET

Unit Structure

1.1   Introduction

The Internet is a worldwide network that connects billions of computers and other electronic devices. The Internet allows you to access almost any information, communicate with anyone in the world, and do a lot more. All of this is possible by connecting a computer to the Internet, also known as going online. When someone says a computer is online, it simply means it is connected to the Internet.

The Internet (interconnected network), sometimes known as the net or web, was created to help in the advancement of computing technology by connecting academic computer centers. The modern Internet began in the late 1960s with the establishment of ARPANET, which delivered its first message on Friday, October 29, 1969. The Internet saw one of its most rapid expansions to date in 1993, and it is now accessible to individuals all around the world. ARPANET, NSFnet, and other private networks combined to form the Internet in the 1990s. As a result, the Internet becomes a worldwide network of computer networks. It is made

up of millions of computer devices that carry and transfer massive amounts of data from one device to the next.The Internet provides thousands of services that make life easier. Many financial organizations, for example, provide internet banking, which allows users to control and see their accounts from many places. Hence, it has become crucial for day-to-day activities: bills payment, online shopping and surfing, tutoring, working, communicating with peers, etc.

This course has been designed, mainly, to develop your awareness of the E-business concept. It is assumed that such knowledge about E-business concept and models will not only improve your competences, but will also educate you in how to start and run an E-business. The first unit focuses on the idea of the Internet and its effect on businesses.

1.2 Learning Outcomes

At the end of this unit, you should be able to:
- Understand the meaning of internet, brief history of intent, its basics and services
- Describe the relationship between the internet and a business
- Know the importance of the Internet in the society

1.3 The Internet

1.3.1 What is the meaning of the Internet?

The term "interconnection of computer networks" refers to the Internet. The Internet can be described as a vast network of networks within networks. It links millions of computers across the world to establish a network in which any computer may talk with any other computer as long as they are both linked to the Internet. It is an electronic communications network that connects computer networks and organizational computer facilities around the world. The Internet is infrastructure as well. It is a worldwide network of networked computers that interact in a standardized manner using predefined protocols (Lemonaki, 2020).

The Internet is a pervasive information infrastructure, the first prototype of what is commonly referred to as the National (or Global or Galactic) Information Infrastructure. Its history is complicated and covers numerous dimensions, including technological, organizational, and communal factors. And its impact extends beyond the technical domains of computer communications to all aspects of society as we move

toward greater use of online technologies for electronic commerce, information collection, and community activities. It has transformed the computing and communications industries like nothing before. The inventions of the telegraph, telephone, radio, and computer laid the groundwork for this unparalleled convergence of powers. The Internet is a global broadcasting capacity, a means for information transmission, and a medium for cooperation and interaction between persons and their computers that is not geographically limited. The Internet is one of the most effective examples of the benefits of ongoing investment and dedication to information infrastructure research and development.

Because open standards allow every network to connect to every other network, the Internet works. This is what allows anyone to create content, provide services, and sell products without the need for permission from a central authority. It evens the playing field for everyone, which is why we have such a diverse range of applications and services available to us today.

The overall responsibility for managing Internet Protocol address or domain names at upper levels is vested in the <u>Internet Assigned Numbers Authority (IANA)</u>, which delegates the actual administration of most functions to other bodies.

1.3.2   How did internet come about?

ARPANET, the forerunner network of the internet, was an experiment that resulted in the Internet we know and use today. On October 4, 1957, in the middle of the Cold War, the Soviets launched Sputnik, the first man-made satellite into orbit. This was frightening for Americans since it was the world's first manufactured object to drift into space. Not only were the Soviets advanced in science and technology, but they were also a menace. Americans were concerned that the Soviets would spy on their adversaries, win the Cold War, and launch nuclear weapons on American territory.

ARPA is an acronym that stands for Advanced Research Project Agency. It was a Defense Department computer science research initiative that allowed scientists and researchers to share information, results, expertise, and communicate. It also permitted and aided the development and evolution of the area of computer science.

The initial version of the internet was constructed in 1969 and established as a network (named ARPANET) between four "nodes": UCLA, Stanford Research Institute, UC Santa Barbara, and the University of Utah (Mack). On October 29, 1969, a student programmer called Charley Kline sent the first message via ARPANET. The straightforward message "LO" was meant to be "LOGIN," but the

system broke after the "O." (Norman).

From these simple beginnings sprang new methods of sharing knowledge and communicating. We had the first email communication in 1971, and we witnessed the construction and the spread of new networks, which led the introduction of a network standard in 1983. (McDowall). This eventually led to the creation of the World Wide Web, which was published in 1993 by CERN (the European Council for Nuclear Research) and directed by Tim Berners-Lee (Greenemeier). As a result, while the names are sometimes used interchangeably, the internet is distinct from the Web: the Web is merely a program that runs on the internet, allowing the standardization and sharing of information from the internet.

Browsers were developed to meet the demand for platforms to show information on the Web; currently, Google Chrome, Mozilla's Firefox, and Microsoft's Edge are three major browsers. There was also a need for tools that could index and search material on the Web, or search engines, which now include Google, Yahoo!, and Bing.

1.3.3   What are the Basics and Services in internet?

- The Internet and the WWW (World Wide Web) are not interchangeable terms.
- The WWW is accessed using a browser, and accessing the Internet is frequently referred to as surfing.
- Users navigate websites and web pages by clicking on hyperlinks that go to an address known as a URL.
- A search engine is used to find information on the Internet.
- You may exchange files, photographs, sounds, and videos by downloading (receiving) and uploading (sending).
- The Internet uses the TCP/IP protocol and can be accessed by a dial-up modem, broadband, 3G, 4G, or network linked via an ISP.
- When using broadband, numerous computers and gadgets connect to a router through Wi-Fi to share an Internet connection.
- The computer on which you are viewing this web page is considered a host and it's connected to our server to view this page.

The Internet provides the following services in addition to surfing via a browser. Chat, E-mail, Forum, FTP, IM, Online gaming, Social network, VoIP, WWW etc.

1.4   Internet as a Business driver

The Internet is thought to be overhyped as well as undervalued. It has the power to alter everything—the way we work, study, and play, and maybe even the way we sleep. Furthermore, it is doing so at a far faster rate than the other big disruptive technologies of the twentieth century, such as electricity, the telephone, and the automobile.

While the media has focused on only a few areas of the web the glitzy consumer side of content and shopping on the one hand, and extreme rantings on the other something far more essential is taking place behind the scenes: e-business. The Internet is flipping business on its head and turning it inside out. It is profoundly altering the way businesses work, whether they are high-tech or metal-bashing. This extends far beyond buying and selling via the Internet, or e-commerce, and into an enterprise's procedures and culture.

For the first time, several businesses are establishing direct ties with their consumers over the Internet. Others are leveraging secure Internet connections to strengthen relationships with some of their trade partners, and they are taking use of the Internet's reach and ubiquity to obtain quotations or auction off perishable supplies of products or services. In industries ranging from chemicals to road haulage, entirely new organizations and business models are developing to bring buyers and sellers together in super-efficient new electronic marketplaces. The Internet is enabling businesses to substantially reduce costs throughout their supply and demand chains, elevate their customer service, access new markets, establish new revenue streams, and rethink their business relationships.

According to Andreas (2018), Supply chain management is also becoming more efficient, allowing businesses to dramatically cut inventory expenses. According to Goldman Sachs, an American bank, these variables have already contributed to procurement savings of up to 40% in the electronics components business. Because the Internet leads to lower operational expenses, Goldman Sachs forecasts that business-to-business e-commerce might produce a 5% rise in production in industrialized economies over the next ten years. However, one might argue that the Internet has even more promise for cost reductions and productivity increases in more strictly regulated countries with stiff labor and/or inefficient capital markets.

It is also conceivable to argue that emerging economies would benefit the most from e-commerce. As the Internet cuts transaction costs and the economies of scale achievable through vertical integration, the ideal size of enterprises may decrease.

1.5   Relationship between internet and business and the impact

The Internet has created opportunities and challenges for existing businesses and start-ups that have direct relationships with customers. Regarding the supply chain, some intermediaries have emerged, while others have been replaced. New business models have emerged which showed to organizations how to use technology to achieve a competitive advantage and a bigger income (Gay et al, 2019). To be competitive, the organization must adopt new technologies to develop low cost in exploration consumers behavior, to establish close relationships with its consumers and develop loyalty. Not only are new types of products, but there are also new competitors, new markets, research methods, and more, that stimulate the entrepreneurs to be competitive, innovative and creative all the time.

The Internet allows the firm to create or improve its competitive edge, which should be founded on true facts, different from what rivals provide, and essential to potential consumers. The Internet is quick, efficient, and rich in resources, allowing everyone to locate what they need. An online presence adds prestige to a firm, improves brand awareness, and increases potential clients' trust in the company's offering. According to recent research, a lack of online presence gives buyers the impression that they are dealing with a small and inadequate firm, making them hesitant to acquire the goods. A modern business with no internet, regardless of size, is either a local firm with no practical application at a distance, or a simply executed enterprise with limited time and space perspective.

The Internet connects companies and consumers to communication, trade, education, and entertainment platforms. Entrepreneurs, executives, and businesses are now investing in digital marketing, business automation, remote recruiting, e-commerce, and online collaboration tools in order to boost the pace of innovation and quality in daily operations using internet technology (Sharma, 2019). Here are some of the ways that technology has changed the way a Business Operates (Middleton, 2017):

- **Global news instantly, global impact instantly** - news, ideas and information travels faster.
- **Geography is not that meaningful anymore** - location is a factor that is increasingly less important in making economic decisions. Companies operates on the computer where they find the best offer in terms of skills and productivity.
- **From nine to five became 24 hours a day, seven days a week** - now, companies operate in three shifts, depending on the three major zones: the Americas, East Asia / Australia and Europe. The

"working day" term loses its meaning in a global state in which electronic communication can take place at any time in day or night.

▪ **Size matters less** - small companies can now offer services that, in the past, only large companies could provide them. In addition, the cost of setting up a business are decreasing and as a result, many small companies will appear.

▪ **Customer service changes** - questions and commands that today are still led by phone can be managed via the Internet with a considerably lower cost.

▪ **Short deadlines become shorter** - institutional investors and stock analysts claim a lot of public companies.

▪ **The Internet levels the playing field** - companies who believe that small firms that make much noise on the Internet is not a threat to their core activities built on years of careful planning and research activities of strengthening the brand and marketing are wrong. The Internet placed the newcomers on an equal footing with large corporations, allowing them to compete for new businesses.

▪ **People - a precious resource of maximum importance** - the key challenge for companies will be to hire, to retain quality people and to extract the value that they can offer. Companies will need to convince the best employees that working for them increases their individual value.

1.6   Effect of Internet on Firms' Internationalization Capacity

The internationalization pattern of a company refers to the many dimensions of operations undertaken outside of the home country - the What? How? Where? And When? Questions. A firm's internalization capability refers to a company's preconditions for effectively engaging in international operations as well as the motivation of the company's decision makers to operate abroad. At the most basic level, a firm's internationalization potential is represented by its resource base (technical, human, and financial), which is required for the successful execution of foreign commercial operations. Furthermore, a firm's internationalization capacity includes its internationalization strategy, organizational structure, and procedures.
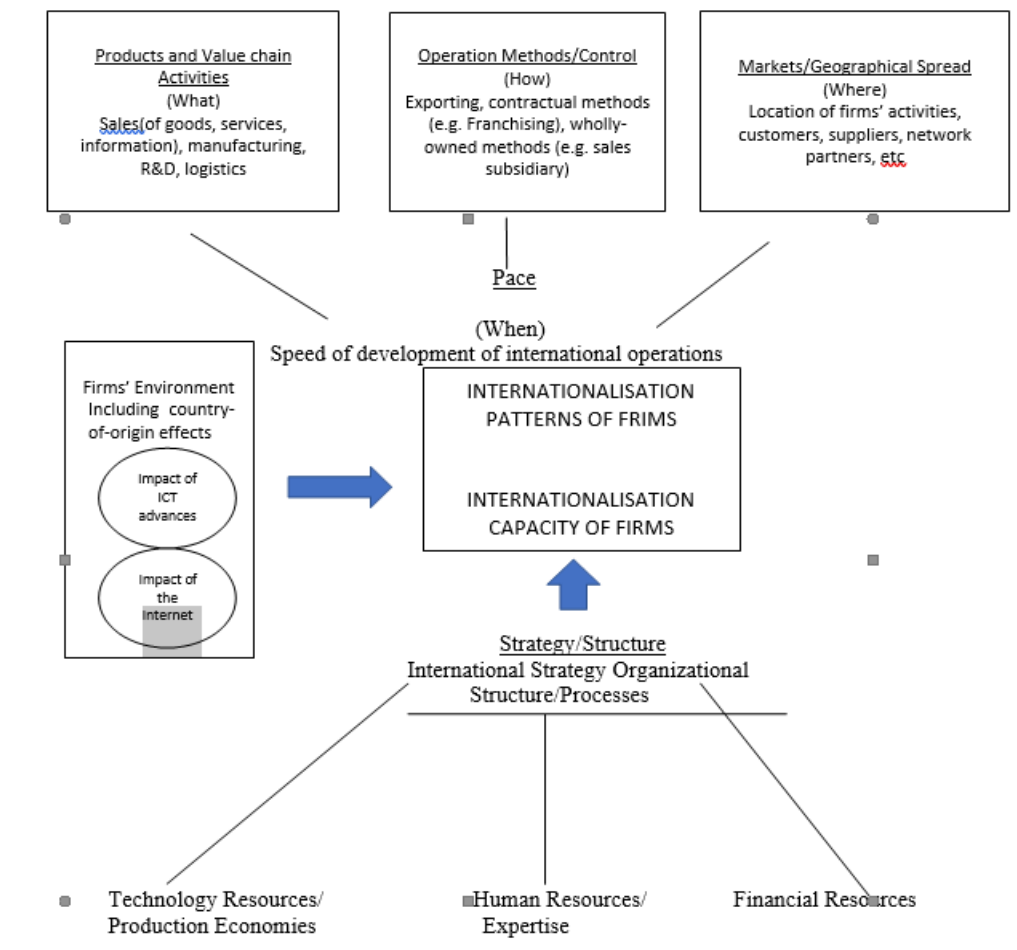
1.   Technology/Production Economies resources:

Developments in the internet have created a tremendous drive for enterprises to become involved in worldwide commercial operations, as has the Internet's capacity to identify international business prospects. The consequences of advancements in internet for internationalization are less unidirectional. The influence of internet breakthroughs on internationalization differs greatly between producers of 'conventional' physical commodities and producers of digital information goods in terms of technology and production economics. Digital information goods (henceforth referred to as "e-products") often have large fixed costs and insignificant marginal costs, therefore the manufacturer has a strong incentive to sell the e-product to as many clients as possible after incurring up-front investment expenditures (Andreas et'al ,2018).

As a result, the cost structure of e-products pushes the manufacturer to attain economies of scale on a worldwide scale. Furthermore, e-products are frequently susceptible to "network externalities," which means that the value that the individual client obtains from the e-product grows as the total number of other customers grows. Scale economies and

network externalities, when combined, create a significant incentive for e-product producers to grow beyond their home market. It may be claimed that advances in the internet in general have reduced the incentive for manufacturers of physical/non-digitized items to grow globally. Because of advancements in information technology, many manufacturers have automated their production processes to improve precision and reduce manual labor. The digitalization of production processes has also decreased the costs of moving from one line of manufacture to another, allowing for more flexible production with a lower minimum efficient scale of operations.

Digitization of production processes tends to lower certain businesses' incentive to internationalize through its effect on production economics, but digitization of goods tends to boost firms' propensity to go international. However, the line between producers of physical commodities and providers of e-products is becoming increasingly blurred. Few corporations nowadays are merely physical good suppliers, as auxiliary services are connected to most items, and many of these services have recently been digitized (e.g., after-sales services given through the producer's website). As the digitalization of services continues, organizations' incentives to internationalize should expand in lockstep.

Looking at how the Internet affects the interplay between firms' production economies and internationalization economies of scope rather than scale, we can see that the Internet has increased the possibility of finding potential foreign partners with complementary assets with whom a firm can share production facilities and technology. One may anticipate that the realization of the extent of economies via the Internet is more significant to small and medium-sized businesses than to huge, international corporations. The growth of portals on the Internet demonstrates how corporations share (limited) resources. The incumbent portal businesses are used to service the demands of the individual consumer in a more complete manner than individual entities can do alone. Evidently, digitalization of products and services, along with increased inter-firm communication capabilities provided by the Internet, has altered production economies in ways that provide enterprises with a significant drive to internationalize.

2.   **Human Resources;**

The Internet has had a significant impact on how employees are managed within multinational corporations. Companies' capacity to grow worldwide operations increasingly through the Internet is dependent on employees' ability to begin and carry out a variety of new activities and deal with a variety of new technology. This will create

significant pressures on the human resources function to recruit suitable candidates, either inside or outside the organization. Although the emergence of international call centers has demonstrated that staff can be trained to perform a variety of functions and communicate with customers in a variety of languages, and even dialects, in a relatively impersonal international environment entry, this is probably the most demanding aspect of global e-commerce.

The link between e- servicing and more personalized approaches to foreign customers, therefore, may depend on some individuals who can move easily between these different forms of customer servicing staff. Companies using the Internet in the international arena are only just coming to terms with the demands and possibilities of the new Internet-driven environment for staffing and training issues. While the Internet itself is likely to alleviate some of these demands, such as via e-learning, it cannot be viewed as a 'cure-all' in international operations. ICT advancements have already improved circumstances for expatriation and short-term assignments by making it much easier for expatriates and their families to stay in touch with their networks back home. However, with the Internet, conditions for virtual tasks have greatly improved.

3.   Financial Resources;

ICT advances in general have been important drivers of the convergence costs of capital of firms during the last decade. Because of this process of transition from independent national financial markets to a more integrated, globalized market international firms have, all else being equal, lost competitive advantage vis-domestic firms operating in what previously may have been high-cost capital markets. The creation of transparency across markets, ICT advances, and the Internet has reduce the disadvantage of foreignness in terms of being unknown to local stores. If the Internet has the effect of hastening internationalisation, for example, by expanding the number of foreign markets that can be served, the ability to finance expansion may become a critical issue, particularly for new Internet-related ventures in the post-"Internet bubble" world. The Internet should increase international transparency about financing options, putting additional pressure on countries to lower their cost of capital. Given the volatility of new venture finance markets, this could be an important consideration for Internet-related new ventures.

4.   International   Strategy/Organizational   Structure   and   Processes;

The Internet appears to have put pressure on multinational corporations to increase global integration and coordination over the past two

decades. At the height of the Internet boom, it was expected that international companies would have a greater need for global standardisation due to increased transparency across national markets. As a result, international firms would be compelled to develop stronger central coordination and control mechanisms, involving greater integration of their dispersed activities. Pricing policies in different national markets would need to be brought more closely together as an example of Internet-induced transparency. Inevitably, such a change would necessitate a slew of changes across the international corporation in areas such as purchasing, supply chain management, and marketing programmes. As a result of this trend toward centralization, some international corporations established corporate websites, and for international operating companies in non-English speaking countries, such as Denmark, the website would typically be in English.

The centralization bias of the Internet has been reinforced by the perceived strategic importance of online sales by international companies so that the direction and control of developments have been driven by headquarters - it has been being too important to leave to the various subsidiaries. This has been applied to testing in the marketplace of online sales of existing as well as new product. some individuals who can move easily between these different forms of customer servicing staff. Companies using the Internet in the international arena are only just coming to terms with the demands and possibilities of the new Internet-driven environment for staffing and training issues. While the Internet itself is likely to alleviate some of these demands, such as via e-learning, it cannot be viewed as a 'cure-all' in international operations. Advances in information and communication technology have already improved conditions for expatriation and short-term assignments by making it much easier for expatriates and their families to stay in touch with their networks back home. However, with the Internet, conditions for virtual assignments have greatly improved.

1.7   Importance of internet in the society

The Internet is important to the society as it adds another resource to enhance businesses, education and entertainment. Many people in today's generation are relying in the internet to do a lot of different tasks. In fact, wherever you go these days, you can see people holding some sort of gadgets and using the internet to play games or search things that they want. But of course, the internet is not just about entertainment. It's also useful in many other things as well.

Many students nowadays use the internet to conduct research and complete assignments. Because the internet is so rich in information, most students use it to supplement their education. In fact, there are now

online programmes and courses available that people can use to study and learn new things while sitting in the comfort of their own homes. Years ago, if you wanted to find something out, you would have to run to a public library and look through a pile of books, which is very tiring and time-consuming. But now, with just a few clicks of your mouse, you can already get any information you need. Years ago, when you also wanted to buy something, such as food, shoes, or any items, you would go to a shop or restaurant to get that thing you need. But now, you can easily Google the product you want and have it delivered directly to your door! In fact, you can now even pay your bills and file your taxes online.

Hiring the people you require is also made much easier by the use of the internet. When it comes to communication, the internet is also very important. People used to have to reach for a phone and make a phone call if they wanted to speak with someone who lived in a distant location. If they don't have access to a phone, they will send a letter, which will take a few days to arrive. However, emails and social media allow you to instantly send messages to your loved ones. You can even use video calling to see someone who is on the other side of the world. This benefit extends to other industries, particularly entrepreneurs and business owners. Previously, business owners would have to travel overseas to speak with a client; now, they can negotiate from the comfort of their own office.

Self-assessment Exercise
  i.   Enumerate 5 ways the internet has changed how a Business Operates as discussed by Middleton (2017).   (10 minutes)
  ii. Identify ten services provided by the internet with one example for each. (5 minutes)

1.9   Summary

- Technological advancement is always a great weapon to the mankind to explore unexplored areas of the universe.
- Understanding the importance of Internet technology has helped many companies gain larger markets, audiences and create services that reach out to customers.
- The technology also helped organizations to enhance the level of communication with employees and customers.
- It provided a medium to publish information or content regarding the product or services that reaches out to millions of people across the globe.
- Customer support and service has been enhanced to a whole new level. Conducting online workshops, conferences, interviews,

and data management has helped an organization to reach out for customer's requirement. Internet has helped increased credibility for the work that is done.

- Technology has also increased exposure to different areas of the market, increase in quantity and quality, increase in sales, reduction in costs, increase in access to information, increase in supply chain, reduction in load on staff and reduction in use of products that are harmful to environment.

- Internet technology has completely changed how we communicate, respond or entertain ourselves. Its importance in everyday life is never ending and plays a great role in enhancement of quality of life.

- There has been a great increase in benefits and reduction in time. Internet is a powerful medium that has changed how we live and will continue to change in the future. We are sure to see further changes to the technology.

- Internet technology is sure to see a sea change in the coming years that will have tremendous effect on personal and professional life.

1.10 References/Further Reading

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UNIT 2   MOBILE TELECOMMUNICATION

Unit Structure

2.1   Introduction
2.2   Learning Outcomes
2.3   Mobile Telecommunication
          2.3.1   What is Mobile Telecommunication?
          2.3.2   What are the features of Mobile Telecommunication?
          2.3.2   What are the types of Mobile Telecommunication?
          2.3.3   What are Generations of Mobile Technology
2.4   Telecommunication
          2.4.1   What is Telecommunication/
          2.4.2   What are the types of telecommunication?
2.5   Mobile Technology and Telecommunication
          2.5.1   What   Relationship   between   Mobile   and
                  Telecommunication?
          2.5.2   What are the Advantages of Mobile Communication
                  Technology?
          2.5.3   What are the Disadvantages of Mobile Communication
                  Technology?
2.6   How has Mobile Telecommunication impacted on E-business?
2.7   Self-assessment Exercise
2.8   Summary
2.9   Reference/Further Reading/Web Sources

2.1   Introduction

This section will go through the basics of mobile communication and telecommunication. We will also talk about the connection between mobile and telecommunication, as well as how mobile telephony is tied to E-business.

2.2   Learning Outcomes

At the end of this unit, students will be able to;
- Understand the concept of Mobile Communication and Telecommunication, types of telecommunication, features and its generations.
- Explain the relationship between mobile communication and telecommunication
- Discuss how e-businesses can use mobile telecommunication for all their operations

2.3   Mobile Telecommunication

2.3.1   What is Mobile Communication?

The use of technology that allows us to communicate with individuals in various areas without the usage of any physical connection (wires or cables) is referred to as mobile communication Mobile communication simplifies our lives and saves us time and effort. Mobile communication is exemplified by a mobile phone (also known as a mobile cellular network, cell phone, or hand phone) (wireless communication). It is an electric device that transmits full duplex two-way radio signals via a cellular network of base stations known as cell sites.

Mobile connection allows for the transport of speech and multimedia data from a computer or mobile device without the use of any physical or fixed links. Mobile interactions are becoming more and more important to everyone. Mobile communication is the simultaneous exchange of voices and data over the communication infrastructure, independent of any physical connection.

2.3.2   What are the features of Mobile Telecommunication?

The following are the features of mobile communication:

- **High capacity load balancing**: High capacity load balancing must be included in all wireless infrastructure. High capacity load balancing implies that if one access point is overwhelmed, the system will actively move users from one access point to another based on available capacity.
- **Scalability**: The popularity of new wireless gadgets is expanding on a daily basis. The scalability of a mobile telecommunication means that they may start small if required, but grow in terms of coverage and capacity as needed - without having to redesign or create an altogether new network.
- **Network Management System**: Wireless networks are becoming far more complicated, with hundreds or even thousands of access points, firewalls, switches, controlled power, and other components. Wireless networks have a more intelligent technique of administering the entire network from a centralized location.

2.3.3   What are the types of Mobile Telecommunication?

The different types of mobile communication systems are:
- **Mobile two-way radios**: These are one-to-many communication

devices that function in half-duplex mode, i.e., push to talk. The most prevalent is citizen band (CB) radio, which employs amplitude modulation (AM). It has 40 channels of 10 kHz and works over a frequency range of 26-27.1 MHz. It is a non-profit service that employs a press-to-talk switch. It can be modulated using either a double-sideband suppressed carrier or a single-sideband suppressed carrier.

▪ **Public Land Radio**: Public Land radio is a two-way FM radio system used in law enforcement, fire departments, and municipalities. It is only available in a few geographical locations.

▪ **Mobile phone or Cell phone:** These are devices that support full-duplex communication. These are one-to-one systems that allow for two concurrent transmissions. Each mobile unit has its own phone number for privacy reasons.

▪ **Amateur (HAM) radio;** Amateur (HAM) radios operate over a wide frequency range, ranging from 1.8 MHz to more than 30 MHz. Continuous wave (CW), AM, FM, radio teleprinter, HF slow-scan still picture TV, VHF or UHF slow-scan or fast-scan TV, facsimile, frequency-shift keying, and amplitude-shift keying are among them. 2017 (Linton).

2.3.4 What are the generations of mobile telecommunication?

• **1G Technology**: 1G refers to first-century cellular telephone networks that utilised analog communication signals. In the early 1980s, it was originally created and particularly designed for speech communication in the United States. The 1G technology has a speed of 2.4 KBPS. Furthermore, with a huge phone and poor speech quality, 1G technology has a shorter battery life.

• **2G Technology**: The term 2G refers to the first usage of digital transmissions in mobile phones of the second generation. It was introduced in Finland in 1991 and utilised GSM technology. Certain key 2G connection capabilities use GPRS technology to offer internet browsing, email, and rapid upload/download speeds. 2G GPRS, which is one step behind the next smartphone generation, is frequently referred to as 2.5G. The data speed of 2G technology is 64 kbps, and it also provides fantastic features like multimedia and messenger, as well as greater voice quality than 1G technology.

• **3G Technology**: Third-generation (3G) cellular telephony began around the turn of the millennium and provided significant change in comparison to prior years. The 3.5G intermediate generation integrates multiple mobile phone and data technologies, paving the way for the next generation of mobile communications. Cell phones are expensive. High operating

expenses, such as license fees and mobile towers Infrastructures require qualified employees.

- **4G Technology**: The fourth generation (4G) of mobile connection was introduced in 2011, maintaining the trend of a new mobile generation every decade. The primary characteristics of 4G include speeds ranging from 100 mbps to 1 GBPS, as well as sophisticated technologies such as cloud computing, mobile web access, and many more.

- **5G Technology**: It is based on OFDM. OFDM (Orthogonal frequency-division multiplexing) is a way of modulating a digital signal across several channels to decrease interference. 5G employs the 5G NR air interface in conjunction with OFDM principles. 5G also makes use of higher bandwidth technologies like sub-6 GHz and mmWave.

2.4   Telecommunication

2.4.1   What is Telecommunication?

Telecommunication is the transfer of signs, signals, messages, words, writings, pictures, sounds, or any other type of information via wire, radio, optical, or other electromagnetic systems. It occurs when participants in a communication exchange utilize technology to exchange information. Telecommunication networks are the technologies utilized to communicate.

A telecommunication network is a collection of terminal nodes connected by connections that allow communication between the terminals. The nodes are linked together by transmission connections. Each network terminal has a unique address, which allows messages or connections to be directed to the relevant receivers. The address space refers to the collection of addresses in the network.

2.4.2   What are the types of Telecommunications?

There are numerous types of telecommunication networks. They are as follows:
- Computer Networks; ARPANET, Ethernet, Internet, Wireless networks.
- Public switched telephone networks (PSTN)
- Packed switched networks
- Radio networks
- Television networks

2.5 Mobile Communication and Telecommunication

2.5.1 What is the Relationship between mobile and telecommunication?

Mobile communication technologies have enabled users to communicate with the global network in real time. Businesses may now utilize these technologies to manage their operations more efficiently and communicate with their consumers from all over the world. The mobile telecommunications business has expanded fast over the previous three decades, making it one of the most fascinating examples of technological diffusion. Since 2002, the number of mobile customers has surpassed the number of fixed lines worldwide. It took less than a fifth of the time for mobile networks to achieve what fixed phones had labored with for more than 120 years.

Indeed, mobile communications have a considerable impact on how users interact and have large externalities for the economic activities for which they are employed. There is extensive anecdotal evidence of a spike in new firms and business models associated with the industry (e.g., Nokia, Vodafone), as well as the emergence of new modalities of communication such as 'personal reachability.' Because of the reduced user access cost compared to wired telecommunications, along with the solution of the creditworthiness problem of customers via prepaid cards, the technology has the potential to reach whole new sectors of the population, particularly in developing nations.

Cell phones, Wi-Fi enabled hand-held devices, and wireless laptops that may connect through Wi-Fi or a cellular connection are examples of mobile communication technologies. It is critical to understand the benefits and drawbacks of mobile communication technologies for company.

2.5.2 Advantages of Mobile Communication Technology

- **Flexibility:** Wireless communication allows people to communicate with one another regardless of where they are. There is no need to be at an office or a phone booth to send and receive messages.
- **Low cost**: There is no requirement for physical infrastructure (wires or cables) or maintenance practices in wireless communication. As a result, the cost is lowered.
- **Speed:** Improvements in speed can also be noted. The precision and speed of network connectivity or accessibility have greatly enhanced.

- **Accessibility:** It is feasible to have quick access to remote regions using wireless technology. Online education, for example, is increasingly available in remote places. Educators and students no longer need to travel to remote locations to provide their education.
- **Constant connectivity:** People can respond to catastrophes more rapidly since they are always connected. A wireless device, such as a mobile phone, can, for example, maintain continual communication even when you move from one location to another or while traveling, but a conventional landline cannot.

2.5.3 What are Disadvantages of Mobile Communication Technology?

- **Cybercrime**: Cybercriminals use communication technologies to steal financial data and commit identity theft. They accomplish this by secretly installing unlawful malware on people's computers without their knowledge, or by exploiting security flaws on online merchants' websites to steal consumers' bank and credit card information.

2.6 How mobile telecommunication is important to an E-business

Telecommunication is a significant business tool. It helps businesses to efficiently engage with consumers and provide high-quality customer service. Telecommunication is also an important component of cooperation, allowing employees to interact quickly from wherever they are. Mobile telecommunications allows businesses to implement more flexible working practices by allowing workers to work productively from home. The emergence of smartphones provides employees with new levels of productivity and mobility.

- **Customer Service;** The phone is still an important part of a customer support approach. Using management solutions allow you to answer incoming calls swiftly, even when lines are crowded, and to route calls to staff who have the necessary expertise to address the query. Alternatively, you may provide callers with a menu of alternatives, such as "Press '1' for Accounts," or "Press '2' for Sales." You may also use the phone to contact clients proactively, such as after a service call or a purchase.
- **Collaboration**; Collaboration within departments may assist your firm in improving performance in projects such as new product development, customer relationship management, and quality efforts. According to McKinsey & Company (Linton, 2017), collaborative, complicated problem solving is the essence of

many workers' employment. Telecommunication allows your project teams to stay on track and make key decisions even when all members are unable to attend meetings. Absent participants can participate in a teleconference or a Web conference if they have a smartphone or computer with Internet access.

- **Remote**; If your sales, technical, and support team members spend a significant portion of their working days with colleagues, visiting clients, working from home, or traveling, mobile communications can help them stay in touch and work successfully while on the go. According to the Yankee Group Enterprise Mobility Survey, 40% of respondents considered more than a third of their workforce to be remote or mobile workers.

- **Smartphones;** With the rising complexity of smartphones, mobile communications has become an essential component of a broader communication capacity. Employees may access data, write and receive emails, work on papers, and participate in multimedia conferences using the same communications device. Data-intensive applications, according to the Cisco Visual Networking Index Study, are the primary driver of the increase in communication network traffic.

2.7   Self-assessment Exercise

i.   Discuss the importance of Mobile Telecommunication to E-Business (10 Minutes)

ii.   Explains the following terminologies in mobile communication technology: 1G, 2G, 3G, 4G and 5G (10 Minutes)

2.8   Summary

- Mobile communication is basically talking, texting or sending data or image files over a wireless network. An example of mobile communication is sending an email from a computer or a smart phone using a wireless network at home or in your local coffee shop.

- The types of mobile communication are; Two-way radio, Public Land radio, Mobile phone and Amateur (HAM) radio.

- Telecommunication is basically the transmission of signs, signals, messages, words, writings, images and sounds or information of any nature by wire, radio, optical or other electromagnetic systems.

- Mobile telecommunications deeply affect the way users interact and have significant externalities for the economic activities for which they are used.

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2.9   Reference/Further Readings / Web sources

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UNIT 3   OVERVIEW OF E-BUSINESS CONTENT

Unit Structure

3.1   Introduction
3.2   Learning Outcomes
3.3   Concept of E-business
          3.3.1   What is E-business?
          3.3.2   Where does E-business takes place?
          3.3.3   What is the differences between technical terms E-business and E-commerce?
3.4   Types of E-business
3.5   Importance and Limitations of E-business
          3.5.1   What are the Importance of E-business?
          3.5.2   What are the Limitations of E-business?
3.6   E-Business Models
3.7   Self-Assessment Exercise
3.8   Summary
3.9   Reference/Further Readings/ Web Sources

3.1   Introduction

We explored the notion of the Internet and mobile telecommunication in earlier units. We spoke about how the Internet and mobile telecommunications effect both businesses and consumers. In this section, we will explore and explain what E-business is, the many forms of E-business, and the relevance of E-business to conventional businesses. In addition, we will highlight and briefly explore the many sorts of E-business models.

3.2   Learning Outcomes

At the end of this unit, students will be able to;
- Understand the nature of an e-business and differentiate e-business from e-commerce
- Know its importance, limitations and the different types of e-businesses
- Identify and explain the different E-business models

3.3   Concept of E-business

3.3.1   What is the meaning of E-business?

E-commerce is commonly connected with online purchasing and selling, as well as any transaction involving the transfer of ownership or rights to use products or services over a computer-mediated network. Despite its popularity, this description falls short of capturing current changes in this new and revolutionary corporate phenomenon. E-business, in its most comprehensive definition, is the use of electronic communications and digital information processing technology in business transactions to create, transform, and redefine relationships for value creation between or among organizations, as well as between organizations and individuals. Wilson (2017)

Electronic Business, refers to a variety of online economic operations for goods and services. It also covers "any type of economic transaction in which the participants communicate electronically rather than via physical transactions or direct physical touch." , e-business is the application of electronic, computing, and Internet-based technologies to alter traditional revenue patterns and business strategies to the joint advantage of customers and sellers (Raid, 2019).

3.3.2   Where does e-business takes place?

E-business is available to all users via the internet, to internal users via an intranet (a smaller network of computers generally within a single firm, analogous to the internet), and to specific users via an extranet (an intranet partially accessible to specified users from outside an organization via a valid username and password).

3.3.3   What are the differences between technical term E-business and E-commerce?

While the words Commerce and Business are nearly interchangeable in English as nouns describing organized profit-seeking activity, there is a distinction between e-Commerce and e-Business. The distinction is artificial, but different terms do have different meanings (www.ebusinessprogrammers.com). E-Commerce or Electronics Commerce is a methodology of modern business, which addresses the need of business organizations, vendors and customers to reduce cost and improve the quality of goods and services while increasing the speed of delivery. Ecommerce refers to the paperless exchange of business information.

However, to clearly distinguish between the two, as they are completely different phenomena, the following are provided:

E-business	E-commerce
E-business is conduct of business processes on the internet.	E-commerce refers to transactions involving exchange of values which is conducted over the internet.
E-business is the superset of e-commerce	E-commerce is a subset of e-business
E-business has to do with the use of CRM'S, ERP'S that connect different business processes.	E-commerce often requires the use of just a website.
It is a wider terminology that involves market surveying, supply chain and logistics management and using data mining.	E-commerce is narrower term and it is restricted to buying and selling
It is used in the context of B2B (business to business) transactions.	It is used in the context of B2C (business to customer transactions.
E-business can involve the use of internet, intranet or extrane	E-commerce involves the mandatory use of Internet.
Example: Using of internet by dell, Amazon for maintaining business processes like. Online customer support, email marketing supply chain management.	Example: Buying of pen drive from Amazon.com, alibaba.com is considered ecommerce.

It may appear that the terms e-commerce and e-business are interchangeable; however, this is not the case. Electronic commerce is responsible for business relationships with the buyer, seller, and relationship implementation processes in this context; both are technical means, whereas the more comprehensive e-business includes the conversion of all paperwork to e-business, financial and administrative services, and also work control, which falls under the concept of many tasks, such as e-banks and e-government services …etc. However, there is much more to e-Business than selling products.

3.4   Types of E-business

- **Business to Consumer (B2C);** The most well-known type of e-business, B2C, is the exchange of information, products, or services between a business and a customer over the internet. As the internet evolves, B2C changes the way customers obtain information, compare items, and purchase them. Amazon.com is an example of a B2C-only website. Ae.com is an example of a

B2C site that also has a physical location.

- **Business to Business (B2B);** In terms of money spent, B2B is the most popular type of e-business. Business-to-business trade provides for trading between firms, utilizing a low-cost sales channel for the selling of products and services, and is responsible for continually changing corporate purchasing patterns. A vehicle component firm selling parts to a car dealership, another company, rather than directly to consumers, is an example of a B2B site.

- **Business to Government (B2G);** B2G, often known as e-government, is the online exchange of information and transactions between companies and government entities. B2G enables government organizations and enterprises to do business and connect with one another through the internet. A B2G site would be one that provides electronic tax filing.

