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Analysis address	cwplan.ibsh@analysis.urkund.com

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5 Editorial Team Content Development Team Prof. N. Siva Prasad IFHE (Deemed-to-be-University), Hyderabad Dr. Vaibhav Mishra IFHE (Deemed-to-be-University), Hyderabad Dr. Jaipal Dhobale IFHE (Deemed-to-be-University), Hyderabad Dr. Nasina Jigeesh IFHE (Deemed-to-be-University), Hyderabad Prof. G.S.B.S. Chowdari IFHE (Deemed-to-be-University), Hyderabad Dr. Y. V. Subrahmanyam IFHE (Deemed-to-be-University), Hyderabad Dr. C. Lakshmi Devasena IFHE (Deemed-to-be-University), Hyderabad Dr. Sashikala. P IFHE (Deemed-to-be-University), Hyderabad Dr. Sumant Kumar Tewari IFHE (Deemed-to-be-University), Hyderabad Dr. Sumangla Rathore IFHE (Deemed-to-be-University), Hyderabad Dr. Jitendra Shreemali IFHE (Deemed-to-be-University), Hyderabad Proofreading, Language Editing and Layout Team Ms. Jayashree Murthy IFHE (Deemed-to-be-University), Hyderabad Mr. Chandra Sekhar IFHE (Deemed-to-be-University), Hyderabad Mr. Prasad Sistla IFHE (Deemed-to-be-University), Hyderabad ©
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Centre for Distance and Online Education (CDOE) The ICFAI Foundation for Higher Education (Deemed-to-be-University Under Section 3 of UGC Act, 1956) Donthanapally, Shankarapalli Road, Hyderabad- 501203. Prof. K. Seethapathi IFHE (Deemed-to-be-University), Hyderabad Dr. D. Saravanan IFHE (Deemed-to-be-University), Hyderabad Dr. Y. V. Subrahmanyam IFHE (Deemed-to-be-University), Hyderabad Dr. Santosh Kumar Yadav IFHE (Deemed-to-be-University), Hyderabad Dr. Dennis Joseph IFHE (Deemed-to-be-University), Hyderabad Prof. Samyadip Chakraborty IFHE (Deemed-to-be-University), Hyderabad

iii BLOCK V: ENTERPRISE FUNCTIONS AND E-BUSINESS The fifth - block to the course on IT & Systems deals with the enterprise functions and e-business. The block contains four units. The first unit provides an overview of e-business, and describes the concept and importance of enterprise application integration. The next three units describe the role played by information technology in improving business functions like supply chain management, enterprise resource planning, and customer relationship management in an organization. The first unit, Basics of E-Business and Enterprise Application Integration, provides a general idea about e-business and enterprise application integration. The Internet and related technologies are being used by organizations to buy and sell products and/or services, to collaborate with business partners, and to maintain relations with customers. This led to the emergence of electronic business or e-business. The unit - highlights the emerging concept and importance of enterprise application integration, which is being used by organizations to integrate their software applications, and share business processes and data. Real- time enterprise and the organization of business in a digital firm are also discussed in the unit. The second unit, Supply Chain Management and E-Business, discusses how supply chain management is helping organizations to integrate their customers, suppliers, and other channel partners. The unit discusses the role played by the Internet in facilitating this integration. The third unit, Enterprise Resource Planning, explains the importance of enterprise resource planning (ERP) applications in solving integration problems and in achieving operational efficiencies. Enterprise Management System (EMS) is also introduced in the unit. The fourth unit, CRM and E-Business, deals with the combined role played by the various customer relationship management processes and technology in enhancing an organization's understanding of the customers' needs and preferences. E-CRM, as it is termed as, helps an organization to build strong relations with its customers and also achieve a competitive advantage in the marketplace.

1

Unit 16: Basics of E-Business and Enterprise Application Integration Structure 16.1. Introduction 16.2. Objectives 16.3. Evolution of E-Business 16.4. Real-Time Enterprise 16.5. Organizational Culture for E-Business 16.6. E-Business Models 16.7. Organization of Business in a Digital Firm 16.8. Enterprise Application Integration 16.9.

Summary 16.10. Glossary 16.11. Self-Assessment Test 16.12. Suggested Readings / Reference Material 16.13. Answers to Check Your Progress Questions 16.1

Introduction In the previous unit, we

learnt about MIS in various areas like government, non-profit, corporate, manufacturing, services and managing projects. We have also seen that the Internet plays a very important role in helping organizations to streamline their business processes, and in enhancing the speed and efficiency of business transactions. The Internet is being used to reduce the costs related to logistics, supply chain management, etc. As companies gain faster access to information, there is a reduction in costs, inventory is at the optimum, decision making becomes quicker, and customer service improves. Organizations are using a number of software packages to improve their business processes such as supply chain and customer service. In this unit, we introduce you to electronic business or e-business. E-business is used by organizations to conduct business, and maintain relations with business partners and customers. In this unit, we shall discuss the evolution of e-business and discuss how organizational culture affects e-business. We shall also learn about the

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various e-business models. Toward the end of the unit, we will be introducing you to the emerging concept of Enterprise Application Integration. 16.2

Objectives By the end of this unit, you should be able to: • State the evolution of

e-business and its growth over the years. • Justify the need for developing an organizational culture for e- business. • Identify the various business models of e-business. • Summarize the need for Enterprise Application Integration. 16.3 Evolution of E-Business The terms e-business and e-commerce are often used synonymously. However, there is a difference between the two. E-Commerce refers to business transactions that take place between two organizations (B2B) or between an organization and consumers (B2C) with the help of computer networks. E-Commerce helps in improving the level of customer service and ensures minimum inventory control. Monetary e-business transactions are called e-commerce transactions. E- Business has a wider scope than e-commerce. E-Business not only refers to buying and selling of products and/or services through the Internet but also involves online collaboration with business partners and servicing of customers. It encompasses other areas like supply chain management, organizational processes & culture, customer relationship management (CRM), knowledge management, etc. 16.3.1 Stages of E-Business There were two phases in the evolution of e-business: the Communication phase and the Information phase that began in the mid and late 1990s respectively. The first phase was characterized by the rapid adoption of e-mail and the development of websites. It focused mainly on e-commerce-based transactions related to buying and selling of products/services. The dotcom companies focused on improving capabilities related to search, product displays, and payment processing. There was a paid growth of websites and consumers were provided with search engines for navigating through the Web. For example, search engines like Yahoo! and Infoseek helped web surfers gather information quickly. But with the increase in online communication, the desire to provide more information grew. This resulted in the second phase of e- business, the communication phase. The communication phase was marked by a shift in focus from transaction-oriented e-commerce to

customer-centric e-business. It aimed at digitizing the organization's internal and external processes that involved its customers, suppliers, and business partners. E-Business offered significant benefits to companies by enabling them to transform themselves by creating or redesigning their value chains and existing business processes. The growth of the information phase widened the scope of information dissemination and information sharing through the Web. For example, websites called Brochureware were designed that provided web tools and software that enabled interaction and sharing of information between the company and the customer. With consumers demanding the maximum level of customer service and improved customer satisfaction, organizations are aiming to become more customer-centric. E-Business helps them improve the level of customer service with maximum customer satisfaction resulting in an increase in revenues and profits for the organization. 16.3.2 The Rise of E-Business Until 1995, e-business was almost non-existent. But with the growing use of the Internet, it evolved rapidly. Worldwide e-commerce revenues (including B2B and B2C) in 2004 amounted to US$ 157 billion. Organizations focus on using e-business in order to integrate their customers and suppliers with their business processes, thus reducing the transaction costs associated with purchasing. Companies can increase their level of efficiency by integrating e-business with their production and distribution processes. This will benefit them right from procurement of goods to servicing of customers. Through e-business, organizations can also serve customers by effectively utilizing the huge amounts of information available. This information could otherwise act as a hindrance, leading to a delay in carrying out business operations. Further, e-business helps companies explore new markets globally as businesses can be carried out without a physical presence in the country. According to certain estimates, online business also leads to an increase in the total revenues of the company. In 2006, Microsoft Corporation reported total revenues of US$ 44.2 billion out of which US$ 1.6 billion were online revenues. PricewaterhouseCoopers has identified four distinct phases of e-business. The first phase consists of development of a website to enable online selling and buying of products. The second phase integrates the suppliers with the business for supply chain management operations through extranets and intranets. The third phase is marked by the organization entering into alliances for marketing, e-commerce, and content with other

online players. In the fourth stage, companies come out with innovative products and services. 16.3.3 Traditional Business Vs E-Business Traditional or brick-and-mortar businesses are product-centric. Their strategies focus on innovation and product differentiation whereas e- business is customer-centric and focuses more on customers rather than on products. The differences between traditional business and e-business are shown in Table 16.1. Table 16.1: Traditional Business Vs E-Business Traditional Business E-Business Customers purchase products manufactured by the company. Companies customize products according to the needs and specifications of the customer. For example, BMW's website has a toolkit that allows customers to develop ideas describing the usage of telematics in the car. Around 1000 people were reported to use the toolkit and 15 were sent to Munich for describing their ideas. The business faces entry barriers and is confined to a limited number of geographic locations. E-Business reduces the entry barriers and carries out operations globally. Processing of transactions and interaction with customers is difficult due to lack of communication channels. E-Business eases the processing of transaction and enhances communication with the customer through telephone, e-mail, or the Internet. Compiled from various sources. 16.3.4 The Emergence of Infomediaries In traditional business, infomediaries link the customers with the manufacturer, whereas in e-business, infomediaries refer to websites that display information related to a company's product/service. For example, the National Institute of Environmental Health Sciences (NIEHS) Kids 'Pages' gives information to children related to their health and environment. It also gives links to other science sites that educate children in areas of science.

Earlier, infomediaries worked like search engines helping customers to search for products and services on the website. Three new business models of infomediaries have now emerged. They are aggregators, online auctioneers, and online exchanges. Aggregators guide buyers by providing information at a single online contact point. Online auctioneers enable buyers to purchase goods at discounted rates and help them to dispose of goods that are perishable or in excess. Online exchanges allow consumers to buy and sell products in a controlled environment. With the help of infomediaries, customers are empowered and information dissemination takes place at a rapid pace. Check Your Progress -1 1. Given below are phases of e-business. i. Implementation of a website ii. Forming alliances with other online players iii. Convergence that leads to innovation iv. Putting supply chain management processes online What is the correct sequence of the phases? 2. From the following options, the type of business model in which some firms act as information agents and give quality information about buyers and sellers is a. Brokerage model b. Advertising model c. Infomediary model d. Merchant model 16.4 Real-Time Enterprise Real time enterprise is an organization which provides instantaneous (real-time) information to all its stakeholders such as customers, suppliers, partners, employees and senior management. With the advancements in technology, growing competition, process innovations, technological innovations and market conditions, real time enterprise practices are gaining popularity among organizations. Real time enterprises innovatively automate their business processes using advanced technologies, social media/technologies and mobile technologies. They use technology to communicate with its stakeholders.

They avoid traditional manual and batch processes. Real time enterprises provide consistent and current information to its stakeholders. Real time organizations should be adaptable to change. This is because change is inevitable in global technological scenario. Real time enterprises treat change as a continuous process. They invest in IT and evaluate the return on IT investment and effectiveness of IT systems. They collaborate with other organizations and develop Inter Enterprise Resource Planning (IRP) systems, which integrate the ERP systems of different organizations. They do the integration of business processes within the organization. They have low cost iterations of systems development. Instead of developing heavy weight systems from scratch, they develop customizations in iterations with little functionality at a time. They allow users to collaborate using their IT systems. For this purpose, they automate and encapsulate the existing IT systems and provide interfaces for users to collaborate. They go for federation of applications instead of integration and they go for configuration instead of customization of IT systems. Real time enterprises use technologies such as HTML, HTTP, XML, UDDI, SOAP and web services. Using web services, they integrate systems with organizational production processes. Changing systems according to changing market conditions is easy with web services. The advantages with web services are they open and they support different vendors. While using web services authorization, authentication and security aspects need to be thoroughly checked. Real time enterprises make the products available to customers as soon as product enters into the store. The billing and invoicing can take place instantaneously. For example, Citibank in Poland has avoided numerous phone calls from their customer organization's employees on pay days to check the balances by sending SMSs to them as soon as their balance amount changed in the accounts. Cisco and DELL also have certain real time enterprise practices. Cisco is able to close their account books at the end of every business day and at the end of the quarter they are able to announce the results within 3 days. This is possible with technology. Using technology, FedEX has reduced their costs 10 times for the customer queries on "where is my consignment?" using technology. Cisco has per employee revenues more than their competitor organizations such as Lucent and Nortel. The operating costs at Cisco are low and their response to customers is quick to compare with their competitors. Amazon and Wal-Mart automated extensively to gain

competitive advantage. Lexmark, a laser printer manufacturer, could have avoided returns of $1 million worth goods from a specific customer if they had provided real time information to their employees. 16.5 Organizational Culture for E-Business Organizations have to develop a culture conducive for conducting e- business. Certain principles that help develop such culture are discussed here: 16.5.1 Ensure Commitment of Top Management The top management plays an important role in creating a culture that will help employees understand the importance of e-business. Such a culture would ensure commitment from employees. 16.5.2 Create Incentives that Support E-Business Goals The goal behind implementing an e-business strategy is to achieve customer satisfaction, which will result in retaining customers. In order to achieve this, an organization has to align its e-business goals with rewards and incentives, which will motivate employees to achieve these goals. 16.5.3 Develop and Maintain a Bias for Action Businesses need to be agile in order to fulfill the demands of a customer for obtaining quicker delivery of a product of superior quality. Organizations need to be efficient and quick in carrying out their businesses in order to prevent competitors from moving ahead in the market. They should not spend too much time in analyzing the market as time plays a crucial factor in e-business. Organizations need to reduce the number of hierarchical levels to ensure effective communication across the organization. Furthermore, organizations should build capabilities that will help them understand their customers, business processes, and the market in which they are operating. This will enable them to test new approaches in sales, marketing, and service, resulting in the development of an effective e-business strategy. 16.6 E-Business Models There are eight e-business models, namely, B2B, B2C, C2C, B2E, G2C, C2G, G2G, and G2B. These models are discussed in detail here: 16.6.1 Business-to-Business Model The most popular e-business model dealing with business to business transactions is business-to-business (B2B) model. B2B enables

organizational buyers and sellers to exchange goods and services. The operations between organizations and their business partners are streamlined with the help of B2B websites. B2B marketplaces offer several benefits like efficient inventory management, quick response to customer demand, reduction in paper costs, and quick product launch. B2B websites provide solutions to various industries such as the banking, hospitality, and automotive industries. These websites register the largest amount of transactions in terms of value. For example, a B2B auction site, iMark.com, links the buyers and sellers and allows them to buy equipment including services related to Transportation and Rigging and Investment Recovery and Leasing. Other B2B sites include FreeMarkets.com, shop2gether.com, etc. 16.6.2 Business-to-Consumer Model The business model that deals with transactions related to business and consumers is called the business-to-consumer (B2C) model. B2C websites sell their products and services directly to individual consumers. They, however, face problems related to security of online payments, fraud, and privacy issues. But by offering personalized services and easy navigation, B2C sites attract customers. B2C websites overcome the problem of order fulfillment by focusing on logistics and supply chain. Amazon.com and indiatimes.com are examples of B2C websites. 16.6.3 Consumer-to-Consumer Model Consumer-to-Consumer (C2C) websites allow individual customers to sell and purchase products and services. Individual customers frequently buy and sell products like computers and home furnishings from each other. eBay.com, an auction site, is an example of a C2C site. 16.6.4 Business-to-Employee Model A business-to-employee (B2E) model is a form of e-business which uses an intranet available within the company in order to communicate to the employees about the various products and/or services. B2E websites serve as communication channels that enable dissemination of organizational information to all the employees who are located worldwide. 16.6.5 Government-to-Citizen Model Government-to-Citizen (G2C) websites connect the citizens to the government in order to provide benefits to the citizens and improve public services. Examples of this model are electronic government

service centers which undertake online vehicle registration renewal, registration of motor vehicles, payment of electricity and water bills, issues of ration cards and passports, etc. The G2C websites include information related to services offered by the government and various initiatives taken for the public. Customers can provide feedback about the services provided by the government so that improvements can be brought about. 16.6.6 Citizen-to-Government Model Citizen-to-Government (C2G) websites facilitate the interaction of citizens with the government. For example, customers can pay taxes online through government websites. E-Democracy encourages citizens of their country to vote and engage in governance through the website. The citizens give some inputs and the government organizes an e-debate, in which political leaders participate. Customer opinions related to various issues are taken into account. For example, The eCitizen New York State Department of Motor Vehicles, a C2G site, allows customers to register their vehicles online and order custom license plates. 16.6.7 Government-to-Government Model Government-to-Government (G2G) sites are also known as e- Administration sites. They aim to reduce costs and improve government processes by interconnecting various government departments. In order to make information sharing possible, all departments, offices, and district headquarters owned by the government are interconnected. This helps in cutting down on the time taken for fulfilling customer requests and thereby improves the level of customer service. The G2G websites are located in a non-public system as they are not allowed for public viewing. 16.6.8 Government-to-Business Model The Government-to-Business (G2B) sites facilitate interaction between businesses and the government. The companies access government websites in order to know the rules and regulations relating to exports and imports and other laws that govern businesses. Citizens can also download forms that they need to submit in order to comply with the rules of the government. These sites make it unnecessary for customers to go to the trouble of contacting government officials as all the information necessary is available on the site.

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E-commerce industry is thriving and will continue to do so during the coming decade. New business models are emerging that suit the changing needs of businesses, consumers and other organisations. Exhibit 16.1 gives Ecommerce business models in 2021. Exhibit 16.1: Types of Ecommerce Business Models in 2021 E-commerce business models have traditionally been broadly classified as B2B, B2C and C2C. But with the changing business scenarios and with increased digitalization, new forms of e-commerce business models have emerged as discussed below: 1. Consumer to Business (C2B): C2B model is becoming more prevalent in recent times, in which consumer sells goods or services to businesses or participates in a reverse auction process. It also includes content monetization strategies such as affiliate marketing and Google Adsense. 2. Business to Government/Administration (B2G/B2A): Governments and public administration departments transact with businesses online for finalising contracts. 3. Consumer to Government/Administration (C2G/C2A): C2G/C2A sites and online services enable citizens to pay taxes or other types of fees to government or public organisations. 4. Dropshipping: Dropshipping model allows businesses to setup an online store quickly using platforms such as Shopify and Oberlo. The inventories, packaging and deliveries are all managed by the suppliers directly. 5. Wholesaling and warehousing: This business model might require higher investments in the beginning, but eventually results in better profit margins by focusing on volumes. DollarDays is one such online wholesaler that has a huge product catalogue of more than 260,000 products and follows a pricing model that suits both general customers as well as retailers. 6. Private labelling and manufacturing: Private labelling allows businesses to come up with product ideas and hire a contracted manufacturer for manufacturing them. This helps these businesses to keep their start-up cost minimal by opting for on-demand manufacturing.