3.5   Importance and Limitations of E-business

3.5.1   What are the Importance of E-business?

E-business is important for the following reasons;

- **Costs;** E-business has reduced operational costs such as inventory maintenance and transaction costs. Electronic invoicing has improved invoice processing efficiencies, increased ordering transparency, streamlined payment processing, and reduced costs associated with the purchase of paper invoices. Customers order their products online and pick them up or arrange for them to be delivered for a fee, so the number of employees has decreased. Customers can easily find high-quality products and services on company websites, lowering search costs.

- **Marketing;** Companies that use e-business have a stronger online presence. They can advertise their products and services on their own websites or on other domains. These advertisements have been tailored to the specific needs of their customers, allowing them to reach out to them on a more personal level. Internet marketing is also cost effective for businesses because they pay Internet advertising agencies only when customers view their page.

- **Communications**; E-business adoption has improved communication in the hypermarket industry. The use of email has enabled businesses to respond to customer issues more effectively and quickly. Improved customer service has fostered better relationships between retail outlets and customers, ensuring customer loyalty. Companies in the hypermarket industry that use websites can provide after-sales services to their customers

without the need for a physical presence or storefront. Constant communication of product improvements improves a company's brand for customers.

▪ **Revenues**; Companies that have adopted e-business have a quicker product development cycle, allowing them to respond to market demands more quickly. They use their position as market leaders to increase revenues before competitors can enter the market. Inventory tracking enables businesses to reduce overstocking and understocking, releasing cash needed for stock maintenance for other purposes while also ensuring sales are not lost due to products being out of stock.

3.5.2 What are the Limitations of E-business?

• **Personal Touch:** E-commerce lacks a personal touch. The product cannot be touched or felt. As a result, it is difficult for consumers to assess the quality of a product. In addition, the human touch is lacking. We have contact with the salesperson in the traditional model. This gives it a human touch and credibility. It also increases customer trust. Such characteristics will always be lacking in an e-Business model.

• **Delivery Time:** Product delivery takes time. In traditional business, you receive the product as soon as you purchase it. However, this does not occur in online business. Customers are frequently put off by this lag time. However, e-commerce companies are attempting to address such issues by promising extremely short delivery times. Amazon, for example, now guarantees same-day delivery. This is an improvement, but it does not completely solve the problem.

• **Security Concerns:** Many people commit fraud through online commerce. It is also easier for hackers to obtain your financial information. It has some security and integrity flaws. This also creates skepticism among potential customers.

3.6   E-business Models

An E-business model, as a system, describes how the components of a business fit together, with a focus on competition and organizational dynamics. Adopting a successful e-business model may allow you to increase your market competitiveness. New business models have emerged on the market, altering the nature of internal and external business processes at companies. These new ways of doing business have had an impact on traditional management techniques taught in management courses, and no industry has been spared.

It is critical to recognize the significance of e-business models in this

new context. They are the new keys to increasing a company's market competitiveness by increasing its current value added. The following are the various types of e-business models in use:

- **Portals;** This is an e-business model that people use to get started on the internet. This was the first Internet model. It is a specially designed website that aggregates information from various sources, such as emails, forums, and search engines, in a consistent manner. Each information source typically gets its own dedicated area on the page for displaying information (a portlet); frequently, the user can choose which ones to display.
- **E-tailing;** This is a common model used by retail organizations when transacting with other businesses. Organizations can add value by acting as intermediaries between producers and potential buyers.
- **Auction;** This acts as a go-between for buyers and sellers. This model of one seller to one broker to many buyers is concerned with filling a market gap rather than with content alone.
- **Value-chains** This business model brings together partner companies that consult with one another in an organized process to create a product with a high added value. The primary goal is to maximize added value creation through an efficient operational process.
- **Barter**; This model enables the exchange of goods and services without the use of money. A business owner can use the Internet to barter tangible or intangible goods with another company. For example, a company can monetize its warehouse space by allowing another company to temporarily store its products there. The second model variation is the most virtual. In this case, companies or individuals who have access to this e-business model are members of various associations or businesses. This type of website encourages the sharing of expertise and knowledge.
- **Buying groups;** This model is a purchasing group for several business owners, allowing for greater bargaining power. The model is especially useful for smaller businesses that cannot benefit from economies of scale. When businesses form a buying group, the new entity acts as an intermediary for research and negotiations with suppliers. It can also provide product catalog distribution, as well as commercial and financial transaction management and merchandise delivery.
- **Integration;** This can be vertical (based on a specific industry or market) or horizontal (according to an organizational function or process). If the website is to attract and retain new and existing buyers and sellers, a differentiation strategy is required. Wilson (2017).

3.7   Self-assessment Test

i.   Itemize the importance and limitations of e-business (5 minutes)
ii.   Vividly differentiate 'e-business' from 'e-commerce' (5 minutes)

3.8   Summary

- Electronic commerce or e-commerce refers to a wide range of online business activities for products and services.
- E-business and e-commerce technically differ in meaning and context even as it is used interchangeably in English Language.
- E-business as some limitations such as delivery time, personal touch and credibility as well as security concerns.
- There are three main types of E-business; Business to Business, Business to Customer and Business to Government.
- An E-business model describes, as a system, how the pieces of a business fit together with emphasis on competition and organizational dynamics.

3.9   Reference/Further Readings / Web sources

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UNIT 4   WEBSITE DESIGN

Unit Structure

4.1   Introduction
4.2   Learning Outcomes
4.3   Meaning of Website
4.4   Different types of websites
4.5   The Usefulness of websites on business
4.6   Summary
4.7   References/ Further Readings/ Web sources
4.8   Self-assessment Test

4.1   Introduction

We discussed the concept and nature of E-business in the previous unit; in this unit, we will go further and discuss the concept of a website, the different types of websites, and the usefulness of websites on businesses.

4.2   Learning outcomes

At the end of this unit, students will be able to;
•   Define and understand the concept of a website
•   Identify the different types of websites
•   Know the usefulness of websites

4.3   Meaning of websites

A website is a collection of interconnected web pages that share a domain name. Any individual, group, or company can create the website. The collection of all the websites put together is referred to as the 'world wide web' (www). It is also known as a site. It is a collection of related web pages, including multimedia content, that are typically identified by a common domain name and are hosted on at least one web server. A website can be accessed via a public Internet Protocol (IP) network, such as the Internet, or a private local area network by referencing a uniform resource locator (URL) that identifies the site (LAN). Although it is sometimes referred to as a "web page," this definition is incorrect because a website is made up of several webpages. A website is also referred to as a "web presence" or simply a

"site." (www.techopedia.com).

Websites serve many purposes and can be used in a variety of ways; for example, a website can be a personal website, a commercial website for a company, a government website, or a non-profit organization website. Websites are typically dedicated to a specific topic or purpose, which can range from entertainment and social networking to news and education. The World Wide Web is made up of all publicly accessible websites, whereas private websites, such as a company's website for its employees, are usually part of an intranet (Wilson, 2017). Educational sites, news sites, company sites, forums, social media sites, e-commerce sites, and so on are all examples of websites. A website's pages are typically a mix of text and other media. However, there are no rules that govern the design of a website. A website can be accessed directly by entering its URL address or by using a search engine like Google or Bing.

Originally, websites were categorized by their domains. Some examples include:

- Government agency websites = .gov
- Educational institutions' websites = .edu
- Nonprofit organizations' websites = .org
- Commercial websites = .com
- Information sites = .info

Web pages, the building blocks of websites, are documents that are typically written in plain text and interspersed with Hypertext Markup Language formatting instructions (HTML, XHTML). They may use appropriate markup anchors to incorporate elements from other websites. Web pages are accessed and transmitted using the Hypertext Transfer Protocol (HTTP), which may optionally employ encryption (HTTP Secure, HTTPS) to provide the user with security and privacy. The user's application, which is typically a web browser, renders the page content onto a display terminal in accordance with the HTML markup instructions.

4.4 Types of Websites

The following table illustrates various types of websites, description and examples:

Type	Description	Examples
Small-Medium Enterprises (SMEs	These websites are typically small, with only a couple dozen pages devoted to the company's products and services.	Tailoring websites, Mechanic websites, Car wash websites etc.

) Website		
Brochure and Catalogue	Brochure websites are statistical websites that provide useful information about a business. You can use these websites as a brand to provide information such as the nature of your business, products or services, location, opening and closing times, contact information, and current offers.	
Corporate Website	These websites are designed for large corporations with a large number of employees. Naturally, these websites are quite large, with hundreds or even thousands of webpages, and can include a wide range of useful information, content, and webpages that are beneficial to various constituencies.	Sites such as IBM and Rogers. .
Landing Page Or Single Page Website	A website serves many functions, and the single-page site typically serves one primary function. As an example, a visitor could become a lead.	
E-Commerce	These are simply websites where customers can buy products online.	Amazon, Jumia, Konga etc.
Branding Or Biography Website	This technique is frequently used by entrepreneurs and other figures to establish a professional digital presence.	https://www.tailopez.com/ (Tai Lopez) is a good example
Portfolio Website	This is a website dedicated to bringing all projects together in one place. When job seekers apply for jobs, they usually include a reference to it in their resume.	
Resume Website	This is similar to a portfolio website in that it is used by job seekers to find employers. The main distinction is that a resume website compiles all of your previous work experiences into one location on the internet.	

Personal Website	A personal website is one that people create for their own personal use. This can include expressing themselves, having a place to write, vent, share their stories, and so on. It is an excellent way for them to organize their thoughts and express their distinct personality to the rest of the world.	
Entertainment Website	These websites are created for the sole purpose of entertainment. The better these websites can entertain their audiences, the more money they can potentially make	Barstool Sports
News Website	These are websites that are about the news. Newspapers are quickly becoming obsolete, so newspaper outlets are going online.	CNN, Fox News, Channels Tv, Leadership newspaper, the Sun
Media	Media sites are similar to news sites, but they contain additional elements. They can be about both news and entertainment. They are not limited to a specific market.	
Political Website	These websites are all about politics. They are even more granular than news websites because they only cover the political sphere.	Examples include, apc.com.ng (APC), pdp.com.ng (PDP)
Government Website	A government website is simply a government entity's official website. This could be the government website of Nigeria, Ghana, China, or any other country.	Naims.gov.ng (NASIMS), ndlea.gov.ng (NDLEA)
Educational Website	These are made solely for the purpose of educating and informing an audience. These websites can be found through virtually any type of online search.	ClassNotes., MySchool.com.ng., MySchoolGist, NigeriaSchool.com.ng.
Nonprofit Or Charity	These websites were created to support a worthy cause such as social, religious, environmental interventions. So,nongovernmental enterprise is to assist the	Abia North Industrial Development Initiative,

Website	public in some way, profit is not a determining factor.mental, interventions.	Abuja Children and Youth International
Web Portals	Web portals are websites that require you to log in before you can access them. They contain restricted content that is only intended for certain people.	
Community Forums	These are websites where members of a community can gather and communicate with one another. There are numerous niche forums on the internet that focus on a specific topic. People who are interested in the topic can come to the forum and discuss it with others who share their interests.	
Blogging Website	A blog is another type of website. This is a type of website with an informal tone that is usually updated on a regular basis by an individual or a small group of people.	Techopedia.com, gistlover.com etc.
Crowd funding / Fundraising website	One of the most common reasons for business failure is a lack of funds. This is a platform for raising funds for a business, social or religious venture or other purposes .	
Social media Website	Social media networks are online platforms that allow you to engage, create, and interact with other users in a social setting.	Facebook, Instagram, twitte and so on.
Search Engine	Search engines are websites that help people find and learn about other websites.	Google, Bing, Yahoo etc.
Wikis Websites	Wikis are websites that allow you to edit and collaborate on content. They enable users to update and correct content on webpages in order to arrive at the most accurate, correct answer.	Wikipedia, Wiktionary, WikiHow, Wikitravel etc.

Video Streaming websites	Video streaming is quickly becoming a very popular service. People are shifting away from television and toward video on demand.	Netflix, Disney plus and so on.
Photo Sharing Websites	Photo sharing websites are just that: places to share photos. It allows you to search for a key phrase and receive relevant images in return. It's wonderful to share your work and learn about the work of others.	Pixels, Pixabay etc.
Business Dictionary Website	These are websites where you can look for businesses by category and industry.	Yelp and Yellowpages are good examples
Review Websites	These are websites that exist solely to provide product and service reviews. Some review sites only focus on specific niches and provide reviews on as many products as possible within a given industry.	
Question And Answer Website	It is committed to answering any and all questions that may be posed. If you have a question about anything, chances are it has already been asked and answered on the websites.	Islamq&a, Quora etc.
Job Boards Website	These websites have digitized the job search and offer job listings to job seekers looking for employers.	Examples include, Workpolis, Jobberman
Coupon Website	Coupon websites allow you to search for any existing coupons for a specific brand or company from which you want to buy a product.	Groupon is a good example of a coupon websites
Affiliate Website	Affiliate websites exist to profit from product sales commissions.	Web4Africa Affiliate Program, Wakanow Affiliate Program,

Auctio n Sites	Websites that auction off products online are known as auction sites.	Godaddy, ebay, Konobid etc.

Source : (www. https://activebusinessgrowth.ca)

4.5   The Usefulness of websites to a business

The following are the usefulness of a website to a business;
- **Your small business will gain credibility**: Today, an increasing number of consumers use the internet to find the products or services they require. A website will help your small business gain credibility. If you don't have one, potential customers will go to your competitors who do. If you already have a website but it is "home-made," having it professionally redesigned will give your company a professional image that will inspire even more confidence. This is especially useful for home-based businesses because you don't have a storefront to promote your products or services.
- **A website saves you money;** As a small business owner, you may believe you cannot afford a professional website, but you cannot afford NOT to have one. Although the cost of designing a website varies, once up and running, a website for a small business typically costs less than $100 per month, and in some cases as little as $20. When compared to the cost of a newspaper ad, a website is a very cost effective way to promote your business when you consider the potential market you can reach.
- **It will enable you to keep your customers informed;** Consider your website to be an online brochure or catalogue. Because it is much easier and faster to update information about your products and services on your website than it is in print material, it is an effective way of informing your customers about the arrival of new products, upcoming events, special promotions, or any new services you now offer. Unlike print advertisements, which quickly become out of date, your website can provide up-to-date information and news.
- **It is always accessible;** A website is accessible to both current and prospective customers 24 hours a day, seven days a week, allowing them to review your products and services even when your store or office is closed. With today's hectic lifestyles, this is an excellent selling point when making a purchasing decision.
- **A website makes it possible to target a wider market;** Whether you sell products or services, your website will give you another outlet to sell them. A website (e-Commerce) is a great place for a retailer to sell their products to a larger market; even services can be made available globally.

- **It provides a medium on which to showcase your work;** A website is a great place to showcase your work no matter what type of business you have. You can demonstrate what makes your company unique by including a portfolio or image gallery, as well as testimonials about your work.
- **A website saves you time**; It takes time to provide information to your customers, whether over the phone, in person, in a brochure, or via email. An online catalogue allows you to provide a wealth of information about your products and services. Once your website is up and running, your customers can access it indefinitely, saving you time.
- **It improves customer service**; Perhaps you sell environmentally friendly products and would like to share recycling tips, or perhaps you are an accountant and would like to advise your clients on how to simplify their bookkeeping practices. You can keep your customers up to date by including a FAQ page, adding articles, or uploading newsletters that answer all of their questions.

4.6   Self-assessment Exercises

i.   Identify 15 types of websites with one example for each (10 minutes)
ii.   Itemize 5 usefulness of website to a business

4.7   Summary

In this unit, we discussed the nature of a website, the different types of websites and the usefulness of a website to a business

4.8   References/Further Readings/Web Sources

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MODULE 2   INTERNET ADVERTISEMENT

UNIT 1   OVERVIEW OF INTERNET ADVERTISEMENT
UNIT 2   ONLINE SHOPPING
UNIT 3   E-PAYMENTS

UNIT 1   OVERVIEW OF INTERNET ADVERTISEMENT

Unit Structure

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1.1   Introduction

We discussed the concept and nature of the Internet, Website design, and E-business in general in the previous module. We will look at several strategies for promoting and advertising products and services on the Internet in this unit. Because of the diverse understanding and applications of the Internet in marketing, we have a variety of ad and

promotional techniques, as seen in this course unit.

1.2   Learning Outcomes

At the end of this unit the student is expected to:
- Trace the history of web banner
- Explain what is Display Advertising
- Differentiate the various forms of web advertising
- Differentiate contextual and interactive advertising
- Define social media optimization and origin
- Enumerate understand and know the use of digital marketing
- Enumerate e-procurement and its advantages and disadvantages.

1.3   Web Banner

1.3.1   What is a web banner?

A banner ad, also known as a web banner, is an advertisement that appears on a web page. The advertisement is made up of an image (.jpg,.png, or.gif) or a multimedia object (usually created using Flash). Thus, depending on the technology used to create them, banner ads can be static or animated (Sonia, 2018). It is a type of online advertising. This type of online advertising involves incorporating an advertisement into a web page. Its purpose is to drive traffic to a website by linking to the advertiser's website.

Just like a physical banner outside a store would entice you to enter because it says they have a great deal on a specific product or they have this new product that piques your interest. The same is true for online banner ads. They inform, notify about new products, attract attention, raise brand awareness, and so on (Sonia, 2018). The advertisement is constructed from an image (GIF, JPEG, PNG), JavaScript program or multimedia object employing technologies such as Silverlight, Java, Shockwave or Flash, often employing animation or sound to maximize presence. Images are usually in a high-aspect ratio shape (i.e. either wide and short, or tall and narrow) hence the reference to banners.

When a web page referencing the banner is loaded into a web browser, the web banner is displayed. This is referred to as a "impression." The viewer is directed to the website advertised in the banner when he or she clicks on the banner. This is referred to as a "click through." Banners are frequently delivered by a centralized ad server. When the advertiser scans their log files and determines that a web user visited the advertiser's site from the content site by clicking on the banner ad, the advertiser sends a small amount of money to the content provider

(usually around five to ten US cents).

This payback system is regularly how the content provider pays for the Internet access required to supply the content in the first place. Web banners function in the same way that traditional advertisements are intended to function: notifying consumers of the product or service in question and presenting reasons why the consumer should choose the product in question; however, web banners differ in that the results of advertisement campaigns can be monitored in real-time and can be targeted to the viewer's interests.

1.3.2   What is the History of Web banner?

Ken McCarthy founded E-Media in 1993, having already been advising on new media opportunities and a marketing advisor to the pioneering BBS community (Dean, 2016). In May of 1994, he first introduced the concept of a clickable/trackable ad at a conference in San Fransisco. He believed that 'only a direct response model—in which the return on investment of individual ads was measured—would prove sustainable over the long run for online advertsing'. Despite this they were valued and sold based on the number of impressions they generated (how many times the banner was displayed) and it would be the likes of Overture and Google to prove the response model to be effective a few years later.

McCarthy mentored media buyer Rick Boyce in his transition from traditional to online advertising. Boyce was recruited by HotWired, the online forerunner of Wired Magazine, to be their director of business development when they launched in the Autumn of 1994 and he would be responsible for organizing the first, widespread effort to sell banner ads and the resulting revenue explosion leading up the dot-com crash of 2000. Together they are considered key pioneers in the movement to commercialise the World Wide Web (Dean, 2016).

On the 24th October 1994, 12 days after Mosaic Netscape 0.9 was launched, Modem Media placed the first graphical advert for the continuously forward-thinking AT&T on HotWired "Advertising didn't exist on the internet, but the internet existed," commented GM O'Connell, founder and chairman of Modem Media. "We had been working with two clients, AT&T and Coors Brewing Company, on other interactive platforms and started looking into how they could advertise online."

Although arguably not the first advert online as Prodigy were already running adverts in the U.S. prior to 1993, what is now deemed as a defining moment in Web history and a prophetic statement for the future of advertising, the advert measured 468 x 60 pixels and read "Have you

ever clicked your mouse right here? You will." And the users did. It achieved a staggering 42% click through rate. HotWired coined the term "banner ad" and was the first company to provide click through rate reports to its customers.

HotWired may not have been the first to run the advert and technically Dale Dougherty, founder of O'Reilly's Global Network Navigator (GNN), since closed but was one of the first ever web sites and also the first commercially supported web publication, started accepting image-based paid advertising at the same time; one banner ad on the home page. "The one that got all the news coverage was HotWired, but the GNN banners actually ran two to three weeks before HotWired," O'Connell said. (Dean, 2016) In fact it may have been earlier than that, as law firm Heller, Ehrman, White and McAuliffe apparently had a clickable advert on GNN in 1993.

Both adverts are prior to the first beta launch of Netscape and therefore limited to Mosaic access. The original AT&T advert was created by Tangent Design with principal creators Joe McCambley, Craig Kanarick and Otto Timmons. Timmons wrote on Adland, "although we had the most popular ad on Hotwired there were at least five or six other banner ads that launched at the same time and they too should get credit for being 'first'. I can remember Club Med, AT&T and ZIMA.

1.3.3   What are the Standard Sizes of Banner ad?

The Interactive Advertising Bureau has developed standardized banner size guidelines that apply to all advertising networks, including the Google Display Network (GDN). The table below shows the standardized sizes for banner ads:

Size	Weight	Global Frequency
300×250	Medium Rectangle	40%
728×90	Leaderboard	25%
160×600	Wide Skyscraper	12%
300×600	Half Page	5%
970×250	Billboard	1%
336×280	Large Rectangle	<1%
468×60	Banner	<1%
234×60	Half Banner	<1%
120×600	Skyscraper	<1%
120×240	Vertical Banner	<1%
300×1050	Portrait	<1%
970×90	Large Leaderboard	<1%

250×250	Square	<1%
200×200	Small Square	<1%
180×150	Small Rectangle	<1%
125×125	Button	<1%
320×50	Mobile Leaderboard	12%
320×320	Mobile Full Page Flex	1%
320×100	Large Mobile Banner	<1%

1.4   Display Advertising

Display advertising is a type of advertising that may, and most oftenly include graphic information other than text, such as logos, photographs or other images, location maps, and similar items. It can appear on the same page as or adjacent to general editorial content in periodicals, as opposed to classified advertising, which generally appears in a separate section and was traditionally text-only in a limited selection of typefaces (although the latter distinction is no longer sharp).

Display advertising employs static and animated images in standard or non-standard sizes known as web banners, as well as interactive media that may contain audio and video elements. Adobe Flash (originally Macromedia, which was purchased by Adobe) is the preferred format for interactive advertisements on the internet. Display ads do not have to be visually appealing or contain audio or video. Text ads are also used in situations where text is more appropriate or effective. Text ads are commercial SMS messages sent to mobile device users.

1.4   Interactive Advertising

The use of interactive media to promote and/or influence consumer purchasing decisions in an online and offline environment is known as interactive advertising. Media such as the Internet, interactive television, mobile devices (WAP and SMS), and kiosk-based terminals can all be used for interactive advertising.

Interactive advertising allows marketers to engage consumers in a direct and personal manner, allowing for a sophisticated and multidimensional dialogue that can influence potential customers' purchasing decisions, particularly in an e-commerce environment. So-called viral marketing is one of the most effective forms of interactive advertising. This technique employs images, texts, web links, Flash animations, audio/video clips, and other media that are passed from user to user via email chain letter style. A notable example is Burger King's Subservient Chicken campaign, which promoted their new line of chicken sandwiches and the "Have It Your Way" campaign. Other avatars of interactive advertising are emerging, such as online brand directories.

1.6   Contextual Advertising

Contextual advertising is a computer-assisted process that matches a promotional message to relevant digital content. The algorithms that power contextual advertising choose advertisements based on keywords and other metadata in the content. The resulting advertisement is relevant and targeted, encouraging users to click on it. This click-through activity generates revenue for the content publisher and more traffic for the advertiser (James, 2021). **It** is a form of targeted advertising for advertisements appearing on websites or other media, such as content displayed in mobile browsers. The advertisements themselves are selected and served by automated systems based on the content displayed to the user.

Contextual advertising is directed at a specific person who is visiting a website (or page within a website). A contextual advertising system scans a website's text for keywords and returns advertisements based on what the user is viewing. The advertisements can appear on the webpage or as pop-ups. For example, if the user is viewing a sports-related website that employs contextual advertising, the user may see advertisements for sports-related businesses such as memorabilia dealers or ticket sellers. Search engines use contextual advertising to display advertisements on their search results pages based on the keywords in the user's query.

1.6.1   What is the impact of contextual advertising

Contextual advertising has made a major impact on earnings of many websites. Because the advertisements are more targeted, they are more likely to be clicked, thus generating revenue for the owner of the website (and the server of the advertisement). A large part of Google's earnings is from its share of the contextual advertisements served on the millions of webpages running the AdSense program.

Contextual advertising has attracted some controversy through the use of techniques such as third-party hyperlinking, where a third-party installs software onto a user's computer that interacts with the Web Browser Keywords on a webpage are displayed keywords as hyperlinks that lead to advertisers.

1.6.2   What are the Agency Roles

There are several advertising agencies that help brands understand how contextual advertising options affect their advertising plans. There are three main components to online advertising, namely;

- **Creation** – what the advertisement looks like;
- **Media planning** – where the advertisements are to be run; and
- **Media buying** – how the advertisements are paid for.

Contextual advertising replaces the media planning component. Instead of humans choosing placement options, the function is replaced with computers facilitating the placement across thousands of websites.

1.7   Social Media Optimization

1.7.1   What is Social Media Optimization?

The use of social media networks to manage and grow an organization's message and online presence is known as social media optimization (SMO). Social media optimization can be used as a digital marketing strategy to raise awareness of new products and services, connect with customers, and mitigate potentially damaging news (Will et'al, 2021).
In many ways, social media optimization is similar to viral marketing in that word of mouth is generated through networking in social bookmarking, video and photo sharing websites rather than through friends and family. Similarly, blog engagement achieves the same result by sharing content via RSS in the blog sphere and special blog search engines such as Technorati.

The term SMO is attributed to Rohit Bhargava. His original Social Media Optimization rules are as follows:

- Increase your link ability
- Make tagging and bookmarking easy
- Reward inbound links
- Help your content travel
- Encourage the mashup

1.7.1   What are the reasons to adopt Social Media Marketing?

The use of social media has increased dramatically in recent years. Being present on social media platforms is an essential form of marketing that should not be overlooked. Connecting to social media platforms has numerous advantages: it increases exposure and traffic, generates leads, reduces marketing expenses, improves your online search ranking, grows your customer base, and develops loyal fans.
Learning where your audience is, which platforms they are active on, and which platforms they are searching on is critical in determining how to grow your business. Facebook, Twitter, Instagram, LinkedIn, YouTube, and Pin Interest are the top social media platforms with the most active users.

The following are key benefits why firms should adopt social media platforms;

- **Targets your audience more efficiently;** Knowing your audience is essential for any business to grow more effectively. Not only does social media accomplish this, but it also has the tools to specifically target demographic variables of your intended audience by using customer information (e.g. gender, age, relationship status, language). Understanding your target audience not only allows you to efficiently shift your marketing strategy, but it also allows you to discover new uncharted opportunities and analyze your audience's movements, interactions, and behaviors.
- **Increases your target audience and attracts new ones;** Social media platforms allow users to like, comment, and share your page, resulting in free advertising to broaden your business's reach and attract new customers.
- **Allows instantaneous feedback from customers;** Social media platforms allow immediate feedback from customers; whether they are negative or positive. This provides valuable insight to customer's perspectives; allows you to either enhance your product/service to better suit your customer's needs or learn that customers are satisfied with your businesses offerings. This avoids the tedious task of calling your customers or sending out emails to ascertain their level of satisfaction.
- **Increases website traffic, search ranking and generating leads;** The more followers, likes, comments, and sharing your social media platforms receive, the higher your search ranking ability. Creating blogs and connecting your company's activities to your social media accounts increases your online visibility and traffic to your website. To drive this more effectively, it is critical to maintain regular updates, videos and images, as well as interactive and compelling content. The more active you are on social media, the more leads you will generate for your business. However, ensure that the content provided is stimulating and meets your customers' information and demand. The goal here is to make future connections and spread word of mouth.
- **Cost effective;** For new start-up companies, SMEs and entrepreneurs, creating brand awareness on a limited budget can often be challenging. Social media is a great way to increase brand awareness at little to no costs compared to other traditional advertising and marketing methods. This allows businesses to maximize their return on investments without breaking the bank. The more time and energy put in investing in social media will provide a greater impact to your businesses growth instantaneously.

- **Develops customer service relations and loyalty**; A key feature of social media platforms is the direct interaction between you and your customer. It enables you to form direct bonds with your customers and build a supportive network. The instant back and forth communication provided by social media aids in the establishment of trust and the development of a loyal fan base. Loyal customers promote your brand and can drive immediate traffic to your website via social media. Furthermore, social media encourages direct communication with customers, which validates their worth. Customers may then recommend the company's product or service to others. At times, customers can encounter dissatisfaction and make this public. However, if customers feel that their voice has been heard and their negative experience has been quickly rectified and resolved, a once dissatisfied customer can regain confidence, trust and loyalty.

- **Builds brand awareness and exposure;** This is what social media platforms does best: increases your brand awareness and exposure. You basically have access to many millions of potential customers signed up to these social media platforms at your disposable. Social media gets your business to be active visually and engagingly.

1.8   Digital Marketing

1.8.1   What is Digital Marketing?

The practice of promoting products and services through digital distribution channels to reach consumers in a timely, relevant, personal, and cost-effective manner is known as digital marketing. While digital marketing includes many of the techniques and practices found in Internet Marketing, it also includes other channels through which to reach people that do not require the use of the Internet. Because of this lack of reliance on the Internet, the field of digital marketing encompasses a wide range of components such as mobile phones, SMS/MMS, display/banner ads, and digital outdoor.

Previously viewed as a separate service, it is now frequently viewed as a domain that can and does cover most, if not all, of the more traditional marketing areas such as Direct Marketing by providing the same method of communicating with an audience but in a digital format.

1.8.2   What are the forms of Digital Marketing?

Digital Marketing are of two forms: Pull Digital Marketing and Push Digital marketing:

i.   **Pull Digital Marketing**: This is a form of digital marketing which requires the user to actively seek out and directly grab (or pull) the content. Websites/blogs and streaming media (audio and video) are excellent examples. In each of these examples, users can access the content via a unique link (URL).

Advantages:

▪   No restrictions, in terms of type of content or size as the user determines what they want.
▪   No technology required to send the content, only to store/display it.
▪   No regulations or opt-in process required.
▪

Disadvantages:

•   Considerable marketing effort required for users to find the message/content.
•   Limited tracking capabilities – only total downloads, page views, etc.
•   No personalization – content is received and viewed the same way across all audiences.

ii.   **Push Digital Marketing**: Push digital marketing technologies involve both the marketer (the message creator) and the recipients (the user). Push digital marketing includes email, SMS, and RSS. In each of these examples, the marketer must send (push) the messages to the users (subscribers) for them to be received.

Advantages:

•   Can be personalized -- messages received can be highly targeted and specific to selected criteria.
•   Detailed tracking and reporting – marketers can see not only how many people saw their message but also specific information about each user such as their name as well as demographic and psychographic data.
•   High Return on Investment (ROI) possible – if executed the right way, push messaging can help drive new revenue as well as brand reinforcement.

Disadvantages:

•   Compliance issue – each push messaging technology has its own set of regulations, from minor (RSS) to heavily controlled (email and text messaging)

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- Requires mechanism to deliver content – the marketer has to use an application to send the message, from an email marketing system to RSS feeders.

Delivery can be blocked – if the marketer does not follow the regulations set forth by each push message type, the content can be refused or rejected before getting to the intended recipient

1.8.3 What is the difference between Digital Marketing and Multi-Channel Communication?

While digital marketing is effective when only one type of message is used, it is far more effective when a marketer combines multiple channels in message campaigns. For example, if a company wants to promote a new product release, it could send out an individual email message or text campaign. If done correctly, this could produce positive results. This same campaign, however, could be vastly improved if multiple message types were used.

A list of potential customers could be emailed with a special offer for those who include their cell phone number. A few days later, a follow-up campaign with the special offer would be sent via text message (SMS).

Message technologies such as push and pull can also be used in tandem. An email campaign, for example, can include a banner ad or a link to a content download. This allows a marketer to have the best of both worlds when it comes to marketing messaging.

1.8   E-Procurement

1.9.1   What is e-procurement?

E-procurement (electronic procurement, also known as supplier exchange) is the purchase and sale of supplies and services between businesses (B2B) or Business and consumers (B2C) via the internet and other information and networking systems such as Electronic Data Interchange and Enterprise Resource Planning. In most cases, e-procurement Websites make it possible for qualified and registered users to search for buyers and sellers of goods and services. Buyers or sellers may specify costs or invite bids, depending on the approach. Transactions can be started and finished. Customers who make repeat purchases may be eligible for volume discounts or special offers. Some buying and selling may be automated with e-procurement software. Companies that participate expect to be able to better control part inventories, reduce purchasing agent overhead, and improve manufacturing cycles.

The trend toward computerized supply chain management is expected to be integrated with e-procurement. E-procurement is carried out using software that includes features for supplier management and complex auctions. Similar features can be found in E-seller Bay's tools.

1.9.2 What are the types of e-procurement?

- **Web-based ERP (Electronic Resource Planning)**: Creating and approving purchasing requisitions, placing purchase orders and receiving goods and services by using a software system based on Internet technology.
- **E-MRO (Maintenance, Repair and Operating)**: The same as web-based ERP except that the goods and services ordered are non-product related MRO supplies.
- **E-sourcing**: Identifying new suppliers for a specific category of purchasing requirements using Internet technology.
- **E-tendering**: Sending requests for information and prices to suppliers and receiving the responses of suppliers using Internet technology.
- **E-reverse auctioning**: Using Internet technology to buy goods and services from a number of known or unknown suppliers.
- **E-informing**: Gathering and distributing purchasing information both from and to internal and external parties using Internet technology.

Indent Management, eTendering, eAuctioning, Vendor Management, Catalogue Management, and Contract Management comprise the e-procurement value chain. The workflow involved in tender preparation is known as Indent Management. Individual procuring departments define their indenting process, so this part of the value chain is optional. In the procurement of works, administrative approval and technical sanction are obtained electronically. In the case of goods procurement, indent generation is done online. The stage results are used as inputs for issuing the NIT. Request for Information, Request for Proposal, Request for Quotation, RFx (the previous three together), and eRFx are all components of e-procurement (software for managing RFx projects).

1.9.3 What are the advantages of e-procurement?

Advantages include acquiring the correct product, from the correct supplier, at the correct time, for the correct price, and in the correct quantity. E-procurement has the advantage of elevating supply chain management by providing vendors with real-time information on the status of a customer's needs. For example, a vendor and a customer may have an agreement to automatically ship materials when the customer's stock level reaches a certain level, eliminating the need for the customer to request it.

A significant disadvantage of this type of agreement is that the vendor has the ability to take advantage of the customer by knowing more information about the customer than they would if the customer were in a normal supply chain management structure.

Self-Assessment Exercises

 i.   Discuss five benefits of firms adopting social media optimization (SMO) (10 minutes).
 ii.   Discuss the forms of digital marketing (5 minutes).

1.10 Summary

- A **web banner** or **banner ad** is a form of advertising on the World Wide Web. This form of online advertising entails embedding an advertisement into a web page. It is intended to attract traffic to a website by linking to the website of the advertiser.
- **Display** advertising is a type of advertising that may, and most frequently does, contain graphic information beyond text such as logos, photographs or other pictures, location maps, and similar items.
- **Interactive Advertising** is the use of interactive media to promote and/or influence the buying decisions of the consumer in an online and offline environment.
- **Contextual advertising** is a form of targeted advertising for advertisements appearing on websites or other media, such as content displayed in mobile browsers.
- **Social media optimization** (SMO) is a set of methods for generating publicity through social media, online communities and community websites.
- **Digital Marketing** is the practice of promoting products and services using digital distribution channels to reach consumers in a timely, relevant, personal and cost-effective manner.
- **E-procurement** (**electronic procurement**, sometimes also known as supplier exchange) is the business-to-business or business-to-consumer purchase and sale of supplies and services through the internet as well as other information and networking systems, such as Electronic Data Interchange and Enterprise Resource Planning.
- The e-procurement value chain consists of Indent Management, e-Tendering, e-Auctioning, Vendor Management, Catalogue Management, and Contract Management.

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UNIT 2   ONLINE SHOPPING

Unit Structure

2.1   Introduction

Online shopping is an e-commerce business. Online shopping is the act of purchasing goods or services over the internet. Online shopping has transformed the business world by making everything imaginable available with the click of a mouse button (Aniket, 2017). However, the population is still befuddled by issues such as quality, delivery time, and defective items.

An online store is also known as an e-web store, an e-shop, an e-store, a web-shop, an online store, a virtual store, and so on. These are intended to allow customers to browse products and services via mobile devices, tablets, computers, and so on.
This c1.hapter will discuss in detail the meaning, history and other various aspect relating to online shopping.

2.2   Learning Outcomes

At the end of this unit the student is expected to:
▪   Define online shopping
▪   Trace the history and development of online shopping
▪   Identify the target audience of online shopping
▪   Recount the trends in online shopping
▪   Identify the payment systems available for online shoppers
▪   Enumerate the issues of logistics, security, convenience, user interface, and much more.

2.3   Online Shopping

2.3.1   What is Online Shopping?

The activity or action of purchasing products or services over the Internet is known as online shopping. It entails going online, landing on a seller's website, making a purchase, and arranging for delivery. The buyer pays for the item or service either online with a credit or debit card or at the time of delivery.

The term encompasses not only purchasing items online, but also searching for them. In other words, I may have gone online shopping but did not purchase anything. Online shopping has been available for approximately twenty-five years. Its popularity has grown significantly. We can now buy almost anything online. Indeed, retail experts predict that online shopping will soon outperform traditional shopping in terms of revenue.

Nowadays, almost all stores offer online shopping. In other words, they have a website that allows customers to make online purchases from them. The retailer will either deliver to the shopper's home, office, a neighbor, or a nearby store. Many people do their weekly grocery shopping online at supermarkets. In fact, some businesses only sell online. They do not have a physical store where customers can shop. Amazon.com, for example, sells nearly all of its products online via its e-commerce platform. NewEgg, Ocado, and TigerDirect are also primarily focused on online shopping.

Most importantly, you will require an Internet connection, a debit or credit card, and a secure password. You may also need an email address or a phone number. Most retailers will let you create your own password. Make it a password that no one can guess. Avoid your and

your relatives' birthdates. Ideally, you should use a mix of letters, numbers, and upper and lower case.

You then browse the items on offer from the retailer. They may have a category list, such as furniture, sports equipment, gardening, and so on. Most retailers also provide a search function. This means you can write down the name of the item you're looking for to see if they have it.

2.3.2   How did online shopping come about?

In 1979, English entrepreneur Michael Aldrich pioneered online shopping. His system used a domestic telephone line to connect a modified domestic TV to a real-time transaction processing computer. Using videotext technology, he designed, manufactured, sold, installed, maintained, and supported numerous online shopping systems during the 1980s.

Since about 1990, online shopping has emerged into every corner of life, linking people to the culture of capitalism in frequent and daily ways. It lets us buy what we want, when we want at our convenience, and helps us to imagine ourselves buying, owning, and having positive outcomes by the goods available out there on the web. Shopping has been a way of identifying oneself in today's culture by what we purchase and how we use our purchases. Online shopping has always been a middle to high class commodity since its first arrival on the internet in society. . Tim Berres Lee created the first worldwide hub server and browser in 1990, which became available for commercial use in 1991.