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White labelling: This particular business model follows a system wherein a company can package, label and sell a product that is made by another company. 8. Subscription: Mostly followed by beauty, grooming, health, fashion and food companies, subscription model delivers customers
a
consistent supply of goods and services as per the subscribed plan.
Source: https://www.ecommerceceo.com/types-of-ecommerce-business-models/ September 11, 2021 / By Darren DeMatas
Activity: A company plans to start an online auction site. Which e- business model should it implement and what should the features of the auction site be? Answer: Check Your Progress -2 3. Business-to-Business (B2B) is a popular e-business model dealing with B2B transactions. What is the main aim of these marketplaces? 4. Government-to-Government (G2G) marketplaces aim at cutting costs and improving government processes by interconnecting government departments. G2G marketplaces are also known as _____. a. E-Democracy b. E-Debate c. E-Administration d. E-Governance 5. Amazon.com is an example of _____ website while E-Debate is a feature of _____ websites. 6. What are Government-to-Citizen (G2C) websites? Give examples. 7. The e-business model that involves selling products directly to customers is/are: a. B2C b. B2B
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c. C2C d. Both b & c 16.7 Organization of Business in a Digital Firm Digital firms are the organizations which use IT in their external and internal business operation. They do the extensive automation of their activities. Internet and digital firms are changing the business and pricing models of the organization. They are providing rich and dynamic content to their stakeholders. The advantages with digital firms include reduced transaction costs, direct communication between stakeholders, standard communication practices, more information about the product and availability of infrastructure for doing e-commerce or e-business. These technologies improved collaboration and streamlined supply chains in the organization. Group work became best practice not only in product design and development but also in functional activities. Business model explains how the organization delivers product and creates wealth for them. The business models of digital organizations include: i) Virtual store front: who keeps the products and services on Internet instead of physical store. Example: Amazon.com, Wine.com ii) Transaction Broker: Their main job is to execute the transaction online. Example: Ameritrade, E*Trade iii) Auction: these firms provide auction services to customers. They provide electronic clearing house. Example: eBay, Ubid iv) Reverse Auction: In these sites, the consumers bid for the supplier products. Example: Importquote.com and Priceline.com There are also online hardware and software service providers, virtual communities and information brokers. These digital firms are changing the way people are organized in the organizations. That is, they are changing the organization structures and organization cultures. Sometimes organizational units are based on the product type or technology being used. Some of the digital organizations are following flat organization structures instead of hierarchical organization structures. Technology is being used for training and development. E-learning and online content is widely used in digital firms. Some of the digital firms even have digital products such as software for sale over the Internet.
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This can be purchased and installed instantaneously over the Internet using credit card payment. The electronic commerce is taking place between business-to-business, business-to-consumer and consumer-to-consumer. They are also mobile market places doing m-commerce. Some of the digital organizations are using the currency in digital forms such as digital wallets and electronic cash (e-cash). Smart cards are being used to do transactions in digital firms. Some of the digital firms also support micro payments (less than $1). Yahoo payDirect, Paypal and Billpoint support person-to-person payments over the Internet. The challenges in doing business in digital firms include channel conflicts, non-matured business models, frequent changes in business processes, legal issues, security and privacy. 16.8 Enterprise Application Integration Enterprise Application Integration (EAI) is the unrestricted sharing of data and business processes throughout the networked applications or data sources in an organization. EAI can also be defined as the integration of disparate applications with technologies that enable data translation, transformation, and intelligent routing. There are four major categories of EAI software including database linking, application linking, data warehousing, and common virtual system. 16.8.1 Principles of EAI The organization has to follow certain principles for the successful implementation of EAI. • Alignment of plans to strategy: The organization aligns technology with its business plans with the help of models like the Capability Maturity Model for achieving its target. • Consolidation should precede integration: Disparate systems that have the same functionality are consolidated in order to reduce complexity and the overheads incurred by the organization. • Enforcement of EAI architecture: A multi-tiered EAI architecture is defined and enforced across the enterprise. • Integration requirements for new applications: Organizations integrate only the essential requirements to their functional requirements in order to reduce the costs of integrating new applications.

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Early and regular testing: Organizations use simulation techniques for testing new models. This reduces the costs for them as simulation processes are close to real world processes. • Common representation of data and process: The data and process are represented in a manner that makes it easily accessible to any process in the organization. This is expected to facilitate effective communication between various applications, resulting in ease of system interoperability and understanding. • Re-factoring interfaces: In order to sustain quality integration, a stable interface is re-factored whenever a new technology is adopted by an organization. • Evolving business practices through experimentation: Organizations identify the best end-to-end processes with the help of process experimentation and scientific comparison. 16.8.2 Need for EAI With the rapidly changing business environment, organizations must capitalize on new opportunities and use time effectively. This will give them an edge over their competitors and eventually result in higher profitability for them. With the growing complexity of organizations, information has to be shared across various systems. This requires disparate functions to be linked in an integrated solution with the help of EAI. Organizations invest in EAI for streamlining their business processes and interconnecting the elements of an enterprise. The EAI will help organizations reap significant benefits that can be realized over the execution of a project. 16.8.3 What Does EAI Do? Individual applications are integrated with the help of EAI. The Web- oriented EAI applications link applications such as CRM and sales force automation in order to support back-end applications like enterprise resource planning and supply chain management. EAI addresses the need of medium and large enterprises by integrating applications that can be shared across the organizations. EAI is a high-level architectural tool that integrates unrelated systems, making it easily available to users. For example, when a sale is closed in an organization, the customer’s address present in the sales automation software has to be reentered in an order entry system before the product can be delivered. The address has to be

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entered again in the accounting system for the invoice to be dispatched. With the help of an EAI solution, these applications can be integrated. With the help of EAI, organizations map databases and legacy applications in order to extract information from applications such as SAP purchasing programs and Product Data Management (PDM) system and integrate them into a single unified system. EAI uses process modeling to define potential solutions that will help it in analyzing information and delivering solutions for organizations. This involves integration of mission-critical processes with high investment. EAI provides a solution that reduces cost and helps create application interfaces that can be reused in future. Global 2000 companies using IT applications like web-based commerce, B2B commerce, etc., are expected to use EAI as the legacy costs are reduced and specific integration requirements are implemented with ease. 16.8.4 EAI Standards Certain considerations need to be addressed while deciding upon the EAI standards. These include the ability to combine processes across internal systems and third party, to link all packages and internal applications, to maintain application servers and transaction processing monitors, and to offer services so that it can be used for external purposes. XML was the standard initially used by EAI. But with the emergence of Java-based applications, EAI uses standards like JMS (Java Messaging Service) as its functionality caters to all the needs of a market. Other standards used are J2EE connector architecture, web services like SOAP, UDDI, and WSDL as the tasks of integrating applications and business processes are simplified. 16.8.5 Impact of EAI Standards XML-based standards are acceptable to EAI vendors because they are easy to use and flexible. Java-based standards are also gaining importance. However, they faced resistance from few vendors as they developed their own proprietary solutions. Organizations have expressed concerns before buying EAI software as they expect rapid return on investment. The software should help in reducing the level of business risk. Standard EAI models like ESB (Enterprise Service Bus) use in-house skills to help companies put together applications that are already integration-enabled. The standards reduce the functional complexity

involved with the system and help in improving the overall return and speed of payback. One of the largest components of any EAI project is the incorporation of a legacy system with specialized adapters that match their existing system needs. Standards like J2EE connector architecture and web services area of standards are likely to reduce the time taken and the business risk involved in the integration of a legacy system. Standards will also lead to a reduction in the skills requirements of personnel. With the adoption of these standards, maintenance costs will come down, while high levels of quality will be achieved. The implementation of these standards will enhance the appeal of EAI and assure organizations that EAI implementation is a reliable business investment. Activity: A company plans to integrate all its business activities and share information seamlessly across its various departments with the help of Enterprise Application Integration software. What steps should the company take to successfully implement this EAI project? Answer: Check Your Progress-3 8. In EAI, simulation technique is used for _____. 9. Models like the Capability Maturity Model in EAI can be used for: a. Aligning plans to strategy b. Consolidation of disparate systems c. Enforcing EAI architecture d. Making a common representation of the data and the processes

Summary • E-Business involves buying and selling of products and/or services through the Internet. It also involves online collaboration with business partners and servicing of customers. • E-Business has evolved in two major phases: the communication phase and the information phase. It integrates the customers and suppliers with the organization's business processes and this reduces the transaction costs. • E-Business lowers the entry barriers and enables a company to carry out its operations globally. • Infomediaries are websites that offer products and service information. The three business models of infomediaries are aggregators, online auctioneers, and online exchanges. • In e-business, organizations need to continuously make efforts to achieve customer satisfaction by leveraging on their businesses and technological operations. Organizational culture helps businesses in maintaining this focus. • EAI allows data to be shared across various data sources and networked applications in an organization. • There are certain principles that enable the successful implementation of EAI: Alignment of plans to strategy, consolidation preceding integration, enforcement of EAI architecture, integration requirements for new applications, early and regular testing, common representation of data and process, re-factoring interfaces, and evolving business practices through experimentation. 16.10 Glossary • Business-to-Business (B2B): An e-business model that deals with matching buyers and sellers, thus enabling the exchange of goods and services. B2B websites help streamline operations between organizations and their business partners. • Business-to-Consumer (B2C): An e-business model that enables businesses to sell their products and services directly to individual consumers. • Business-to-Employee (B2E): An e-business model which uses an intranet available within the company in order to communicate to the employees about the various products and/or services. B2E websites

 serve as communication channels that enable dissemination of organizational information to all the employees who are located worldwide. • Citizen-to-Government (C2G): An e-business model that enables citizens to interact with the government. C2G websites allow the citizens to give their opinions and participate in the governance online. • Consumer-to-Consumer (C2C): An e-business model that enables the sale and purchase of products and services between individual customers. The C2C websites enable individual customers to frequently buy and sell products from each other through online. • Electronic Business (E-Business): It involves more than buying and selling of products and/or services. Apart from e-commerce, it includes several other areas like supply chain management, customer relationship management, knowledge management, business intelligence, and collaborative technologies. • Electronic Commerce (E-Commerce): It deals with the buying, selling, and distribution of information, products, and services through computer networks. It includes any form of computerized commercial transactions. • Enterprise Application Integration (EAI): The unrestricted sharing of data and business processes throughout the networked applications or data sources in an organization. EAI refers to the integration of disparate applications with technologies that enable data translation, transformation, and intelligent routing. • Government-to-Business (G2B): An e-business model that provides a platform for businesses to interact with government. The government websites provide companies with access to the rules and regulations regarding exports and imports and other laws governing businesses. • Government-to-Citizen (G2C): An e-business model that provides a platform for the government to connect with citizens in order to provide benefits to citizens and to improve public services. The government hosts some websites which contain information about the various public-related initiatives taken and the services offered by it. • Government-to-Government (G2G): An e-business model that aims at cutting costs and improving government processes by interconnecting government departments. G2G websites connect all

government offices, departments, and district headquarters with each other and with the secretariat so that information is shared by all. • Infomediaries: Websites that offer products and service information. Infomediaries empower customers and disseminate information quickly. • Online auctioneers: These help sellers dispose off perishable goods or excess stocks and enable the buyers to purchase goods at discounted rates. 16.11 Self-Assessment Test 1. What is e-business? How does it differ from e-commerce? Study the growth of e-business over a decade. 2. Organizational culture is critical for the success of e-business. Explain the principles that help develop a culture that facilitates the transformation of traditional business into e-business. 3. There are eight e-business models. What are they? Explain them in detail with examples. 4. What is Enterprise Application Integration? Explain its principles. 5. Certain considerations need to be addressed while deciding upon the EAI standards. What are EAI Standards? Also, explain the impact of EAI Standards on businesses. 16.12 Suggested Readings / Reference Material 1. Introduction to Information Technology, V. Rajaraman, PHI learning, 2018 2. Information Technology for Management, 2ed: Advancing Sustainable, Profitable Business Growth, Turban, Volonino, Wood, O.P. Wali, Wiley India Pvt Limited, January 2021 3. Introduction to Information Systems - 6th edition, R. Kelly Rainer; John Wiley & Sons, Inc.2016 4. Information Technology: An Introduction for Today's Digital World, Richard Fox, Chapman and Hall/CRC; 2nd edition (August 21, 2020) 5. Information Technology for Management, Efraim Turban, Carol Pollard, Gregory Wood, Wiley, 2018 Additional References: 1. Critchley, L., Where Nanotechnology, the IoT, and Industry 4.0 Meet., https://www.mouser.com/blog/where-nanotechnology-the-iot- and-industry-40-meet, 2019
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Jay, A., 10 New ERP Trends & Forecasts for 2020/2021 – A Look Into What's Next. https://financesonline.com/erp-trends/2019 5. Gingiss, D., How Integrating Social Media Into The Rest Of The Business Will Increase Revenue., How Integrating Social Media Into The Rest Of The Business Will Increase Revenue (forbes.com), 2019 16.13
Answers to Check Your Progress Questions Following are the answers to the Check Your Progress questions given in the Unit. 1.

i-iv-ii-iii PricewaterhouseCoopers has identified four distinct phases of e- business. The first is marked by implementation of a website enabling concerned organizations to buy and sell online. The second involves putting supply chain management processes online by linking suppliers with the enterprise, using extranet and intranet. In the third phase, the organization forms alliances (content, marketing and commerce) with other online players, indicating the adoption of e-business as a commercial tool. This alters the way in which the organization operates. In the fourth and final stage, there is a convergence leading to innovative products and services. 2. (c) Infomediary model In the Infomediary model, some firms act as information intermediaries and give quality information about buyers and sellers. This information is required by marketing companies to learn about the consumption habits of consumers and by the consumers to get to know about different products offered on websites.
Unit 16: Basics of E-Business and Enterprise Application Integration 21 3.
Match buyers and sellers to enable exchange of goods and services Business-to-Business (B2B) is the most popular e-business model dealing with B2B transactions. B2B marketplaces evolved with the goal of matching buyers and sellers, enabling the exchange of goods and services. B2B websites help streamline operations between organizations and their business partners. 4. (c) E-Administration Government-to-Government (G2G) is also known as E- Administration. It involves connecting all government offices, departments and district headquarters with each other and with the Secretariat so that information is shared. This helps reduce time taken for solving customer requests and improves customer service levels. 5. B2C; C2G The e-businesses that adopt Business-to-Consumer (B2C) model sell their products and services directly to individual consumers. Amazon.com is an example of B2C website. Citizen-to- Government (C2G) websites facilitate citizen interaction with the government. The government takes inputs from citizens and organizes an e-debate, in which political leaders belonging to various parties participate. Citizens give their opinions on the manifestos of various parties. This initiative brings citizens closer to elected members and gives them a chance to evaluate their leaders. 6. Government-to-Citizen (G2C) websites provide a platform for the government to connect to citizens to provide them benefits and improve public services. Electronic government service centers that issue ration cards, accept electricity bills and water bills, issue passports, undertake registration of motor vehicles, etc., are examples of G2C model. 7. (a) B2C The Business to Consumer (B2C) e-business model involves selling products directly to consumers. 8. Testing One of the principles in EAI is to conduct early and regular testing. By doing this, it becomes cheaper to build executable models. Testing is carried out by using the simulation technique.
Block-5: Enterprise Functions and E-Business 22
Simulators are close to the real-world processes and systems and hence provide meaningful information with a reasonable ability to predict outcomes. 9. (a) Aligning plans to strategy Implementation of end-to-end integrated solutions can be successful only when a basic alignment between business plans and technology exists in the organization. Models like the Capability Maturity Model can be used to establish an overall target for the organization and keep various businesses and the IT organization in alignment as they move toward the target. Therefore, such models help in aligning plans with strategy.
23
Unit 17 Supply Chain Management and E-Business Structure 17.1 Introduction 17.2 Objectives 17.3 Supply Chain Management: An Overview 17.4 E-Supply Chain 17.5 Managing Relationships in the E-Supply Chain 17.6 Issues in E-Supply Chain Management 17.7 Future of the E-
Supply Chain 17.8
Summary 17.9 Glossary 17.10 Self-Assessment Test 17.11 Suggested Readings/Reference Material 17.12 Answers to Check Your Progress Questions 17.1
Introduction In the last unit, we

discussed
Evolution of E-Business, Organizational Culture for E-Business, E-Business Models,
and Enterprise Application Integration. We have discussed the vital role played by the internet in streamlining business functions. In this unit, we introduce you to supply chain management and the ways in which the Internet is enabling the supply chain management function in the organization. With a highly competitive business environment, companies are trying to reduce their product development cycle time and launch new products faster. To create and sustain a competitive advantage, a company requires both internal capabilities and tight integration with the external entities. Supply chain management helps companies integrate their customers, suppliers, and channel partners. The number of stages in the supply chain depends on the customers' needs and the role each stage plays in fulfilling their needs. The Internet has also provided organizations with the ability to integrate the entire supply chain, from the stage of raw material sourcing to the delivery of products to the customers. In this unit, we shall discuss an overview of supply chain management and electronic supply chain. We shall discuss how relationships can be managed in an e-supply chain and the various issues in an e-supply chain. The unit would end with a discussion on the future of e-supply chain.
Block-5: Enterprise Functions and E-Business 24 17.2
Objectives By the end of this unit, you should be able to: • Identify the
components of
the supply chain. • Recognize the benefits of e-supply chain. • Evaluate the type of relationships in a supply chain
and their relevance in e-supply chain. • Determine the issues to be addressed prior to the implementation of e-supply chain management. • Predict the future trends in e-
supply chain management. 17.3 Supply Chain Management: An Overview Stank et al. Described supply chain management as a "strategic level concept." Ho et al. Conceptualize SCM as having three core elements: Value Creation Integration of Key Business Processes Collaboration Based on this conceptualization, they define supply chain management as follows: "SCM is the philosophy of management that involves the management and integration of a set of selected

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key business processes from end user through original suppliers, that provides products, services, and information that add value for customers and other stakeholders

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key business processes from end user through original suppliers, that provides products, services, and information that add value for customers and other stakeholders

through the collaborative efforts of supply chain members" Supply Chain Management (SCM) as defined by the Council of Supply Chain Management Professionals: "Supply Chain Management encompasses

the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities." Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers, and customers. In essence, supply chain management integrates supply and demand management within and across companies. Supply Chain Management

is an integrating function with primary responsibility for linking major business functions and business processes within and across companies into a cohesive and high-performing business model. It includes all of the logistics management activities noted above, as well as manufacturing operations, and it drives

Unit 17: Supply Chain Management and E-Business 25

coordination of processes and activities with and across marketing, sales, product design, finance and information technology."