Following that, in 1994, there was online banking, the opening of an online pizza shop by Pizza Hut, and so on. In 1994, Net Market or Internet Shopping Network conducted the first secure retail transaction over the internet. Amazon.com launched its online shopping site in 1995, and eBay followed suit (Aniket, 2022).

2.3.3   Target Audience

In general, shopping has always catered to women from the middle and upper classes. The shopping experience is fragmented and pyramid-shaped. At the top of the pyramid are elegant boutiques for the wealthy, while at the bottom is a vast belt of inelegant but ruthlessly efficient "discounters" selling everything. At the bottom of the pyramid are the world's workers and poor, on whose cheap labor the rest of the pyramid relies for its incredible abundance. Shopping has progressed from single stores to large malls with a variety of services such as delivery, attentive service, store credit, and return acceptance. These new shopping additions have encouraged and targeted middle-class women. Online

shopping has grown in popularity in recent years, but it still caters to the middle and upper classes. To shop online, you must have access to a computer and, in most cases, a credit card. This technology separates social classes and their ability to shop. The shopping landscape not only serves to distract us from the enormous social segregation by race and class that the most privileged Americans accept as natural, but it also serves to reproduce this segregation. Shopping has evolved with the advancement of technology, resulting in an even greater disparity between social classes and their ability to shop. Individual preferences and tastes in popular culture are heavily influenced by social position. When it comes to the demographics of the in-home shopper, the higher the level of education, income, and occupation of the head of the household, the more favorable the perception of non-store shopping. It should be remembered that exposure to technology is an influential factor in consumer attitudes toward non-store shopping, as it has been demonstrated that increased exposure to technology increases the likelihood of developing favorable attitudes toward new shopping channels. Online shopping broadened the target audience to include middle-class men and women. Initially, the majority of online shoppers were young men with a high income and a university education. This is a changing profile. For example, in the early days of the Internet in the United States, there were very few female users, but by 2001, women made up 52.8 percent of the online population. Men are more independent in their purchasing decisions as a result of sociocultural pressure, whereas women place a higher value on personal contact and social relationships. Furthermore, male shoppers are more self-sufficient when making purchasing decisions because, unlike women, they do not need to see or try on the product.

2.3.4 Trends and Predictability in Online Shopping

One-third of people who shop online use a search engine to find what they are looking for, while one-fourth find websites through word of mouth. People are increasingly finding websites to shop from through word of mouth. When an online shopper has a positive first experience with a particular website, 60% of the time they will return to that website to purchase more. Books are one of the most popular items purchased online, but clothes, shoes, and accessories are also very popular. Online purchases of cosmetics, nutrition products, and groceries are becoming more common. One-fourth of all travelers buy plane tickets online because it is a quick and easy way to compare airline travel and make a purchase. Online shopping gives you more freedom and control than in-store shopping.

From a sociological standpoint, online shopping is arguably the most predictable way to shop. One knows exactly which website to visit, how

much the product will cost, and how long the product will take to arrive. One of the most appealing aspects of online shopping is how routine and predictable it has become.

2.3.5 Logistics

Consumers find a product of interest by going directly to the retailer's website or by using a shopping search engine to search across many different vendors. After locating a product on the seller's website, most online retailers employ shopping cart software to allow the consumer to accumulate multiple items and adjust quantities, analogous to filling a physical shopping cart or basket in a traditional store. Following the "checkout" process (continuing the physical-store analogy), payment and delivery information is collected, if necessary. Some stores allow customers to create a permanent online account, which allows them to enter some or all of this information only once. Once the transaction is complete, the consumer usually receives an e-mail confirmation. Less sophisticated stores may require customers to call or email their orders (though credit card numbers are not accepted by e-mail, for security reasons).

2.3.6 Payment

Online shoppers commonly use credit card to make payments, notwithstanding, some systems enable users to create accounts and pay by alternative means, such as:
*   Debit card
*   Various types of electronic money
*   Cash on delivery (C.O.D., offered by very few online stores)
*   Cheque
*   Wire transfer/delivery on payment
*   Postal money order
*   PayPal
*   Google Checkout
*   Moneybookers
*   Reverse SMS billing to mobile phones
*   Gift cards
*   Direct debit in some countries

Some sites will not accept international credit cards, and the billing and shipping addresses must be in the same country where the site operates. Other websites allow customers to send gifts to anyone in the world. The financial portion of a transaction may be handled in real time (for example, informing the consumer that their credit card has been declined before they log off) or later as part of the fulfillment process. While credit cards are currently the most popular method of online

payment, alternative online payments will account for 26% of e-commerce volume by 2009. Wilson (2017).

2.3.7 Product Delivery

Following the acceptance of a payment, the goods or services can be delivered in the following ways:

- **Download:** This is the method often used for digital media products such as software, music, movies, or images.
- **Shipping:** The product is shipped to the customer's address.
- **Drop shipping:** The order is passed to the manufacturer or third-party distributor, who ships the item directly to the consumer, bypassing the retailer's physical location to save time, money, and space.
- **In-store pickup:** The customer orders online, finds a local store using locator software and picks the product up at the closest store. This is the method often used in the bricks and clicks business model.

2.3.8 Shopping Cart Systems

Offline administration of products and categories is feasible with simple systems. After that, the shop is generated as HTML files and graphics that can be uploaded to a webspace. These systems do not use an online database. A high-end solution can be purchased or rented separately or as an add-on to an enterprise resource planning program. It is typically installed on the company's own webserver and may integrate into the existing supply chain to greatly automate ordering, payment, delivery, accounting, and warehousing. Other solutions enable the user to register and create an online shop on a portal that hosts multiple shops concurrently. Advanced platforms such as Interchange, as well as off-the-shelf solutions such as osCommerce, Magento, Zen Cart, and VirtueMart, are examples of open source shopping cart packages. Commercial systems can also be tailored to individual needs, eliminating the need to start from scratch. Using an existing framework, software modules for various webshop functionalities can be adapted and combined.

2.3.9 Information Load

The variety of stimuli is referred to as information load (in type of number to which the receiver must attend). Furthermore, information load can be defined as the information available to consumers (Nguyen, 2020). Information depends on multiple dimensions to determine the amount of information in a choice set. The traditional approach and the structural approach are both used to determine the information load.

Concerns about whether consumers can be given too much information in virtual shopping environments are directly related to the concept of information load. In comparison to traditional retail shopping, computer shopping enhances the information environment of virtual shopping by providing additional information.

According to the structural approach to information, there are more important dimensions in determining the amount of information. These dimensions include the number of attributes, the number of alternatives, the number of attribute levels, and how attribute levels are distributed across alternatives. For information load, two major sub-dimensions have been identified: complexity and novelty. The number of different elements or features of a site, which can be the result of increased information diversity, is referred to as its complexity. The unexpected, suppressing, new, or unfamiliar aspects of the site are considered novel.

2.3.10   User Interface

The user interface (UI) of a device is the point of human-computer interaction and communication. Display screens, keyboards, mice, and the appearance of a desktop are all examples of this. It is also the method by which a user interacts with a program or a website (Fred, 2021). User input options are website elements that the user enters from his or her end. A user input occurs whenever a user clicks something on the ecommerce site. Drop-down menus, buttons, drag and drops, and other such elements are examples. These elements allow users to quickly navigate to relevant sections of the ecommerce site. It is critical that user inputs are properly labeled so that users can quickly navigate to the desired section of the site.

A user interface, also known as a "UI," is the user-facing design of a website or application. Ecommerce merchants must have a user-friendly interface in order to provide customers with intuitive navigation and a pleasant shopping experience.

Navigation options are made up of elements that assist users in determining how to get to a specific area of the website.
• **Universal menus** at the top or left side of all pages
• **Search bar** so users can navigate directly to specific product or information pages
• **Help options** to assist those who get lost or don't understand how to perform an action or reach a specific section of the site.

2.3.11 Convenience

Online stores are typically open 24 hours a day, and many consumers have access to the Internet both at work and at home. A trip to a

traditional retail store necessitates travel and must be made during business hours. Searching or browsing an online catalog may be more efficient than browsing the aisles of a physical store. Consumers who use dial-up Internet connections instead of broadband have much longer load times for content-rich websites and a significantly slower online shopping experience. Some customers prefer interacting with people over computers (and vice versa), sometimes because computers are difficult to use. Not all online retailers have succeeded in making their websites user-friendly and dependable.

In most cases, merchandise must be shipped to the consumer, causing a significant delay and potentially introducing uncertainty about whether the item was in stock at the time of purchase. Brick-and-click stores allow customers to buy online and pick up at a nearby location. When a package is shipped, many stores provide the consumer with the delivery company's tracking number so that they can check its status online and know when it will arrive. Online stores generally do not ship products immediately after receiving an order for efficiency reasons.

Orders are only filled during warehouse operating hours, and in-stock items may take anywhere from a few minutes to a few days to a few weeks to be packaged and shipped. Many retailers inform customers how long they should expect to wait for a package and whether there is a general fulfillment backlog. A quick response time can be an important factor in a customer's choice of merchant. Even if a purchase can be made 24 hours a day, the customer must frequently be at home during normal business hours to accept the delivery. This can be difficult for many professionals, and absence at the time of delivery can result in delays or, in some cases, the item being returned to the retailer. This issue has been addressed by automated delivery booths such as DHL's Packstation. Consumers are concerned about the ease with which they can return an item for a replacement or a refund if there is a problem with it - it is not what the consumer ordered or it is not what they expected. Customers may need to contact the retailer, go to the post office, and pay return shipping before receiving a replacement or refund.

2.3.12   Information and Reviews

Online stores must describe products for sale with text, photos, and multimedia files, whereas in a physical retail store, the actual product and the manufacturer's packaging will be available for direct inspection (which might involve a test drive, fitting, or other experimentation). Some online stores provide or link to supplemental product information, such as instructions, safety procedures, demonstrations, or manufacturer specifications. Some provide background information, advice, or how-to guides designed to help consumers decide which product to buy. Some

stores even allow customers to comment or rate their items. There are also dedicated review sites that host user reviews for different products. In a conventional retail store, clerks are generally available to answer questions. Some online stores have real-time chat features, but most rely on e-mail or phone calls to handle customer questions.

2.3.13   Price and Selection

One advantage of shopping online is being able to quickly seek out deals for items or services with many different vendors (though some local search engines do exist to help consumers locate products for sale in nearby stores). Search engines and online price comparison services can be used to look up sellers of a product or service. Shoppers find a greater selection online in certain market segments (for example, computers and consumer electronics) and in some cases lower prices. This is due to a relaxation of certain constraints, such as the size of a "brick-and-mortar" store, lower stocking costs (or none, if drop shipping is used), and lower staffing overhead. Shipping costs (if applicable) reduce the price advantage of online merchandise, though depending on the jurisdiction, a lack of sales tax may compensate for this. Shipping a small number of items, especially from another country, is much more expensive than making the larger shipments bricks-and-mortar retailers order. Some retailers (especially those selling small, high-value items like electronics) offer free shipping on sufficiently large orders.

2.4   Dangers and Security Concerns that are inherent in internet marketing

2.4.1 Fraud and Security Concerns

Due to the inability to inspect merchandise before purchase, consumers are more vulnerable to merchant fraud than they would be in a physical store. Merchants are also vulnerable to fraudulent purchases made with stolen credit cards or fraudulent repudiation of online purchases. Merchants face less risk of physical theft when they use a warehouse instead of a retail storefront. SSL encryption has largely eliminated the problem of credit card numbers being intercepted in transit between the consumer and the merchant. Consumers are still concerned about identity theft when hackers break into a merchant's website and steal names, addresses, and credit card numbers. Computer security has thus become a major concern for merchants and e-commerce service providers, who protect their networks with countermeasures such as firewalls and anti-virus software. Wilson (2017).

Another risk is phishing, in which consumers are led to believe they are dealing with a reputable retailer when they have been duped into

providing private information to a malicious party's system. Dealing with an automated system rather than a population of store clerks, on the other hand, reduces the risk of employees stealing consumer information or dumpster diving for paper receipts. Merchants face only a minor risk from denial of service attacks, as well as server and network outages. Quality seals can be displayed on the Shop webpage if they have been independently evaluated and meet all of the requirements of the company issuing the seal. The goal of these seals is to boost online shoppers' confidence; the presence of many different seals, or seals unfamiliar to consumers, may thwart this effort to some extent. Several sources advise consumers on how to protect themselves when using online retailer services. These are some examples:

- Sticking with known stores, or attempting to find independent consumer reviews of their experiences; also ensuring that there is comprehensive contact information on the website before using the service, and noting if the retailer has enrolled in industry oversight programs such as trust mark or trust seal.
- Ensuring that the retailer has an acceptable privacy policy posted. For example note if the retailer does not explicitly state that it will not share private information with others without consent.
- Ensuring that the vendor address is protected with SSL (see above) when entering credit card information. If it does the address on the credit card information entry screen will start with "HTTPS".
- Using strong passwords, without personal information. Another option is a "pass phrase," which might be something along the lines: "I shop 4 good a buy!!" These are difficult to hack, and provides a variety of upper, lower, and special characters and could be site specific and easy to remember.

Although there are numerous advantages to shopping online, when the process goes wrong, it can lead to a difficult situation. Identity theft, faulty products, and spyware accumulation are just a few of the issues that customers may face. Most large online corporations are constantly developing new ways to make fraud more difficult, but criminals are constantly responding to these developments with new ways to manipulate the system. Even though these efforts are making it easier to protect yourself online, maintaining the lead is a constant battle. To fully protect yourself and your finances, it is best to be aware of the most recent technology and scams.

One of the most difficult aspects of online shopping is product delivery. Most companies provide shipping insurance in the event that a product is lost or damaged in transit; however, if the buyer chooses not to purchase insurance on their products, they are generally out of luck.

Some shipping companies will offer refunds or compensation for damage, but this is entirely at their discretion. It is critical to understand that once the product leaves the seller's hands, they have no responsibility (provided the product is what the buyer ordered and is in the specified condition).

2.4.2 Privacy

Some consumers are concerned about the privacy of their personal information. Different legal jurisdictions have different consumer privacy laws, as well as different levels of enforcement. Many customers want to avoid spam and telemarketing as a result of providing contact information to an online merchant. Many merchants have responded by promising not to use consumer information for these purposes or providing a mechanism to opt out of such contacts. Consumer information is also collected in physical stores. Some retailers request an address and phone number at the time of purchase, but customers may refuse. Many larger retailers use the address information encoded on consumers' credit cards to add them to a catalog mailing list (often without their knowledge). This information is obviously unavailable to the cash-paying merchant.

Many profitable purely virtual businesses deal with digital products (such as information storage, retrieval, and modification), music, movies, office supplies, education, communication, software, photography, and financial transactions. Google, eBay, and Paypal are examples of this type of company. Drop shipping or affiliate marketing techniques are used by other successful marketers to facilitate transactions of tangible goods without maintaining physical inventory. Numerous eBay sellers are examples. Some non-digital products have performed better than others in online stores. Profitable items frequently have a high value-to-weight ratio, may involve embarrassing purchases, may typically go to people in remote areas, and may have shut-ins as their typical purchasers. Items that fit through a standard letterbox, such as music CDs, DVDs, and books, are ideal for a virtual marketer, and Amazon.com, one of the few enduring dot-com companies, has historically focused on this market.

Spare parts products, both for consumer items like washing machines and for industrial equipment like centrifugal pumps, appear to be good candidates for online sales. Retailers frequently need to order spare parts specifically because they typically do not stock them at consumer outlets; in such cases, e-commerce solutions in spares compete with other ordering systems rather than retail stores. A key factor for success in this niche can be providing customers with precise, reliable information about which part number their version of a product requires, such as by providing parts lists keyed by serial number.

2.4.3 Aggregation

Small retailers can use high-volume websites to host their online stores. These shops are displayed within a unified navigation framework. Virtual shopping malls or online marketplaces are terms used to describe collections of online stores. Become.com is a product price comparison service and discovery shopping search engine that aims to assist shoppers in making the best purchasing decisions. Dulance was a price engine that specialized in finding hard-to-find products that were frequently sold by small independent online retailers ("The Long Tail").

Self-assessment Exercises

 i.   Define Online shopping and trace its briefly trace its history.
ii.   Explain the problems associated with online shopping

2.5   Summary

* Online shopping is the process consumers go through to purchase products or services over the Internet. An online shop, eshop, e-store, internet shop, webshop, webstore, online store, or virtual store evokes the physical analogy of buying products or services at a bricks-and-mortar retailer or in a shopping mall.
* Since about 1990, online shopping has emerged into every corner of life, linking people to the culture of capitalism in frequent and daily ways.
* In general, shopping has always catered to middle class and upper class women.
* One third of people that shop online use a search engine to find what they are looking for and about one fourth of people find websites by word of mouth.
* Consumers find a product of interest by visiting the website of the retailer directly, or do a search across many different vendors using a shopping search engine.
* Online shoppers commonly use credit card to make payments, however some systems enable users to create accounts and pay by alternative means.
* Once a payment has been accepted the goods or services can be delivered in the several ways.
* Online stores are usually available 24 hours a day, and many consumers have Internet access both at work and at home.
* One advantage of shopping online is being able to quickly seek out deals for items or services with many different vendors

(though some local search engines do exist to help consumers locate products for sale in nearby stores).

- Given the lack of ability to inspect merchandise before purchase, consumers are at higher risk of fraud on the part of the merchant than in a physical store.
- Privacy of personal information is a significant issue for some consumers. Different legal jurisdictions have different laws concerning consumer privacy, and different levels of enforcement
- High-volume websites offer hosting services for online stores to small retailers.

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UNIT 3   E-PAYMENTS

Unit Structure

3.1   Introduction

We discussed the concept and forms of online shopping in the previous unit. In this unit, we will go over the various e-payment methods. Due to the difficulty of Internet payment methods, several e-payment options have been developed to facilitate Internet marketing transactions. This unit emphasizes the various e-payment methods.

Aside from their convenience and safety, Electronic Payment Systems (EPS) have a significant number of economic benefits, including mobilizing savings and ensuring that the majority of the cash available in the country is with banks. Borrowers, both businesses and individuals, will now have access to funds. Furthermore, an electronic payment system can track individual spending, making it easier for

banks to design products. This information can also help the government make decisions. EPS can also help you save money on cash handling and printing. According to Moody's Analytics, real global GDP grew by 0.2% more per year than it would have without card usage. Simply put, card usage raises a country's GDP by 0.2% per year (Okifor and Igbunu, 2019).

3.2   Learning Outcomes

At the end of this unit the student is expected to:
* List the various forms of e-payments
* Differentiate the various forms of e-payment methods
* Identify the advantages and disadvantages associated with the use of the e-payment methods
* Answer the questions of security as well as other challenges that come with use of the e-payment options.

3.3   Debit Card

3.3.1   What is Debit Card?

When a debit card is used, money is deducted directly from the consumer's checking account. They are also known as "check cards" or "bank cards," and can be used to purchase goods or services, as well as to obtain cash from an automated teller machine or a merchant who will allow you to add an additional amount to a purchase (Amy et'al, 2021).
A debit card is typically a rectangular piece of plastic, similar to a credit card. It is linked to the user's bank or credit union checking account. The amount of money that can be spent with it is proportional to the si In some ways, debit cards are a hybrid of ATM cards and credit cards. You can use them to obtain cash from an automated teller machine, as with the former, or to make purchases, as with the latter. Indeed, many financial institutions are replacing their basic, single-purpose ATM cards with debit cards issued by major card-payment processors such as Visa or Mastercard. These debit cards are included with your checking account. Whether used to obtain cash or to make a purchase, the debit card works in the same way: it immediately withdraws funds from the associated account.ze of the account (the amount of funds in the account) (Amy et'al, 2021).

The following features are related to the use of debit cards:
▪ Debit cards eliminate the need to carry cash or physical checks when making purchases and can also be used to withdraw cash from ATMs.

- Debit cards typically have daily purchase limits, so making a particularly large purchase with a debit card may be impossible.
- Generally, debit card purchases can be made with or without a personal identification number (PIN).
- If you use your debit card to withdraw cash from an ATM that is not affiliated with the bank that issued your card, you may be charged an ATM transaction fee.
- Some debit cards, like credit cards, offer reward programs, such as 1% back on all purchases.

3.3.2 Debit or Credit Card?

The distinction between a "debit card" and a "credit card" for consumers is that a debit card deducts the balance from a deposit account, such as a checking account, whereas a credit card allows the consumer to spend money on credit to the issuing bank. In some countries, the answer to the question "credit or debit?" determines whether a merchant will use a merchant account affiliated with one or more traditional credit card associations (Visa, MasterCard, Discover, American Express, and so on) or an interbank network typically used for debit and ATM cards, such as PLUS, Cirrus (interbank network), or Maestro. In other countries, the answer to the question "credit or debit?" determines whether the transaction is handled as a credit transaction or a debit transaction. In the former case, the merchant is more likely than in the latter case to have to pay a fee defined by fixed percentage to the merchant's bank. In both cases, the merchant may have to pay a fixed amount to the bank. In either case, the transaction will go through a major credit/debit network (such as Visa, MasterCard, Visa Electron or Maestro). In either case, the transaction may be conducted in either online or offline mode, although the card issuing bank may choose to block transactions made in offline mode. This is always true for Visa Electron transactions, almost always true for Maestro transactions, and only rarely true for Visa or MasterCard transactions. In other countries, a merchant will only ask "credit or debit?" if the card is a credit+debit card. If the payee selects "credit," the amount of the purchase will be deducted from the credit balance; if the payee selects "debit," the amount of the purchase will be deducted from the bank account balance. This may be perplexing because "debit cards" linked directly to a checking account are sometimes dual-purpose, allowing them to be used in place of a credit card and charged by merchants using traditional credit networks. There are also "pre-paid credit cards" which act like a debit card but can only be charged using the traditional "credit" networks. The card itself does not necessarily indicate whether it is connected to an existing pile of money, or merely represents a promise to pay later.

In some countries, consumer protections also vary, depending on the network used. Visa and MasterCard, for instance, prohibit minimum and

maximum purchase sizes, surcharges, and arbitrary security procedures on the part of merchants. Merchants are usually charged higher transaction fees for credit transactions, since debit network transactions are less likely to be fraudulent. This may lead them to "steer" customers to debit transactions. Consumers disputing charges may find it easier to do so with a credit card, since the money will not immediately leave their control. Fraudulent charges on a debit card can also cause problems with a checking account because the money is withdrawn immediately and may thus result in an overdraft or bounced checks. In some cases, debit card-issuing banks will promptly refund any disputed charges until the matter can be settled, and in some jurisdictions the consumer liability for unauthorized charges is the same for both debit and credit cards.

In some countries, "debit" networks typically require in-person purchases and the supply of a personal identification number. Cards can be charged using only a signature and/or a picture ID on "credit" networks. Identification in other countries typically entails entering a personal identification number or signing a piece of paper. This is true regardless of whether the card network in use is primarily used for credit or debit transactions. Identification using a PIN is impossible in the case of an offline transaction (regardless of whether the offline transaction is a credit or a debit transaction), so only signatures on pieces of paper work.

In other countries, such as India, consumer protection is the same regardless of network. Some banks, mostly for online-only cards, have minimum and maximum purchase sizes. However, this has nothing to do with the card networks and everything to do with the bank's assessment of the person's age and credit history. Customers must pay the same fees to the bank whether the transaction is conducted as a credit or a debit transaction, so there is no advantage for customers to choose one transaction mode over another. Surcharges may be added to the price of goods or services in accordance with applicable laws. Banks consider purchases to have been made when the card was swiped, regardless of when the purchase was settled. The purchase, regardless of transaction type, may result in an overdraft because the money is considered to have left the account at the time of card swiping. Although many debit cards are issued by Visa or MasterCard, there are many other types of debit cards, each of which is accepted only within a specific country or region, such as Switch (now: Maestro) and Solo in the United Kingdom, Carte Bleue in France, Laser in Ireland, "EC electronic cash" (formerly Euro check) in Germany, and EFTPOS cards in Australia and New Zealand. Because of the need for cross-border compatibility and the introduction of the euro, many of these card networks (including Switzerland's "EC direkt," Austria's "Bankomatkasse," and Switch in the

United Kingdom) have recently been rebranded with the internationally recognized Maestro logo, which is part of the MasterCard brand. Some debit cards bear the logos of both the (former) national card and Maestro (e.g. EC cards in Germany, Laser cards in Ireland, Switch and Solo in the UK, Pinpas cards in the Netherlands, Bancontact cards in Belgium, etc.). Debit card systems are becoming increasingly popular in video arcades, bowling alleys, and theme parks. The use of a debit card system allows operators to package their product more effectively while monitoring customer spending. An example of one of these systems is ECS by Embed International. (Wilson, 2017) A prepaid debit card looks a lot like a credit card. It even works a lot like a credit card, when you use it in a store to purchase products. However, a prepaid credit card is not a credit card. The two work very differently.

When you use a credit card to make a purchase, you are borrowing money from someone else. A credit card becomes a loan in this case. It makes no difference whether you have a secure credit card, a small business credit card, or anything else: the credit card company is lending you money to make your purchase, for which you will be charged interest later (assuming you do not pay the total balance within a 30-day period). In contrast, a prepaid debit card is not a loan. It is simply a method that uses some of the same principles as credit cards for the basic transaction, but instead of borrowing money from a third party, you withdraw money directly from your debit card account. As a result, it is referred to as prepaid: you deposit money into the account, then withdraw funds using your debit card, as opposed to paying for the purchase later with a credit card. As a result, there are no interest rates applied to debit cards, though there are occasionally fees associated with them. You never should worry about going into debt using a debit card, since you are only taking out what you take in. Many people appreciate them as a viable alternative to traditional credit cards.

3.3.3 What are FSA Debit Cards

Flexible spending accounts (FSAs) and health savings accounts (HSAs) allow you to set aside pre-tax money for eligible medical expenses, sometimes directly from your paycheck. Keep this card safe because you may not have the same rights to your money if it is stolen as you would with a bank or credit union debit card. An FSA card is a debit card that gives you access to the funds in your flexible spending account. This is an account that is set up alongside your health insurance and into which you can direct pretax dollars from your paycheck.

In the U.S.A, FSA debit card only allows medical expenses. It is used by some banks for withdrawals from their FSAs, MSAs, and HSAs as well. They have Visa or MasterCard logos, but cannot be used as "debit

cards", only as "credit cards"", and they are not accepted by all merchants that accept debit and credit cards, but only by those that accept FSA debit cards. Merchant codes and product codes are used at the point of sale (required by law by certain merchants by certain dates in the USA) to restrict sales if they do not qualify. Because of the extra checking and documenting that goes on, later, the statement can be used to substantiate these purchases for tax deductions.

3.4   Wire Transfer

3.4.1   What is Wire Transfer?

Wire transfers is a type of money transfer from one entity to another. A wire transfer from one entity's bank account to the other entity's bank account is possible, as is a cash transfer at a cash office. A wire transfer is a method of electronically transmitting money between people or businesses in which no physical money is exchanged. The sender provides all transfer instructions, which may include the recipient's name, bank, account number, amount, and, in some cases, a pickup location. Its process can be facilitated by a bank (often related to as a "bank wire") or by a nonbank money transfer provider.

3.4.2   What is the history of Wire Transfer?

Wire transfers have been around since the nineteenth century. As early as the 1870s, Western Union used their telegraph network to send wire transfers. Senders would bring money to the telegraph office and the operation would send a message and "wire" the funds to another location. To ensure the funds were released to the correct person, the parties involved would use codes and passwords.

3.4.3   What is the Process in Wire Transfer?

The information you must provide differs depending on whether you are using a bank or a nonbank provider:
▪   You must include the recipient's name, address, bank account number, and ABA number when sending a domestic bank wire (routing number).
▪   When sending an international bank wire, you must include the recipient's name, address, SWIFT BIC, and bank account number, as well as the International Payments System Routing Code, if applicable (you will be prompted for this).
▪   A bank account number may not be required for a transfer made through a nonbank provider, but the provider will require the recipient's name and pickup location.

3.4.4   What are the regulations in Wire Transfer?

Bank transfer is the most popular payment method in Europe, with millions of transactions completed each day. Debit cards are widely used to pay in stores, whereas monthly bills are typically paid via direct transfer (by cellular phone or Internet, or at the bank or an ATM). The European Commission relegated the regulation of the fees that a bank may charge for Euro payments between European Union member countries to the domestic level in 2002, resulting in very low or no fees for transfers within the Eurozone; wire transfers between this zone and external areas can be costly. Domestic wire transfers in the United States are governed by Federal Regulation J and Article 4A of the Uniform Commercial Code.

3.4.5   What is the security of Wire Transfer?

Bank-to-bank wire transfer is considered the safest international payment method. Each account holder must have a proven identity. Chargeback is unlikely, although wires can be recalled. Information contained in wires is transmitted securely through encrypted communications methods. The price of bank wire transfers varies greatly, depending on the bank and its location; in some countries, the fee associated with the service can be costly. Wire transfers done through cash offices are essentially anonymous and are designed for transfer between persons who trust each other. It is unsafe to send money by wire to an unknown person to collect at a cash office: the receiver of the money may, after collecting it, simply disappear. This scam has been used often, especially in so-called Nigerian letters, also called advance fee fraud or 419 scams.

International transfers involving the United States are subject to monitoring by the Office of Foreign Assets Control (OFAC), which monitors information provided in the text of the wire to ascertain whether money is being transferred to terrorist organizations or countries or entities under sanction by the United States government. If a financial institution suspects that funds are being sent from or to one of these entities, it must block the transfer and freeze the funds.

3.4.6   What are the methods in Wire Transfer?

The following are the common methods used in Western Union wire transfer:

- **Western Union:**
Western Union is one of the largest wire transfer companies, allowing individuals to transfer or receivea money without having an account

with Western Union or any financial institution. Concerns and controversy surrounding Western Union transfers have grown in recent years, owing to increased monitoring of money-laundering transactions as well as concerns about terrorist groups using the service, particularly in the aftermath of the September 11, 2001 attacks. Although Western Union collects information on senders and recipients, some transactions can be completed virtually anonymously, as the receiver is not always required to show identification.

- **International:**

The majority of international transfers are handled by SWIFT, a co-operative society founded in 1974 by seven international banks to operate a global network to facilitate the transfer of financial messages. Banks can exchange data for fund transfers between financial institutions using these messages. SWIFT's headquarters are in La Hulpe, Belgium, on the outskirts of Brussels. The society also serves as a United Nations-approved international standards body for the development and upkeep of financial messaging standards.

An ISO 9362 code, also known as a Bank Identifier Code (BIC) or SWIFT Code, is assigned to each financial institution. These codes are typically eight characters long. As an example: Deutsche Bank is an international bank headquartered in Frankfurt, Germany, with the SWIFT code DEUTDEFF:

- *DEUT* identifies Deutsche Bank.
- *DE* is the country code for Germany.
- *FF* is the code for Frankfurt.

Using an 11-digit extended code (if the receiving bank has assigned extended codes to branches or processing areas), the payment can be routed to a specific office. DEUTDEFF500, for example, would direct the payment to a Deutsche Bank office in Bad Homburg. The International Bank Account Number, or IBAN, is also used by European banks when making transfers within the European Union.

- **United States**

Banks in the United States use SWIFT to make payments to banks in other countries. Domestic bank-to-bank transfers are conducted through the Fed wire system, which uses the Federal Reserve System and its assignment of routing transit number, which uniquely identify each bank.

ASSESSMENT EXERCISE
1.   Western Union Money Transfer has reduced the concerns, bottleneck, and problems encountered in remittance of funds from one person to another. Discuss

3.5   Money Order

3.5.1   What is Money Order?

A money order is a payment order for a fixed sum of money. It is a more trusted method of payment than a personal check because the funds must be prepaid for the amount shown on it. Merchants appreciate the added security of a pre-paid money order over a personal check, which can bounce. A money order is a certificate that allows the stated payee to receive cash on demand, usually issued by a government or banking institution (Mitchell, 2021). A money order is similar to a check in that the person who purchased it has the ability to stop payment.

Money orders are easily accepted and converted to cash, and they are frequently used by people who do not have access to a traditional checking account. These instruments are an acceptable form of payment for small debts, both personal and business, and can be purchased from most institutions for a small service fee (Mitchell, 2021).

3.5.2   What is the History of Money Order?

Money orders first appeared in late-nineteenth-century Britain. The concept was not particularly successful when it was first introduced. It was due to the system's high fees that more traditional payment methods, such as cash or checks, became more appealing. The payment system was then sold to a private buyer, who was able to significantly reduce the fees associated with requesting a money order, thereby popularizing the system.

When the British Post Office recognized the value of money orders, it was a watershed moment in the history of the service. British postal officials were pleased that one party could safely send a money order to another without fear of theft.

If money was sent, it could be easily stolen and deposited into any bank account. A money order was legally binding and could only be deposited into a specific entity's account. The post office purchased the system and improved its profitability, transforming it into a significant source of cash flow for the organization.

3.5.3   How is Money Order used?

A money order for the desired amount is purchased. It is similar to a certified check in this way. The main distinction is that money orders have a maximum face value limit (e.g., the United States Postal Service

limits domestic postal money orders to $1,000 as of July 2008), whereas certified checks do not.

Money orders typically have two parts: a negotiable check for remittance to the creditor if the person can relate to the matter made, and a receipt that the customer keeps for his/her records. The amount is printed by machine or check writer on both portions and similar documentation, which is retained at the issuer and agent locations as a third hard copy or in electronic form.

Money orders were originally issued by the U.S. Postal Service as an alternative to sending cash through the postal system for those who did not have checking accounts. They were later offered by many more vendors than just the postal service as a means to pay bills and send money internationally where there were no reliable banking or postal systems.

3.5.4   What are the drawbacks in Money Order?

While the concept was deemed fairly appealing and profitable, it does have a few drawbacks. Due to concerns about how it could be used for money laundering, the payment system saw very limited acceptance and usage in the brokerage and insurance industries.

Because the system could easily be used in business transactions involving a large number of parties, it could potentially be used to launder money obtained through illegal activities. For example, a criminal organization could receive money orders and declare it through a limited liability company (LLC), making the money legitimate or "clean."

Bureaucratic policies were implemented in an attempt to set up checks and balances in the system to combat the exploitation of money orders as money laundering instruments. Money orders are subject to "more regulatory processing" than checks, according to legislation such as the United States Bank Secrecy Act and the USA Patriot Act (since those could be easily forged). As part of its efforts to make the practice safer, the US government set the maximum transaction amount for domestic orders at $1,000 and $700 for international orders at $700.

3.5.5   What is the nature of money order in Nigeria?

Electronic Money Order (eMO) is one of Nigerian Postal (NIPOST)'s service new products that allows customers in both rural and urban areas to initiate money orders electronically.
Unlike a traditional postal order, in which a customer visits the Post

Office to purchase a postal order and send it to a recipient who will either cash the money at the Post Office or use it as a form of payment, an electronic Money Order (eMO) can be completed by a customer from the comfort of his or her own home using a computer or mobile device. Because transaction records/information on the platform are securely stored on a centralized database, this service is fast, secure, reliable, and efficient.

3.5.6   What is the nature of money order in USA?

Money orders are typically sold in the United States by third parties such as the United States Postal Service, grocery stores, and convenience stores. Some financial institutions, such as banks and credit unions, may not charge their customers for money orders. Money orders continue to be a reliable financial instrument. In 2005, 889 million money orders were purchased in the United States, totaling $145 billion in gross transaction volume. Federal Reserve (source). However, just because a company can issue a money order does not guarantee that it will cash it.

3.5.7   What is the nature of money order in India?

In India, a Money Order is a service provided by the Indian Postal Service. A remitter is someone who sends money orders. He is to Fill in the blanks with ink and add his signature of thumbs marks at the bottom. A form that is missing a signature or a thumb mark, or is otherwise incomplete, will not be accepted. All entries in the form must be legible and may be written in English, Hindi, or the district's language by the remitter or anyone on his behalf. The remitter may write anything he wants to say to the payee on the coupon. The maximum amount for which a single money order may be issued is Rs 5000/-.

After the money is paid to the payee, the remitter of the money order receives an acknowledgement of payment signed by the payee or his authorized agent for the amount of the money order. If the acknowledgment is not received within a reasonable time, a payment certificate signed by the Postmaster of the office will be issued upon request. However, in the case of money orders issued in favor of the Government or District, Local, or Municipal Boards, the acknowledgement may be retained by the payee who issued a departmental receipt to the remitter directly.

3.5.8   What is International Money Orders?

An international money order is similar to a regular money order in many ways, except that it can be used to make payments abroad. With it,

a buyer who lives in another country can easily pay a seller for goods or services. International money orders are frequently issued by a buyer's bank and purchased in the currency accepted by the seller. International money orders are thought to be safer than sending currency through the mail because they require various forms of identification, often including a signature and a form of photo identification.

When purchasing an international money order, make sure that the type of money order is accepted in the destination country. Several countries require that money orders be printed on pink and yellow paper and bear the words "international postal money order." These features are required by Japan Post (one of the world's largest banking institutions). When there is any doubt about the authenticity of a document, most other countries use this as a standard.

3.5.9   What are the alternatives to money order?

Consumers can now choose from a variety of alternatives to money orders thanks to technological advancements. The newer alternatives are significantly less expensive, more efficient, and safer. Alternatives includes:
- the MasterCard/Visa;
- credit payment systems;
- Japan's Konbini system;
- Italy's Postepay system and;
- PaidByCash is becoming increasingly popular in the United States, where it is now available in over 60,000 stores.

Finally, money orders were the first monetary transaction vehicles that paved the way for the development of modern payment processing technologies.

3.6   Summary

Due to the challenge of payment methods over the Internet, several e-payment options have been developed the ease Internet marketing transactions.

For consumers, the difference between a "debit card" and a "credit card" is that the debit card deducts the balance from a deposit account, like a checking account, whereas the credit card allows the consumer to spend money on credit to the issuing bank.

Debit card is a plastic card which provides an alternative payment method to cash when making purchases. Functionally, it is like writing a cheque as the funds are withdrawn directly from either the bank account

(often referred to as a *cheque card*), or from the remaining balance on the card. In some cases, the cards are designed exclusively for use on the Internet, and so there is no physical card

In the U.S.A, a FSA debit card only allows medical expenses. It is used by some banks for withdrawals from their FSAs, MSAs, and HSAs as well.

Wire transfer is a method of transferring money from one entity to another. A wire transfer can be made from one entity's bank account to the other entity's bank account, and by a transfer of cash at a cash office.

money order is a payment order for a pre-specified amount of money. Because it is required that the funds be prepaid for the amount shown on it, it is a more trusted method of payment than a personal check. Merchants welcome the extra security of a pre-paid money order instead of a personal check, which can bounce.