The supply chain represents the relationships between an organization, its trading partners, and its customers. Coordinated flow of information, linkage of all procurement related activities, and sale of finished goods are the main features of a supply chain. Product flow relates to the transformation of raw material into finished goods and information flow refers to the future requirements (raw materials, products and tools, and equipments) and order delivery status. In the late 1980s, organizations emphasized internal process efficiency as priority followed by external processes. Integration of ad-hoc and fragmented processes into a consolidated system is a major function of supply chain management (SCM). Process optimization as compared to traditional optimization methods helps in reduction of total cost of the order-to-delivery process. 17.4 E-Supply Chain

E-SCM involves using internet to carry out value added activities to meet the customer' need effectively and enhance the overall supply chain profit. E- Supply chain

helps to achieve synergy in supply chain operations and streamlining of B2B processes. It provides better communication and coordination among the members of the supply chain; enhance speed of business processes and real-time control over the production operations of suppliers, and improve customer satisfaction. The effectiveness of the supply chain can be measured based on the extent of collaboration achieved between the partners. The key factors determining the success of supply chain are collaboration, processes integration and information management with continuous monitoring. Some of the best practices employed by leading technology firms for efficient information capture in a product supply chain are discussed below: 17.4.1 Components of E-Supply Chain The key components of an e-supply chain are: Supply chain replenishment: Aligning the real time demand of a particular business with its suppliers and partners is the objective of supply chain replenishment. Contrary to the traditional assemble-to-order strategy, components or sub-assemblies are not stocked in an e-supply chain. Instant delivery of components at the site for assembling, non-

Block-5: Enterprise Functions and E-Business 26

requirement for product-testing and strong back-end system is crucial for making the supply chain more efficient. Make-to-order strategy is adopted in a highly volatile environment and requires tight integration between the supplier and the company. The supplier has to constantly change the design of components according to the specifications of the customer order received by the company. In the assemble-to-order strategy, the company can maintain an inventory of components. A tentative estimate of the requirements is prepared in the assemble-to-order strategy. Management of production and demand is better handled by e-business. E-Supply chains enable catering to global requirements, integration with existing ERP systems, optimization of procurement, inventory management, and scheduling, leading to an overall improvement in the quality of decision making. Collaborative planning: Collaborative planning helps in product flow coordination, optimization of resource utilization and inventory level management. E-supply chain provides real-time access to demand-related information, and makes relevant statistical information available to all the partners and suppliers, thereby achieving complete integration amongst all the partners. Collaborative product development: This aspect pertains to the design and implementation of product development processes and observation of change and its impact. The use of e-business technology in product development can help in reducing product development cycle time. Product development requires better coordination of activities of staff working in different locations. E-Business technology can enable knowledge transfer between the personnel spread at various locations. The technology can be leveraged to the fullest extent by achieving higher levels of co-ordination between various teams. Problems related to communication are directly proportional to the size of the organization. In such cases, e-business technology increases the need for integration and coordination among the departments. In e- business, marketing and sales divisions should analyze feasibility for customization, levels of collaboration, and impact of decisions on production department. Any gaps in terms of product offerings can be minimized through appropriate communication and coordination between departments. For businesses to extract inputs from extraprise, appropriate changes in business processes, systems, and organizational culture have to be made.
Unit 17: Supply Chain Management and E-Business 27

Efficient electronic sales and delivery system should be available to make online transactions more secure. The focus should be on continuous information sharing, aiding collaborative and real-time product development. Electronic information system along with electronic images, online operating manuals, online prototypes, etc., will provide the support for a range of activities. E-Procurement: The use of e-business technology in streamlining of the procurement process across business partners in the supply chain is referred as e-procurement. With electronic search mechanisms, components selection by the designers becomes easier. Software and electronic modeling help in determining the suitability components, and online catalogs with 3D view enable quick decision making, lesser instances of product redesigning, etc. E-Logistics: Redesigning of warehousing and product distribution using e-business technology is referred as e-logistics. Optimizing the routing of products, checking of real-time shipping status, and tracking of inventory through vendor-managed inventory systems are some of the activities enabled by e-logistics. Simultaneous undertaking of final assembly and package at the distribution centers reduces the inventory levels of finished goods. e-Logistics (Chennai based logistics player), Tata Consultancy Services and IIT (Kanpur) have joined hands to develop new software named Satellite Imaging Software for Rail Navigation (SIMRAN) that would help to monitor trains through Internet thereby reducing collision related incidents. This software makes the use of GPS, GSM and radio frequency identification technologies. For any train that passes through a station, its information is relayed to GSM/GPRS network and there onwards to the Internet via SIMRAN Web server. The voice recognition (VR) systems which have significant potential in warehouse/distribution operations are discussed below. 17.4.2 Inter-Enterprise Integration In partnership-centric business model, organizations integrate their operations and strategies with those of their trading partners, suppliers, and customers. A higher level of integration can ensure lower inventory levels. Owing to their proximity with the customers, distributors and retailers can receive accurate information from them and this information when used with appropriate replenishment optimization software helps in estimation of future demand and preparation of production plans

accordingly. Increasing awareness about buying options has posed challenge to the companies in the form of product customization. Types of inter-enterprise integration: Three types of supply chains that make inter-enterprise integration possible are discussed in Table 17.1 given below. Table 17.1: Types of Inter-Enterprise Integration Responsive Supply Chain Enterprising Supply Chain Intelligent Supply Chain • Quick response to customer requirements • Consideration of available-to- promise (ATP) factor • Changes in the supply chain are made in response to changes in customer demand as quickly as possible • Requires two-way integration (up and down) in the supply chain. • Fine-tune the weak links (to make them strong) in the supply chain on the basis of changing market conditions Few factors that imply lack of integration between planning and execution function are inconsistent customer service, absence of demand forecasting and its impact, frequent changeovers in production schedules and more stock-out instances etc. Supply chains should be able to achieve better level of integration between processes and for this organizations can make use of enterprise-level software applications. 17.4.3 Supply Chain Planning Some of the functions of supply chain planning modules are listed as follows. • Advanced scheduling and manufacturing planning modules ensure coordination between manufacturing and supply chain functions. • Demand planning modules generate demand forecasts and enable preparation of production schedules. • Distribution planning functions help in developing operating plans. • Transportation planning module keeps track of material movement and other variables such as loading dock space, trailer availability etc.

Enterprise Resource Planning (ERP) provides required support for the SCP modules. SCP applications should be flexible thereby enabling the changes to be visible to everyone. 17.4.4 Supply Chain Execution A customer centric strategy along with adequate planning for streamlining and cost reduction should be adopted. For effective supply chain execution, informational inputs at every stage should be available. Software applications used in this regard are popular because they enable optimization of coordination with external channel partners and handling of varying data requirements in real world situations. Some of the key components of supply chain execution are listed as follows 17.4.4.1 Order planning The execution plans should address issues such as inventory availability, production capacity, suppliers' ability to deliver on time and limitations posed by transportation modes. 17.4.4.2 Production Master production schedule and the manufacturing resource planning system determine the time, quantity and location of the subassembly requirements. 17.4.4.3 Replenishment Well-timed replenishment of goods should be followed to ensure that no customer's request is turned down for shortage of goods. 17.4.4.4 Distribution management Management of activities related to transportation from the manufacturer, distribution center and finally to customers is referred as distribution management. 17.4.4.5 Reverse distribution Goods returned owing to product defect or customer dissatisfaction is referred as reverse logistics. They are either sent back for remanufacturing or disposed off. Activity: The procurement department of a retail company is through with the supply chain planning stage. After the planning stage, what are the key components that the department has to focus on for effective supply chain execution?

Contd. .....

Block-5: Enterprise Functions and E-Business 30

Answer: Check Your Progress-1 1. The component of the e-supply chain that involves aligning the real time demand of a particular business with its suppliers and partners to improve customer service and enhance customer satisfaction is known as _____.

2. Given below are a few statements related to supply chain processes. Match these with the appropriate type of strategy. i. Generally adopted in a highly volatile environment ii. Inventory of components is maintained iii. Constant changes in the product iv. Tentative estimate of requirements is prepared p. Make-to-order strategy q. Assemble-to-order strategy 3. In the supply chain execution process, factors like time, quantity and location with regard to sub-assemblies is determined by i. Master production schedule ii. Order planning iii. Manufacturing resource planning system iv. Replenishment

a. Both i & iv b. Both ii & iv c. Both i & iii d. Both ii & iii 4.

The e-supply chain comprises five components. What are the benefits derived from the collaborative planning component and the supply chain replenishment component of e-supply chain?