Self-assessment Exercise
i.   What is money order? (3 minutes
ii.   Explain the nature of money order service in Nigeria, India and USA? (10 minutes)
iii.   Mention the alternatives to money order. (2 minutes)

3.7   References/Further Readings/Web Sources

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MODULE 3   CONCEPT OF MARKETING

Unit 1   overview of e-marketing
Unit 2   e-market opportunity analysis for firms
Unit 3   developing an e-marketing plan
Unit 4   online strategy formulation plan
Unit 5   market communication and branding
Unit 6   financial appraisal, implementation and control of e-marketing plan

UNIT 1   OVERVIEW OF E-MARKETING

Unit Structure

1.1   Introduction
1.2   Learning Outcomes
1.3   E-Marketing
          1.3.1   What is E-marketing?
          1.3.2   What are the services offered in e-marketing?
          1.3.3   What are the business model associated with marketing?
1.4   Differences between e-marketing and traditional marketing
1.5   Advantages and Limitations to e-marketing
          1.5.1   What are the advantages of e-marketing?
          1.5.2   What are the limitations to e-marketing?
1.6   Security concerns to e-marketing
1.7   Effects of e-marketing on industries
1.8   Internet Market Structures
1.9   Summary
1.10   References / Further Readings/ Web Sources

 1.1   Introduction

This chapter introduces you to the world of e-marketing; its background and its benefits. It explores the current e-marketing situation, e-marketing definitions and examples. It discusses the services in e-marketing, its differences from the traditional marketing, advantages and its limitations.

 1.2   Learning Outcomes
At the end of this unit the student is expected to:
• define Electronic marketing
• identify some services associated with Internet marketing

- differentiate Electronic marketing from traditional form of marketing
- know the advantages of Electronic marketing as well as the limitations
- understand the basic security concerns about Electronic marketing;
- answer the question of the impact of Electronic marketing to industries
- know what Electronic market structure is.

1.3 E-Marketing

1.3.1 What is E-marketing?

E-marketing is the practice of marketing online, whether through websites, online ads, opt-in e-mail, interactive kiosks, interactive TV, or mobile devices. It entails getting closer to customers, better understanding them, and maintaining a dialogue with them. It is broader than e-commerce because it includes all marketing processes rather than just transactions between an organization and its stakeholders.

E-marketing expands on the database (of customers and prospects) and establishes a continuous flow of communications between customers and suppliers, as well as between customers themselves. As a result, there is a two-way communication flow - an ongoing discussion between customer and supplier. Keep in mind that e-marketing entails using electronic communications to manage the internal marketing process and better understand customers, as well as marketing research and analysis.

Electronic marketing, also referred to as online marketing, Internet advertising, Internet Marketing, is the marketing of products or services over the Internet. When applied to the subset of website-based advertisement placements, Electronic marketing is commonly referred to as Web advertising (Webvertising) and/or Web marketing. The Internet has brought many unique benefits to marketing, one of which being lower costs for the distribution of information and media to a global audience. The interactive nature of Electronic marketing, both in terms of providing instant response and eliciting response, is a unique quality of the medium. E-marketing is sometimes considered to have a broader scope since it refers to digital media such as web, e-mail and wireless media, but also includes management of digital customer data and electronic customer relationship management systems (E-CRM systems).

1.3.2   What are the services offered in e-marketing?

Electronic marketing ties together creative and technical aspects of the Internet, including design, development, advertising, and sales. Electronic marketing methods and strategies encompass a wide range of services:
* Affiliate marketing
* Behavioral marketing
* Cause marketing
* Contextual advertising
* Customer relationship management (CRM) marketing
* Digital marketing
* Display advertising
* E-mail marketing
* In-text advertising
* Interactive advertising
* Internet news releases
* Lead scoring
* Newsletter marketing
* Online market research
* Online reputation management (ORM)
* Search engine marketing (SEM)
* Social media marketing
* Blog marketing
* Multivariate testing or optimization
* Viral marketing
* software-based advertising.

Electronic marketing does not simply entail building or promoting a website, nor does it mean placing a banner ad on another website. Effective electronic marketing requires a comprehensive strategy that synergizes a given company's business model and sales goals with its website function and appearance, focusing on its target market through proper choice of advertising type, media, and design. Electronic marketing also refers to the placement of media along different stages of the customer engagement cycle through search engine marketing (SEM), search engine optimization (SEO), banner ads on specific websites, email marketing and Web 2.0 strategies. In 2008, *The New York Times* working with comScore published an initial estimate to quantify the user data collected by large Internet-based companies. Counting four types of interactions with company websites in addition to the hits from ads served from advertising networks, the authors found the potential for collecting upward of 2,500 pieces of data on average per user per month.

1.3.3   What are the business models associated with e-marketing?

Electronic marketing is associated with several business models:
▪   E-commerce – goods are sold directly to consumers or businesses;
▪   Publishing – the sale of advertising;
▪   Lead-based websites – an organization generates value by acquiring sales leads from its website.

There are many other business models based on the specific needs of each person or business that launches an Internet marketing campaign.

1.4   Differences between e-marketing and traditional marketing One-to-one approach

Because the targeted user is usually browsing the Internet alone, marketing messages can reach him directly. This method is used in search marketing, where ads are based on search engine keywords entered by the user.

Appeal to specific interest
Instead of reaching out to a broad demographic, electronic marketing focuses on marketing that appeals to a specific behavior or interest. "Off-line" marketers typically segment their markets based on age, gender, geography, and other broad factors. Online marketers have the advantage of being able to target based on activity.

A kayak company, for example, can place advertisements on kayaking and canoeing websites knowing that the audience has a similar interest. Electronic marketing differs from magazine advertisements in that the goal is to appeal to the periodical's projected demographic. The company does not rely on the expectation that a certain group of people will be interested in its new product or service because the advertiser knows the target audience - people who engage in certain activities (e.g., uploading pictures, contributing to blogs).

1.5   Advantages and Limitations of E-marketing

1.5.1   What are the advantages of e-marketing?

•   **Growth in Sales:** Achieved through broader distribution to customers you cannot easily service offline, or possibly through a broader product range than in-store, or lower prices compared to other channels.
•   **Add Value:** Achieved by providing additional benefits to customers online or informing product development through online dialogue and feedback.

- **24-hours Services**: E-marketing allows customers to obtain product information and make purchases even when a company's physical premises are closed or if the company does not have any physical premises at all. Customers expect a company's offering to be available without interruption 24 hours a day, seven days a week.
- **Get Closer to Customers**: This includes conducting online market research through formal surveys and informally monitoring chat rooms to learn about them, as well as creating a two-way dialogue through web and e-mail forms and polls. Also, reach out to them online via Public Relations (PR).
- **Save Costs**: Achieved by reducing staff, print, and postage costs through online e-mail communications, sales, and service transactions.
- **Extend the brand online**: Achieved by offering a new proposition and experience online while appearing familiar.

1.5.2   What are the limitations of e-marketing?

Customers must use new technologies rather than traditional media in order to participate in e-marketing. Another impediment is slow Internet connections. Individuals connected to the Internet via dial-up connections or mobile devices may experience significant delays in content delivery if companies build large or overly-complicated websites. The inability of shoppers to touch, smell, taste, or "try on" tangible goods before making an online purchase can be limiting from the buyer's perspective. There is, however, an industry standard for e-commerce vendors to reassure customers by offering liberal return policies and in-store pick-up services. According to a survey of 410 marketing executives, the following are the barriers to entry for large companies looking to market online: a lack of ability to measure impact, a lack of internal capability, and difficulty persuading senior management.

1.6   Security Concerns

Information security is critical for both businesses and consumers who conduct online transactions. Many customers are hesitant to make online purchases because they do not trust that their personal information will be kept private. The primary method for enforcing privacy policies is encryption. Some online businesses have recently been caught giving away or selling information about their customers. Several of these businesses make assurances on their websites that customer information will be kept private. Some companies that buy customer information allow individuals to have their information removed from the database, a process known as opting out. However, many customers are unaware

that their information is being shared and are unable to stop such activity if it occurs. Another major security concern that customers have with e-commerce merchants is whether or not they will receive exactly what they ordered. Online merchants have attempted to address this concern by investing in and developing strong consumer brands (e.g., Amazon.com, eBay, Overstock.com), as well as by utilizing merchant/feedback rating systems and e-commerce bonding solutions. These solutions attempt to reassure consumers that their transactions will be trouble-free because merchants can be relied on to provide dependable goods and services. Furthermore, the major online payment mechanisms (credit cards, PayPal, etc.) have provided back-end buyer protection systems to address any issues that may arise.

1.7   Effects on Industries

E-marketing has had a significant impact on a number of previously retail-oriented industries, including music, film, pharmaceuticals, banking, flea markets, and the advertising industry itself. In terms of market share, e-marketing has now surpassed radio marketing. In the music industry, many consumers have been purchasing and downloading music (e.g., MP3 files) over the Internet in addition to purchasing compact discs for several years. By 2008, Apple Inc.'s iTunes Store had surpassed Amazon.com as the largest music retailer in the United States (US.). The number of banks that allow customers to perform banking tasks online has also grown. Customers are said to prefer online banking because it is more convenient than visiting bank branches. Over 150 million US adults now bank online, with increasing Internet connection speed being the primary reason for the industry's rapid growth. 44 percent of those who use the Internet now use it to conduct banking transactions. Internet auctions are becoming increasingly popular. Unique items that were previously only available at flea markets are now being sold on eBay. Specialized e-commerce sites sell everything from antiques to movie props. eBay, as the leading online reselling platform, is frequently used as a pricing basis for specialized items. Buyers and sellers frequently check eBay prices before going to flea markets; the price displayed on eBay frequently becomes the item's selling price. Flea market vendors are increasingly placing targeted advertisements on the Internet for each item they are selling online, all while running their business from their homes.

1.8   Internet Market Structures

All Internet business, according to Mahadevan, falls into one of three broad market structures: portals, market makers, and product/service providers. B2B portals primarily provide a sense of community to members of an industry by providing information about products,

services, and general industry information. They are also used as hubs to direct traffic to the websites of product/service providers in the targeted industry. Market makers, like portals, provide customers with a sense of community and industry information, but they also participate in the facilitation of business transactions between the buyer and supplier. This market structure can help an industry save money by lowering product search and transaction costs. Product/service providers are suppliers who sell directly to their customers over the Internet. After weighing the benefits and drawbacks of taking their business online, a company must decide which path to take in terms of implementing an e-business model is best for them. Unfortunately, there is no one-of-a-kind, successful business model for companies that conduct electronic commerce. The model, like in traditional business, is determined by the company's products and services, market structure, and so on. It is also critical to understand what a business model is and what the company hopes to achieve with it.

Every successful organization, whether it is a new venture or an established player, requires a good business model. Success in online business, as in traditional business, entails adding value to both the firm and the customer. A good business model should explain who the customer is, what the customer values, how the company makes money, and how value is delivered to the customer at a reasonable price. All new business models are variations on the universal value chain that underpins all enterprises. They are divided into two categories: activities related to making something and activities related to selling something. A new business model entails either the design of a new product or process innovation, which is a better way of producing, selling, or distributing an existing product or service. Process innovation models are the way that companies will more commonly use the Internet in terms of business-to-business e-business models. Companies must understand that their business model does not have to be set in stone.

SELF ASSESSMENT EXERCISE
1.   Discuss the advantages and limitations of e-marketing Marketing. (10 minutes)

1.9   Summary

- Electronic marketing, also referred to as online marketing, Internet advertising, Internet marketing, is the marketing of products or services over the Internet.
- Internet marketing ties together creative and technical aspects of the Internet, including design, development, advertising, and

sales. Internet marketing methods and strategies encompass a wide range of services.
- Internet marketing is associated with several business models.
- Internet marketing differs from magazine advertisements, where the goal is to appeal to the projected demographic of the periodical.
- Internet marketing is relatively inexpensive when compared to the ratio of cost against the reach of the target audience.
- Internet marketing requires customers to use newer technologies rather than traditional media. Low-speed Internet connections are another barrier.
- Information security is important both to companies and consumers that participate in online business. Many consumers are hesitant to purchase items over the Internet because they do not trust that their personal information will remain private.
- Internet marketing has had a large impact on several previously retail-oriented industries including music, film, pharmaceuticals, banking, flea markets, as well as the advertising industry itself.
- According to Mahadevan, all business on the Internet falls into one of three broad market structures: portals, market makers, and product/service providers.
- The Internet economy is a broader concept than e-commerce and e-business.

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UNIT 2   E-MARKET OPPORTUNITY ANALYSIS

Unit Structure

2.1   Introduction

This unit will go over the opportunity analysis for an e-business. We will go over the concept of e-marketing opportunity analysis as well as the steps our company will take to assess the potential of an e-market.

2.2   Learning Outcomes

At the end of this unit, students should be able to;
•   Define and understand the concept of e-marketing opportunity analysis
•   List the benefits of the concept
•   Identify the steps in the E-Marketing Opportunity analysis process.

2.3   E-marketing Opportunity Analysis

According to Jenna (2021), the process of researching where and how you can reach more potential clients or increase your revenue share is known as market opportunity analysis. It entails identifying competitors, comprehending your target audience, and identifying potential risks. A firm can prioritize new business ideas based on how potentially profitable and risky they are by conducting a market opportunity analysis.

A market opportunity analysis is an in-depth examination of the potential benefits, returns, and risks of a potential investment (Jenna, 2021). It enables a company to make an informed decision about whether or not to invest in a particular project in the long run. It considers all relevant data surrounding the company's decision to invest in additional resources and expertise to help it succeed.

It is critical to comprehend the potential impact of a new technology on the market. A Market Opportunity analysis is the application of forecasting techniques to market factors that may influence demand for a product that has been identified as a market opportunity. The primary goal of a Market Opportunity Analysis is to aid in the process of gaining a better understanding of the most important market segments, how quickly the opportunity is growing, what the key sustainable differentiations are, and why these are important.

Before a firm can deeply explore a marketing opportunity analysis for an e-market, they should consider it will differ from the analysis in a traditional marketplace. Mohammed et al (2003), and some analysts believe that the two analyses differ in the following ways:

- Competition occurs across industry boundaries rather than with industry boundaries.
- Competition developments and responses are occurring at an unprecedented speed
- Competition occurs between alliances of companies rather than between individual companies
- Consumer behaviour is still in the early stages of being defined, thus it is easier to influence and change consumer behaviour
- Industry value chains or systems are rapidly being reconfigured

2.3   Marketing Opportunity Analysis Steps

A company can begin the opportunity framing of its potential e-market by taking six steps. These steps will provide a sufficient foundation of knowledge and perspective to frame a winning business model and lay the groundwork for making an informed go/no-go decision. The steps that a company should take to frame a market opportunity are as follows, along with the benefits of each step.

- **Step 1: Investigate opportunity in an existing or new value system:** opportunity identification and analysis is attached to an existing or new value system. The value system can be thought of as the entire chain of suppliers, distributors, competitors, buyers, and intermediaries that bring an existing offering to market. In an e-market, the starting point for opportunity identification is when someone believes that the value system can be reinvented. The first step is essentially to identify which market that the company wants to enter. In an e-market the business arena is defined from within or across an industry value chain or value system. Start the exploration by looking for a set of activities ripe for positive transformation, either within a firm or across activities conducted by multiple firms. Firms can look at the value system with a lens that yields ideas about new business

possibilities. A firm can look for one of three things; a trapped value, new-to-the-world value and a hybrid value (combination of both trapped and new-to-the-world values. The benefit of this step is that it helps identify previously unexploited areas of potential market value for further analysis.

- **Step 2: Identify unmet or undeserved needs:** The creation of new value is based on doing a better job of meeting the needs of customers. Customers will only switch from their current supplier if the new company does a better job of meeting a specific set of needs. Companies can use the customer decision-making process to identify unmet or undeserved needs. The customer decision process is a framework for searching systematically for unmet or undeserved needs. Within a value system, the process maps the activities and choices that customers make when accessing a specific experience. The process may aid in the generation of new ideas about unmet or undeserved needs.

- **Step 3: Determine target customer segments**: In order to be effective and efficient, a company must understand which customer groups are most appealing, which groups the company should pursue, which groups the company should avoid, and what offerings to present to which target segment. Customer segmentation must be relevant and actionable. Simple market maps with segment profiles will show where the money is, how well competitors serve the segments, and where the undeserved customers are. The primary advantage of this step is that it enables a company to create an offering that will appeal to the target customers.

- **Step 4: Assess resource requirements to deliver the offering:** After determining the company's initial customer focus, the company should identify the capabilities and technology required to deliver the offering's benefits. The management team should identify at least three or four resources or assets that comprise a winning resource system and can be brought to bear, created, or provided through business partnerships. This resource system is critical to delivering new benefits or unlocking trapped value, which is at the heart of the company's value story, and should hold the promise of measurable advantage when compared to current and prospective players in the targeted market. A resource system is a distinct set of individual and organizational activities and assets that, when combined, produce organizational capabilities. In opportunity assessment, a company must be realistic about any missing capability gaps. The main benefit of this step is that it identifies existing resource strengths and

weaknesses needing to be addressed internally or with partners to bring offering to market.

- **Step 5: Assess competitive, technological, and financial attractiveness of opportunity:** there are nine factors in four areas that marketing teams can assess to determine the character and magnitude of the opportunity;

  - **Competitive intensity;** competitor mapping that shows direct and indirect competitors; strengths and weaknesses.
  - **Customer dynamics;** levels of unconstrained opportunity; segment interaction; and the likely rate of growth
  - **Technology vulnerability;** impact of the penetration of enabling technologies; and new technologies on the value proposition
  - **Microeconomics;** estimate of the size or volume of the market; and level of profitability.

  The main benefit of this step is that it determines the character and magnitude of the opportunity and also it establishes barriers to entry and potential rewards.

- **Step 6: Conduct go/no-go assessment:** A business opportunity framework can be thought of as the first draft of a business plan. It should state the value proposition and target customers clearly. It should demonstrate the benefits of these customers and estimate the financial magnitude of the opportunity, as well as identify key capabilities and resources. Management must decide whether to define the specific value proposition and create a business model. This is the first of several decision gates with a yes/no option. The main advantage of this step is determining whether the opportunity is appealing enough to pursue.

SELF ASSESSMENT EXERCISE

i.   List and explain the steps of the marketing opportunity analysis framework

2.5   Summary
- A Market Opportunity analysis is an application of forecasting techniques to the market factors that may influence the demand for a product identified as a market opportunity.
- The main aim of a Market Opportunity Analysis is to help guide the process of better understanding of the most important market segments, how fast the opportunity is growing, what the key

sustainable differentiations are and why these are important.

- The steps in the market opportunity analysis framework are; Investigating opportunity in an existing or new value system; Identifying unmet or undeserved needs; Determine target customer segments; Assess resource requirements to deliver the offering; Assess competitive, technological, and financial attractiveness of opportunity; and Conduct go/no-go assessment

2.6   References/Further Readings/Web Sources

Jenna B. (2021*). "Market Opportunity Analysis:* What is it & How Can Businesses do it The Right Way

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UNIT 3 DEVELOPING AN E-MARKETING PLAN

Unit Structure

 3.1 Introduction

Many new business owners believe that by simply placing an ad in a local newspaper or airing a commercial on a radio or television station, customers will flock to buy their product or service. To some extent, this is correct. Some people may learn about your invention and try it out of curiosity. However, hundreds, if not thousands, of other potential customers may never learn about your company. Create an effective marketing strategy. What you must do as a potential business owner is maintain a thorough understanding of your marketing program and use it to gain market advantages. Examine various strategies and techniques until you understand how to apply them to achieve the desired results. Remember that your goal is to not only attract and retain a consistent group of loyal customers, but also to expand your customer base by identifying and attracting new customers, as well as to reduce risks by anticipating market shifts that can affect your bottom line.

3.2   At the end of this unit the student is expected to:

• Identify the four Ps of marketing
• Define a target market
• Identify competition
• Develop marketing budget and the location of a market
• Develop pricing, promotional and marketing strategies
• Find the right market mix.

3.3   Marketing Four Ps

To help you accomplish this aim, your marketing plan should include strategies typical of any marketing plan. To successfully plan and market a product or service, the four Ps must be carefully considered and wisely implemented. They are as follows: product, price, place, and promotion (Alexandra et al, 2022):

▪ **Product:** Developing a marketing campaign begins with an understanding of the product. Who requires it, and why? What does it do that no other product can? Perhaps it is something entirely new that is so compelling in its design or function that consumers will have to have it as soon as they see it.

▪ **Price**: The price of a product is the amount of money that customers are willing to pay for it. Marketers must link the price to the product's true and perceived value, while also taking into account supply costs, seasonal discounts, competitor prices, and retail markup. In some cases, business decision-makers may increase a product's price to give it the appearance of luxury or exclusivity. Alternatively, they may reduce the price so that more consumers will try it.

▪ **Place:** Placement is the consideration of where the product should be available, both in physical stores and online, as well as how it will be displayed.

▪ **Promotion:** The goal of promotion is to communicate to customers that they require this product and that it is reasonably priced. Advertising, public relations, and the overall media strategy for introducing a product are all examples of promotion.

3.4   Process of E-marketing Plan

3.4.1   What is your Target Market?

Identify and describe your customers (target market) based on their age, gender, income/educational level, profession/career, and place of

residence. Know your customers' likes, dislikes, and expectations better than anyone else. Because you will have limited resources, focus on customers who are more likely to buy your product. As your company grows and your customer base expands, you may need to revise this section of your marketing strategy to include new customers.

- By age
- By gender/sex
- By profession or career or trade
- By level of income
- By level of education
- By geography or residence

3.4.2 Who are your Competitors?

- By market research data
- By demand for product
- By your nearest direct and indirect competitors
- By the strengths and weaknesses of competitors
- By an assessment of how competitor's businesses are doing
- By a description of the unique features of your product
- By the similarities and dissimilarities between your product and competitor's
- By a pricing strategy for and comparison of yours and the competitions.

Determine the five closest direct competitors as well as the five indirect competitors. Begin a file for each, identifying their flaws and strengths. Maintain records of their advertising and promotional materials, as well as their pricing strategies. Examine these files on a regular basis to determine when and how often they advertise, sponsor promotions, and offer sales.

3.4.3 What is your Product?

Try to describe the advantages of your products from the standpoint of your customer. Highlight its unique features, or selling points. Successful business owners are aware of, or have a good idea of, what their customers want or expect from them. This type of anticipation can aid in the development of customer satisfaction and loyalty.

3.4.4 How to develop a Marketing Budget?

- For your advertising and promotional plan
- For costs allocated for advertising and promotions
- For advertising and promotional materials
- For a list of advertising media to be used

Operating an effective marketing plan costs money, so allocate funds from your operating budget to cover advertising, promotional, and all other marketing costs. Create a marketing budget based on the cost of the media you intend to use, as well as the cost of gathering research data and monitoring market shifts.

3.4.5 What is your Location (Place)?

* description of the location / channel of distribution
* advantages and disadvantages of location.

Again, try to describe your business's location from your customer's point of view. Describe its assets, such as convenience, accessibility to public transportation, and safety features such as street lighting, a well-lit parking lot or facility, decor, and so on. Your location should be designed around your customers, be easily accessible, and provide a sense of security.

3.4.6 What is your Pricing Strategy?

* pricing techniques and brief description of these techniques
* retail costing and pricing
* competitive position
* pricing below competition
* pricing above competition
* price lining
* multiple pricing
* material costs
* labor costs
* Overhead costs.

Although your pricing strategy may be based on the strategy devised by others, you should study this plan and the strategies used by competitors. That way you will acquire a thorough understanding of how to price your product, and you can determine if your prices are in line with competitors, if they are in line with industry averages and what adjustments you can make to bring them in line. The key to success is to have a well-planned strategy, to establish your policies and to constantly monitor prices and operating costs to ensure profits. Keep abreast of changes in the marketplace because these changes can affect your bottom line.

3.4.7 Develop an Effective Promotional Strategy
* advertising media
* print media (newspaper, magazine, classified ads, Yellow Pages advertising, brochure)

- radio
- television
- networking
- business cards
- tee shirts, hats, buttons, pens
- Internet.

Develop a promotional strategy that utilizes different media for promoting your business (video, audio etc). Monitor the different media identifying those that most effectively promote your business. Exert effort on developing material for these formats that clearly identifies your services, its location and price. Since financial institutions weigh the soundness of your marketing plan when deciding whether your business is a good risk for their money, it is important that you prepare and present credible market data that shows there is a need in the community for your business and that demonstrates your ability to compete.

Self-assessment Exercise
i.   Briefly explain the marketing 4 Ps
ii.   Enumerate the steps in e-marketing plan

3.5   Internet Marketing as Promotional Strategy

A solid online marketing strategy will assist businesses in growing (Laura, 2021). Internet marketing can drive more traffic to your website, increase sales, and improve the branding of your company and products. The following ten strategies for e-marketing by Laura (2021) include:

- It is effective to Invest in **Website Design**
- Use Search Engine marketing and optimization
- Affiliate and Associate Programmes
- Hire a Consultant
- Use Email Marketing
- Build an Opt-In Email List
- Get into Articles or News Stories
- Write Online Press Releases
- Hold Contests and Giveaways
- Start a Blog and Interact with you visitors.

3.6   Internet Marketing and Home Businesses

Prospective customers and clients expect a business to have a website, which is the most important component of Internet marketing. In fact, the lack of one may raise a red flag with a prospect. Because online usage is so prevalent nowadays, many prospects may easily choose to do

business with a company that provides up-to-date information 24 hours a day, seven days a week. Even a small business with a single location, such as a restaurant or shoe store, can benefit from having a website. Furthermore, businesses whose customers are not limited to a geographical area may have difficulty finding an alternative method of attracting customers that offers the low cost and global reach of a Web presence. Because most home businesses are "virtual," websites, while not an absolute necessity, can certainly provide benefits to a home business operator. Because most home-based businesses do not have a physical location, a website is an inexpensive way for prospects to learn about what you do or sell, and it can even serve as a "storefront" for selling goods and services directly. Because of the low cost of establishing and maintaining a web presence, the Internet has greatly aided the growth of home businesses. As a result, Internet marketing should be incorporated into your business plan and marketing strategy.

3.7   Finding the Right Internet Marketing Mix

How much of your marketing strategy should be handled online, which Internet marketing elements you employ, and how much importance you should place on your website are all determined by the nature of your business, your budget, and, to some extent, your personal characteristics. Unless you only do business online, such as an eBay reseller, you should probably include some traditional offline marketing elements in your strategy. Even those who only do business online may consider placing traditional advertisements in newspapers or magazines to bring prospects to their website where they can transact business. Expedia, Travelocity, and Monster.com are excellent examples of this. Despite the fact that they are online businesses, they invest heavily in traditional advertising, such as radio and television advertising, to drive traffic to their sites where the actual business is done. If you dislike "spam," as most of us do, you may not want to include E-mail marketing in your Internet marketing strategy. E-mail marketing, on the other hand, does not have to imply sending unsolicited messages to every e-mail address you can find. You can collect email addresses of interested prospects by including a visitor registration form on your website, for example, or by exhibiting at trade shows. You could create a newsletter and send it to these prospects on a regular basis. Or, you could simply set up a schedule in which you send an email to your interested prospects on a regular basis to see how they're doing, if you can help them, or if their needs have changed since your last conversation. Of course, the components of your Internet marketing strategy will be determined by your budget.

A website will necessitate the registration of a domain name as well as the purchase of web hosting services. Both items are heavily discounted;

for example, I recently saw an offer for domain name registration for only $1.99 per year if you also purchase other services, such as hosting, which is now available for less than $10 per month. After that, you'll need to create a design and content for your website, which you can do yourself or hire a web content professional and/or web designer to do for you. Once you've completed your content and design, you'll want your site to be found, so you'll want to either learn about search engine optimization (SEO) or hire an SEO contractor to do it for you. Depending on your budget, you should also investigate which directories are available and how much a paid listing costs (PFI). If you pay to have web content written for you, that content should ideally be optimized as soon as it is written. Similarly, you or your web designer should be familiar with SEO because how your site is designed can either increase or decrease site traffic. You'll pay a little more in both cases, but you'll save time in the long run. Once the site is up and running, you'll need to either maintain it yourself or hire an independent Webmaster to do it for you. Pay-per-click advertising, such as Google AdWords, is less expensive because you can specify how much you're willing to pay when someone clicks on your ad and how much you're willing to pay per day. You can also choose whether you want your ad to appear only on search pages or on websites related to your keywords. They're also simple to activate, deactivate, rack, and update. Images can also be used with PPC advertising, which may be less expensive than placing banner ads on other websites. On the other hand, you can make money with your website by using pay per click ads through programs such as Google AdSense, Yahoo Publisher, or Microsoft AdCenter.

3.8 Tracking Results

Let's face it, the average home business operator is not awash in cash. If you're going to be spending money on Internet marketing you need to track its effectiveness. As you do so, you'll discover what works and what doesn't work for your business. And, you cam learn from the mistakes you make in your Internet advertising campaign to become an Internet advertising success. Knowing what's worth spending money on and what isn't is critical for your business success. Keep in mind, in most cases patience is a true virtue. Search engines aren't likely to find you overnight and your Internet marketing campaign and search engine marketing programs may not generate a bundle of revenue right away. Because you'll have literally millions of competitors on the Internet, it will behoove you to keep up to date and keep on your toes. However, some knowledge, some capable assistance, and a well-managed **Internet marketing strategy** can increase your chances for home business success.

3.9 Summary

- Many first-time business owners think that by simply placing an ad in a local newspaper or a commercial on a radio or a television station, customers will automatically flock to purchase their product or service.
- To help you accomplish this aim, your marketing plan should include strategies typical of any marketing plan. The plan should especially include what marketers dub as the four P's of Marketing.
- Successful business owners know or at least have an idea of what their customers what or expect from them. This type of anticipation can be helpful in building customer satisfaction and loyalty.
- Internet marketing can attract more people to your website, increase customers for your business, and enhance branding of your company and products.
- Of all the components of **Internet marketing**, prospective customers and clients expect a business to have a website.
- How much of your marketing strategy should be handled online, which Internet marketing elements you use, and the importance you should give to your Web site, depends on the nature of your business, your budget, and, to some extent, your personal traits.
- Let's face it: the average home business operator is not awash in cash. If you're going to be spending money on Internet marketing you need to track its effectiveness.

3.10 References/Further Readings/Web Sources

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UNIT 4   ONLINE STRATEGY FORMULATION

Unit Structure

4.1   Introduction
4.2   Learning Outcomes
4.3   Internet Marketing Strategy
          4.3.1   What is Internet marketing strategy?
          4.3.2   What can it do for you?
          4.3.3   Why is it important?
4.4   Four Myths to Avoid in Internet Marketing Strategies
4.5   Marketing in a Virtual World
          4.5.1   The Virtual First Impression
          4.5.2   How to become an online center of influence?
          4.5.3   How to Create a Virtual Podium with Tele classes?
          4.5.4   How to Place Articles Online?
          4.5.5   How to Build Online Relationships?
4.6   Networking on the Internet
4.7   Strategies to Boost Online Sales
4.8   Summary
4.9   References/Further Readings/Web Sources

4.1   Introduction

It is important to investigate Internet strategies and techniques that will enhance and support your company's overall marketing objectives. Learn how to conduct banner promotions, generate targeted online traffic, position your content, and increase overall brand awareness.

4.2 Learning Outcomes

At the end of this unit the student is expected to:
•   Develop internet marketing strategy
•   Enumerate the important things in developing internet marketing strategies
•   Avoid myths in internet marketing
•   Market in a virtual marketing world
•   Network on the Internet.

4.3   Internet Marketing Strategy

4.3.1   What is Internet marketing Strategy?

Internet Marketing has proven to be the most effective tool for attracting new audiences and maintaining positive relationships with existing onesa via the internet (Ayush, 2021). Hence, marketers have long used various tactics and strategies to entice customers. With the age of digital transformation, even marketing strategies have evolved into internet marketing strategies, and a plethora of them have emerged, causing widespread change.

Internet marketing strategy can be described as a long-term plan for achieving a company's goals through customer understanding and the creation of a distinct and sustainable competitive advantage online (www.opitmizely.com). It includes everything from determining who your customers are to deciding how to reach those customers.
An internet marketing strategy allows you to define how your company positions itself in the online marketplace, the types of products you produce, the strategic partners you form, and the types of advertising and promotion you engage in (Ayush, 2021).

4.3.2   What can it do for you?

Having an Internet marketing strategy allows you to target your market and position your business so that those looking for what you have to offer can easily find you. This is only the first stage of the sales process, but it is critical to the success of your online business; however, keep in mind that traffic marketing is not the same as sales. Search engine optimization, pay per click advertising, and marketing your site in advertising campaigns can all help to increase traffic. After completing the marketing step that drives traffic, you must then focus on selling to your visitors once they arrive. How do you approach prospective clients and customers who visit your website? Are you convincing them to take the action you want them to? Have you specified what you want them to do? Maybe you want them to; Purchase a product? Do you want more information? Would you like to subscribe to your newsletter or request a free report?

4.3.3   Why is it Important?

Would you start a business without a business plan? Would you place your yellow pages' ad in an irrelevant category just to see if anyone would call? Would you pay thousands of dollars to have a billboard ad created and placed where there is no traffic? If you are among most business owners you probably answered no to all the above questions.

Businesses are very careful when it comes to spending marketing dollars, but truth is most businesses have neglected the most effective marketing tool that they have which is the strategic planning of their internet presence. It's not a problem to spend thousands of dollars to pay for the design and development but the planning process and strategy building has been neglected. Why? Many are under the misconception that a web designer is an expert in Internet marketing and that they are also well versed in search engine optimization. They are only met with disappointment. Do you know anyone who has experienced following problems?

- Minimal sales and conversion.
- Traffic to the site is not as expected or hundreds of dollars are being paid for traffic leads but still there is no conversion from that traffic.
- Subscriptions to reports or newsletters that you offer are slim to none.
- You have received only minimal requests for services or products by email or telephone since your site launch.

How could these problems have been avoided? An Internet Marketing Strategy can help position you to your target and niche market as well as increase conversion by following the five levels of the sales process mentioned below. While the answer seems simple the process is a bit more involved but vital to the success of a business that is about to launch online.

SELF ASSESSMENT EXERCISE
1.   Why is internet marketing strategy important?

4.4   Four Myths to Avoid in Internet Marketing Strategies?

More marketing hype is published on the Internet in a single day than P.T. Barnum generated in his entire career. The Internet marketing beast feeds primarily on itself, much like a worm swallowing its tail. The vast majority of marketing information available on the Internet is intended to assist you in marketing products and services sold and delivered solely through the Internet. So, what does this mean for the independent professional whose primary goal is to sell his or her own personal services?

You know, the old-fashioned way of delivering services, with humans interacting face-to-face or at least voice-to-voice. The sheer volume of Internet marketing advice available is likely to overwhelm the average professional. At worst, it is seriously misleading him or her. The issue is that marketing your own professional services is not the same as marketing a retail product or an unidentified business service. Corporate

consulting cannot be sold in the same way that web hosting is, nor can life coaching be sold in the same way that an e-book is. You're likely to make serious mistakes if you try to market yourself by following advice designed for marketing Internet products and services.

Here are four Internet marketing myths that may be hazardous to the health of your business. So, you need to be mindful of them in developing your marketing strategies.

- **Myth One – It all starts with a great website**
The beginning point is a well-defined service. If you don't know who you're marketing to and what you're selling them, even the best website in the world won't bring you customers. Before you even consider creating a website, you should understand your target market, how to describe your professional specialty, and what specific benefits your work provides for your clients. Your site's content is far more important than its design. Yes, you should have a professional-looking website, but a brilliant design and eye-catching graphics will not pay off as well as a clear explanation of why a client should work with you. Articles, assessments, and other examples of your expertise will persuade prospective clients much more than flash intros and interactive menus.

- **Myth Two – More traffic translates to increased profits**
The only thing that increased traffic to your website guarantees is that your web host will use more bandwidth. Before you spend money on banner ads, web directories, or pay-per-click listings to drive more visitors to your site, make sure they will want to do business with you once they arrive. Request feedback from colleagues and current clients on your website. Do they grasp what you're offering? Can they see tangible advantages for your target audience? Based on their feedback, revise your website. Then personally invite some prospective clients to visit and touch base afterward. Do your prospects appear to be more willing to do business with you after viewing your website? If this is the case, you are on the right track.

- **Myth Three – Do whatever it takes to build your list**
There's no doubt that a large opt-in mailing list is a valuable marketing asset, but the quality of the names on your list is far more important than the quantity. Acquiring names by giving away other people's material, trading lists with joint venture partners, or purchasing them from a vendor rarely results in qualified buyers who are truly interested in your services. Absolutely, invite site visitors and people you meet to join your mailing list in exchange for something of value. Effective premiums include a well-written e-zine, a useful report, or informative audio. However, your premium should be directly related to the services you offer and should serve to boost your professional credibility. Names

obtained through promotional gimmicks or unknown sources are rarely converted into paying clients.

- **Myth Four – Killer copy is the secret to sales**

Hype-filled web copy may be effective in selling specific information products or courses, but it does not inspire trust. You will not persuade anyone to hire you as a consultant, coach, trainer, designer, or financial advisor if you offer "not one, not two, but three valuable bonuses," as if you were selling steak knives on late-night television. Your online persona should be as professional as the work you do with your clients. If writing marketing materials isn't your strong suit, consider hiring a professional copywriter. However, make certain that you hire someone who has experience writing for professionals like yourself. The copy on your website should instill confidence in your abilities while also communicating your dependability and solid qualifications.

4.5   Marketing in a Virtual World

Prior to the Internet, small business owners like yourself were typically restricted to a local market, relying on costly advertising and brochures, direct mail, cold-calling, and networking at the local Chamber of Commerce or Rotary. You hoped people would find you through word of mouth or a Yellow Pages ad. You can now work with a consultant, financial planner, or business coach from across the country as easily as you can from across town. Prospects frequently find you in the Internet age (instead of the other way around). The virtual customer has arrived. However, while the Internet has made it perfectly reasonable to land a major client you have never met in person, it has also created new consumer expectations. Prospects can now "Google" for someone with your skills. They anticipate you making a strong virtual "case" for yourself. If you fail the test, make a poor impression, or appear unimpressive in comparison to your competitors, you will lose the potential client. Establishing a good reputation is the only way to be truly successful in business. Understanding how business has changed in the Internet age can also assist you in bringing the potential of marketing your business into the virtual world.

4.5.1   The Virtual First Impression

Consumers now expect businesses to have a credible online presence as a result of the Internet. Many of us now form "first impressions" of people and businesses through our web browsers. From the moment your name and company appear in a Web browser to the moment your website loads, your first impression can mean the difference between getting a shot at your prospect's business or being turned down. Consider this. You've probably used the Internet to research a company

or a person with whom you want to do business. Potential clients and customers are undoubtedly researching you online. Prospects who have never met you are forming opinions about your company with the click of a mouse. Internet first impressions are influenced not only by the appearance of your website, but also by how frequently your company appears or ranks in a web browser.

4.5.2   Become an Online Center of Influence

We have all met people who command complete attention when they speak. Others want to listen to, learn from, and model themselves after them. They are centers of influence, a distinction you can achieve online by cultivating the following characteristics:

* Share inside knowledge with your target market;
* Participate, listen, contemplate, and offer thoughtful responses;
* Be willing to voice an opinion;
* Assume leadership positions in your industry.

Definitely, experience is important. However, this is not the only requirement for becoming an online center of influence and earning the title of 'trusted advisor' within your target market. Begin by making your website a resource for your industry by including a wealth of useful information such as articles, links, downloadable files, customer resources, and anything else relevant to your target audience.

4.5.3   Create a Virtual Podium with Tele-classes

Tele-classes are an excellent way for businesses to establish a virtual presence. They are easily promoted via email and can provide information to prospects, clients, and customers all over the world for a low cost and effort. Michael Losier, a business coach and tele-class leader, created a trade show tele-class: "I had 60 students in my first class, which was very profitable, and many later hired me as a consultant." Also, rather than producing your own tele-class, it may be just as effective and require less effort to participate as a guest lecturer in another professional's class.

4.5.4   Placing Articles Online

Online articles leverage your expertise by providing useful information that website visitors actively seek. Online articles establish you as an expert in your field and convey a level of authority that builds trust and lays the groundwork for sales. When high-traffic, high-credibility Web sites and newsletters publish your articles, you benefit from their loyal readership. Visitors regard your articles as recommendations from

trusted friends. Some of the most valuable "real estate" in the world is now at the top of search engine results pages. The most popular search engines rank websites based on the number of other websites that link to them.

4.5.5 Build Online Relationships

Most business networking used to take place when we recommended a colleague, exchanged business cards, or met with colleagues over lunch. However, social networking is increasingly moving to the Internet. Entrepreneurs can access virtual communities of prospects and associates while developing virtual "platforms" to generate leads and sales and establish themselves as recognized experts through social networking Web sites and online discussion lists. The key to developing a niche community is to identify your ideal customers and the communities to which they belong. You can become your target market's vendor of choice by targeting the best, most favorably inclined prospects within a niche, and sell more with far less effort.

4.6 Networking on the Internet

Networking is one of the most effective ways for any consulting or professional services firm to find clients. However, limiting your networking to only what you can do in person will leave you open to a plethora of opportunities. Networking entails more than simply walking into a room full of strangers and exchanging business cards. It is the development of a network of contacts with whom you can exchange clients, referrals, resources, ideas, and information. Networking can take place via phone, mail, coffee, and, increasingly, the Internet. The expansion of the Internet has given rise to numerous new ways to network without ever leaving your home or office. Pick any topic, and there will be numerous web sites and online communities dedicated to it. Almost any type of Internet presence provides networking opportunities. Enter the name of your profession or specialty, such as "interior design" or "marketing communications," into your preferred search engine. Alternatively, if you have a clearly defined target market, such as "baby boomers" or "biotechnology," you can use that. Skip the sponsored links and banner ads and instead concentrate on the detailed results. You will discover the following:

- **Professional Associations and Schools:** Many association and school websites include member rosters, resource pages, back issues of newsletters, event calendars, and bulletin boards or discussion boards. Not all features will be available only to members or students.
- **Online Communities and Resource Sites:** These include

directories of professionals, vendors, articles, event calendars, bulletin boards, discussion boards, live chats, and links to even more resource sites.

- **Publications:** Magazines and newsletters have websites that include everything from back issues to entire online communities.
- **Job postings**: These can be found on any of the sites mentioned above, and they frequently include opportunities for independent professionals as well as those looking for full-time work.
- **Colleagues and competitors**: Depending on your relationship with them, colleagues and competitors may be the same people. Their websites will provide more information about them and their work, as well as many of the same features as resource websites.
- **Prospective Customers:** Their websites will provide information about their work, current and upcoming projects, and even the names of executives and managers. In addition, if you subscribe to an online service that provides interactive "channels," such as America Online, CompuServe, or MSN, there may be an entire section dedicated to your profession or target market. Some of these resources are also available to non-members.
- **Bulletin Boards** are web pages where you can view and post questions and comments about a specific topic. Answering a posted question is a great way to demonstrate your knowledge, get to know the people who frequent the board, and meet others in your field. When posting, don't be too self-promotional; simply include a signature line at the end of your post, such as "Ingrid Gustafson, Nordic Design." If you see someone else on the board who you'd like to get to know on a more personal level, send them an e-mail. However, never approach the people you meet there for business. You might be barred from joining the club.
- **Discussion Lists**: These are similar to bulletin boards, but members are e-mailed daily, weekly, or whenever a new posting arrives. You can include more information about yourself in a signature box at the end of each e-mail when posting to these lists. Keep it brief, but include a reason for people to contact you outside of the list, such as "Subscribe to my free newsletter" or "Visit my website for a free resource guide." In addition to the search engines mentioned above, you can find discussion lists through online community hosts such as Yahoo Groups or MSN Groups.
- **Live Chats**: Many online communities host live chats on a variety of topics. Participating in these chats is a great way to meet people who are interested in the topic being discussed. Chat rooms that require membership are the best because you are more likely to meet professionals who are seriously interested in the topic rather than people looking for a date.

- **Articles**: Pay attention to who writes them and who is being written about. These individuals are likely to be leaders in your field, or at the very least highly visible. As a result, they are valuable contacts for you. Send them an email congratulating them on the article and suggesting you get to know each other for mutual benefit. Make a specific suggestion for what you can provide, such as referrals or resources.
- **Others in Your Industry**: These individuals could be coworkers, competitors, vendors, or potential clients. Collegially approach them with ideas for how a relationship could benefit you both, such as exchanging referrals, pooling resources, linking on each other's websites, or trading endorsements or articles in each other's e-zine.

4.7   Strategies to Boost Online Sales

There is no deep secret to increasing sales via the Internet. You increase traffic by increasing sales leads. When these first-time buyers arrive, you engage them and convert their interest into a transaction. All of this, however, is much easier said than done. Here are some specific strategies for increasing sales and making your online store crackle and then pop.

Many customers who started shopping online because of COVID-19 stay-at-home orders have become loyal online shoppers. With some basic strategy and marketing tactics, you can capitalize on this trend to increase your online sales and build customer loyalty. The following are strategies to boost online sales of a firm:

4.7.1   Seek out Strategic Partners

The first step is to accurately define your target buyer. Investigate your customer's profile and preferences thoroughly. Next, create as many relevant come-hither offers, teasers, interactive ads, and must-read content as you can manage and afford. Professional organizations and associations should be considered as partners or affiliates when marketing services or business products. Trade or pay for links with other small or medium-sized e-commerce marketers. Consider easy access to the shopping cart as well as dependable site-wide product search functionality.

4.7.2   Cross-Promote

Successful sellers understand that the Internet is only one sales channel, just like mail-order catalogs, phone orders, or face-to-face contact. Everything must work in tandem. Customers will be able to research one

of your products online, purchase it over the phone, and pick it up at the offline store. If you only sell online, you must ensure that your branded URL is widely visible. This includes including it in every employee's e-mail signature. All brochures, catalogs, packing material, shipping boxes, shopping bags, delivery trucks, posters, and postcard notices should include the store URL. If you attend trade shows or conferences, make sure your booth signage and promotional materials include a large, boldly printed URL. Don't pass up a chance. Register variants and misspellings of your domain name as well, so that customers who get it wrong can still find you. For example, a business called "Baskets R Us" should also register "Baskets Are Us." Consider this: for a few hundred dollars in registration fees, you might get one return customer who purchases thousands of dollars in merchandise over time.

4.7.3 Keep Close Touch

Customers will feel more valued and at ease about purchasing online if you establish a bond with them. The more personal you are and the more in touch you are, the more relaxed your customer will be.

4.7.4 Provide Specific (and Honest) Information About Your Product Offerings

The more specific you are, the better. "People want to know the backstory of what you're selling and who you are," says Lynne Dralle, an eBay Power Seller who has sold thousands of items through online auctions. "Always describe precisely what the buyer will receive. "Be truthful," she advises. Dralle mentions any chips or flaws in her collectibles, but she also tells stories, such as how her Aunt Mary brought an item over from England. High-quality product photographs are also required.

4.7.5 Set Delivery Policies that Work for Your Business Model

The long-running debate over whether free shipping increases online sales has finally devolved into individual solutions. While there are still advocates for and against, it is now a matter of product pricing. "Free shipping costs can kill you if you don't include them in the price of the product," says Restivo of GourmetFoodMall.com, whose company surveys online consumers on such issues on a regular basis. However, if you raise your price to accommodate free shipping on commodity items that only sell at the lowest possible price, you will lose. High shipping prices, on the other hand, are a significant detriment to sales of perishable or premium products, presumably because it is easy to avoid those items when they do not feel like a "bargain." Restivo's recommendation: Use second-day air shipping.

4.7.6 Improve Your Website and Service

The goal is to encourage customers to return and to tell their friends and family about your online store. So do everything you can to make the experience faster, more enjoyable, and far superior to your competitors. Explain all of your policies right away. Make unconditional money-back guarantees with no strings attached. Provide free samples. Respond to every question or comment as soon as possible. Invest in a live chat function so that customers can get immediate answers to product questions. Create reasons for people to return to your site by offering a loyalty club, contests, email games, and discounts. Make connections with customers and offer incentives to keep them.

SELF-ASSESSMENT TEST
i.   Explain the strategies a firm can employ to enhance its online sales.

3.8 Summary

It is pertinent to explore strategies and techniques that you can use on the Internet that will enhance and support your business's overall marketing objectives. The strategies include learning how to conduct banner promotions, generate targeted online traffic, positioning your content, and over all brand awareness. Having a Internet marketing strategy gives you a measurable and definitive way to target your market and position your business so that those looking for what you must offer are finding you easily. There are proven methods and tactics that you can use online to increase your conversion rate and get that prospect to become a customer or client. If you haven't taken time to plan your Internet Marketing Strategy you have made a costly mistake that could be draining to your business and costing you customers. There is more marketing hype published on the Internet in one day than P.T. Barnum generated in his lifetime. Like a worm swallowing its tail, the Internet marketing beast feeds mostly on itself. The clear majority of what appears on the Internet about marketing is designed to help you market products and services sold and delivered exclusively on the Internet. Before the Internet, small business owners like yourself were usually limited to a local market -resorting to expensive advertising and brochures, direct mail, cold-calling, networking at the local Chamber of Commerce or Rotary Networking is one of the most effective ways to find clients for any consulting or professional services business. But if you limit your networking to only what you can do in person, you'll be missing out on a huge number of possibilities. There's really no deep secret about increasing sales through the Internet. You drive traffic by

creating more sales leads. When these newbie shoppers show up, you engage them and convert their interest into a transaction.

3.9   References/Further Readings/Web Sources

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UNIT 5   MARKETING   COMMUNICATION   AND BRANDING

Unit Structure

5.1   Introduction
5.2   Learning Outcomes
5.3   Marketing Communication
       5.3.1   What is Marketing Communication?
       5.3.2   What is Integrated Marketing Communication?
       5.3.3   Why is Integrated Marketing Communication Important?
       5.3.4   What are the types of Marketing Communication?
       5.3.5   What are the components in a communication process?
5.4   Role of Internet in Marketing Communication Campaign.
5.5   Steps in Establishing Marketing Communication Campaign.
5.6   Branding
       5.5.1   What is a brand and brand equity?
       5.5.2   What is the steps in branding process?
5.7   Summary
5.8   References/Further Readings/Web Sources

5.1   Introduction

All organizations, large and small, commercial, government, charities, educational, and other non-profit, must communicate with a variety of stakeholders. This could be to obtain materials and services for their business activities, or to collaborate and coordinate with others to ensure appropriate distribution of their goods and services. There are also consumers, like you and me, who have the freedom to choose from among hundreds of thousands of product offerings. Marketing communications is a critical activity that allows all interested parties to understand the intentions of others and appreciate the worth of the goods and services offered. products available. In this unit, we will look at the concept of market communication and branding, as well as its role in e-commerce. We will talk about the role of the internet in a marketing communications campaign, different types of communication, and communication steps. We'll also go over the definition of a brand, brand equity, and the Seven-Step Branding Process.

5.2   Learning Outcomes

At the end of this unit, students will be able to;

- Define Market Communication and understand its importance
- Explain the role of the Internet in a Marketing Communication campaign.
- Identify and explain the communication types and steps in the communication process
- Define what branding is and brand equity.
- Enumerate the Seven-step Branding process

5.3   Market Communication

5.3.1   What is Market Communication?

Marketing communication (MarCom) refers to the methods used by businesses to convey messages about the products and brands they sell to customers, either directly or indirectly, in order to persuade them to purchase. The marketer employs MarCom tools to raise brand awareness among potential customers, which means that an image of the brand is formed in their minds, assisting them in making a purchase decision.

Advertising, sales promotion, events and experiences (sponsorship), public relations and publicity, direct marketing, interactive marketing, word-of-mouth marketing, and personal selling are all examples of marketing communication. These communication tools are referred to as the Marketing Communication Mix.

Marketing communications are the techniques used by a company or a business person to communicate promotional messages about their products and services. Marketing communication experts create various types of persuasive communication and distribute them to the intended audience.

The following are the critical considerations for effective marketing communications:

- **Persuasive Message**: Because different customers have different needs and expectations, it is critical to tailor your persuasive messages accordingly.
- **Design:** Each medium of communication (such as a magazine, newspaper, television, digital media, or brochure) has its own design and specifications. As a result, you must plan and design your messages accordingly.
- **Feedback:** You must solicit feedback from your target audience in order to improve your marketing communication.

5.3.2   What is Integrated Marketing Communication (IMC)?

Integrated Marketing Communication (IMC) is the process of unifying marketing communication elements such as public relations, social media, audience analytics, business development principles, and advertising into a brand identity that remains consistent across distinct media channels. It enables public and private organizations and businesses to provide an engaging and seamless consumer experience for a product and/or service, as well as optimize an organization's image and stakeholder relationships. Professionals with a background in integrated marketing communications may work in areas such as social media marketing, digital media, journalism, market research and consulting, public relations, non-profit and government, entertainment, television and radio, and other related fields.

Integrated marketing communication is a multidisciplinary field that incorporates both traditional and new media practices. As the name implies, integrated marketing communications is a holistic marketing approach that considers marketing strategy in the context of an organization's goals, as well as its business development and maintenance requirements. In other words, rather than having separate teams or efforts within an organization for marketing, advertising, public relations, social media, and consumer/audience analytics, integrated marketing communications encourages the integration of these disciplines to create a more powerful and concerted approach.
Marketing specialists, public relations directors, brand managers, digital media associates, social media marketers, and other media professionals can use IMC theories and strategies to create, execute, and track multi-channel advertising and communication messages that target and influence specific audiences. IMC's influence can be seen in website display advertisements, enterprise blogs, search engine optimization, newspaper editorials, outdoor billboards, magazine advertisements, and other places throughout modern society.

5.3.3   Why is Integrated Market Communication Important?

Marketing communications' sole purpose is to increase the volume of sales through persuasive, informative, and positive messages. Through encouraging messages about products/services, marketing communication provides new facts. Marketing communications are intended to inform and persuade target audiences, as well as to strengthen market credibility. The following are reasons why IMC is important to a firm:

- **Increases Brand Recognition and Trust**: When a brand is able to reach its target audience multiple times through various

channels, it begins to resonate with its audience. If the various channels consistently communicate the brand and message, the person is more likely to recognize and trust the brand. This consistent delivery is made possible by an integrated marketing communications strategy. Without this communication, the audience receives a disjointed brand experience, making the intended message less likely to translate.

- **Enables you to reach a larger audience**: Using more to communicate expands the number of people a business can reach. If a brand focused solely on subway car posters, they would miss out on the audience that drives to work by ignoring radio advertising and billboard advertising. Knowing about integrated marketing communications enables a company to develop a multi-pronged marketing campaign that targets a broader audience. A master's degree in integrated marketing communications teaches students how to identify the appropriate channels for targeting the appropriate audience with the appropriate messaging.

- **Higher Revenues**: When a company is able to deliver a consistent branded message to a large number of people through various channels, revenue growth will naturally increase. Businesses are extremely competitive and rely on a variety of efforts to generate revenue, including their research team, strategists, public relations team, digital and social media marketing team, design team, and others. It is no longer feasible to concentrate solely on one department. If a company wants to stay competitive in their industry, they must become comfortable communicating across all departments.

5.3.4 What are the types of Marketing Communication?

Marketing communications, which include all points of contact between the company and its customers, can be divided into four categories:

- **Mass Offline:** marketing levers such as television, radio, outdoor advertisements, point-of-purchase displays, public relations, and print media such as newspapers, magazines, brochures, newsletters, and yellow pages are examples of mass offline marketing.
- **Personal Offline:** telemarketing, direct mail, sales force, and customer service are examples of levers.
- **Mass online**: Websites, banners, interstitials, rich media, search engines, listings, classifieds, and sponsorships are examples of mass online levers.

- **Personal Online**: levers such as personalized websites, dynamic ad placement, interactive television, wireless devices, e-mail, and customer service are examples of personal online levers.

5.3.5   What are the components in a communication process?

Communication is simply the transfer of information from the sender to the receiver. In practice, however, this is a complex process involving numerous other factors. However, Kotler has provided one of the most effective models for defining the marketing communication process (see diagram   below):
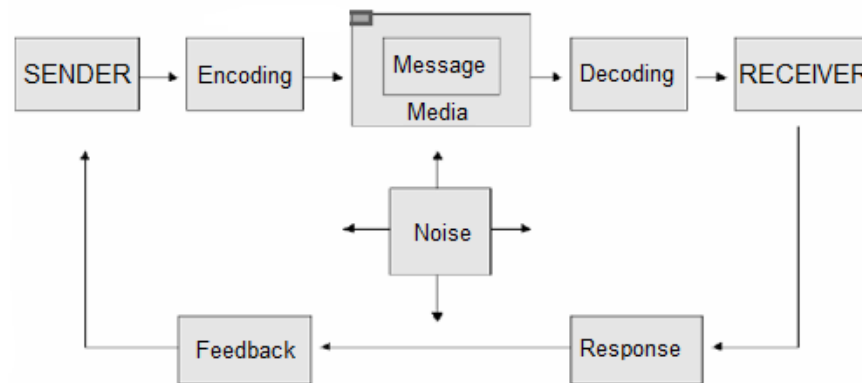
Fig 1: Communication Process
Source: *Kotler (2017).*

The diagram describes various components, the first two of which are 'sender' and 'receiver.' The second and third components are' message' and 'media.' This model also includes 'encoding,' 'decoding," response,' and 'feedback.' The final feature is 'noise.' Noise is made up of random messages that frequently interfere with communication.

This model focuses on the major key factors that contribute to effective communication. Before sending any message, it is critical to understand the market response and your target audience (Kotler and Keller, 2017).

5.4   Role of Internet in marketing communication campaign

From identifying the target audience to evaluating campaign performance, the Internet can play a role in almost every stage of the campaign. The Internet's most important strengths as a powerful marketing tool are its interactive and individual characteristics, as well as its measurement and tracking capabilities.

Interactivity and personalization will assist businesses in moving users through the relationship stages efficiently and smoothly. Firms can streamline the progression of the customer relationship in ways never

before possible by utilizing the online marketing communications levers in an interactive and individual manner. Because of the interactivity provided by a click-through, a banner ad, for example, can generate awareness and exploration.

A user can see an ad, click through to a website, explore it, and make a purchase while sitting in front of a browser. It is an interactive experience that television, radio, and print cannot match. This straightforward progression appears to be very promising for web firms, but it can also be dangerous. The same characteristics allow Internet users to easily end a relationship. Users may leave a website if it is inaccessible, has poor navigation and controls, or has a time-consuming registration process. The ability to communicate with users in a more personalized and interactive manner via the Internet is a significant boon to marketing communications.

5.5 Steps in Establishing a Marketing Communication Campaign

A company must determine the best way to use the appropriate levers in order to successfully build and execute a marketing communications campaign. The segmentation, targeting, and positioning decisions made as part of the marketing strategy should serve as the starting point for any communications campaign. Six stages comprise the process of planning a communication campaign in accordance with marketing strategy.

- **Identify the target audience:** The first step in launching a campaign is to identify the target audience. Customer research determines the best audience to target by asking questions such as who is the potential customer, whose need is being met by the product, and who is willing to pay for it. This information is typically obtained in one of three ways: through experience, demographics, or tracking previous behavior. Original customer research or customer-research firms can be used to obtain demographic information. Furthermore, the Internet has made it easier and less expensive to track consumer behavior, and developing target audiences based on Internet tracking is becoming a promising reality. By keeping track of the webpages that users visit, time spent on specific webpages, ads and links clicked on, and purchases made, marketers can develop an extremely valuable database.
- **Determine the communication objectives**: The communication's intent must be clear before it is created. The message should emphasize one of the four stages of the customer relationship. If the company or offering is unfamiliar to the target audience, the message should raise awareness. Once an overall

goal for an integrated marketing campaign has been established, individual goals for each of the campaign's media elements should be established. Traditionally, communications were classified based on whether they were intended to raise awareness, knowledge, and preference or to provide an immediate stimulus to purchase.

- **Create a media plan:** creating a media plan entails selecting the appropriate media for the message and deciding how to use it. The media plan must be consistent with the target audience, consistent with the communication objective, and the plan's various components must work well together.

- **Create the message**: Creating the message necessitates extensive planning and analysis. The communication theme is one of the first things to consider. The target audience must be receptive to the theme and consistent with the goal that has been established. When it comes time to focus on the later stages of the customer relationship, the theme of a message designed to raise awareness may need to be adjusted. The theme should also be consistent with the offering's function and with brand personality.

- **Execute the campaign**: once the content for the integrated marketing communications campaign is set for distribution, the firm can move forward with the campaign's execution. It will need to purchase media placements and decide whether to form a partnership with other marketers. It will also be responsible for transferring execution materials to the media.

- **Evaluate the campaign's effectiveness**: the evaluation process commences as soon as the message is distributed. Each aspect of the campaign should be evaluated in relation to its goals. Furthermore, the campaign's integrated message synergy should be evaluated to determine whether the messages and media are integrated optimally. In the case of messages directed at specific consumers, the evaluation should include a consideration of whether the communication method and content are consistent with the customer's history.

Self-assessment Exercise
1. Explain the concept of Integrated Marketing Communication.
2. Enumerate the stages in the marketing communication campaign.

5.6 Branding

5.6.1 What is branding and brand equity?

A brand is a name, term, sign, symbol, or design, or a combination of these, used to identify and differentiate the goods and services of one seller or group of sellers from those of the competition. Brand equity, on

the other hand, is a collection of assets that can be viewed from the perspective of both the firm and the customer. It is essentially a synthesis of consumer responses and benefits.

Consumer responses can be classified into two types: brand awareness and brand associations. The strength of a brand's presence in the consumer's mind is referred to as brand awareness. A brand with a high level of brand awareness is more likely to be remembered, whether prompted by an advertisement or unaided by the company. Consumers' associations with a brand are referred to as brand associations. These associations can be usefully classified according to their strength, valence, and uniqueness.

Researchers recommend that marketers use a combination of techniques to assess consumer perceptions, such as depth interviews, focus groups, thought listing, visual techniques, projective techniques, and rating scales.

E-marketing programs can be used to build brand equity through web design, brand name and logo, service offerings, cobranding arrangements, and so on.

5.6.2 What is the steps in branding process?
The seven steps are as follows;
- **Step 1; Clearly define the Brand Audience;** branding strategies will be ineffective without a clear specification of the target audience for the offering.
- **Step 2; Understand Target Customers;** From the broad description of the target customer, it is frequently useful to describe a composite prototypic customer who can bring the target customer segment to life.
- **Step 3; Understand the Competition;** the competitive environment is also critical given the need to provide relative or superior value to target customers.
- **Step 4; Design compelling brand intent;** the brand intent brings to life the value proposition or cluster. Value propositions or clusters tend to focus on high-level customer benefits. Here, firms are looking for a description of how the brand should be interpreted from the customer's viewpoint.
- **Step 5; Identify key leverage points in customer experience;** this step requires the firm to move from the strategic notion of brand intent to the tactical notion of marketing levers-prices of products, customer interface, mix of online versus offline communications-that will activate the customer.
- **Step 6; Execute the branding strategy;** principles of good execution include integrity, consistency, patience and flexibility.

- **Step 7; Establish feedback systems;** branding strategies rarely work out exactly as planned, and so it is important to have regular feedback systems in place.

5.7   Summary

- Communication at its simplest, is about delivering a message.
- To be effective, an Integrated Marketing communication approach requires support at the highest corporate level. High-level coordination is also imperative to ensure that marketing communications adhere to the marketing strategy and positioning objectives that define the target audience and value proposition for the firm's offering.
- Marketing communications, which includes all the points of contact that the firm has with its customers can be grouped into four categories; Mass Online, Personal Online, Mass Offline and Personal Offline.
- The process of planning a communication campaign in accordance with marketing strategy has six stages.
- A brand is a name, term, sign, symbol, or design, or a combination of them intended to identify the goods and services of one seller or group of sellers and to differentiate them from those of the competition. Brand equity on the other hand is a combination of assets that can be viewed from both firm and customer perspective.
- The seven-step branding process are;
  Step 1; Clearly define the Brand Audience.
  Step 2; Understand Target Customers.
  Step 3; Understand the Competition.
  Step 4; Design compelling brand intent.
  Step 5; Identify key leverage points in customer experience.
  Step 6; Execute the branding strategy.
  Step 7; Establish feedback systems.

Self-assessment Exercise
i.   Define branding.
ii.   Identify and discuss the processes in branding

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UNIT 6   FINANCIAL   APPRAISAL,   IMPLEMENTATION AND CONTROL OF 3-MARKETING PLAN

Unit Structure

6.1   Introduction

Finance is an important resource for any organization. The availability of finance underpins the enterprise's operational capability. A second critical requirement of the strategic analysis process is thus an assessment of the enterprise's current financial situation. This chapter summarizes some of the criteria that may be used in the financial appraisal process. It also examines and depicts the concept of zero-based budgeting.

This unit will go over the financial evaluation, implementation, and control of an e-marketing plan. We will emphasize the significance of these stages of the marketing plan as well as the techniques used in each stage.

6.2   Learning Outcomes

- Understand the concept of financial appraisal and know the techniques to use to appraise the finances of a potential project.
- Know how to Control and Implement an E-marketing plan.

6.3   Financial Appraisal

6.3.1 What is Financial Appraisal

Financial appraisal is a method for determining the viability of a proposed project by calculating the value of net cash flows generated by its implementation. The scope of the investigation, the range of impacts examined, and the methodology used distinguish financial appraisals from economic appraisals. A financial appraisal looks at investment decisions through the eyes of the organization making the investment. As a result, it only measures the direct effects of an investment decision on the cash flow of the organization.

If it is necessary to determine the profitability of a project to the project implementer, a financial analysis must be performed. A financial analysis is usually only worthwhile if the project's output can be sold in the market or otherwise valued in market prices. This is almost always the case for a privately funded project, but it also applies to some government business ventures. A private firm will be primarily interested in conducting a financial analysis of any project it is considering, and only in exceptional circumstances will it be interested in conducting an economic analysis.

An economic appraisal, on the other hand, considers not only the impact of a project on the organization that sponsors it, but also the external benefits and costs of the project for other government agencies, private sector enterprises, and individuals-regardless of whether such impacts are matched by monetary payments.

Financial appraisals differ from economic appraisals in the following ways:

Financial Analysis	Economic Analysis
Market prices and valuations are used to assess benefits and costs.	Measures such as willingness to pay and opportunity cost are used to determined the benefits and costs.
The discount rate used represents	Estimated social opportunity cost

the weighted average cost of debt and equity capital.

of capital represents the weighted averaged cost of debt and equity capital.

A project's financial analyses compare the benefits and costs to the enterprise.

Economic analyses compare the costs and benefits to the entire economy.

6.3.2 How is Finance a Key Resource and Capability?

Finance is an important resource for any organization. Finance is almost never, if ever, limitless. It may be a constraint on, or a limiting factor for, organizational decision-making (the concepts of "constraint" and "limiting factor"). The enterprise can only do so much with its available financial resources (and the quality of its financial management).

Finance, as a resource, underpins the enterprise's operational capability and capacity. In other words, it may evaluate what the enterprise can afford to do and thus achieve. This is due to the fact that the available funds will determine the type of assets and people the enterprise can afford to use, and thus the type of output it can produce. Wealthier football clubs, for example, can afford to build larger stadiums (which can hold more paying customers) and pay the highest-paid managers and international players.

The organization's financial performance is critical. Financial performance refers to the enterprise's financial results in terms of profitability, cash flow, budgetary and cost management, dividends paid, and so on. Financial performance is a critical success factor . It is, for example, a critical success factor from the perspective of financial providers. Investors will anticipate a reasonable return on their investment. Banks will demand interest and loan repayment. Family members' livelihoods will be dependent on the financial performance of a family business. The state will expect public agencies, schools, and hospitals to be good stewards of taxpayer money in order to meet their obligations.

The "financial health check" technique can be used to assess the financial state of the enterprise (as well as the capability and capacity it represents).

6.3.3 What are the purposes of Financial Health Check?

The financial health check is used to I analyze the organization's financial condition and (ii) analyze the capability and capacity that this financial condition represents. It consists of:
a.   examination of published accounts and accounting ratios

b.   an examination of the margin of safety (performance, profitability and asset utilization)

The financial health check is likely to be used to supplement the internal corporate appraisal process.

- **Examining Published Accounts and Accounting Ratios**: Where a business's financial accounts are available in the public domain, the financial appraisal process may be based on the analysis of accounting ratios such as liquidity, leverage, profitability ratios, and so on.

- **Performance, Profitability, and Asset Utilization**: This category of financial data analysis is used to show how well a business is run. These ratios indicate the level of return generated by the organization's assets and employees. They demonstrate howfixed assets are used to generate profit and how working capital is used to generate sales and cash flow. They also demonstrate the speed and efficiency with which the company completes customer transactions.

6.3.4   What are the Uses of Financial Analysis

Solvency and Liquidity:

Indicators of solvency and liquidity are critical to the financial appraisal process. These indicators indicate whether or not the company can pay its suppliers (creditors) for goods and services received. They demonstrate whether it is able to pay interest on loan finance or repay loan capital. They demonstrate whether it has sufficient working capital to support its current or planned level of business activity. They also indicate whether the company generates its own funds for investment and business development.

This appraisal process will also be used to identify management actions that may overstretch the organization's finances and lead to "overtrading" conditions. Overtrading is the attempt to operate a level of business activity that exceeds the organization's financial capacity to operate that business. Any business or service organization must ensure that it has adequate cash resources to pay its bills and a proper cash flow to operate on.

Ownership, Capital Structure and Debt Management:

Accounts must be published in order to show information about capital structure, which includes the various sources of finance used in a business. Shareholders, institutional investors or trusts, banks, or the state may contribute funds. The process of corporate appraisal examines the relative importance of, or balance between, these various sources, as well as how their providers' expectations can be met.

The evaluation process includes an examination of ownership and debt management. Dividends and capital growth will be expected by shareholders. The use of debt and credit creates long-term obligations. It is necessary to pay interest. Debt must be paid back.

Companies borrow money at a predetermined interest rate and reinvest it in their operations. They anticipate a return greater than the cost of the interest. This process has the potential to "gear up" or "leverage" the business activity. It may increase the return to shareholders if the investment results in a positive cost-return differential.

This type of financing, however, is fraught with danger. The procedure can be reversed. A combination of high or rising interest rates, declining business activity returns, and a recession may reduce shareholder returns. This may have an impact on share valuations as well as dividends. And the higher the debt burden, the less profit there is to distribute to shareholders in the form of dividends, making the shares less appealing to investors. As a result, a downward spiral or "vicious circle" may occur, leading to the loss of confidence or the potential for hostile acquisition or takeover described in a later chapter.

When companies became overly geared in the late 1980s and early 1990s, the workings of this vicious circle were brutally illustrated in the UK and the US. In an era of high interest rates, deep recession, and emerging global competition, they had become dangerously over-reliant on large amounts of debt finance.

Stock Management Requirements:
Analysis of the four financial ratios is used to indicate:
- stock market evaluation and acceptance of the company as an investment.
- the relationship between earnings retained in the business, and dividends paid to investors.
- the degree to which retained earnings are being used to provide funds by which to finance the business. A low payout from a healthy firm may indicate that earnings are being reinvested for growth, or that the business wishes to minimize its dependence on other sources of capital.

Cover:
The analysis of cover deals with the adequacy of the margin of profit over and above a required rate of dividend payment, or the ability to pay interest on loan finance, thus:
In this case, the appraisal process looks at the capacity of the organization to meet its immediate commitments to shareholders and lenders.

The analysis of cover is also extended to the capacity of the organization to repay the capital of the loan by the due date. Similarly, banks and institutional investors are interested in the value of the assets against which a loan may be secured. This is a particular issue for the small to medium sized enterprise (the SME), the private company, or for the riskier venture.

Financial Strength and Capability:
The financial appraisal of the organization may reveal something about the strength of its financial capability and capacity. For instance, it may indicate the degree to which it already possesses funds for use in the business; or is instead likely to be able to obtain new monies, from whichever source. It may indicate how easy (or otherwise) it would be to obtain these additional funds. The analysis of financial strength may therefore demonstrate such features of capability and capacity as:

- the feasibility of growth or development strategies, since the availability of finance is essential to their implementation.
- the capacity of the organization to self-finance itself, without the need for additional share issues or external borrowing, whilst at the same time meeting shareholder dividend expectations, debt service commitments (etc).

Trends, Growth Rates and Comparisons:
The use of published accounting information and ratio calculations is likely to be most effective when taken over a number of years. The analysis of a series of ratios will reveal *trends over time*. These trends will show whether the company is growing, stagnating, or declining. They may confirm the existence of the strengths or weaknesses. They might instead hint that the company is ripe for hostile acquisition or takeover.

Similarly, the use of accounting ratios as a tool of corporate appraisal may be at its most effective where comparisons can be made with other organizations in the same operational or industry sector. These comparisons are used as *benchmarks* by which to evaluate current levels of performance. Interfirm or inter-organization comparisons are for instance available on commercially available databases, from "benchmarking clubs" or benchmarking groups, or from subscription services such as PIMS.

Self-assessment Exercise
- Define financial analysis. (2 minutes)
- In three sentences, distinguish financial analysis from economic analysis. (5 minutes)

6.4   Different Appraisal Viewpoints

The interpretation placed upon published financial information, accounting ratios, trends, and interfirm or benchmarking comparisons may depend on the particular viewpoint of the person carrying out the appraisal. For instance:

- the investor may focus on trends in annual or short-term performance and profitability, share and asset valuation, cash flow, and growth potential.
- the supplier as creditor is interested in short-term cash flow, the ability to pay debts, long term enterprise viability, and evidence of the systematic avoidance of conditions of overtrading.
- the potential acquirer monitors trends in relative performance, efficiency and profitability (for instance against industry benchmarks), potential for growth and efficiency gains, and share valuation (especially if the present stock market valuation is perceived to be too high or too low). So-called "asset strippers" or "corporate raiders" will instead be looking for undervalued assets whose real value they think they can realize at a profit if they can acquire them.
- Management and employees are concerned with short and long-term viability and performance, with comparisons with competitors and benchmark companies in the sector, and with the potential for unwelcome or hostile takeover bids.
- The state will be concerned with the effectiveness and efficiency with which public sector organizations use the financial resources that they have been allocated, relative to the objectives set. In recent years in the UK this has meant a requirement to demonstrate the achievement of "Best Value" performance against pre-established service targets, performance benchmarks, and Performance Indicators ("PI's"). It has also meant adapting to rigorous government policies of the "resource stretch and leverage" process. Published accounting data and ratio calculations are variously used as an appraisal guide, to identify issues, and to provoke questions. They augment and enhance the picture of the organization being built up as the process of corporate appraisal takes shape. (Barbera, 2017)

6.5   Analysis of Margin of Safety

Margin of safety calculations may be an important part of the internal appraisal of the enterprise. Data on a company's margin of safety is normally never made available on an external basis. The appraisal value of the margin of safety calculations stems from knowing that the greater the margin of safety, the less the company is vulnerable to a decline in

sales of that product or product line. In the case given above, the Elliott Company can withstand a 40 per cent drop in sales and still achieve break-even. The reverse is also true. The smaller the margin of safety, the more the company is vulnerable to a decline in sales and the closer it is pushed towards its break-even point. Two implications follow from this reasoning. These are that:

- the company needs to monitor the gap between actual and break-even sales on a continuing basis.
- it may need to control (or to reduce) its fixed cost burden to keep its break-even point as low as possible.

The operation of assets such as hotels and commercial passenger aircraft are for instance particularly sensitive to margin of safety calculations. These assets represent a high fixed cost and need a certain minimum level of occupancy to break even. Once they are (say) 70 percent full then virtually every unit of extra revenue represents contribution to profit. Variable costs per customer are marginal; most of the costs are fixed irrespective of volume. The hotel or aircraft costs a certain amount of money to operate whether it is full.

The analysis of margin of safety calculations is also of importance where information technology-based systems of direct product profitability analysis and customer profitability analysis are in use. These systems facilitate the close or "real-time" monitoring of sales to customers of individual products or product lines. They for instance permit the frequent adjustment or fine-tuning of distributor or retailer stockholding levels and inventory. Such systems can as a result produce erratic and unpredictable movements in channel purchasing and manufacturing volume patterns. They can erode the profit buffer represented by the margin of safety.

Given the uncertainty and requirement for flexibility implied by these systems, and their widespread use, the appraisal process may focus on the degree to which the enterprise (and a supplier) pursues strategies which have the effect of maximizing its margin of safety, minimizing its fixed cost burden, and minimizing its break-even points.

6.6.1 What is Zero-Based Budgeting?

Zero-based budgeting (ZBB) is a formalized system for reviewing the process of budgeting for an organization's activities. Zero-based budgeting looks at each activity as if it were being done for the first time, starting from scratch. Several levels of provision are identified, costed, and evaluated in terms of the benefits to be obtained from each activity. Zero-based budgeting is also known as "priority-based budgeting."

ZBB may be used in the appraisal process because it is based on the belief that management should be required to justify existing activities and resource allocations in the same way that new proposals are justified. The appraisal process will compare existing activities with alternative potential applications of resources to be committed during the planning period in question. As a result, the concepts of: are implicit in ZBB.

• opportunity cost – how may the available resources now best be used?

• priority – do past and current commitments of resources reflect or match present strategic priorities?

In most cases, businesses and government agencies use incremental budgeting over time. Budgetary planning is based on recent or recent past experience. Existing budgets are updated for the upcoming planning period by incorporating anticipated price, volume, inflation, or operational changes. Last year's expenditure is the main justification for next year's expenditure. The fact that resources are allocated to the activity is assumed. Because the activity is already present, it is assumed that it will retain its right to resource allocation. The use of ZBB in the corporate appraisal process calls these assumptions into question. It can be used to call into question the implied right of existing activities to continue receiving resources. It can be used to ask questions like:

▪ What are the current goals of the activity being evaluated?

▪ To what extent are these goals being met, and how relevant are they to current circumstances?

▪ Is the activity still required?

▪ Is there now another way to achieve the same goal, such as by re-engineering or outsourcing the processes involved?

▪ Are any of the alternatives less expensive?

▪ What are the ramifications (in terms of costs and benefits) of discontinuing the activity now?

6.6.2 How is Zero-Based Budgeting Implemented?

The organization and its departments must be divided into identifiable and manageable activity areas, where costs can be clearly identified and allocated, operational benefits and results described, and meaningful comparisons made.