Unit 17:

Supply Chain Management and E-Business 31 5. E-procurement is a vital component of the e-supply chain. Given below are statements pertaining to e-procurement. Indicate whether they are true or false. i. Electronic search mechanisms help product designers find components quickly compared to traditional mechanisms True/False ii. The process of selection is by way of trial and error True/False iii. Online purchases help streamline the delivery process True/False iv. Any online catalog does not exhibit products in a three-dimensional view True/False 6. Given below are observations made by an FMCG company. Of these, the instances that indicate the absence of coordination between the planning and execution functions are i. Inconsistent customer service resulting in low or high inventory levels ii. Lack of trust between the production and marketing departments iii. Frequent changes in production patterns iv. Inefficient inventory management

a. Both i & iv b. Both ii & iv c. Both i & iii d. i, ii, iii

and iv 7. Execution of the supply chain should be based on the available information details at each stage. What are the components of the supply chain execution process? 8. Given below are components of the e-supply chain and their description. Choose the component that has been wrongly described. a. E-logistics – Redesigning warehousing & product distribution using e-business technology b. E-procurement – Procurement processes among business partners in the supply chain using e-business technology c. Supply chain replenishment -- Helps coordinate product flows across business units d. Collaborative product development – Design and implementation of the product development processes within the organization and across partners and suppliers in the supply chain Block-5: Enterprise Functions and E-Business 32 9. _____
is a type of inter-enterprise integration that modifies weak links in the supply chain based on changes in market conditions to achieve an advantage over competitors. 17.5 Managing Relationships in the E-Supply Chain Electronically enabling communication channels of a company provide benefits in terms of cost reduction, time reduction and improved collaboration between the suppliers. Based on the significance of the materials sourced, the different types of relationships that exist between the suppliers are discussed as follows: 17.5.1 Commodity-Based Supplier Relationships ? Price is a major factor concerned with the purchase of commodity products. ? Availability of commodities with many suppliers gives companies opportunity to switch between suppliers. ? Relationship with commodity product suppliers is not emphasized. However, to ensure quality and reliable delivery, strong relationships with commodity suppliers need to be maintained. Two forms of commodity based relationships are explained in Table 17.2 below. Table 17.2: Two Forms of Commodity-Based Supplier Relationships Traditional Direct Commodity Relationship E-nabled Direct Goods Commodity Relationship ? The purchasing departments focus more on procurement of direct materials than indirect materials. ? Cost and supplier's ability to deliver products on time is emphasized ? Long-term relationships are not maintained ? Improvisation of product scheduling and purchasing of direct commodities ? Electronic sharing of information with suppliers ? Inventory is replaced with information ? Adoption of e-nabled Vendor-Managed Inventory (VMI) systems provide cost and time efficiencies and lessens need for human interference
Unit 17: Supply Chain Management and E-Business 33 17.5.2
Strategic Supplier Relationships • Good relationships have to be maintained with suppliers of critical components. • If the outsourcing service provider handles many operations of the company's value chain or performs specialized functions, it should be ensured that good relationships are maintained. The three forms of strategic supplier relationships are explained below in Table 17.3. Table 17.3: Three Forms of Strategic Supplier Relationships Traditional Strategic Component Supplier Relationship E-Nabled Strategic Component Supplier Relationship Process Outsourcing Relationships ? In traditional set-up, visits by representatives are followed by discussions leading to actual production of critical component. ? Real-time communication with suppliers can be facilitated by acquiring suitable technology. ? Continuous information exchange with regard to demand forecasts and production schedules. ? Efficient control of strategic component procurement costs can minimize development costs Collaboration with suppliers can lead to development of new and improved components Tools such as VMI and CPFR (Collaborative Planning, Forecasting, and Replenishment) can be used to establish real-time communication with their suppliers and foster long-term relationships. ? Outsourcing non-core business processes in the supply chain ? Provides scope for value addition activities ? Close and extensive communication between the company and the outsourcer is essential
Block-5: Enterprise Functions and E-Business 34
Check Your Progress-4 10. _____ is a type of supply chain relationship that focuses more on procurement of direct materials than indirect materials. 11. The processes/technologies used by organizations for establishing real-time communication with the suppliers are i. Vendor Managed Inventory ii. Advanced Planning and Optimization iii. ERP systems iv. CPFR (Collaborative Planning, Forecasting and Replenishment)
a. Both i & iv b. Both ii & iv c. Both i & iii d. Both ii & iii 17.6

Issues in E-Supply Chain Management The need for managing and integrating product flows through SCM is gaining more importance. In developing an integrated system of SCM, strategic factors have to be focused on. Four major elements that help in effective SCM design are listed as follows 17.6.1 Appropriate Supply Chain Structure SCM design has more strategic focus and is implemented to yield the benefits of either low-cost distribution or lead-time responsiveness. Basic elements of SCM include demand forecasting, capacity planning, strategic scheduling, and performance measurement. 17.6.2 Differentiation Companies generally adopt product or service differentiation to derive competitive advantage. SCM is another area where differentiation is possible. Such differentiation can be achieved by following the build-to- order model, controlling the speed of goods movement, controlling the amount of inventory, adjusting product cycle times etc.

 17.6.3

Order Fulfillment Capabilities Resolving internal conflicts would help in better supply chain management. Reactive supply chains make order fulfillment process successful and also ensure effective deployment of resources. 17.6.4 Adequate Infrastructure Creation of a suitable infrastructure supporting real-time supply chain is a major challenge for most of the companies. Supply chain applications should ensure compatibility with ERP and other legacy systems existing in the firm. Selection of new technologies should be based on the predicted capabilities required for serving the customers in future. Investment decisions should center on the predicted technological deliverables. Advantages of e-supply chain management Following are the

advantages of E-supply chain management: 1. Improves efficiency 2. Reduces inventory 3. Saves cost 4. Enables competitive advantage 5. Enhances ability to implement just-in-time delivery, increases on- time deliveries, resulting in more customer satisfaction 6. Reduces cycle time, increases revenue, improves customer service 7. It

imparts improvement in

order fulfilment, order management, decision making, forecasting, demand planning, and warehouse/distribution 8. It reduces paperwork, administrative overheads,

and manual interventions so that the goods reach faster to the customers. 17.7 Future of the E-Supply Chain Some of the important trends in e-supply chain are: 17.7.1 Integrated Make-to-Stock In this model, the quantity of production is decided based on forecasted demand. The goods are then manufactured and shipped to distributors from where it reaches the retailers through different intermediaries. At each level, the goods are stocked by intermediaries till they are

purchased. In make-to-stock model of supply chain management, companies do not wait for the customer to place orders. For example, Toyota follows a make-to-stock model. The model's major characteristics are discussed below: Activity: SM Manufacturing Company has implemented Supply Chain Management (SCM) software for increasing the speed of its supply chain activities, reducing the costs associated with those activities, and retaining its existing customers. What SCM elements need to be considered while developing an effective SCM design? Explain Answer: • It is more suited to mass-production environment. • Production is based on forecasted demand and goods are stocked with intermediaries till they are purchased. • Information sharing across supply chain resolves the issue of underutilization of resources. • Postponement, i.e., assembling of final product in the distribution channel, is a latest trend in make-to-stock model. 17.7.2 Continuous Replenishment Organizations involved in manufacturing products or services adopt the continuous replenishment model. This model is altered depending on the level of organizational integration. But the major purpose of the model is to coordinate the processes in the organization. For example, Procter & Gamble uses a Continuous Replenishment Process (CPR) for improving its logistics function and reducing its channel inventory. Its major characteristics are discussed below: • Most suited to the packaging industry and those involved in product manufacturing or services. • This model attempts to achieve better process co-ordination in the organization. • Distribution through wholesalers reduces the firm's customer service related tasks, provides customer ease in information access and also informational assistance to the firm.

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Inter-enterprise process integration and enterprise-level applications facilitate supply chain integration. 17.7.3 Build-to-Order Industries with rapid and continuous change in technology follow the build-to-order (BTO) model. Large stocks of products may become obsolete. Hence, companies try to be more flexible in the procurement process. The major elements in a BTO model are mass customization and realization that inventory can be substituted with information. For example, Dell follows a BTO model. Its major characteristics are discussed below: Mass customization and possible substitution of information with inventory are the two major elements of BTO model. • It is appropriate for industries characterized with rapid and continuous technology change. • Unlike traditional SCM, e-supply chain production is driven by demand through real-time matching of supply and demand. 17.7.4 Outsourcing Supply Chain Management Companies in the e-business era also have the option of outsourcing their supply chain. They can outsource (contract out) critical parts of supply chain execution to partners. Partners comprise manufacturing partners who build components, fulfillment specialists who provide support for logistics and fulfillment, and warehouse management specialists who manage inventory. Supply Chain Management is constantly evolving with increasing focus on optimisation and digitalisation of the processes. Exhibit 17.1 presents the SCM trends in 2021. Exhibit 17.1: Top 10 Supply Chain Management Trends in 2021 Supply chains across industries are focusing on reducing silos, enhancing networking and sustainability. Given below are the top Supply Chain Management trends for 2021 that will shape the supply chain function: 1. Enhanced focus on purchasing and procurement: As market prices are becoming more transparent due to constantly growing e-commerce sector, purchasing and procurement activities will involve collaborative efforts by all stakeholders with the help of forecasting and demand planning tools. 2. Supply networks replace supply chains: Instead of focusing on enterprise-centric systems, focus will shift towards tools and platforms