After that, each identified sphere of activity is subjected to a cost-benefit analysis. This analysis begins at zero and assumes that no activity has an established right to command the use of resources. The process may require the creation of a series of alternatives for each decision area based on the following criteria:

- a summary of the activity, function, or department
- a statement of the activity's objectives
- activity performance evaluation and measurement criteria
- the various methods and costs of carrying out the activity
- the potential outcomes and benefits at various levels of funding.
- the ramifications of not funding the activity

An example will demonstrate the impact of this process on corporate appraisal. Assume a railway system has four operating divisions. Figure 3.1 shows an example of each. Each division can be funded at one of five different levels, ranging from "high" to "low." It can cu However, using ZBB in the process of corporate appraisal can focus management attention on the consequences of:

However, using ZBB in the process of corporate appraisal can focus management attention on the consequences of:
- an increase in the level of gross available resources, say from 14 to 17.
- desired changes in resource allocation priority within total service provision, such as "intercity freight," given a fixed level of resource availability (that is, 14 units).
- new priorities, such as customer demand for new electrification schemes or urban rapid transit systems, neither of which is covered by the current budget.
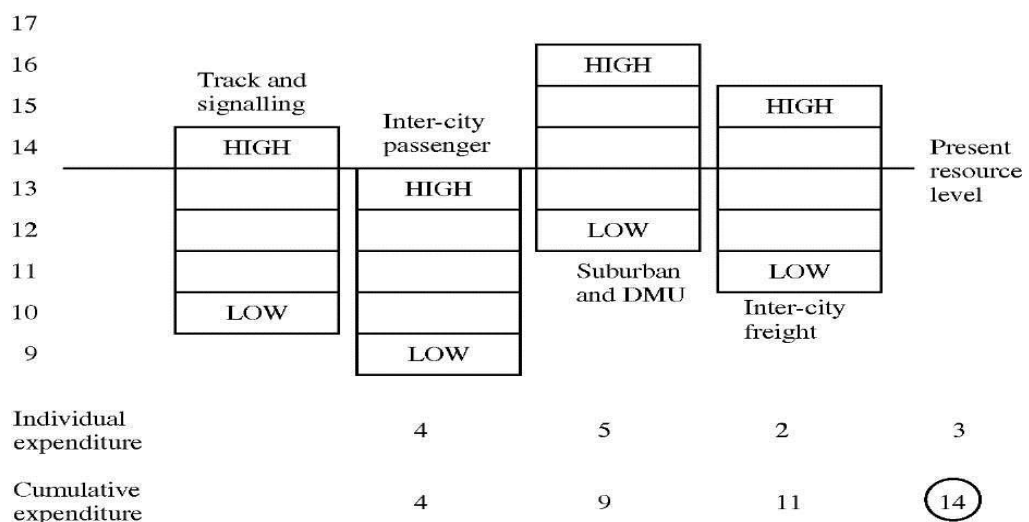

Figure 3.1 Implementing ZBB (Lohrey, 2017)

The use of ZBB in the appraisal process can thus be used to clarify the implications of funding decisions, whether current or planned. It forces the organization to reconsider the fundamental reasons for what it is currently doing; to confront the consequences of continuing as is; or to change its priorities.

Self-assessment Exercise
1.   Discuss how an organization can implement Zero-Based Budget.

6.7   The Use of Financial Appraisal Within Strategic Management

6.7.1   What does financial appraisal analyzes?

The financial appraisal process examines:
- the enterprise's financial situation and health
- financial resources and capacity (what the enterprise can afford to do).
- financial strengths and weaknesses.
- performance disparities
- the use of the zero-base concept.

6.7.2   What is the process of corporate appraisal?

This corporate appraisal process can then be used to:
- Focus the selection of strategies on areas of financial capability and strength. Exploiting high safety margins and low break-even points in markets with wide or cyclical variations in demand and profitability, such as capital equipment or building construction.
- choose strategies that capitalize on, enhance, or develop financial capability and strength. For example, companies may repurchase their shares in order to reduce dividend commitments and provide a better return to the smaller number of remaining shareholders, thereby increasing shareholder value.
- Choose strategies that address or correct financial weaknesses that would otherwise put the company at a disadvantage. Taking steps to improve cash flow; reducing costs; increasing company profitability; lowering corporate indebtedness by reducing long-term borrowing; seeking Best Value performance enhancements to offset the need for a local government authority to seek higher local taxes are some examples.

6.8   Implementation and Control of Marketing Plan

6.8.2   How is Implementation of Marketing Plan Conducted?

To ensure that a company's product, service(s), and business are in front of the right people at the right time, a well-thought-out marketing plan must be implemented and followed. If the firm skipped the step of developing a marketing plan, it is recommended that the firm do so before spending any money on marketing. If the company has already finalized its marketing strategy (at least for the next quarter), here is some helpful information on how to successfully implement it.

1.   **Communicate Your Marketing Plan:** The first step in putting a marketing strategy into action is to communicate it to the rest of the company. Obviously, if the entrepreneur is a sole proprietor, proceed to step 2. Now, management must rally everyone behind them and create a rallying point around your marketing strategy. Any business can benefit from new marketing efforts. People like to feel like they are a part of something new and exciting, so make sure to include those in your organization to foster this sense of involvement and enthusiasm. Some of the best ways for the firm to get exposure for its new product or service that they are marketing may be through some of the people right around them. The sales team is a great example: if you get them excited about how you're going to strategically and effectively market what you're asking them to sell, they'll gain more confidence and pride in what they're selling.

2.   **Know Your Marketing Plan's End Goal:** For the most part, business, like life, is unpredictable. It is critical that you maintain your faith in the research and planning you did to carry out your marketing strategy. If you have a specific set of goals that you are constantly striving to achieve, you are on the right track to success. Just be aware that outside factors will cause kinks in your plan and may cause you to deviate from it. This is normal; just stay true to your goals, and a few degrees or dollars off here and there will not harm you in the long run. However, if you implement your marketing strategy with no end goal in mind, these external factors will almost certainly be detrimental to your business and its bottom line.

3.   **Chart the Success of Your Marketing Plan:** Tracking as much of your new marketing plan as possible is one of the most important things you can do during its implementation. One of the advantages of online marketing, which should account for at least 70% of your marketing budget, is that you can track your Return on Ad Spend (ROAS) and Return on Investment (ROI) down to the penny. Traditional marketing methods, such as newspaper advertising, make this extremely difficult to accomplish. The data you collect while implementing your marketing plan will be extremely useful not only during the implementation, but also for future marketing efforts.

4.   **Adjust Your Marketing Strategy:** As stated previously, business can be unpredictable, so be prepared to adjust your marketing efforts to accommodate market highs and lows. It is critical to stick to your marketing plan as much as possible, but if an outside factor interferes with its implementation, you must be able to make precise, strategic moves on the fly. The last thing you want to do is panic. This is the simplest option. If the economy slows or a news event has a negative impact on the acceptance of your offer, don't panic; these factors can be

used to your advantage. The last thing you want to do is become fearful and turn things off in order to avoid wasting money. This will destroy your company. During slow markets, you should be more aggressive because this is usually the best time to get the most exposure and branding for the lowest possible price. When the market recovers, as it will, your company will be well positioned, while most other companies will be scrambling for the same exposure. You must also use all press, positive or negative, to your advantage. One of the most valuable aspects of the media is that it will provide you with some of the best advertising and exposure if you position your company and marketing correctly.

5.   **Marketing Plan Success:** By following the steps outlined above and truly investing in your marketing plan, your product, service, business, and company will receive the exposure, branding, and positioning required for success. There are numerous ways to market a business these days, and if you are not creative and strategic in your marketing, your success rate will decrease exponentially. Don't get stuck in the old-school marketing methods you learned in school or from your first boss. The Internet alone provides numerous options for marketing your business that are less expensive, have a much wider reach, and are more cost effective. The most significant advantage of Internet Marketing is that people are constantly using the Internet to find information or products to purchase. In other words, they are specifically requesting that someone advertise their services to them and demonstrate why they should use them. This is known as inbound marketing, and it produces the best type of customer. Take advantage of the methods provided by the Internet, and your business will grow faster than you could have imagined.

6.8.2   How is Control of Marketing Plan Carried out?

To maximize the return on a marketing plan, controls must be in place to monitor its progress. The controls are constantly analyzed as a marketing plan progresses to determine how the plan's actual performance compares to the projections. Any necessary changes are made based on the analysis of marketing controls. Understanding the controls in a marketing plan will aid in the development of effective performance measurement indicators.

The control phase of a marketing plan includes three distinct levels of control

1.   **Controls for Marketing Plans**: Many control mechanisms are quantitative in nature, evaluating performance and cost effectiveness based on hard facts and mathematical calculations. Sales analysis, market share analysis, and assessments that compare marketing expenses to sales ratios are some examples. Qualitative controls, such as

a suggestion box, customer surveys, or an in-house customer panel, are equally important. These control techniques allow you to assess how customers feel not only about the company's products and services, but also about the company itself.

2.   **Performance Benchmark Standards:** Marketing plan controls include performance benchmark standards that are related to marketing plan objectives. However, performance benchmarks can only be useful if the marketing plan objectives are clear, well-written, and well-defined. For example, if the marketing plan objective only states that the plan should improve response rates, it will be difficult to establish an accurate benchmark standard. A goal of improving response rates by 25%, on the other hand, lays the groundwork for developing an effective performance standard.

3.   **Control Phase Timing**: At the end of a marketing plan or campaign, it is too late to discover that the plan or campaign was not as successful as it could have been or that it was not cost effective. Throughout the implementation phase, monthly and quarterly evaluations can assist the marketing team in identifying red flags that require further investigation or immediate action, as well as monitoring trends as they develop. The goal is to determine what is happening and why it is happening, and then to determine what corrective actions are required, including the implementation of a contingency plan, to eliminate marketing plan issues.

Self-assessment Exercise
i.   Discuss the control phases in marketing plan control.

 6.9   Summary

- Financial Analysis is different from Economic analysis.
- The financial health check is used (i) to analyze the financial condition of the organization, and (ii) to analyze the capability and capacity that this financial condition represents.
- To ensure that a product, service(s) and business get in front of the right people at the most opportune times, a company must implement and stick to a well thought out marketing plan.
- To maximize the return on a marketing plan, there need to be controls in place to monitor the plan's progress.
- The control phase of a marketing plan includes three distinct levels of control. The first level includes strategic controls that determine the overall effectiveness of a marketing plan in terms

of markets, products and channels. The second level includes operational controls that assess whether positive results are being achieved. The third level includes profit and efficiency controls that determine whether the business is making or losing money and whether funds allotted to the marketing plan are being spent in the most efficient way.

6.10   References/Further Readings/ Web Sources

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MODULE 4   E-BUSINESS SECURITY

UNIT 1   INTRODUCTION TO E-BUSINESS SECURITY

Unit Structure

1.1   Introduction

We discussed the concept and nature of the e-marketing plan in the previous module. This unit will go over the concept and nature of E-Business Security. Highlight the security methods, security setup, the relationship between security and websites, whether it is necessary, customer tracking, and the consequences of not having security on your website.

1.2   Learning Outcomes

At the end of this unit, the student is expected to:
- List the various types of security measures for e-commerce
- Assess security measures
- Identify some security measures for a web site
- Explain the relevance of security measures
- Explain the basic principles for customer security
- Track a customer as a security measure.

1.3   Computer and Security

1.3.1   What is e-commerce security?

E-Commerce security is the policy that ensures secure internet transactions. It consists of protocols that protect people who sell and buy goods and services online (Jinson, 2022). Security is an essential component of any internet-based transaction. Customers will lose trust in e-commerce if its security is compromised. The essential requirements for secure e-payments/transactions are as follows:

- **Confidentiality**: Information should not be accessible to unauthorized individuals. It should not be intercepted while being transmitted.
- **Integrity:** Information should not be altered while being transmitted over a network.
- **Availability**: Information should be available whenever and wherever it is needed, within the time frame specified.
- **Authenticity:** A mechanism should be in place to authenticate a user before granting him/her access to the necessary information.
- **Non-Reputability**: Non-Reputability is the protection against order denial or payment denial. Once a message is sent, the sender should not be able to deny sending it. Similarly, the message's recipient should not be able to deny receipt.
- **Encryption:** Encryption Only an authorised user should be able to encrypt and decrypt information.
- **Auditability:** Data should be recorded in a way that allows it to be audited for integrity requirements.

1.3.2 What is the relationship between computer and security?

Prior to the Internet, computer security was restricted to 'closed systems' or network computers such as offices or banks, where only people

physically present could use the computer system. The network supervisor had an easy time setting up user names and passwords because people were used to logging on before they could use these types of computers or resources at the time.

With the introduction of the Internet, computer users can now work in a 'open system,' and security has become significantly more complicated. Even though you can now connect your home or office computer to the Internet and conduct remote transactions without leaving the building, you want to be certain that the transaction is secure. The transaction is carried out over the Internet by bouncing the information through various computers before reaching, say, the bank's computer. You want to ensure that no one observes the transaction and collects or modifies your transaction information along the way. This is where computer security enters the picture. There are numerous types of security systems, but the majority rely on a process known as encryption.

When you connect to your bank or another service to make a transaction, you may be asked to send your account number or user name, as well as a Personal Identification Number (PIN) or password, for verification. This information should only be sent after a secure connection has been established. If you are using an Internet browser, you will notice a small closed lock appear in the browser window. When you connect to a secure server, any information you send or receive is scrambled or encrypted using a mathematical formula and then decrypted or reassembled at the other end. The computer user is unlikely to notice this as they conduct their secure transaction.

Anyone who intercepts your transaction with criminal intent will be treated to a stream of garbled nonsense. If you are using a new service for the first time, you will most likely need to create an account and possibly download a small piece of software known as a plug-in, which allows your computer to create the secure connection or link. The transaction frequently involves the exchange of a small file that records the transaction and can serve as a flag or bookmark the next time you visit that website. Cookies are small files that are set by the website you are visiting. They may include information such as the type of server from which you are connecting, the type of browser you are using, the most recent site you visited, and any information you volunteer. The information stored in the cookie can be viewed. To locate the cookies folder, perform a search for 'cookie.' Windows users can view the cookies that they have saved in the folder.

Self-assessment Exercise
i.   Enumerate the basics of e-business security. (5 minutes)
ii.   Briefly discuss the relationship between computers and security

1.4   Security Methods

The following are major security measures:

1.4.1   What is Encryption?

Encryption is a very effective and practical method of protecting data being transmitted over a network. The information is encrypted by the sender using a secret code, and only the specified receiver can decrypt it using the same or a different secret code.

Encryption protects privacy. A message is encrypted by a public key and decrypted by a private key in PKI (public key infrastructure). The public key is widely distributed, but the recipient is the only one who has a key. The encrypted message is encrypted again, but this time with a private key, to prove the sender's identity (since only the sender has the key). Such procedures serve as the foundation for RSA (which is used by banks and governments) and PGP (Good Privacy, used to encrypt emails). Unfortunately, PKI is inefficient for sending large amounts of data and is frequently used only as a first step — to allow two parties to agree on a key for symmetric secret key encryption.

In this case, the sender and recipient use keys generated by a third body: a key distribution centre. Although the keys are not identical, they are all shared with the key distribution centre, allowing the message to be read. The symmetric keys are then encrypted using RSA, and various protocols' rules are applied. Naturally, private keys should be kept private, and most security flaws occur here. The key pair is also used in encryption, but in reverse. Once your message is finished, you encrypt the file with the recipient's public key, ensuring that only the recipient has access to the message with their private key.

1.4.2   What is Digital Signature and Certificates?

Digital signatures satisfy the requirements for authentication and integrity. To greatly simplify matters (as is done throughout this page), a plain text message is passed through a hash function and assigned a value: the message digest. The recipient receives the digest, hash function, and plain text encrypted with the recipient's public key. The recipient decodes the message using their private key and runs it through the hash function provided to ensure that the message digest value remains unchanged (message has not been tampered with). The message is frequently tamped by a third-party agency, which provides non-repudiation.

What about verification? How can a customer be sure that the website

receiving sensitive information was not set up by a third party impersonating the e-merchant? They validate the digital certificate. This is a digital document issued by a CA (certification authority, such as VeriSign or Thawte) that uniquely identifies the merchant. Digital certificates are available for email, e-commerce, and web servers. The digital signature will be covered in depth in later units of this course.

1.4.3   What is Secure Socket Layers (SSL)?

SSL is an abbreviation for Secure Sockets Layer. This is the method by which web servers and browsers encrypt and decrypt all data that they send and receive. The secret decoder sounds the alarm. Both ends devise and employ the same scheme to ensure that no one else is listening in on their conversation. TCP/IP (Transmission Control Protocol / Internet Protocol) is a set of rules that is commonly used to send information over the Internet. The data is divided into packets, which are sequentially numbered, and an error control is attached. Individual packets are sent via various routes. TCP/IP reassembles them in the correct order and resubmits any packets that contain errors.

SSL ensures privacy and authentication by utilising PKI and digital certificates. The process is as follows: the client sends a message to the server, which responds with a digital certificate. Using PKI, the server and client negotiate the creation of session keys, which are symmetrical secret keys created specifically for this transmission. Communication with the session keys and digital certificates resumes once the session keys are agreed upon.

It is the most widely used protocol and is used throughout the industry. It satisfies the following security requirements:

- Authentication
- Encryption
- Integrity
- Non-reputability

"https://" is to be used for HTTP urls with SSL, where as "http:/" is to be used for HTTP urls without SSL.

1.4.4   What are PCI, SET, Firewalls and Kerberos?

Credit card information can be safely transmitted using SSL, but once on the server, it is vulnerable to outsiders hacking into the server's accompanying network. A PCI (peripheral component interconnect: hardware) card is frequently added for protection, so an all-encompassing approach is used.

SET (Secure Electronic Transaction), developed by Visa and MasterCard, uses PKI for privacy and certificates to authenticate the three parties: merchant, customer, and bank. More importantly, sensitive data is not visible to the merchant and is not stored on the merchant's server. Firewalls (either software or hardware) protect a server, a network, and individual computers from virus and hacker attacks. Protection from malice or carelessness within the system is also important, and businesses use the Kerberos protocol, which uses symmetric secret key cryptography to restrict access to authorised employees.

1.5   Setting up Security

Because the majority of people will not be setting up their own secure server, the scope of this section is limited to protecting e-mail and small business or organisational transactions. A service or application can be used to protect e-mail (program).

Others exist, but the two that stand out right now are S/MIME and PGP. S/MIME requires the user to register with a third-party service, which provides a digital id that is attached to the message. Though this is typically a commercial service, there is frequently a free trial period. Though this is typically a commercial service, there is frequently a free trial period. PGP is a free personal application or a commercial application for business use that runs on your own computer. Both methods enable users to sign or attach a digital identification to an email message, confirming to the recipient that the message is from the original person or organisation and that the information is in transit. These methods also allow the user to encrypt their message so that anyone intercepting it cannot read it. You can also choose the level of encryption, ranging from low (which a nerd with some good software and enough time on their hands could possibly decrypt) to high (which a nerd with some good software and enough time on their hands could possibly decrypt) (128 bit) which would take a whole lot of experts weeks to decrypt if even then. Most of us will choose somewhere in between as this process involves increased time and file size.

Your public key can be sent in a variety of ways, including posting it to an internet service or including it in an email message. Public keys can also be posted in a file on your website. Your associated friends can add your public key to a file known as a key ring). When someone wants to send you a secure email, they encrypt it with your public key. You must decrypt the email when you receive it using your private key. Many email clients will automatically validate the message's authenticity. To view the message, you must enter your password.

Small businesses and organizations that wish to offer transactions over the Internet or e- business can take their chances and set up an unsecured system, set up their own secure server or purchase a service from a third party. There are various types including service that take a percentage of the transaction and/or charge a service fee and/or charge for each transaction. Some organizations are more reliable and you should always shop around before committing to a service. Because this type of service is so new the length of time a company has been operating is not always a way to decide. Things to watch for are downtime. If your company's website is operating properly yet the customer or user can't access the transaction server because it is down, too busy or misconfigured they will easily be put off perhaps entirely. Watch for contracts that lock you in as the market is still developing and prices tend to fluctuate. It is easy to switch services by simply changing the address on your website's order forms.

1.6   Security and Websites

As stated at the outset of this unit, the Internet's nature is an open system; however, there are numerous reasons and methods for establishing a secure or closed system within this open framework. Private or member-based discussion groups, private files or folders, protected databases, and copyright material, to name a few, all require some method of restricting distribution to the intended recipient only. In addition, many businesses are developing Intranets, which are closed systems that only registered users can access. An intranet can make company information more accessible and allow branch offices to communicate with one another more easily. The following are the methods of e-commerce security:

- **Account Security:** Your ISP's software protects your website itself. When attempting to access your web space via a shell or ftp to change or modify a file, you are prompted to send your username and password. This is the first line of defence and is sufficient for many website administrators.
- **Server Security:** The second line of defence is the server on which your website is hosted. Most servers include security features that enable users to password protect folders or create scripts that send a username/password challenge to a user attempting to access a file or folder. This enables website administrators to create discussion groups within their site or to place confidential documents or information on their website that is only accessible to registered users. Unfortunately, some ISPs either do not provide this option, charge a fee to use it, or only allow their own employees to set it up.
- **Third Party Security**: Another option is to outsource the

security of private files to a third party, pay a third party to host a private discussion group, or obtain web space on another server with access to security options. The entire Internet is as close as your computer connection, and whether the file being viewed is stored in your current web space or on another server is usually irrelevant. When your customers, employees, or members navigate from one page to another, the design, not the addresses of the individual pages, maintains the website's consistency. If necessary, the address that is displayed can also be controlled.

- **Software Security**: Another option is to control customer or member access to secure features using JavaScript or Java applets. Users with Java-enabled browsers have access to this feature. Scripts and applets can control access to documents and databases, create content on the fly based on user input, detect the visitor's browser and direct them to the appropriate page, retrieve cookies and use that information to determine whether a user has access to a certain area or not, and many other things.

- **Copyright:** Copyright is a protect using the same process as any original material (books, artwork, film, etc...). Anything that a user gets off the Internet should be treated as privately owned information unless otherwise noted. Anyone posting private information to the Internet should be aware that copyright law is not the same in every country and may be difficult to enforce. It is possible to set up a page that won't be stored on the user's computer once they leave the site but that will only slow down not stop users who want to obtain information posted on a website. Notices of copyright are often added to the main page of a website sometimes with a link to a page describing the details of how the content can be used.

- **Updating Software**: It is critical to update your software on a regular basis. When a programme, internet browsers, is released, it may contain flaws known as bugs. These bugs may not appear to be a problem, but criminals will attempt to exploit them. Keeping your software up to date will aid in the security of your computer.

1.7   Necessity of Security

Utilizing proactive web security actively detects and prevents attacks. Web security strategies include a variety of methods rather than a single solution. Because cybersecurity involves many moving parts, it frequently necessitates the use of experts to deploy infrastructure, configure it, and ensure that it functions properly. To avoid vulnerabilities caused by unpatched software, all updates and patches should be installed as soon as possible.

Because advanced persistent threats are difficult for administrators to detect, cybersecurity must actively seek out any potential vulnerabilities and malware that may be present on the network. An advanced persistent threat (APT) instals backdoors and spreads throughout the network, making it impossible to completely eradicate. Because these threats are difficult to contain, web security must be capable of detecting and proactively containing any threat on the network.

Whether or not you decide to include a security component in your web site project at the outset, it is a good idea to consider or discuss web site security when planning the site. You should also review your security systems on a regular basis, whether it is to change your password or to review and update your security system.

1.8   Basic Principles of Customer Security

This is a set of standards intended to reduce the vulnerability of systems and services to attackers who may gain unauthorised access to sensitive data and misuse it. Most e-commerce merchants leave the mechanics to their hosting company or IT staff, but understanding the fundamentals is beneficial. The following is a list of security principles:

1.   **Confidentiality:** The confidentiality principle of security states that messages should only be accessible to their intended sender and receiver; if an unauthorised person gains access to this message, the confidentiality is jeopardised. For example, suppose user X wants to send a message to user Y, and X does not want anyone else to have access to it, or if it does, he/she does not know the details. However, if user Z gains unauthorised access to this secret message, the purpose of this confidentiality is defeated. This results in the interception. Specifically, if user Z gains access to a secret message or email sent by user X to user Y without the permission of X and Y, then it is called an interception. Interception causes loss of message confidentiality.

2.   **Authentication:** The security authentication principle establishes proof of identity and ensures that the origin of a document or electronic message is correctly identified. Assume user Z sends a message to user Y, but the problem is that user Z posed as user X while sending the message to user Y. How would user Y know that the message came from Z rather than X? As a result, the fabrication attack is launched. As an example, The attacker can impersonate user X and send a fund transfer request (from X's account to attacker's account) to a bank, and the bank will transfer the requested amount from X's account to the attacker because banks believe the fund transfer request is from user X. In

the absence of proper authentication mechanism, fabrication is possible.

3. **Integrity:** The message should not be altered, according to the security integrity principle. In other words, the integrity of the message is lost when the content of the message changes after the sender sends it but before it reaches the intended receiver. For example, suppose user X sends a message to user Y, and attacker Z intercepts the message during transmission and modifies its content before sending it to user Y. User Y and User X are unaware that the message's content was altered after User X sent it to Y. This results in a change. Message integrity is lost when it is modified.

4. **Non-Repudiation**: The non-repudiation principle of security does not allow the sender of a message to refute the claim that the message was not sent. In some cases, the user sends a message and then denies that he or she sent it. User X, for example, sends requests to the bank for fund transfers via the internet. User X cannot claim that he/she never sent the fund transfer request to the bank after the bank performs the fund transfer based on user X's request. This security principle eliminates the possibility of denying something after having done it.

5. **Access Control**: Security access control principles determine who should be able to access what. In other words, we can specify which users have access to which functions. For example, we can specify that user X can view database records but cannot update them, whereas user Y can access both, view records and update them. This principle is broadly related to two areas: role management and rule management, with the former focusing on the user side. i.e. which user can do what, while rule management focuses on the resources side, i.e. which resources are available. Based on this matrix, a list of items that the user has access to is generated. The access control matrix is subsumed by the access control list.

6. **Availability**: According to the availability principle of security, resources should be available to the authorised person at all times. For example, an authorised user x may be unable to contact server Y due to the intentional action of another unauthorized user Z, resulting in an interruption attack, which jeopardizes resource availability. Assume an attacker or unauthorized person Z attempts to access user X's Facebook account; because User Z does not know user X's password, he/she attempts to log in to the X's account using a random password. If the password is incorrect after attempting the

maximum number of times, X's account will be blocked, and user X will be unable to access his account as a result of unauthorized person Z.

7.   **Ethical Issues:** The following categories are used to categorize ethical issues in the security system.
▪   **Privacy:** It is concerned with the individual's right to access personal information.
▪   **Accuracy**: It is responsible for the authentication, fidelity, and accuracy of information.
▪   **Property:** It deals with the owner of the information.
▪   **Accessibility:** Accessibility is concerned with what information an organisation has the authority to collect.

Transactions

At least three transactions should be used to protect sensitive information:

▪   Credit card information supplied by the customer to the merchant or payment gateway, which is handled by the server's SSL and the merchant/digital server's certificates.
▪   Credit card information passed to the bank for processing, handled by the payment gateway's complex security measures.
▪   Order and customer information supplied to the merchant, either directly or through the payment gateway/credit card processing company, handled by SSL, server security, and digital certificates (and payment gateway sometimes).

1.9   Practical Consequences

1.   The merchant is always responsible for security of the Internet connected PC where customer details are handled. Virus protection and a firewall are the minimum requirement to be safe, store sensitive information and customer details on zip-disks, a physically separate PC or with a commercial file storage service. Always keep multiple back-ups of essential information, and ensure they are stored safely off-site.
2.   Where customers order by email, information should be encrypted with PGP or similar software. Or payment should be made by specially encrypted checks and ordering software.
3.   Where credit cards are taken online and processed later, it's the merchant's responsibility to check the security of the hosting company's webserver. Use a reputable company and demand detailed replies to your queries.
4.   Where credit cards are taken online and processed in real time,

four situations arise:

- You use a service bureau. Sensitive information is handled entirely by the service bureau, which is responsible for its security. Other customer and order details are your responsibility as in 3 above.
- You possess an e-business merchant account but use the digital certificate supplied by the hosting company, a cheaper option acceptable for smallish transactions with SMEs. Check out the hosting company, and the terms and conditions applying to the digital certificate.
- You possess an e-business merchant account and obtain your own digital certificate (costing some hundreds of dollars). Check out the hosting company, and enter a dialogue with the certification authority: they will certainly probe your credentials.
- You possess a merchant account, and run the business from your own server. You need trained IT staff to maintain all aspects of security-firewalls, Kerberos, SSL, and a digital certificate for the server (costing thousands or tens of thousands of dollars).

Security is a vexing, costly and complicated business, but a single lapse can be expensive in lost funds, records and reputation. Do not wait for disaster to strike, but stay proactive, employing a security expert where necessary. Sites on our resources page supplies details.

1.10   Tracking the Customer

Of primary importance in any transaction is that the customer feels comfortable with your communication. To make it seem like the website is talking to each customer individually you must track who the customer is and what he is interested in. The most common way this is achieved on the web is with the shopping cart concept. This allows many different people to be shopping on your site and all have their own sets of items in their cart. In our fax back example, you would have to use something like the fax number to keep track of each customer. The equivalent with the web would be the IP number (known as IP tracking).

The one major difference is that a customer's fax number doesn't change very often, while a customer's IP number can change every time that they connect to the Internet -- for those people using dial up accounts or other dynamic addressing situations -- so IP numbers are not an able way to track customers. Another common tracking technique is cookies. You can have your website put a cookie onto the customer's machine so that it maintains important information, like the contents of their shopping cart. A better technique that I have found is tag propagation. This is a technique in which the first page that someone hits when they enter the site assigns a unique number, something like the number of

seconds since 1904. This number is in turn passed thru every page on the site and the shopping cart information is stored in a file with that number on the server. This allows a customer to disconnect (by choice or happenstance) from the Internet and not lose the shopping cart information. This can be very important in situations where buying approval from someone else required for the purchase. Most of the commercial products include a way of doing this. With Web Catalog, you insert a cart =[cart] parameter into every HREF and form on your site.

Tracking the customer is very useful not just for the convenience of a shopping cart, but for things like tracking down people that you think are using stolen cards and, more importantly for that all allusive goal, to make the site more usable. Correlating this tracking information with the general web server logs can be used to determine trends of the people visiting your site, are they getting all the information they need to make a buying decision, are they understanding the buying process, are they losing interest after a certain amount of time. One big advantage of this tracking log is to look for all the searches that people are doing on your site and were they are not finding any products. Maybe you can subscribe to the products more effectively. These answers can help you understand ways to change your site to make it more useful.

1.11   Security Concerns

- **Areas that need security**

As mentioned in the section about SSL, we do want to protect transmission of sensitive information with something like SSL to keep the eavesdroppers away, but another equally important issue for security is protection from attacks on your web server. People trying to find credit card numbers in accounting logs or just trying to steal products, to buy at ridiculously low or free prices. Prevention of this type of security breach is the most overlooked area. Much of the information on the machine should not be allowed any access.

The first obvious area to secure is the accounting files. Let's say the web server is doing a great job of keeping people out of sensitive areas, but the same machine is also your ftp server. People are prevented by the web server from getting to your accounting log, but maybe there is a security hole because your ftp server software allows access to this log, so my first advice, limit the access protocols to all sensitive data -- 1) store your accounting logs and other sensitive files outside of the web server folder, Web Star and many other web server products will not serve files outside of their folder tree, 2) don't run ftp and other protocol services on the same machine. Also, make sure that if you are delivering electronic

product, only the person that bought it, gets it. For this you should either be copying the product to some unique place only that person is given access to or have a onetime password scheme allowing only one shot at downloading the product. The concern of the web server allowing access to files that are sensitive is best taken care of by your disk organization. Below is a screen shot of a sample organization of your web server folder structure using Web Star and Web Catalog.

- **Areas That Do Not Need Security**

There are many areas within the selection and buying process that are considered public information and therefore don't need security. In fact, the whole process would be slowed down if it sent everything through a SSL server. Imagine if you received a mail-order catalog from Mac Warehouse or Club-Mac and you had to put a decoder ring over each letter to figure out what it really was, that would take you hours just to read one page. That is what your browser is doing with SSL data. So, big picture, you only want to use SSL when you are expecting sensitive data from the customer, like a credit card number. Protect that from eavesdroppers with SSL, everything else should go thru the non-SSL server.

Self-assessment Exercise
Explain the basic principles of security

1.12   Summary

- There are a lot of discussions these days about e-commerce security as more people use email and more services such as banking and retail subscriptions become available through the Internet
- Digital signatures meet the need for authentication and integrity. To vastly simplify matters (as throughout this page), a plain text message is run through a hash function and so given a value: the message digest
- Email can be protected using a service or an application (program). There are others but the two that stand out currently are S/MIME and PGP. S/MIME requires the user to register with a 3-party service which issues a digital id that you attach to your message
- As was stated at the beginning of this unit, the nature of the Internet is an open system. Having said that there are many reasons and many ways to set up a secure or closed system with in this open framework

- Though you may think that it is not necessary to setup security systems, there are many reasons to consider it. I have come across several examples of people forging documents and email. Digital signature will be the only way to verify whether a document is genuine or not.
- Before the Internet, computer security was limited to 'closed systems' or network computers such as offices or banks where only people physically in the office could use the computer system. It was quite easy for the network supervisor to set up user names and passwords and since that time people have become used to logging on before they can use these types of computers or resources.
- Most e-commerce merchants leave the mechanics to their hosting company or IT staff, but it helps to understand the basic principles.
- Of primary importance in any transaction is that the customers feel comfortable with your communication. To make it seem like the website is talking to each customer individually you must track who the customer is and what they are interested in
- The first obvious area to secure is the accounting files. Let's say the web server is doing a great job of keeping people out of sensitive areas, but the same machine is also your ftp server.

1.13 References/Further Readings/Web Sources

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UNIT 2   USINESS SECURITY CHALLENGES

Unit Structure

2.1   Introduction
2.2   Learning Outcomes
2.3   The Needs of E-Business Security
2.4   Information System Breakdown
2.5   Summary
2.6   References/Further Readings/Web Sources

2.1   Introduction

In the previous unit, we discussed the relationship between computers and security. In this unit we are going to discuss the challenges that businesses face with e-security.

The new millennium brought with it new possibilities in terms of formation access and availability, simultaneously introducing new challenges in protecting sensitive information from some eyes while making it available to others. The Internet allows businesses to use information more effectively, by allowing customers, suppliers, employees, and partners to get access to the business information they need, when they need it. These Internet-enabled services all translate to reduced cost: there are less overhead, greater economies of scale, and increased efficiency. E-business' greatest promise is timelier, more valuable information accessible to more people, at reduced cost information access. With the changes in business operations because of the Internet era, security concerns move from computer labs to the front page of newspapers. The promise of e-business is offset by the security challenges associated with the disintermediation of data access.

One security challenge results from "cutting out the middleman," that too often cuts out the information security the middleman knows, for example the expansion of the user community from a small group of known, vetted users accessing data from the intranet, to thousands of users accessing data from the Internet. Application service providers (ASP) and exchanges offer especially stringent—and sometimes contradictory—requirements of per user and per customer security, while allowing secure data sharing among communities of interest.

E-business depends on providing customers, partners, and employees with access to information, in a way that is controlled and monitored. Technology must provide security to meet the challenges encountered

by e-businesses. Virtually all software and hardware vendors claim to build secure products, but what assurance does an e-business have of a product's security? E-businesses want a clear answer to the conflicting security claims they hear from vendors. How can you be confident about the security built into a product? Independent security evaluations against internationally-established security criteria provide assurance of vendors' security claims.

2.2   Learning Outcomes

At the end of this unit, you should be able to:
•   explain the greatest promises of e-business
•   understand the needs for the security of e-business
•   discuss cases of problems encountered in e-business transactions.

2.3   The Needs for e-Business Security

While putting business systems on the Internet offers potentially unlimited opportunities for increasing efficiency and reducing cost, it also offers potentially unlimited risk. The Internet provides much greater access to data, and to more valuable data, not only to legitimate users, but also to hackers, disgruntled employees, criminals, and corporate spies.

• **Increased Data Access**
One of the chief e-business benefits of the Internet is "disintermediation." The intermediate information processing steps that employees typically perform in "brick and mortar" businesses, such as typing in an order received over the phone or by mail, are removed from the e-business process. Users who are not employees and are thus outside the traditional corporate boundary, including customers, suppliers, and partners, can have direct and immediate online access to business information which pertains to them.

In a traditional office environment, any access to sensitive business information is through employees. Although employees are not always reliable, at least they are known, their access to sensitive data is limited by their job function, and access is enforced by physical and procedural controls. Employees who pass sensitive information outside the company contrary to policy may be subject to disciplinary action; the threat of punishment thus helps prevent unauthorized access. Making business information accessible via the Internet vastly increases the number of users who may be able to access that information. When

business is moved to the Internet, the environment is drastically changed. Companies may know little or nothing about the users (including, in many cases, employees) who are accessing their systems. Even if they know who their users are, it may be very difficult for companies to deter users from accessing information contrary to company policy. It is therefore important that companies manage access to sensitive information, and prevent unauthorized access to that information before it occurs.

- **Much More Valuable Data**

E-business relies not only on making business information accessible outside the traditional company, it also depends on making the best, most up-to-date information available to users when they need it. For example, companies can streamline their operations and reduce overhead by allowing suppliers to have direct access to consolidated order information. This allows companies to reduce inventory by obtaining exactly what they need from suppliers when they need to streamline information flow through the business system allows users to obtain better information from the system. Now, businesses that allow other businesses and consumers to submit and receive information directly through the Internet can expect to get more timely, accurate, and valuable information, at less expense than if traditional data channels were used.

Formerly, when information was entered a business system, it was often compartmentalized. Information maintained by each internal department, such as sales, manufacturing, distribution, and finance, was kept separate, and was often processed by physically separate incompatible databases and applications—so-called "islands of information." Companies have found that linking islands of information and consolidating them where possible, allows users to obtain better information, and to get more benefit from that information, which thus makes the information more valuable. Improving the value of data available to legitimate users increases its value to intruders as well, increasing the potential rewards to be gained from unauthorized access to that data, and the potential damage that can be done to the business if the data were corrupted. In other words, the more effective an e-business system is, the greater the need to protect it against unauthorized access.

- **Scalability with Large User Communities**

The sheer size of the user communities which can access systems via the Internet not only increases the risk to those systems, it also constrains the solutions which can be deployed to address that risk. The Internet creates challenges in terms of scalability of security mechanisms, management of those mechanisms, and the need to make them standard

and interoperable. Security mechanisms for Internet enabled systems must support much larger communities of users than systems that are not Internet-enabled. Whereas the largest traditional enterprise systems typically supported thousands of users, many Internet-enabled systems have millions of users.

- **Manageability**

Traditional mechanisms for identifying users and managing their access, such as granting each user an account and password on each system he accesses, may not be practical in an Internet environment. It rapidly becomes too difficult and expensive for system administrators to manage separate accounts for each user on every system.

- **Interoperability**

Unlike traditional enterprise systems, where a company owns and controls all components of the system, Internet-enabled e-business systems must exchange data with systems owned and controlled by others: customers, suppliers, partners, etc. security mechanisms deployed in e- business systems must therefore be standards based, flexible, and interoperable, to ensure that they work with others' systems. They must support browsers, and work in multi-tier architectures with one or more middle tiers such as web servers and application servers.