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Block-5: Enterprise Functions and E-Business 38

that promote tight integration among business processes such as forecasting, orders, deliveries, production, capacity and inventory in real time. 3. Breaking down ERP silos: The post-pandemic business scenario is more focused on building collaborative networking platform to enable easy and faster data sharing within the organisation and with partner companies. 4. Restructuring of Supply chain organisations: Use of prescriptive analytics and automation tools will lead to elimination of positions and roles within supply chain organisations. 5. Supply chain control towers become better: Supply chain control will become more and more technology driven. AI techniques such as predictive and prescriptive analytics as well as use of optimisation techniques will help to automate supply chain processes and optimise transit times. 6. Matching supply and demand: In the globally connected world undergoing rapid changes in demand and supply, companies will need to keep service levels high by optimally matching demand with available supply within deadlines. 7. Omnichannel: Instead of following a single channel approach, businesses will have to explore multiple channels such as brick-and- mortar retail, wholesale, e-commerce, direct-to-consumer, distribution partners and platforms. 8. Direct-to-consumer channel: e-commerce technologies will be needed to handle the wide variety of options and customer demands, in addition to faster deliveries and returns/exchange processing. This will enable the businesses to sell goods directly to customers without maintaining large inventories. 9. Cold chains: For temperature sensitive products such as medicines, vaccines, food and some chemical products, businesses will have to maintain supply chains that can offer complete monitoring and product traceability. 10. Focus on Sustainability: Sustainability issues such as carbon emissions, water and energy consumption and product recycling will gain even more importance in times to come.
Source: https://www.supplychainbrain.com/articles/32976-top-10-scm-trends-in- 2021
Unit 17: Supply Chain Management and E-Business 39
Activity: Integrated make-to-stock, continuous replenishment, and build-to-order models are set to dominate the supply chain application space. Which of these models do you think will be the most suitable for a firm in the automobile industry? Explain, giving reasons for your answer. Answer: Check Your Progress-5 12. Which process in supply chain management is more suited to the packaged goods industry? 13. From the following, which characteristic/s in SCM is/are not exhibited by the continuous replenishment model? i. Companies involved either in manufacturing or services engage in it ii. It involves postponement iii. The objective is to coordinate processes in the organization iv. Alterations in the model are dependent on the level of organizational integration a. Only i b. Only ii c. Only iii & iv d. Only iv 14. Even the core functions of the supply chain can be outsourced. Who can the selected as partners for outsourcing? 15. Built-to-order is one of the models in supply chain management. Which of the following characteristic/s is not exhibited by the built- to-order model? i. Mass production ii. Mass customization iii. Flexibility in procurement process iv. Managing large stocks
Block-5: Enterprise Functions and E-Business 40
a. Both i & iv b. Both ii & iv c. Both i & iii d. Both ii & iii 16. _____
do (does) not provide an opportunity for businesses to achieve differentiation in supply chain activities. a. Build-to-order business b. Control speed of movement of goods c. Inventory control at the supplier's source d. Rigid product cycle times 17. Given below are a set of characteristics and trends in supply chain management. Match the characteristics with the appropriate trend in supply chain management. i. Option of contracting out key activities of the supply chain ii. Key element is information and substitutes inventory iii. This supply chain model is altered depending on the level of organizational integration iv. Applicable for industries which experience rapid and continuous technological change p. Built-to-order q. Outsourcing SCM r. Continuous replenishment 18. Which of the following is not a characteristic of the integrated make- to-stock model of supply chain management? a. Suitable for mass production environment b. Production is based on forecasted demand c. Final product is assembled in the distribution channel d. Companies wait for customers to place orders 19. Given below are the steps in the make-to-stock model in supply chain management. What is the correct sequence in which these activities should take place? i. Shipping to distributors ii. Retailers iii. Demand forecasting iv. Customer place order

Unit 17: Supply Chain Management and E-Business 41
v. Manufacturing goods vi. Intermediaries 17.8 Summary • The set of processes involved from creation to the product delivery constitute the supply chain. It also represents the relationships between the firm and its partners. •
E-Supply chains help to achieve synergy in supply chain operations and provide better communication and coordination among the members of the supply chain. Supply chain replenishment, collaborative planning, collaborative product development, e-procurement, and e-logistics are the key elements of supply chain management. • Higher level of integration can ensure lower inventory levels. Responsive supply chain, enterprising supply chains, and intelligent supply chain are the three types of inter-enterprise integration possible. • Key modules of supply chain planning are advanced scheduling and manufacturing planning, demand planning, distribution planning, and transportation planning. • For effective supply chain execution, relevant information should be made available at every stage and suitable software applications are used in this regard. Supply chain execution comprises of key elements such as order planning, production, replenishment, distribution management, and reverse logistics. • The different relationships in a supply chain are the commodity supplier relationship and the strategic supplier relationship. • Prior to the implementation of SCM, the firm has to attain clear answers on issues such as: appropriateness of supply chain structure, product or service level differentiation, order fulfillment capabilities, and infrastructural sufficiency. • Notable trends in supply chain applications are integrated make-to- stock, continuous replenishment, and build-to-order models. 17.9 Glossary • Build-to-order strategy: With growing customer awareness about buying options, companies are facing the challenges of product customization. The customer order cycle has become unpredictable
Block-5: Enterprise Functions and E-Business 42
and therefore, companies are forced to keep zero inventory level and adopt. • Commodity-based relationships: These relationships occur between a company and its suppliers of commodity products. Decisions on the purchase of commodities are usually based on price and service as well as transportation and availability. • E-logistics: It is concerned with the redesigning of warehousing and product distribution using e-business technology. E-logistics enables companies to optimize the routing of products and allows customers to track the real-time shipping status of the product. • E-Procurement: The streamlining of the procurement process across business partners in the supply chain using e-business technology. • Make-to-order strategy: The strategy generally adopted by companies in a highly volatile environment where customers' preferences change drastically and rapidly. • Responsive supply chains: These enable quick response to customer requirements. The most important factor to consider is whether the inputs for the product are available, so that a commitment to deliver can be made. • Supply chain management: A set of processes which helps organizations develop and deliver products. The supply chain represents the complex relationships of an organization with its trading partners through whom it sources materials, manufactures products and delivers products or services to the customers. • Vendor-Managed Inventory (VMI) system: Companies can improve the efficiency of their materials management system by collaborating with key suppliers. A VMI system allows the key suppliers to determine inventory requirements, replenish the inventory from time to time and send shipment notices. 17.10 Self-Assessment Test 1. An e-supply chain helps to achieve synergy in supply chain operations and streamlining of B2B processes. Identify and elaborate the key components of an e-supply chain.
Unit 17: Supply Chain Management and E-Business 43 2.

A high level of integration between the supply chain partners ensures lower inventory levels. In this regard, give a comparative account of the three types of inter-enterprise integration. 3. The most crucial aspect after the supply chain planning stage is supply chain execution. Identify the key components of supply chain execution. 4. Based on the significance of the materials sourced, there are different types of relationships that exist between the firm and its suppliers. Describe these relationships. 5. Identify the issues on which a firm has to attain clarity before commencing on the supply chain management design. 6. Describe three major trends that supply chain applications may witness in the near future. 17.11

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Answers to Check Your Progress Questions Following are the answers to the Check Your Progress questions given in the Unit. 1.

Supply chain replenishment The e-supply chain is made up of five components. Supporting the real time demand of a particular business with supply chain partners is the function of supply chain replenishment. 2. i, iii – p; ii, iv – q In the make-to-order strategy, as demand is highly volatile, estimates of components cannot be prepared. The supplier has to constantly change the design of components according to the specifications of the customer order received by the company. In the assemble-to-order strategy, the company can maintain an inventory of components. 3. (c) Both i & iii Production is a major component of the supply chain execution process. In the current scenario, sub-assemblies are procured when products are to be assembled. 4. Collaborative planning enables organizations to coordinate product flows across their business units, optimize resource utilization and optimize inventory levels through integration of operations across the suppliers and partners in the value chain. Supply chain replenishment involves aligning the real time

demand of a particular business with its suppliers and partners so as to improve customer service and enhance customer satisfaction. 5. Statements ii and iv are false while statements i and iii are true. In traditional business, selection is by way of trial and error. E-procurement ensures that the right components are selected and so resolves the issue of these parts being incompatible after they are received. Most online catalogs give a three-dimensional view of the product. 6. (d) i, ii, iii and iv To avoid problems in integration of processes, companies should ensure efficient collection, structuring and sharing of information in a supply chain. Trust between production and marketing departments would help in forecasting demand and analyzing its impact on production. The absence of co-ordination between production, marketing and customer service departments would cause many changeovers in production. Improper inventory management would lead to increase in the number of stock-outs. 7. Transportation planning is a part of the supply chain planning process. Order planning, production, replenishment, distribution management, reverse distribution and logistics are part of the supply chain execution process. 8. (c) Supply chain replenishment -- Helps coordinate product flows across business units Supply chain replenishment involves aligning the real time demand of a particular business with suppliers and partners to improve customer service and enhance customer satisfaction. The coordination of product flows and resource optimization is possible through collaborative planning. 9. Intelligent supply chain The enterprising supply chain initiates changes in the supply chain based on alterations in customer demand. The responsive supply chain considers changes in customer requirements and

confirms the material availability to achieve the set delivery schedule. 10. Traditional direct commodity relationships In traditional direct commodity relationships, purchasing departments focus more on procurement of direct materials than indirect materials. They consider cost as well as the supplier's ability to deliver products on time in their commodity- purchasing decisions. They also have agreements with suppliers to ship commodities on consignment, enabling them to pay only for material actually used in production. The department purchases from a particular supplier as long as it delivers the commodity at a price agreeable to the former. 11. (a) Both i & iv VMI and CPFR help establish real-time communication with suppliers and foster long-term relationships with them. With the help of ERP, SCP processes can determine the demand for a product, raw material needed, the time taken to manufacture and deliver and the inventory stock of finished goods and raw materials. Advanced Planning & Optimization is a tool of optimization. 12. Continuous replenishment Organizations involved in manufacturing products or services adopt the continuous replenishment model, which is primarily suited to the packaged goods industry. This model is altered depending on the level of organizational integration. The major purpose of the model is to coordinate the processes in the organization. 13. (b) Only ii Postponement is the latest trend in the make-to-stock model. It involves assembling the final product in the distribution channel. The major purpose is to coordinate processes in the organization. 14. Companies in the e-business era have the option of outsourcing their supply chain. They can outsource critical parts of supply chain execution to partners. Partners comprise manufacturing partners who build specialized components, fulfillment

specialists who provide support for logistics and fulfillment and warehouse management specialists who manage inventory. 15. (a) Both i & iv Mass production environment is a characteristic of integrated make-to-stock model. Large stocks are not maintained as they may become outdated over time. So, companies try to be more flexible in their procurement processes. 16. (d) Rigid Product cycle times There should be some adjustment allowed in product cycle times for the benefit of customers. 17. i-q; ii & iv - p; iii – r Organizations involved in manufacturing products or services adopt the continuous replenishment model, which is primarily suited to the packaged goods industry. This is altered depending on the level of organizational integration. The major purpose of the model is to coordinate processes in the organization. Built- to-order is especially true for industries where there is rapid and continuous technology change. Large stocks of products may become obsolete. So, companies try to be more flexible in the procurement process. 18. (d) Companies wait for customers to place orders The unique characteristic of the make-to-stock model is that companies do not wait for the customers to place orders. 19. iii-v-i-vi-ii The quantity of production is decided based on forecasted demand and then they are shipped to retailers via intermediaries. In the make-to-stock model of supply chain management, companies do not wait for the customer to place orders.