- **Hosted Systems and Exchanges**

The principal security challenge of hosting is keeping data from different hosted user communities separate. The simplest way of doing this is to create physically separate systems for each hosted community. The disadvantage of this approach is that it requires a separate computer, with separately installed, managed, and configured software, for each hosted user community, providing little economies of scale to a hosting company. Mechanisms that allow multiple different user communities to share a single hardware and software instance, keep data for different user communities separate, and allow a single administrative interface for the hosting provider, can greatly reduce costs for the hosting service provider. Exchanges have requirements for both data separation and data sharing. For example, an exchange may ensure that a supplier's bid remains unviable by other suppliers, yet allow all bids to be evaluated by the entity requesting the bid. Furthermore, exchanges may also support "communities of interest" in which groups of organizations can share data selectively, or work together to provide a joint bid, for example. Assurance E-businesses need some form of assurance of the security provided in the technology products they purchase. For such assurance, there are international standards used to validate vendors' security claims against established criteria in formal evaluations.

Security evaluations are carried out by independent, licensed and accredited organizations. The evaluation process, from inception to certificate, often lasts up to a full year (and sometimes longer). Vendors who have undergone evaluations of their products learn to improve upon their development, testing and shipping processes because of completing the demanding process. Security evaluations are perhaps the most effective way to qualify a vendor's assertions about its security implementations. Is a product that has not completed such evaluations secure enough to run an e-business? Is it securing enough to protect an organization's most sensitive data? E-businesses demand that the software and hardware vendors they select ship certified provably secure products. Assurance afforded by independent security evaluations lets E-businesses'' be assured of the products they purchase and deploy.

Self-assessment exercise
Identify and explain the need for e-business security

2.4　Information Systems Breakdown

Businesses that depend on computer face lots of threats and breakdown. The following incidents and cases illustrate representative cases of breakdowns in the information systems of e-businesses.

- **Incident 1**

For almost two weeks in 1993, a seemingly legitimate automated teller machine (ATM) operating in a shopping mall near Hartford, Connecticut gave consumers apologetic notes that said "sorry, transactions are possible". Meanwhile the machine recorded the card numbers and the personal identification numbers that hundreds of customers entered in their vain attempt to make the machine dispense cash. On May 8, 1993, while the dysfunctional machine was resulting in the shopping mall, thieves started tapping into the 24-hour automated teller network in New York City. Using counterfeit bank cards encoded with the numbers stolen from the Hartford customers, the thieves removed almost $100,000 dollars from the accounts of innocent customers. The criminals were successful in making an ATM machine do what it was supposedly not designed to do, breach its own security by recording bank card numbers together with personal security codes.

- **Incident 2**

In 1994, a Russian hacker who did not know English broke Citibank electronic fund transfer system and stole more than $10 million by wiring it into accounts around the world. Since then, Citibank, a giant bank that moves half a trillion dollars a day, increased its security, requiring customers to use electronic devices that create new passwords very frequently. (Lord et al, 2002)

- **Incident 3**

According to Wall Street Journal, the Bank of Tokyo–Mitsubishi branch in New York and the National Westminster Bank in the UK reported losses of tens of millions of dollars in 1996v due to errors in their options and derivatives trading models. I both cases, the losses went undetected for a long time. In the first case the trading model was found to be inaccurate, in the second case the model was fed inaccurate data. (Lord et al, 2002)

- **Incident 4**

Netscape security is aimed at scrambling sensitive financial data such as credit card numbers and sales transactions so they would be safe from break-ins, by using a powerful 128-bit program. However, using 120 powerful workstations and two supercomputers, in 1996 a French student breached the encryption program in eight days, demonstrating that no program is 100 percent secure. (Lord et al, 2002)

- **Incident 5**

In 1996, the Los Angeles Times reported "Computer makes $850 million error in Social Security". The glitch shortchanged about 700,000 Americans in retirement benefits and had been undetected for almost 23 years until it was discovered during an audit in 1994. While the newspaper blamed the computer, the fault is that of the programmers who were unable to properly automate the complex computations of the benefits. It took more than three years to fix the problem. (Lord et al, 2002)

- **Incident 6**

A Tarrant County, TX jury found Donald Burleson guilty of harmful access to a computer, a third-degree felony with a maximum penalty of 10 years in prison and a $5,000 fine. Jurors were told that the man planted a virus in a computer system that was used to store records by an insurance and brokerage firm. The virus was programmed like a time bomb and was activated two days after the man was fired from his job. The virus eliminated 168,000 payroll records, which resulted in a one month delay in issuing employee's payroll checks.

- **Incident 7**

In 1999, a fire disabled a major Illinois Bell switching center. The outage affected the voice and data communications of more than one half million residents and hundreds of businesses during a period ranging from two days to three weeks. The major effects on business were the following:

- Dozens of banks were hindered in cashing checks and transferring funds.

- At least 150 travel agencies were hindered in their ability to make reservations and print tickets
- About 300 automated teller machines were shut down
- Most of the cellular phones and paging systems in the area were disrupted
- Hundreds of companies were hindered in their communications, both inside and outside the immediate area.

2.5   Summary

- The new millennium brought with it new possibilities in terms of information access and availability, simultaneously introducing new challenges in protecting sensitive information from some eyes while making it available to others.
- While putting business systems on the Internet offers potentially unlimited opportunities for increasing efficiency and reducing cost, it also offers potentially unlimited risk.
- The principal security challenge of hosting is keeping data from different hosted user communities separate
- Businesses that depend on computer face lots of threats and breakdown.
- For almost two weeks in 1993, a seemingly legitimate automated teller machine (ATM) operating in a shopping mall near Hartford, Connecticut gave consumers apologetic notes that said "sorry, no transactions are possible".
- In 1999, a fire disabled a major Illinois Bell switching center. The outage affected the voice and data communications of more than one-half million residents and hundreds of businesses during a period ranging from two days to three weeks.
- E-business depends on providing customers, partners, and employees with access to information, in a way that is controlled and secure.

2.6   References/Further Readings/Web Sources

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UNIT 3   NETWORK SECURITY AND MANAGEMENT

Unit Structure

3.1   Introduction

This unit will go over the concept of network security and management. We will discuss the characteristics of a secure network, security management levels, management functional areas, common implementations, and case requirements for e-businesses.

3.2   Learning Outcomes

At the end of this unit you should be able to:
- define network security and management
- identify the attributes of a secure network
- identify the components of a functional architecture of network management
- explain the levels of network management and how they differ from one another
- Identify the constituents of Management Functional Areas (MFAs)
- define how to implement network security and management.

3.3   Attributes of a Secured Network

Network security is a set of technologies that protects the usability and integrity of a company's infrastructure by preventing the entry or proliferation of a wide range of potential threats within a network.

A network security architecture is made up of tools that secure both the network and the software that runs on it. Effective network security methods employ several scalable and automated lines of defence. Each defensive layer implements a set of security policies chosen by the administrator (Ginni 2021).

Network security employs multiple layers of protection at the network's edge and between networks. Some security layers implement specific strategies and policies. Only authorised users will be granted access to network resources, while unauthorised users will be barred from conducting exploits and malicious activities.

Securing network infrastructure is analogous to securing a country's available entry points for attacks by deploying appropriate defence. Computer security is more of a supporting measure to protect a single PC from external intrusion. The former is superior and more practical for keeping civilians safe from attacks.

The preventive measures attempt to secure access to individual computers as well as the network itself, thereby securing the computers and other shared resources such as printers and network attached storage linked by the network.

Attacks can be stopped before they progress at their entry points. In contrast, computer security measures are taken to protect individual computer hosts. A computer host with negotiated security is likely to infect multiple hosts connected to a potentially unsecured network.

Network security begins with authenticating a user, most likely with a username and password. Once authenticated, a stateful firewall applies access policies that specify which services network users can access. Although effective in preventing unauthorised access, this component fails to check potentially harmful content, such as computer worms, that are transmitted over the network.

An Intrusion Prevention System (IPS) aids in the detection and prevention of malware. IPS also monitors network traffic for suspicious content, volume, and anomalies in order to protect the network from attacks such as denial of service. To ensure privacy, network

communication between two hosts can be encrypted. Individual network events can be tracked for audit purposes and for current high level analysis.

Honeypots, which are essentially decoy network-accessible resources, can be set up as surveillance and early-warning tools in a network. Techniques used by attackers to negotiate these decoy resources are learned during and after an attack in order to keep an eye out for new exploitation techniques. This type of analysis can be used to improve the security of the actual network being protected by the honeypot.

3.4   Functional Architecture

Functional architecture is an architectural model that identifies enterprise functions, interactions, and associated IT requirements. A design paradigm is at its heart. When you need to organise information, processes, or different solution modules into an enterprise system, you can use functional architecture as a framework.
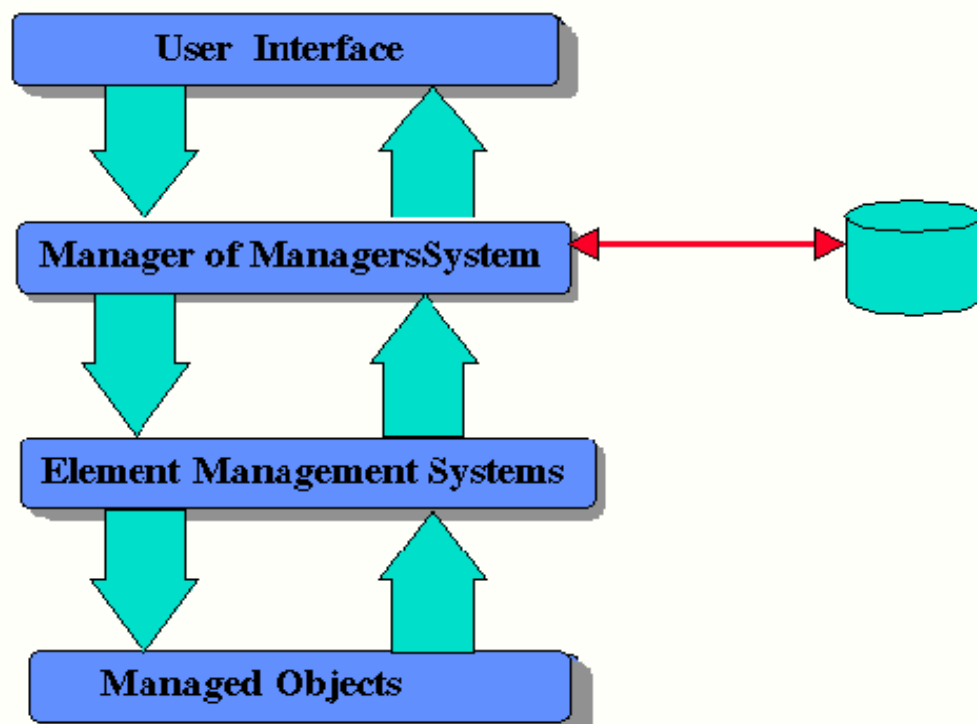
Source: Pieces Defined (Kellogg, 2007)

There are four basic levels of functionality in network management systems. Each level defines a set of tasks to provide, format, or collect data required to manage the objects. These four levels of functionality are depicted in the figure above.

- **Managed Objects**

Managed Objects are devices, systems, and/or anything else that requires monitoring and management. Because most implementations do not have the business case requirements prior to design, they design as they go.

Routers, concentrators, hosts, servers, and applications such as Oracle, Microsoft SMS, Lotus Notes, and MS Mail are examples of managed objects. The managed object does not have to be a piece of hardware; rather, it should be represented as a network function.

- **Element Management System (EMS)**

An EMS is in charge of a specific section of the network. Sun Net Manager, an SNMP management application, for example, is used to manage SNMP manageable elements. Element Managers are in charge of synchronisation lines, multiplexers, PABXs, proprietary systems, or applications.

- **Manager of Manager Systems (MoM)**

MoM systems integrate information from multiple element management systems, typically performing alarm correlation between EMSs. This category includes products such as Boole & Babbage's Command Post, Nynex All Link, International Telematics MAXM, OSI Net Expert, and others. In most cases, the actual data to be collected comes from the managed object. The EMS systems collect this data, which is then stored in a database for processing and retrieval.

- **User Interface**

The primary component of deploying a successful system is the user interface to the information, whether it is real-time alarms and alerts or trend analysis graphs and reports. If the information gathered cannot be distributed to the entire MIS organisation in order to keep people informed and enable team communications, the Network's true purpose is lost.

In the implementation, the management system is lost. Data is meaningless unless it is used to make informed decisions about system and function optimization. These system components are then mapped back to what are known as Management Functional Areas (MFAs). These MFAs are a wish list of areas in which management applications as a system should concentrate their efforts.

3.5   Levels of Security Management

Security management for networks differs depending on the situation. A small home or office would only require basic security, whereas large businesses would require high maintenance as well as advanced

software and hardware to prevent malicious hacking and spamming attacks.

Small Homes
•   A basic firewall
•   For Windows users, basic Antivirus software like McAfee, Norton Anti-Virus, AVG Antivirus or Windows Defender, others may suffice if they contain a virus scanner to scan for malicious software.
•   When using a wireless connection, use a robust password.

Medium Businesses
•   A fairly strong firewall
•   A strong Antivirus software and Internet Security Software.
•   For authentication, use strong passwords and change it on a bi-weekly/monthly basis.
•   When using a wireless connection, use a robust password.
•   Raise awareness about physical security to employees.
•   Use an optional network analyzer or network monitor.

Large Businesses
•   A strong firewall and proxy to keep unwanted people out.
•   A strong Antivirus software and Internet Security Software.
•   For authentication, use strong passwords and change it on a weekly/bi-weekly basis.
•   When using a wireless connection, use a robust password.
•   Exercise physical security precautions to employees.
•   Prepare a network analyzer or network monitor and use it when needed.
•   Implement physical security management like closed circuit television for entry areas and restricted zones.
•   Security fencing to mark the company's perimeter.
•   Fire extinguishers for fire-sensitive areas like server rooms and security rooms.
•   Security guards can help to maximize security.

School
•   An adjustable firewall and proxy to allow authorized users access from the outside and inside.
•   A strong Antivirus software and Internet Security Software.
•   Wireless connections that lead to firewalls.
•   CIPA compliance.
•   Supervision of network to guarantee updates and changes based on popular site usage.
•   Constant supervision by teachers, librarians, and administrators to guarantee protection against attacks by both Internet and sneaker net sources.

Large Government
- A strong firewall and proxy to keep unwanted people out.
- A strong Antivirus software and Internet Security Software.
- Strong encryption, usually with a 256 bit key.
- Whitelist authorized wireless connection, block all else.
- All network hardware is in secure zones.
- All hosts should be on a private network that is invisible from the outside.
- Put all servers in a DMZ, or a firewall from the outside and from the inside.
- Security fencing to mark perimeter and set wireless range to this.

3.6 Management Functional Areas (MFAs)

The most common framework depicted in Network management designs is centered on the Open Systems Interconnect (OSI) "FCAPS" model of MFAs. However, most network management implementations do not really cover these areas. Other areas that may be important to the e-business/MIS function and to specific business units within the company may not be addressed at all.

Management Functional Areas				
Fault Management	Configuration Management	Accounting	Performance Management	Security Management
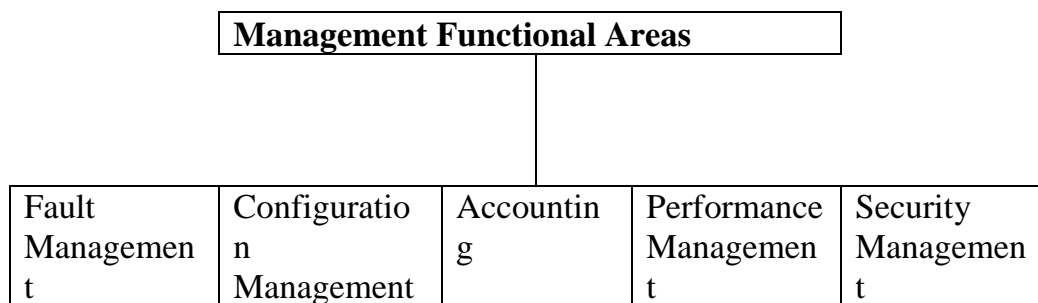
FCAPS divides network management's operational objectives into five levels. Fault-management (F), Configuration (C), Accounting (A), Performance (P), and Security (S) are the five levels (S). Hence, the Management functional areas include:
- Fault Management
- Configuration Management
- Accounting Management
- Performance Management
- Security Management

Other areas covered under Management Functional Areas include:
- Chargeback
- Systems Management
- Cost Management

Fault Management
Network problems are discovered and resolved at the fault management

level. Future issues are identified and steps are taken to prevent them from occurring or recurring. The network remains operational with fault management, and downtime is reduced.

Fault management is the detection of a problem, isolation of the problem, and restoration of normal operation. Most systems poll managed objects for error conditions and display the problem in either graphical or textual form. The majority of these messages are configured by the person who configures the polling on the Element Management Systems. Element Management Systems collect data directly from log printer output, receiving alarms as they occur. Fault management is most commonly concerned with events and traps that occur on the network. However, keep in mind that using data reporting mechanisms to report alarms or alerts is the best way to perform health checks on specific managed object performance without having to double the amount of polling done.

Configuration Management

Configuration management is most likely the most important aspect of network management because you cannot accurately manage a network unless you can manage its configuration. Network additions and deletions must be coordinated with network management system personnel. To ensure that the configuration is known, dynamic updating of the configuration must be performed on a regular basis.

Accounting Management

The accounting management level, also known as the allocation level, is responsible for allocating resources among network subscribers in an optimal and equitable manner. This makes the best use of the available systems while lowering operating costs.

Most implementations leave out the accounting function, despite the fact that LAN-based systems are said to promote accounting-type functions until one gets into Hosts like the IBM Mainframe or Digital VAX. Others argue that accounting is a server function that should be managed by system administrators.

Performance Management

The performance management level is in charge of managing the network's overall performance. Throughput is maximised, bottlenecks in the network are avoided, and potential issues are identified**.** Most MIS support personnel are concerned with performance. Despite being high on the list, it is considered difficult to be accurate about some LAN performance issues unless RMON technology is used. (This is another case of throwing money at a problem.) RAM Pods are very useful; however, one should carefully weigh what is relevant to what can be

accomplished in other ways without spending a fortune. Performance of Wide Area Network (WAN) links, telephone trunk utilisation, and other areas must be revisited on a regular basis because these are some of the easiest to optimise and save money in.

Security Management

Most network management applications only address network hardware security, such as someone logging into a router or bridge. As part of physical security, some network management systems include alarm detection and reporting capabilities (contact closure, fire alarm interface, etc.) None of them are concerned with system security, which is a function of system administration. The network is protected against hackers, unauthorised users, and physical or electronic sabotage at the security management level. Where necessary or warranted, user information is kept confidential.

Chargeback

Chargeback has been used for years in large mainframe environments and will continue to be used because it allows the end user to be charged only for the portion of the service that he or she uses. Because so many services are provided, chargeback on Local Area Networks presents new challenges. Many implementations perform chargeback on the individual Server providing the service. While chargeback is difficult on broadcast networks such as Ethernet, it is possible on networks that dynamically allocate bandwidth based on the needs of end users (ATM). Chargeback will be integrated into more and more systems as technology for monitoring LAN and WAN networks advances.

System Management

System management is the administration and management of network services. Many implementations overlook this critical component, despite the fact that it is one of the areas where management systems can demonstrate significant capabilities, streamline business processes, and save the customer money with minimal effort. There are numerous good commercial off-the-shelf (COTS) products available to automate system administration functions, and these products can be easily integrated into the overall Network Management system.

Cost Management

Cost management is a method of addressing the dependability, operability, and maintainability of managed objects. This single function enables the upgrading of equipment, the deletion of unused services, and the tuning of Server functionality to the services provided. The costs associated with maintaining the network as a system can be tuned by continuously addressing the cost of maintenance, Mean Time Between Failure (MTBF), and Mean Time to Repair (MTTR) statistics. This is an

MFA that is driven by I/T management in order to get the most out of the money allocated.

3.7   Common Implementations

The majority of medium and large network management system implementations revolve around some kind of Network Management Center. All data is sent and processed from this location. While various EMSs are used to manage their respective areas, all data is returned to the Manager of Managers application. The Network Management Center handles the majority of fault detection, isolation, and troubleshooting, with technicians dispatched once the problem has been thoroughly investigated. Several company locations may be connected to the global network that spans thousands of miles.

Management Focus
The management focus for this scenario is on the Network Management Center driving the total operation. Detection, troubleshooting and dispatching is accomplished from the NMC. This operational focus is a carryover from the old Net view days in that the center of the picture was a huge IBM Mainframe that did all the work. If you don't have a Network Management Center today, consider what it will cost not only for the hardware and software, but the people to accomplish this and their level of expertise.

The Right Implementation
If you, as an MIS Manager, are looking at the benefits of Network management to reduce downtime and overall cost to your business, make sure that the business case requirements drive the implementation and not the implementation drive the business cases.
As a systems integrator, make sure the requirements are accomplished before any implementation. When the requirements are put in place, it is your job as an Engineer to make sure management is informed as to what each implementation segment will cost along with what that capability brings to the overall MIS function.

3.9   Business/E-Business Case Requirements

In today's world, any implementation must adhere to the business case for what will be implemented. The implementation must solve a business problem or improve the efficiency of current work methods while lowering overall costs. If the solution does not save money while improving service, it is probably not worth pursuing.

3.8.1   What is Business Case?

The most difficult aspect of creating a business case is gathering information. One must define the problem at hand broadly in order to look for specific issues that network management can address in that area. The business case developer must examine how each section currently completes its day-to-day tasks. Documenting current work processes that may be automated by the system can help define the case for network management. Each of the automated work processes must be documented and addressed in the system design and implementation. Look for ways to save money for the organisation. Continue to work on making the MIS organisation and the services it provides more efficient.

3.8.2   What are the Levels of Activity

Before applying management to a specific service or device, one must first understand the four levels of activity. These are the four levels of activity:

- **Inactive:** This is the case when there is no monitoring, and if you received an alarm in this area, you would ignore it.
- **Reactive:** This is the stage at which you respond to a problem after it has occurred and monitoring has been implemented.
- **Interactive:** This is where you monitor components but must troubleshoot interactively to eliminate side effect alarms and isolate to a route.
- **Proactive:** This is where you monitor components and the system provides a root cause alarm for the problem at hand, as well as automatic routes to minimise downtime.

These four levels of activities outline exactly how your support organisation is dealing with problems today and where you want them to be in terms of goals as a MIS manager. Teams with various goals and focuses exist within the organisation (i.e. proxy support, desktop support, network support, etc.). Keep in mind that while one team may prefer an inactive approach, another team may prefer a proactive approach. When gathering network management requirements, keep these objectives in mind. Today's network management implementations are few and far between, and very few truly address the needs of the business. Most are implemented with good intentions, but they are not geared toward increasing efficiency.

In a multiple site network, there are technicians, engineers and support personnel at each major location as required. No one knows those local environments better than the people having to do the work. No one knows the people of the organization better than the Help Desk staff as they are the first line of communication between the people and the MIS support organization.

Network management elements are considered, among other things, tools in which troubleshooting can be accomplished. The local support staff could benefit greatly from the use of these systems as a tool. As such, most implementations give read-only access to these systems. The ability to focus these tools at a local level is paramount to increasing the effectiveness to the local support staff. In some implementations, where read/write access is provided, it is accomplished through X-Windows which doesn't work very well across low speed links. Most implementations focus these tools at a global level in that they are in the Network Command Center. When a trouble ticket is generated from the NCC, it reflects a problem or symptom generated by the network management elements and/or the Manager of Managers.

Sometimes, the local technician cannot relate to this symptom because he or she doesn't understand where this message came from or why. Without access to the management element and familiarity with the product, they usually start off problem isolation in a "cloud" looking for the problem. When a global problem occurs, in these scenarios, the information is concentrated and orchestrated by the Network Command Center. Additionally, an outage can black out management of a geographic location by centralizing the management resources.

3.8.3   What is the System Focus?

The ideal network management system should be designed and implemented with real-world business processes in mind. It should direct the tools toward those employees who support the managed area in a way that makes their job easier and faster. Support personnel should understand the significance of information associated with a problem or symptom.

If they see the problem at a glance, they should know which specific area that problem belongs and what to do to get started in the trouble isolation process. Other personnel in the organization should know that a specific technician is considering the problem as the problem may be affecting other areas. Help Desk personnel should know what is happening and who is working on what at a glance. If they are not familiar with the system in question, they should have adequate information at their fingertips to guide them in what to do, who to call, and what steps to take, even what questions to ask. Additionally, the problems that affect other sites should be available to those personnel at a glance. The information must be at the fingertips of the other sites' Help Desk personnel so that they know, in near real time, what is going on. See how the focus of information should be; local when it is a local problem and global when it is a global problem. Also, the associates are more focused on the local situation and not the global picture.

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Network management over low-speed wide-area links makes no sense. This type of bandwidth is more expensive than LAN bandwidth because the links must be paid for on a monthly basis. Consider that the majority of WAN links are connected by bridges or routers. These devices have networks capable of 10 Mbps, 16 Mbps, or even 100 Mbps on the back side. On the link side, 1.544 Mbps, 512kbps, and even 19.2kbps links are available. Actual polling of network management elements (SNMP) could consume these links, severely limiting the link's operational capabilities. The question is whether you want to increase the bandwidth across these links solely for network management purposes ot, do you want to distribute management polling to local area concentrations while only passing the true alarm information?

Self-assessment Exercise
i.   Discuss the Management Functional Areas? (15 Minutes)

3.9   Summary

- Network security consists of the provisions made in an underlying computer network infrastructure, policies adopted by the network administrator to protect the network and the network-accessible resources from unauthorized access and the effectiveness (or lack) of these measures combined.
- Network security starts from authenticating any user, most likely a username and a password. Once authenticated, a stately firewall enforces access policies such as what services can be accessed by the network users.
- Network management systems have four basic levels of functionality. Each level has a set of tasks defined to provide, format, or collect data necessary to manage the objects.
- Security Management for networks is different for all kinds of situations. A small home or an office would only require basic security while large businesses will require high maintenance and advanced software and hardware to prevent malicious attacks from hacking and spamming.
- The most common framework depicted in Network management designs is centered on the Open Systems Interconnect (OSI) "FCAPS" model of MFAs.
- Most implementations of medium and large network management systems center on a Network Management Center of some sort. From this location, all data is sent and processed. While several EMS's are used to manage their specific areas, all of the data comes back to the Manager of Managers application.
- In today's world, any implementation must follow the business

case associated with what will be implemented. The implementation must solve a business problem or increase efficiency of the current methods of accomplishing work while reducing overall costs.

3.10 References/Further Readings/Web Sources

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UNIT 4   COPYRIGHT LAW AND ELECTRONIC ACCESS TO INFORMATION CONTENT

Unit Structure

4.1   Introduction

Because a relatively inexperienced user can simply browse the web and save or copy nearly anything that catches his eye, the Internet makes copying photographs, artwork, and words simple. As an e-business owner, you'll want to protect your photographs while also ensuring that your employees are not stealing the work of others. After all, a copyright infringement can cost huge amount of money in legal fees, time, forced subscription fees, and possible fines.

In the previous unit, we discussed the concept of Network Security and Management. In this unit, we are going to discuss the nature of copyright laws and electronic access to information. We will also discuss obtaining and enforcing copyright, gaining exclusive rights, the limitations and exceptions to copyrights and highlighting the Anti-Counterfeiting Trade Agreement.

4.2   Learning Outcomes

At the end of this unit you should be able to:

- define and know the concept of copyright
- trace the history and development of copyright
- answer the question of the scope and justification in applying copyright
- understand how to obtain and enforce copyright
- explain the limit and exceptions to copyright.

4.3   Copyright Law

4.3.1   What is Copyright

The term "copyright" is not expressly defined in Nigeria under the Copyright Act26, but the meaning of the term can be appreciated in the provisions of Section 6 of the Copyright Act, which states that:
"Copyright is the exclusive right to control, do, or authorise the doing of any of the acts restricted to the copyright owner."

Copyright is a type of intellectual property that protects original works of authorship once they are fixed in a tangible form of expression. Paintings, photographs, illustrations, musical compositions, sound recordings, computer programmes, books, poems, blog posts, movies, architectural works, plays, and many other types of works are protected under copyright law. The goal of copyright law is to balance the interests of those who create content with the public interest in having as much access to that content as possible.

To grasp how these rights can be used or licenced, consider them as a bundle of sticks, with each stick representing one of these rights. The copyright holder has the option of keeping each "stick" for themselves, transferring them individually to one or more people, or collectively to one or more people. In short, copyright gives the owner the ability to control how his or her copyrighted works are made available to the public.
The primary goal of copyright is to encourage and reward authors to create new works and make those works available to the public for enjoyment through the provision of property rights. The theory goes that by granting creators certain exclusive rights that allow them to protect their creative works from theft, they benefit economically while the public benefits from creative works that would not otherwise be created or disseminated.

4.3.2   What is the origin of copyright?

Copyright was invented after the advent of the printing press and with wider public literacy. As a legal concept, its origins in Britain were from

a reaction to printers' monopolies at the beginning of the eighteenth century. Charles II of England was concerned with the unregulated copying of books and passed the Licensing Act of 1662 by Act of Parliament, which established a register of licensed books and required a copy to be deposited with the Stationer's Company, essentially continuing the licensing of material that had long been in effect.

The British Statute of Anne (1710) further alluded to individual rights of the author, beginning: "Whereas Printers, Booksellers, and other Persons, have of late frequently taken the Liberty of Printing Books, and other Writings, without the Consent of the Authors... to their very great Detriment, and too often to the Ruin of them and their Families:..." A right to benefit financially from the work is articulated, and court rulings and legislation have recognized a right to control the work, such as ensuring that the integrity of it is preserved. An irrevocable right to be recognized as the work's creator appears in some countries' copyright laws.

The Statute of Anne was the first real copyright act. The copyright has grown from a legal concept regulating copying rights in the publishing of books and maps to one with a significant effect on nearly every modern industry, covering such items as sound recordings, films, photographs, software, and architectural works. The Copyright Clause of the United States Constitution (1787) authorized copyright legislation: "To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." That is, by guaranteeing them a period of time in which they alone could profit from their works, they would be enabled and encouraged to invest the time required to create them, and this would be good for society as a whole. A right to profit from the work has been the problem for much legislation extending the duration of copyright, to the life of the creator and beyond, to his heirs. The 1886 Berne Convention, first established recognition of copyrights among sovereign nations, rather than merely bilaterally. Under the Berne Convention, copyrights for creative works do not have to asserted or declared, as they are automatically in force at creation: an author need not "register" or "apply for" a copyright in adherence to the Berne Convention. As soon as a work is "fixed", that is, written or recorded on some physical medium, its author is automatically entitled to all copyrights in the work, and to any derivative works unless and until the author explicitly disclaims them, or until the copyright expires. The Berne Convention also resulted in foreign authors being treated equivalently to domestic authors, in any country signed onto the Convention. The UK signed the Berne Convention in 1887 but did not implement large parts of it until 100 years later with the passage of the Copyright, Designs and Patents Act of 1988. The USA did not sign the Berne Convention until 1989.

The United States and most Latin American countries instead entered into the Buenos Aires Convention in 1910, which required a copyright notice (such as "all rights reserved") on the work, and surrounding nations to limit the duration of copyrights to shorter renewable terms. The Universal Copyright Convention was drafted in 1952 as another less demanding alternative to the Berne Convention, and ratified by nations such as the Soviet Union and developing nations.

The regulations of the Berne Convention are incorporated into the World Trade Organisation's TRIPS agreement (1995), thus giving the Berne Convention effectively near- global application. The 2002 WIPO Copyright Treaty enacted greater restrictions on the use of technology to copy works in the nations that ratified it.

4.3.3 What are the requirements for copyright protection?

A work must meet three basic requirements in order to be protected by copyright. The work must consist of:

- **Originality of the work**: To be considered original, a work must be created independently. In other words, it cannot be duplicated. There is no requirement that the work be novel, unique, imaginative, or inventive (as in patent law). To meet the originality requirement, a work only needs to show a small amount of creativity. Very few creations fail to meet the bare minimum of creativity.
- **A work of authorship**: A work must be a product of creative expression that falls under a category of copyrightable subject matter to qualify as a work of authorship for the purposes of copyright protection. Literary works, musical works, motion pictures and other audiovisual works, derivative works, compilations, and many others are examples of copyrightable subject matter.
- **Fixed Work**: A work must be fixed in a tangible medium of expression to meet the fixation requirement. Protection is automatically attached to an eligible work the moment it is fixed. A work is considered fixed if it is sufficiently permanent or stable to allow it to be perceived, reproduced, or otherwise communicated for more than a transitory period of time.

These three requirements do not pose significant challenges to copyright protection. In fact, unlike the requirements for patent or trademark protection, very few works that fall under the subject matter of copyright fail to meet all three of these requirements.
A copyrighted work is generally protected for the length of the author's life plus seventy years. In the case of joint works, copyright protection is

granted for the length of the life of the last surviving joint creator plus another 70 years. Works created for hire, as well as anonymous and pseudonymous works, are protected for 95 years from the year of first publication or 120 years from the year of creation, whichever is shorter. When a copyrighted work's term of protection expires, the work enters the public domain.

4.3.4   What are the scope of copyright?

Copyright may apply to a wide range of creative, intellectual, or artistic forms, or "works". Specifics vary by jurisdiction, but these can include poems, theses, plays, other literary works, movies, dances, musical compositions, audio recordings, paintings, drawings, sculptures, photographs, software, radio and television and broadcasts. Copyright does not cover ideas and information themselves, only the form or manner in which they are expressed. For example, the copyright to a Mickey Mouse cartoon restricts others from making copies of the cartoon or creating derivative works based on Disney's particular anthropomorphic mouse, but doesn't prohibit the creation of other works about anthropomorphic mice in general, so long as they are different enough not to be judged copies of Disney's. In many jurisdictions, copyright law makes exceptions to these restrictions when the work is copied for the purpose of commentary or other related uses. Meanwhile, other laws may impose additional restrictions that copyright does not — such as trademarks and patents.

 Copyright laws are standardized somewhat through international conventions such as the Berne Convention and Universal Copyright Convention. These multilateral treaties have been ratified by nearly all countries, and international organisations such as the European Union or World Trade Organisation requires their member states to comply with them.

4.3.5   What is the justification for copyright?

As with patents for physical objects, governments ensured the granting of a copyright to promote innovation and ensure first-to-market protection for the owner of the copyright (historically, more likely the publisher than the creator). This government-sponsored monopoly thus promotes innovation and general societal benefit, but it also allows for capitalistic pressures after the first-to-market advantage has been provided as a reward (and effort to cover R&D time for such works to be developed). However, with the modern emergence of massive mass-media conglomerates, the first-to-market advantage can be recouped in weeks rather than years. This point is easily illustrated by the fact that the millions of dollars invested in blockbuster movies are typically

recouped in a matter of days, and the studios themselves stop collecting ticket sales income after one, though sometimes two, weeks (which is when local theatre owners finally start to collect revenue on ticket sales). Similarly, with the increased use of technology such as Digital Rights Management to maintain studio control of content, the time of monopolistic control of content is extended even beyond the legal limit. This post-copyright restriction planning has been criticised as deceptive and even unethical use of government-granted protection. The solution to this criticism has been heavy lobbying by Disney and artist unions to constantly extend copyright protections, making DRM appear to protect copyrights that are effectively permanent, extending 25 years after the author/death.

The Sonny Bono Copyright Term Extension Act of 2000, which targeted Senator Bono's artistic heritage and recent death in an appeal to his colleges and public support for such an act, provided the most recent extension of this corporate protection. This act is commonly referred to as the Mickey Mouse Act by copyright lawyers.

The Walt Disney Corporation spent hundreds of millions of dollars lobbying to ensure the passage of the Consumer Protection Act. The upcoming release of Steamboat Willie, the first Mickey Mouse cartoon whose success launched the mega-cartoon corporation, piqued Disney's interest in this act. Releasing Steamboat Willie into the public domain was viewed as a dangerous step that Disney refused to take because they believed that copyrights should be indefinite and that they were entitled to society's recognition of their monopoly.

Another contentious issue is the relationship between copyrights and other types of "intellectual property" and material property. Most copyright scholars agree that it is a type of Property Consensus; it involves the exclusion of others from something. However, there is disagreement about how far that fact should be extended to allow the transportation of other beliefs and intuitions about material possessions. The Sony vs. Disney case over recordable CDs and tapes highlighted this philosophical difference. At the time, Disney was attempting to outlaw VHS recorders as illegal devices infringing on their copyright. The US Supreme Court disagreed and allowed the sale of VHS recording machines, and the US Supreme Court later allowed the sale of recordable CDs and Mini-Discs in a similar suit brought by Disney. This repeated failure to gain government support for their position prompted Disney to try new tactics and lobby for extending copyright protection and, eventually, Digital Rights Management. There are numerous other philosophical issues that arise in copyright jurisprudence. They include issues like determining when one work is "derived" from another or determining when information is in a "tangible" or "material" form.

Some critics claim copyright law protects corporate interests while criminalizing legitimate use off particular concern is the increasing mound of orphaned works. Orphaned works are those that were protected for so long that the original artist is no longer alive, and although the work may now be in the public domain, is no longer available due to physical decay of the paper, film, or physical form due to aging and lack of maintenance. The fact remains that less than 1% of all artistic works created in the United States belong to Disney or other corporations who will maintain their art for commercial gain. The bulk of artistic works do NOT generate any appreciable income after 5 years and due to copyright restrictions provide no motivation for museums, clearing houses, or enthusiast organisations to maintain records of the owner or a copy of the work.

These orphaned works may no longer provide commercial benefit to the artists, but they are essential to the fabric of society. As orphan works vanish, historians lose valuable documents containing insights into the evolution of phrases, social structure, and even the origins of new forms of art and genres that emerge from them. To modern copyright lobbyists, orphaned works are justifiable losses, akin to an old chair or other form of property that has served its purpose and, even if no longer economically viable, the copyright should be maintained in principle. By ensuring first-to-market rights, this argument avoids the ethical implications of society losing the very art that it sought.

4.4   Obtaining and Enforcing Copyright

Typically, in order to qualify for copyright, a work must meet minimal standards of originality, and the copyright expires after a set period of time (some jurisdictions may allow this to be extended). Different countries impose different tests, though the requirements are generally low; in the United Kingdom, there must be some "skill, labour, and judgement' that has gone into it. A single word has been held in Australia and the United Kingdom to be insufficient to constitute a copyright work. Single words or a short string of words, on the other hand, can sometimes be registered as a trademark instead. Copyright law recognises an author's right based on whether the work is an original creation rather than whether it is unique; two authors may own copyright on two substantially identical works if the duplication was accidental and neither was copied from the other.

Copyright is automatic in all countries where the Berne Convention standards apply, and does not require official registration with any government office. The copyright holder is entitled to enforce his or her exclusive rights once an idea has been reduced to tangible form, such as by securing it in a fixed medium (such as a drawing, sheet music,

photograph, videotape, or computer file). However, while registration is not required to exercise copyright, it does serve as prima facie evidence of a valid copyright and allows the copyright holder to seek statutory damages and attorney's fees in jurisdictions where registration is required. (In the United States, registering after an infringement allows for only actual damages and lost profits.)

The original holder of the copyright may be the employer of the author rather than the author himself, if the work is a "work for hire". For example, in English law the Copyright, Designs and Patents Act 1988 provides that if a copyrighted work is made by an employee of that employment, the copyright is automatically owned by the employer as a "Work for Hire." Copyrights are generally enforced by the holder in a civil law court, but there are also criminal infringement statutes in some jurisdictions. While central registries are kept in some countries, which aid in proving claims of ownership, registering does not necessarily prove ownership, ignores the fact of copying (even without permission) necessarily prove that copyright was infringed. Criminal sanctions are generally aimed at serious counterfeiting activity, but are now becoming more commonplace as copyright collectives such as the RIAA are increasingly targeting the file sharing home Internet user. Thus most such cases against file sharers have been settled out of court Copyright Notices in the U.S. Prior to 1989, use of a copyright notice — consisting of the copyright symbol (©, the letter C inside a circle), the abbreviation "Copr.", or the word "Copyright", followed by the year of the first publication of the work and the name of the copyright holder — was part of United States statutory requirements. Several years may be noted if the work has gone through substantial revisions. The proper copyright notice for sound recordings of musical or other audio works is a sound recording copyright symbol (, the letter P inside a circle), which indicates a sound recording copyright. Similarly, the phrase. All rights reserved was once required to assert copyright.

The Berne Convention Implementation Act of 1989 amended the 1976 Copyright Act to conform to the majority of the Berne Convention's provisions. As a result, because the Berne Convention makes copyright automatic, the use of copyright notices has become optional when claiming copyright. However, failure to provide copyright notice when using these marks may result in lower damages in an infringement lawsuit—using notices of this type may reduce the likelihood of a successful defence of "innocent infringement."

"Poor Man's Copyright"
The "poor man's copyright" is a popular strategy for avoiding the cost of copyright registration. It suggests that the artist send the work to himself in a sealed envelope via registered mail, with the postmark serving as

the date. This method has not been recognised by any published opinion of a US court. The US Copyright Office emphasises that the technique is not a substitute for actual registration. The UK Intellectual Property Office discusses the technique but does not recommend that it be used.

4.5 Exclusive Rights of Copyright and Offences relating to Copyright Infringement

4.5.1 Exclusive Rights to Copyright

- Make copies or phonorecords of the work.
- Create derivative works based on the original work.
- Make copies or phonorecords of the work available to the public through the sale or other transfer of ownership, or through rental, lease, or lending.
- If the work is a literary, musical, dramatic, or choreographic work; a pantomime; or a motion picture or other audiovisual work, it must be performed publicly.
- If the work is literary, musical, dramatic, or choreographic; a pantomime; or a pictorial, graphic, or sculptural work, it must be displayed publicly. This right also extends to individual images from a film or other audiovisual work.
- If the work is a sound recording, it must be performed publicly via digital audio transmission.

Copyright also grants the owner the right to grant others the right to exercise these exclusive rights, subject to certain statutory limitations.

The phrase "exclusive right" means that only the copyright holder has the right to exercise those rights, and others are not allowed to use the work without the holder's permission. Copyright is sometimes referred to as a "negative right" because it prevents certain people (e.g., readers, viewers, or listeners, and primarily publishers and would-be publishers) from doing something that they would otherwise be able to do, rather than allowing people (e.g., authors) to do something that they would otherwise be unable to do. In this regard, it is analogous to the unregistered design right in English and European law. The copyright holder's rights also allow him or her to refrain from using or exploiting their copyright for some or all of the term.

However, there is a criticism that this assertion is based on a philosophical interpretation of copyright law that is not universally shared. There is also debate over whether copyright is a property right or a moral right. Many argue that copyright does not exist solely to prevent third parties from publishing ideas and information, and that viewing copyright solely as a negative right contradicts the public policy goal of

encouraging authors to create new works and enrich the public domain. The right to adapt a work entails changing the way the work is expressed. Examples include adapting a novel into a stage play or film script, translating a short story, and creating a new arrangement of a song.

4.5.2   Criminal Offences relating to Copyright Infringement

Section 20 of the Nigeria Copyright Act provides for the following criminal offences in relation to copyright infringement:

- Making or causing to be made for sell, hire, or for the purpose of trade or business any infringing coy of a work in which copyright subsists;
- Importing or casing to e imported into Nigeria a copy of any work which if it had been made in Nigeria would be an infringing copy;
- Making, causing to be made, or having in one's possession, any plate, master tape, machine, equipment or contrivance for the purpose of making any infringing copy of any such work;
- Selling or letting for hire or for the purposes of trade or business, exposing or offering for sale or hire any infringing copy of ay work in which copyright subsists;
- Distributing for the purposes of trade or business any infringing copy of any such work
- Having in one's possession, other than for private or domestic use, any infringing copy of any such work;
- Having in his possession, selling for hire or distribution for the purpose of trade or business; or
- Exposing or offering for sale or hire

4.6   Limits and Exceptions to Copyright

Although copyright law gives a creator several important and powerful rights over their work, those rights are not unlimited. The law has always recognised the need to balance the rights of the copyright holder with the public good, and provisions in the law have attempted to do so. Here are some of the most important ways in which your copyright is restricted:

- **Fair Use:**
Fair use is probably the most well-known, but also the most ambiguous, limitation to an owner's copyright. There is no hard and fast rule defining what is and is not fair use. Instead, fair use is defined by a framework that is applied case by case. Only a court can effectively determine whether or not a use is "fair."

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Regardless, when one examines the elements that comprise a fair use case, either for or against, it is usually clear where such a use would fall.

- The use's nature and character. Fair use favours educational, commentary, criticism, and news-related uses of a work over purely commercial uses.
- The copyrighted work's nature. Copyrighted works that are fictional and unpublished are generally afforded greater protection than works that are factual and widely available.
- The size and weight of the portion consumed. When it comes to fair use, less is more. In general, the law favours uses that involve a very small portion of a work in relation to the whole. Exceptions are frequently made for works that cannot be easily broken down, such as photographs and Haiku.
- The impact of the use on the potential market value or marketability of the copyrighted work. Finally, fair use considers the impact of the use on the market or value of the work and favours instances where the use had a positive or minimal negative impact.

In general, when attempting to build a fair use case, take only what you absolutely need, ensure that your use is for some kind of public good, and that the use causes as little harm to the copyright holder as possible.

- **Expiration:**
One of the most obvious and significant limitations of copyright is that it is not indefinite and expires after a certain period of time. The duration of a copyright on work created before or after 1978 is the author's life plus seventy years. The term for works of corporate authorship is 95 years from the date of publication or 120 years from the date of creation, whichever is the shorter. When a copyright expires, the work becomes public domain. The work is considered part of our cultural heritage in the public domain and is not subject to any copyright restrictions.
This means that anyone can profit from a work for commercial or non-commercial purposes. The Creative Commons organisation provides a licence for copyright holders to place works into the public domain themselves, but once that step is taken, it cannot be reversed.

- **Orphan Works:**
Though the orphan works legislation is still a bill, the significant restrictions it imposes on copyright and the likelihood of it passing make it a worthwhile topic to discuss. When someone wishes to use a copyrighted work, the person or entity holding that right is frequently unable to be located or discovered. Even though the work is assumed to be copyrighted, there is no way for someone who wants to reuse it to obtain permission, leaving the work in limbo.

The orphan work legislation addresses this by allowing the use of copyrighted work where the owner cannot be determined as long as A) the user has conducted a "reasonable search" and B) the user has performed a "reasonable search." B) The work is properly attributed or listed as an orphan work. Orphan works may be used for commercial or non-commercial purposes, as well as to create derivative works. If the copyright holder of a work discovers the work after it has been used, he or she can stop the use almost immediately but is only entitled to a reasonable licence fee if the use was commercial.

While not intended to impose new restrictions on an owner's copyright (normal copyright protection resumes when the copyright holder reemerges), it does mean that you may lose several key elements of copyright protection if you cannot be determined to be the copyright holder of the work or are unable to be located.

- **Parody:**

Parody is a subset of the fair use limitation that protects the use of a copyrighted work in order to mock it. In general, fair use favours parody, or making fun of the work itself, over satire, or making fun of something else. However, cases of parody and satire have been found to be fair use.

It should be noted, however, that under parody law, all claims of fair use are still subject to the ordinary fair use test. When using a work for parody, it's generally a good idea to take all normal fair use precautions.

- **Cannot be Copyrighted**

Finally, there are many things that simply cannot be protected by copyright. Though a complete list would be far too long to publish, it includes titles, facts, ideas, phrases, and other items that are either too small or too short to have any unique value. It is important to remember that copyright only protects the expression of an idea, not the idea itself. It can only protect what is fixed in physical form. Copyright law can prevent someone from creating a story based on Star Wars characters (a derivative work), but it can't stop someone from creating a science fiction story about an evil empire and a chosen hero to defeat it.

Copyright does not protect works that are too small or brief to be distinctive. Titles, phrases, and sentences are generally not copyrighted on their own, but only as part of a larger work. Even so, copying such a small portion does not violate a copyright because it could easily have been a unique creation.

- **Transfer and Licensing:**

A copyright, or aspects of it, may be assigned or transferred from one

party to another. For example, a musician who records an album will often sign an agreement with a record company in which the musician agrees to transfer all copyright in the recordings in exchange for royalties and other considerations. The creator (and original copyright holder) benefits, or expects to, from production and marketing capabilities far beyond those of the author. In the digital age of music, music may be copied and distributed at minimal cost through the Internet; however the record industry attempts to provide promotion and marketing for the artist and his or her work so it can reach a much larger audience. A copyright holder need not transfer all rights completely, though many publishers will insist. Some of the rights may be transferred, or else the copyright holder may grant another party a nonexclusive license to copy and/or distribute the work in a particular region for a specified period of time. A transfer or license may have to meet particular formal requirements in order to be effective; section 239 of the Australia Copyright Act 1968 (Cth). Under Australian law, it is not enough to pay for a work to be created in order to also own the copyright. The copyright itself must be expressly transferred in writing.

4.7   Anti-Counterfeiting Trade Agreement (ACTA)

The Anti-Counterfeiting Trade Agreement (ACTA) is a proposed multinational trade agreement that would impose strict enforcement of intellectual property rights related to Internet activity and trade information-based goods. The agreement is being secretly negotiated by the governments of the United States, Japan, Switzerland, Australia, New Zealand, South Korea, Canada, and Mexico, and the European Commission. If adopted the treaty would establish an international coalition against copyright infringement, imposing strong and top-down enforcement of copyright laws in developed nations. The proposed agreement would allow border officials to search laptops, MP3 players, and cellular phones for copyright-infringing content. It would also impose new cooperation requirements upon Internet service providers (ISPs), including perfunctory disclosure of customer information, and restrict the use of online privacy tools. The proposal specifies a plan to encourage developing nations to accept the legal regime, as well.

Self-assessment Exercise
1.   Discuss the Anti-Counterfeiting Trade Act. (5 minutes)
2.   Briefly discuss the scope of copyright (5 minutes)
3.   Identify 4 non-exclusive factors to consider in a fair deal analysis (5 minutes)

4.8   Summary

- Copyright is a legal concept, enacted by governments, giving the creator of an original work of authorship exclusive rights to control its distribution, usually for 70 years after the author's death, after which the work enters the public domain.
- Copyright was invented after the advent of the printing press and with wider public literacy. As a legal concept, its origins in Britain were from a reaction to printers' monopolies at the beginning of the eighteenth century
- Copyright may apply to a wide range of creative, intellectual, or artistic forms, or "works". Specifics vary by jurisdiction, but these can include poems, theses, plays, other literary works, movies, dances, musical compositions, audio recordings, paintings, drawings, sculptures, photographs, software, radio and television and broadcasts.
- As with patents for physical objects, the granting of a copyright was ensured by governments to promote innovation and guarantee first to- market protection for the owner of the copyright (historically, more likely the publisher than the creator).
- Typically, a work must meet minimal standards of originality to qualify for copyright, and the copyright expires after a set period (some jurisdictions may allow this to be extended).
- There are several exclusive rights typically attach to the holder of a copyright:
- Copyright law does not restrict the owner of a copy from reselling legitimately obtained copies of copyrighted works, provided that those copies were originally produced by or with the permission of the copyright holder.
- The Anti-Counterfeiting Trade Agreement (ACTA) is a proposed plurilateral trade agreement that would impose strict enforcement of intellectual property rights related to Internet activity and trade in information-based goods.

4.10   References/Further Readings/Web Sources

https://copyright.gov/what-is-copyright/
https://copyrightalliance.org/faqs/what-is-copyright/
https://www.plagiarismtoday.com/stopping-internet-plagiarism/your-copyrights-online/limitations-of-copyright/#:~:text=One%20of%20the%20most%20obvious,the%20author%20plus%20seventy%20years.

UNIT 5   INTERNET   FIREWALL   AND   FRAUD   PREVENTION

Unit Structure

5.1   Introduction

When an organisation connects its private network to the Internet, one of the primary concerns is security. Regardless of industry, an increasing number of private network users are requesting access to Internet services such as the World Wide Web (WWW) and File Transfer Protocol (FTP) (FTP). Corporations also want to provide WWW home pages and FTP servers for public use on the Internet.

When network administrators expose their organization's private data and networking infrastructure to Internet crackers, network administrators become increasingly concerned about the security of their networks. An organisation requires a security policy to prevent unauthorised users from accessing resources on the private network and to protect against the unauthorised export of private information in order to provide the required level of protection. Even if a company is not connected to the Internet, it may want to establish an internal security policy to manage user access to network portions and protect sensitive or secret information.

5.2   Learning Outcomes

At the end of this unit, you should be able to:
▪   explain the concerns of network security administrators
▪   define Internet firewalls
▪   identify the benefits and limitations associated with Internet firewalls
▪   identify the tools used by hackers as way of knowing how to counter their operations
▪   identify the kind of decisions to make in design of firewalls
▪   identify and differentiate the types of firewalls.

5.3   Internet Firewalls

5.3.1 What is Internet Firewalls

A firewall is a network security device that monitors incoming and outgoing network traffic and permits or blocks data packets based on a set of security rules. Its purpose is to establish a barrier between your internal network and incoming traffic from external sources (such as the internet) in order to block malicious traffic like viruses and hackers (Alison, 2021).

A firewall is a type of network security system that controls incoming and outgoing network traffic using a rule set. A firewall creates a barrier between a trusted, secure internal network and another network (e.g., the Internet) that is not assumed to be secure or trustworthy. Firewalls are available as both software and hardware appliances that run on general-purpose hardware. Many hardware-based firewalls also provide additional functionality to the internal network they protect, such as acting as a DHCP server.

Firewalls can provide different levels of protection. The key is to determine how much protection you require. A firewall serves as a sort of gatekeeper. It monitors attempted access to your operating system and blocks unwanted traffic or unknown sources.

To protect against threats from the public Internet, many personal computer operating systems include software-based firewalls. Many routers that connect networks include firewall components, and many firewalls can perform basic routing functions.

5.3.2   What is the History of Firewalls

Firewalls have undoubtedly evolved and become more advanced since the technology first appeared on the scene. Firewalls began as a basic packet-filtering system in the late 1980s, monitoring packets sent between computers. As shown in the timeline, they now provide more advanced protection and technology.

- **Late 1980s** – As attacks on personal computers drove the development of anti-virus products in the late 1980s, first generation firewalls emerged.
- **Mid-1990** – The introduction of the second generation firewall in the mid-1990s was prompted by internet attacks on networks; the first stateful inspection firewall was introduced in 1993.
- **2000** – Third-generation firewalls addressed vulnerability exploits at the application layer in the early 2000s, resulting in Intrusion Prevention Systems Products (IPS).
- **2010** – Increases in targeted attacks prompted the development of anti-bot and sandboxing products in 2010.
- **2017** – Larger-scale attacks prompted even more advanced defences in 2017.

5.3.3   What are the types of Firewalls

There are various types of firewalls based on where the communication is taking place, where it is intercepted, and the state that is being traced. They are:

- Network layer Firewall (Packet-Filter Firewalls)
- Application layer firewall
- Proxy server
- Network address translation

Network Layer Firewall :
Network layer firewalls, also known as packet filters, operate at a low level of the TCP/IP protocol stack, preventing packets from passing through unless they match the established rule set. The rules can be defined by the firewall administrator, or they can be applied by default. Network layer firewalls are classified into two types: stateful firewalls and non-stateful firewalls.

- Stateful Firewalls
- Stateless Firewalls

- Stateful firewalls keep track of active sessions and use that "state information" to accelerate packet processing. Several properties

can be used to describe any existing network connection, including the source and destination IP addresses, UDP or TCP ports, and the current stage of the connection's lifetime (including session initiation, handshaking, data transfer, or completion connection). If a packet does not match an existing connection, it will be evaluated using the new connection rules. If a packet matches an existing connection in the firewall's state table, it will be allowed to pass through without further processing.

- Stateless firewalls use less memory and can be faster for simple filters that take less time to filter than it takes to look up a session. They may also be required for filtering stateless network protocols that lack a session concept. They cannot, however, make more complex decisions based on the stage of communication between hosts.
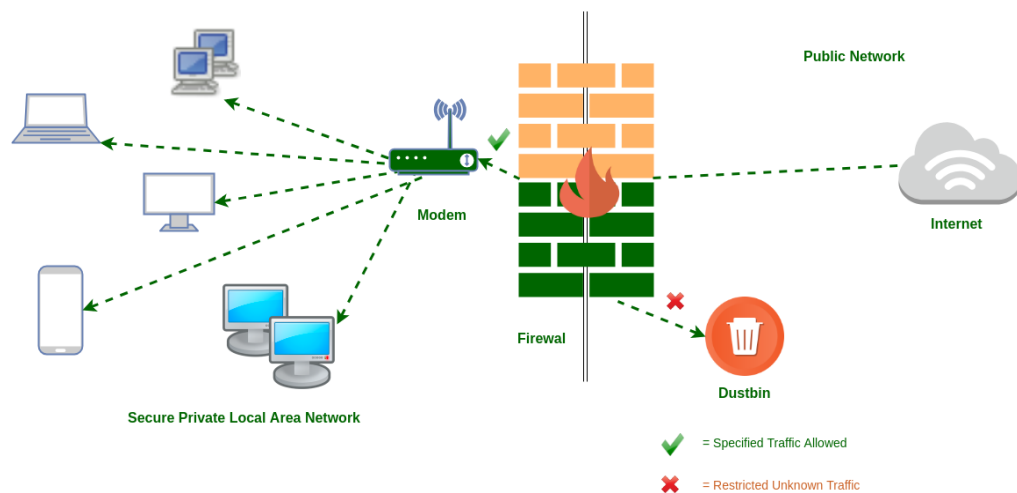

Fig 5.1: Network-Layer Firewall

- **Application-Layer Firewalls:**

Application-layer firewalls operate at the TCP/IP stack's application level (i.e., all browser traffic, or all telnet or ftp traffic) and may intercept all packets travelling to or from an application. Other packets are blocked (usually by dropping them without acknowledgment to the sender).

Firewalls can limit or prevent the spread of networked computer worms and trojans by inspecting all packets for malicious content. The additional inspection criteria can cause additional latency in packet forwarding to their destination.

Application firewalls function by determining whether a process should accept any given \sconnection. Application firewalls filter connections between the application layer and the lower layers of the OSI model by hooking into socket calls. Application firewalls that intercept socket

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calls are also known as socket filters. Application firewalls function similarly to packet filters, but instead of filtering connections on a per-port basis, application firewalls apply filtering rules (allow/block) on a per-process basis. Prompts are typically used to define rules for processes that have not yet received a connection. It is uncommon to find application firewalls that are not combined with or used in tandem with a packet filter.

Furthermore, application firewalls filter connections by comparing the process ID of data packets to a ruleset for the local process involved in data transmission. The provided ruleset determines the extent of the filtering that occurs. Given the variety of software available, application firewalls only have more complex rulesets for standard services like sharing. These per-process rulesets are ineffective at filtering every possible association with other processes.
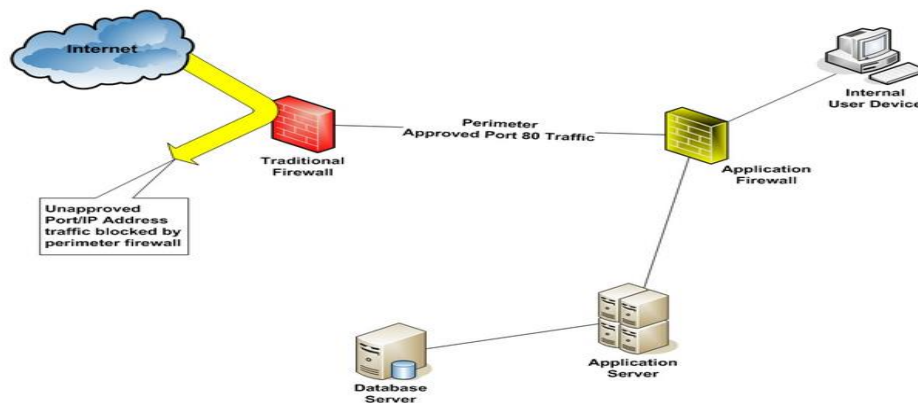

Fig 5.2: Application-Layer Firewall

- **Proxy Firewalls:**

A proxy server, whether running on dedicated hardware or as software on a general-purpose machine, can function as a firewall by responding to input packets (for example, connection requests) in the manner of an application while blocking other packets. A proxy server is a gateway from one network to another for a specific network proposal, acting as a proxy on the network user's behalf.

Proxies make tampering with an internal system from the outside network more difficult, and misusing one internal system does not always result in a security breach that can be exploited from outside the firewall. Intruders, on the other hand, may take over a publicly accessible system and use it as a proxy for their own purposes; the proxy then masquerades as that system to other internal machines. While using internal address spaces improves security, crackers may still attempt to pass packets to a target network using methods such as IP spoofing.
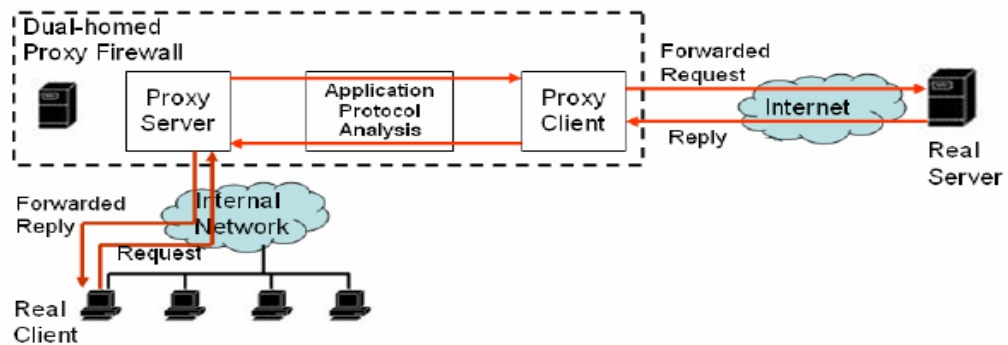
Fig 5.3: Proxy Firewalls

- **Network Address Translation (NAT):**

Firewalls frequently include network address translation (NAT) functionality, and hosts protected by a firewall typically have addresses in the RFC 1918 "private address range." Firewalls frequently include such functionality to conceal the true IP address of protected hosts.

NAT was originally designed to address the limited number of IPv4 routable addresses that could be used or assigned to companies or individuals, as well as to reduce the amount and thus cost of obtaining enough public addresses for every computer in an organisation. Hiding protected devices' addresses has become an increasingly important defence against network reconnaissance.

5.3.4 Benefits of an Internet Firewall

The following are the importance of having an internet firewall:

- **Network traffic is monitored.**

The ability to monitor network traffic is the foundation of all firewall security benefits. Data flowing into and out of your systems opens the door for threats to compromise your operations. By monitoring and analysing network traffic, firewalls leverage preestablished rules and filters to keep your systems protected. You can manage your levels of protection based on what you see coming in and out of your firewall with a well-trained IT team.

- **Prevents Virus Attacks**

Nothing can bring your digital operations to a halt faster or more forcefully than a virus attack. With hundreds of thousands of new threats being developed every day, it is critical that you put safeguards in place to keep your systems safe. The ability to control your system's entry points and stop virus attacks is one of the most visible benefits of firewalls. Depending on the type of virus, the cost of damage from a virus attack on your systems could be immeasurable.

- **Prevents hacking**

Unfortunately, the trend toward more digital operations invites thieves and bad actors to do the same. With the rise of data theft and criminals holding systems hostage, firewalls have become even more important in preventing hackers from gaining unauthorised access to your data, emails, systems, and other information. A firewall can either completely stop a hacker or deter them from choosing an easier target.

- **Stops Spyware**

Stopping spyware from gaining access and infiltrating your systems is a much-needed benefit in a data-driven world. As systems become more complex and robust, the number of entry points for criminals to gain access to your systems grows. One of the most common methods for unauthorised individuals to gain access is through the use of spyware and malware—programs designed to infiltrate your systems, control your computers, and steal your data. Firewalls provide an important barrier against these malicious programmes.

- **Encourages privacy**

The promotion of privacy is a major advantage. By working proactively to keep your data and your customers' data safe, you create a privacy environment that your clients can rely on. Nobody wants their data stolen, especially when steps could have been taken to prevent the intrusion.

5.3.5   What are the Limitations on Internet Firewalls

A firewall is an important component of network security because it addresses issues such as data integrity, traffic authentication (via stateful packet inspection), and internal network confidentiality (via NAT). A firewall provides these benefits to your network by routing all transmitted traffic through it. A firewall provides these benefits to your network by routing all transmitted traffic through it. The value of incorporating a firewall into the security strategy is obvious; however, firewalls have the following limitations:

- A firewall cannot prevent users or attackers using modems from dialling in or out of the internal network, thereby completely bypassing the firewall and its protection.
- Firewalls are incapable of enforcing your password policy or preventing password misuse. Your password policy is critical in this area because it defines acceptable behaviour and the consequences of noncompliance.
- Firewalls are ineffective against nontechnical security risks such as social engineering.
- Firewalls cannot prevent internal users from accessing malicious

websites hence, user education is essential.
- Firewalls cannot protect you from bad decisions.
- When your security policy is too lax, firewalls cannot protect you.

Self-assessment Exercise
i. Trace the history of firewalls (5 minutes)
ii. Write short notes on the types of firewalls (10 minutes)

5.4 The Hacker's Toolbox

It is difficult to describe a typical hacker attack because intruders have different levels of technical expertise and many different motivations. Some hackers are intrigued by the challenge, others just want to make life more difficult for others, and still others are out to steal sensitive data for profit.

Information Gathering

Generally, the first step in a break-in is some form of information gathering. The goal is to construct a database of the target organisation's network and gather information about the hosts residing on each of the networks. There are a number of tools that a hacker can use to collect this information:

- The SNMP protocol can be used to examine the routing table of an unsecured router to learn intimate details about the target organisation's network topology.
- The Trace Route program can reveal intermediate network numbers and routers in the path to a specific host.
- The Who is protocol is an information service that can provide data about all DNS domains and the system administrators responsible for each domain. However, this information is usually out of date.
- DNS servers can access a list of host IP addresses and the corresponding host names.
- The Finger protocol can reveal detailed information about the users (login names, phone numbers, time they last logged in, etc.) of a specified host.
- The Ping program can be employed to locate a host and determine its reachability. This simple tool can be used in a short scanning program that pings every possible host address on a network to construct a list of the hosts residing on the network.

Probing Systems for Security Weaknesses
After information about the targeted organisation's network is gathered,

the hacker attempts to probe each host for security weaknesses. There are several tools that a hacker can use to automatically scan the individual hosts residing on a network; for example:

▪ Since the list of known service vulnerabilities is rather short, a knowledgeable hacker can write a small program that attempts to connect to specific service ports on a targeted host. The output of the program is a list of hosts that support services that are exposed to attack.

▪ There are several publicly available tools, such as the Internet Security Scanner (ISS) or the Security Analysis Tool for Auditing Networks (SATAN), that scan an entire domain or subnetwork and look for security holes. These programs determine the weaknesses of each system with respect to several common system vulnerabilities. Intruders use the information collected from these scans to gain unauthorized access to the targeted organisation's systems. A clever network administrator can use these tools within their private network to discover potential security weaknesses and determine which hosts need to be updated with new software patches.

Accessing Protected Systems

The intruder uses the results of the host probes to target a specific system for attack. After gaining access to a protected system, the hacker has many options available:

▪ The intruder can attempt to destroy evidence of the assault and open new security holes or back doors in the compromised system to have continued access even if the original attack is discovered.

▪ The intruder can install packet sniffers that include Trojan horse binaries that hide the sniffing activity on the installed systems. The packet sniffers collect account names and passwords for Telnet and FTP services that allow the hacker to spread the attack to other machines.

▪ The intruder can find other hosts that trust the compromised system. This allows the hacker to exploit the vulnerabilities of a single host and spread the attack across the entire organisation's network.

▪ If the hacker can obtain privileged access on a compromised system, he or she can read mail, search private files, steal private files, and destroy or corrupt important data.

Self-assessment exercise

1.   Explain the several decisions that must be addressed by the network administrator.

5.5   Basic Firewall Design Decision

When designing an Internet firewall, there are several decisions that must be addressed by the network administrator:

- The firewall stance
- The overall security policy of the organisation
- The firewall's financial cost
- The components or building blocks of the firewall system

The Firewall Stance
The stance of a firewall system describes the fundamental philosophy of the organisation. An Internet firewall may take one of two diametrically opposed stances:

- Everything not Specifically Permitted is denied. This stance assumes that a firewall should block all traffic, and that each desired service or application should be implemented on a case-by-case basis. This is the recommended approach. It creates a very secure environment, since only carefully selected services are supported. The disadvantage is that it places security ahead of ease of limiting the number of options available to the user community.
- Everything not Specifically Denied is permitted; This stance assumes that a firewall should forward all traffic, and that potentially harmful service should be shut off on a basis. This
- approach creates a more flexible environment, with more services available to the user community. The disadvantage is that it puts ease of use ahead of security, putting the network administrator in a reactive mode and making it increasingly difficult to provide security as the size of the protected network grows.

The Overall Security of the Organization
As previously stated, an Internet firewall does not exist in isolation; it is a component of the organization's overall security policy, which defines all aspects of its perimeter defence. Organizations must understand what they are protecting in order to be successful. The security policy must be founded on a thorough security analysis, risk assessment, and business needs assessment. If an organisation lacks a detailed security policy, even the most carefully crafted firewall can be bypassed, exposing the entire private network to attack.

The Firewalls Financial Cost
How much security can the company afford? Because the organisation requires a router to connect to the Internet, and packet filtering is included as part of the standard router feature set, a simple packet

filtering firewall can be inexpensive. A commercial firewall system increases security but can cost anywhere from $4,000 to $30,000, depending on its complexity and the number of systems protected. A home-brewed firewall can be built from public domain software if an organisation has the in-house expertise, but there are still costs in terms of time to develop and deploy the firewall system. Finally, all firewalls necessitate ongoing administration, general maintenance, software updates, security patches, and incident response.

Components of the Firewall System
After making decisions about firewall stance, security policy, and budget issues, the organisation can determine the specific components of its firewall system. A typical firewall is composed of one or more of the following building blocks:

- Packet-filtering router
- Application-level gateway (or proxy server)
- Circuit-level gateway

5.6   Digital Signature (Electronic Signature)

5.6.1   What is Digital Signature?

A digital signature is a mathematical scheme for proving the authenticity of an electronic message or document. A valid digital signature provides a recipient with reason to believe that the message was created by a known sender, such that the sender cannot deny sending the message (authentication and non-repudiation), and that the message was not altered in transit (integrity). Digital signatures are commonly used in software distribution, financial transactions, and other situations where forgery or tampering must be detected.

Although digital signatures are frequently used to implement electronic signatures, a broader term that refers to any electronic data that carries the intent of a signature, digital signatures are not used in all electronic signatures. Electronic signatures have legal significance in some countries, including the United States, India, Brazil, and members of the European Union.

A digital signature scheme is usually made up of three algorithms:

- A key generation algorithm that chooses a private key from a set of possible private keys at random. The algorithm generates the private key as well as the corresponding public key.
- Given a message and a private key, a signing algorithm generates a signature.

- Given a message, a public key, and a signature, a signature verifying algorithm either accepts or rejects the message's claim to authenticity.

- **5.6.2 How is Digital Signature Applied?**

- **Authentication**: Although messages frequently include information about the entity sending the message, that information is not always correct. Digital signatures can be used to verify the origin of messages. When a digital signature secret key is bound to a specific user, a valid signature demonstrates that the message was sent by that user. In a financial context, high confidence in sender authenticity is especially important. Assume a bank's branch office sends instructions to the central office requesting a change in an account's balance. If the central office is not convinced that such a message is truly coming from an authorised source, acting on it could be a costly mistake.

- **Integrity:** In many cases, the sender and receiver of a message may require assurance that the message was not altered during transmission. Although encryption conceals a message's contents, it is possible to alter an encrypted message without understanding it. (Some nonmalleable encryption algorithms prevent this, but others do not.) If a message is digitally signed, any change to the message after the signature renders the signature invalid. Furthermore, there is no efficient way to modify a message and its signature to produce a new message with a valid signature, because most cryptographic hash functions consider this to be computationally infeasible (see collision resistance).

- **Non-repudiation:** Non-repudiation, or non-repudiation of origin, is an important feature of digital signatures. This property states that an entity that has signed some information cannot later deny having signed it. Similarly, simply having access to the public key does not allow a fraudulent party to forge a valid signature.

Some digital signature algorithms:
- RSA-based signature schemes, such as RSA-PSS
- DSA and its elliptic curve variant ECDSA
- ElGamal signature scheme as the predecessor to DSA, and variants Schnorr signature and
- Pointcheval–Stern signature algorithm
- Rabin signature algorithm
- Pairing-based schemes such as BLS
- Undeniable signatures
- Aggregate signature - a signature scheme that supports aggregation: Given n signatures on n messages from n users, it is possible to aggregate all these signatures into a single signature

whose size is constant in the number of users. This single signature will convince the verifier that the n users did indeed sign the n original messages.

▪ Signatures with efficient protocols - are signature schemes that facilitate efficient cryptographic protocols such as zero-knowledge proofs or secure computation.

5.7   Fraud Prevention Solutions

A wide range of solutions have been devised to reduce the security risks associated with conducting on-line business.

Hardware Security
To provide a safe system for electronic commerce, computer hardware needs to be adequately secured. This extends from computer terminals used in homes, businesses, and public kiosks through servers operated by ISPs, to the hardware maintained by merchants and financial institutions. The extent of the security precautions used will be determined by the risks present. Terminals located in Internet kiosks may need only basic access controls such as using passwords or smartcard tokens, whilst servers maintained by banks might need to be shielded against electro-magnetic radiation (EMR) scanning.

The threat of EMR scanning should not be taken lightly. Although the risk is remote, the possibility exists. In one case in England, for example, a computer eavesdropper scanned electronic transaction information transmitted by a bank. Even though the information was encrypted, the code was defeated and the individual successfully obtained £350,000 by blackmailing the bank and several customers by threatening to reveal certain information to the Inland Revenue (Nicholson, 1989). If payment systems are used which make use of digital signatures and encrypted data transmissions, then the need to protect computer cables from interception would not arise as any data would not travel in clear text. At present, however, a good deal of sensitive information travels across networks in unencrypted form making it vulnerable to interception and subsequent disclosure

Terminal Safeguards
Crime prevention needs to be focused on areas of weakness in electronic systems and the most obvious target for electronic fund transfer systems is the computer terminal at which transactions are carried out. As is the case with telephone kiosks, ATM and EFTPOS terminals need to be manufactured in such a way as to ensure that access cannot be gained to cables or to electro-magnetic radiation (Tyree 1990). Computer terminals should be in secure places where users are protected both physically, as well as against shoulder surfing, to obtain PINs.

Card Security

Plastic cards may be used in conjunction with on-line transactions in a variety of ways. Primarily they will be used to store access devices such as cryptographic keys or other user authentication devices. They may also be used to store value in Mondex-type smart card systems. The most sophisticated security features should be built into plastic cards to prevent counterfeiting, alteration or un-authorized access to the data which they hold. Newton (1995) describes various crime prevention strategies which have been used to prevent plastic card counterfeiting including the use of security printing, micro-printing, holograms, embossed characters, tamper-evident signature panels, magnetic stripes with improved card validation technologies, and indent printing. Smart cards, of course, are much more difficult to copy than ordinary magnetic stripe cards. Unfortunately, these card security features have been overcome by organised criminals including computer chip circuitry in smart cards. On-line payment systems which do not rely upon plastic cards, should be much more secure and it may also be possible for these to operate in conjunction with biometric user identification systems.

Value Restrictions

As an alternative to target hardening, it has been suggested that the risk of large-scale fraud and money laundering using Internet-based funds transfer systems could be restricted by placing limits on the size of transactions. In the case of on-line commerce, electronic restrictions could be placed on the value of transactions to avoid the possibility of large scale fraud, although this may be an unwarranted intrusion into freedom of electronic commerce.

Password Protection

Passwords used as a means of restricting access to computer technologies are popular at present and frequently misused and abused. It is possible to guess passwords, particularly if little or no thought has been given to their selection, or to use various forms of social engineering to trick users into revealing their passwords for subsequent improper use. The use of brute computing force has also been used to break passwords. Password cracking programs are available by which computers are able systematically to search entire dictionaries in search of a password. Even if passwords are encrypted to prevent them from direct exposure, encryption keys have been broken using massive computing resources

Appropriate education of users is an initial first step in which information is given concerning ways of ensuring that passwords are not disclosed, guessed, or otherwise compromised by the user in question. Systems should be used which change passwords regularly, or which deny access after a specified number of consecutive tries using invalid

passwords. Terminals should have automatic shutdown facilities when they have not been used for specified periods, such as five minutes. Single use passwords, where the password changes with every successive login according to an agreed protocol known to the user and system operator, could also be used.

Challenge-response protocols may also be used as a means of carrying out user authentication. The server generates a random number which is sent to the card. In a public key system, the card digitally signs the number and returns it to the server. The server then validates the digital signature. Alternatively, call-back devices may be used. After the user dials into a computer through a modem and gives his or her identity, the system disconnects the user and then telephones the user on a number previously registered with the server.

Biometrics
One way in which problems of password and token security may be overcome, is for users to identify themselves biometrically. Already there are a wide variety of such systems being used which make use of an individual's unique physical properties. Common biometric identifiers today include fingerprints, voice patterns, typing patterns, retinal images, facial or hand geometry, and even the identification of a person's subcutaneous vein structures or body odours (Johnson 1996).

5.7   Summary

▪   Security has become one of the primary concerns when an organisation connects its private network to the Internet. Regardless of the business, an increasing number of users on private networks are demanding access to Internet services such as the World Wide Web (WWW), Internet mail, Telnet, and File Transfer Protocol(FTP).

▪   An Internet firewall is a system or group of systems that enforces a security policy between an organisation's network and the Internet. The firewall determines which inside services may be accessed from the outside, which outsiders are permitted access to the permitted inside services, and which outside services may be accessed by insiders.

▪   It is difficult to describe a typical hacker attack because intruders have different levels of technical expertise and many different motivations. Some hackers are intrigued by the challenge, others just want to make life more difficult for others, and still others are out to steal sensitive data for profit.

▪   After information about the targeted organisation's network is gathered, the hacker attempts to probe each host for security weaknesses.

- When designing an Internet firewall, there are several decisions that must be addressed by the network administrator
- As discussed earlier, an Internet firewall does not stand alone--it is part of the organisation's overall security policy, which defines all aspects of its perimeter defense.
- The most common Internet firewall system consists of nothing more than a packet- filtering router deployed between the private network and the Internet
- A wide range of technological solutions have been devised to reduce the security risks associated with conducting on-line business.
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5.8   References/Further Readings/ Web Sources

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