Unit 18 Enterprise Resource Planning Structure 18.1 Introduction 18.2 Objectives 18.3 Enterprise Management System (EMS) 18.4 ERP: An Overview 18.5 Rationale for ERP 18.6 Enterprise Architecture Planning 18.7 Implementing ERP 18.8 Effect of ERP on the Company 18.9 Overview of ERP modules 18.10 ERP Investments in the US 18.11 ERP Market – The Indian Scenario 18.12 ERP Implementation Problems 18.13 Emerging Trends in the ERP Industry 18.14 Future of ERP Applications 18.15

Summary 18.16 Glossary 18.17 Self-Assessment Test 18.18 Suggested Readings / Reference Material 18.19 Answers to Check Your Progress Questions 18.1

Introduction In the previous unit, we

have discussed

supply chain management and electronic supply chain. We have learnt that e-supply chains aid in achieving a

synergy in supply chain operations. They also provide communication and coordination among the supply chain

members. In this unit, we introduce you to enterprise resource planning (ERP). Operational efficiencies and the ability to quickly respond to changing customer demands act as sources of competitive advantage for an organization. An organization can quickly respond to the customers' demands through proper communication and coordination between the various departments as well as efficient planning/execution of resource utilization. Most of the companies are adopting ERP applications to solve their integration problems, to develop optimum business models, and to achieve operational efficiencies. ERP implementation significantly

affects the architecture, processes, and procedures of an organization. Proper ERP implementation would reduce inventories and cycle times, cut costs, and enhance the operations and customer service of an organization. In this unit, we shall learn about ERP, the rationale for ERP, enterprise architecture planning, the implementation of ERP, and the effect that ERP has on an organization. We shall also discuss the ERP modules, and the ERP investments in the US and in India. The unit would end with a discussion on the problems during ERP implementation, emerging trends in the ERP industry, and

the future of ERP applications. 18.2

Objectives By the end of this unit, you should be able to: • Justify the

rationale for implementation of ERP. • Discuss the concept of Enterprise Architecture Planning. • Select a suitable approach for implementing ERP. • Analyze the effect of ERP on the company. • Explain the ERP modules. • Evaluate the ERP market in different countries. • Discuss the problems involved in implementation of ERP. • Identify the emerging trends in the ERP industry. • Predict the future of ERP applications. 18.3 Enterprise Management System (EMS) Enterprise Management System (EMS) automates all the stages of day to day organizational operations related to HR, accounts, inventory, payroll, sales, purchase, production, assets and day to day management of the organization. Some organizations rely on human resources rather than on processes. For them enterprise management systems are very useful. EMS brings more visibility and control over the organizational business processes. EMS should be in compliance with regulatory environment. Enterprise management system component include HR management system, accounts management system, inventory management system, payroll management system, sales management system, purchase management system, production management system, asset management system, petty cash management system, office management system, and customer relationship management system. All these modules of an enterprise management system should work in sync in an integrated manner. Office management system should have internal communications system, employee training system and knowledge base Block-5: Enterprise Functions and E-Business 50 management system. Customer relationship management system should be able to maintain the potential customer leads as well. Example EMS includes Vcidex Enterprise Management System from Vcidex, India. 18.4 ERP: An Overview Enterprise Resource Planning or ERP software helps in integrating different business functions, allowing optimum use of resources and improving process efficiencies. The availability of data pertaining to one functional module to another ensures consistency and integrity. Unlike traditional software, ERP uses the process view of the organization emphasizing broad understanding of the entire organization and its systems and procedures. It addresses the need of any one department in an organization that is difficult to handle. Though the costs involved in ERP are high, many leading companies have implemented these systems. 18.5 Rationale for ERP Large corporations are characterized by a wide range of business management applications that often run on heterogeneous technology platforms. Integration of applications purchased from different vendors with other enterprise systems is a major issue that most of the companies face. Data gathering becomes difficult in such situations and leads to reentering of information, thereby deteriorating its quality and affecting business management. ERP provides solution to all these problems. It integrates different functional modules and can be run on a single technology platform facilitating real-time updation across all the enterprise systems. ERP solutions were restricted to the major industry players till the late 1990s but have now percolated to small and medium- sized enterprises owing to reduction in prices. Some of the ERP vendors provide solution only in the small and medium enterprises (SME) segment. Example: ERP Benefits – Need for Quantification For an ERP solution to be implemented, it should have enough tangible benefits that exceed the costs incurred on implementing it. Generally, a cost benefit analysis is done by the companies prior to the implementation but this is seldom done during the implementation. Following are some of the reasons for not performing a cost analysis: ? ERP is viewed just as IT systems to replace existing systems. ? There is the absence of a standard approach to analyze the benefits. ? Most often, no interest is exhibited by the top management.

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Benefits serve the purpose of defining meaningful, measurable goals and milestones for the system implementation project. ? Calculation of ROI on ERP implementation helps to compare system projects with other capital projects carried out by the organization ? Defining the benefits helps in completing the project within the time framework set. Some examples where benefits can be quantified are: ? Demand flow procurement processes and related inventory management ? Delivery commitments through better order entry visibly ? Introduction of new product

Adapted from Bob Kaswen, "Quantifying the Benefits of an ERP System Prior to Implementation," http://www.relevant.com/ pdf/articles/ quantify.pdf. 18.6

Enterprise Architecture Planning Implementation of an ERP solution in an organization is of strategic importance. With improper planning, even profitable firms may incur huge losses. The firm should be able to strike a positive match between the ERP applications and organization requirements. Even before opting for an ERP package, the firm should do a thorough need analysis and prioritize them. ERP architecture is multilayered, thus facilitating communication and transactions among the members of the supply chain. Developing ERP architecture

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is one of the first activities in an ERP project. It should consider the business

processes, goals, objectives, and strategies of the organization. Also, a discussion with employees in this regard will provide more inputs. Integrated process view is the key for developing an effective architecture and ARIS (Architecture of Integrated Information System) is one such framework. ARIS is the most widely used method for an integrated process view. According to the ARIS framework, a complex business process can be viewed in terms of data, function, organization, and process views. The data view helps in viewing complex business processes in terms of different data entities and the relationship between them. The function view breaks each function into a set of activities and establishes hierarchical relationships between them. The organization view looks at all the departments and the people working in it. It can be represented by an organization chart. The integrated process view helps in incorporating all views into a single view.

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A well-developed ERP architecture helps in determining the suitability of ERP package in catering to the organization requirements and hence provides vital clue in selection of the package. Organizations either opt for developing a solution internally or outsource the solution from others. Check Your Progress-1 1. Given below are statements related to Enterprise Resource Planning. Choose the statement that is false. a. It is a software application that integrates various functions. b. It addresses the need of any one department that is difficult to handle. c. It emphasizes the function view. d. It ensures that data is accessible across organizational functions and helps improve data consistency and integrity. 2. Name the activity that has to be performed first for an organization to adopt ERP. 3. In the implementation of ERP architecture, _____ view has to be adopted. 4. The most widely used method for an integrated process view is a. ARIS b. SAP c. JD Edwards d. Baan 5. Given below are statements related to various views as per the ARIS framework. Match these statements to the appropriate view in line with this framework. i. Viewing all departments and the people working in those departments ii. Breaks each function into a set of activities and establishes hierarchical relationships between them iii. Incorporation of all views into a single view iv. Use of the organization chart p. Organization view q. Integrated process view r. Function view

Unit 18: Enterprise Resource Planning 53 6. As per the ARIS framework, viewing complex business processes in terms of different data entities and the relationship between them is known as a. Function view b. Organization view c. Data view d. Process view 18.7 Implementing ERP The scope of ERP implementation is broad and involves change management and integration of the organization. The success of ERP implementation can be determined based on the following factors: • Understanding Corporate Needs and Culture: Preparedness and capability to implement change are the prime requirements for ERP implementation. Active participation by all levels of management, willingness to change, anticipation of results due to change, and educating the employees on potential benefits is important for implementing ERP. • Complete Business Process Changes: Prior to the implementation of ERP, a business process redesign will be beneficial. It covers key aspects like intended changes in business processes and their implications, skills and attitudes of the workforce, etc. It will ensure that the ERP solution caters to the firm's requirements. Incorporating changes after ERP implementation will be expensive, and hence well-informed decisions should be made at earlier stages. • Communicate Across the Organization: Support of top management is essential in ERP implementation. The need for change can be communicated through rigorous training programs involving realistic modeling of expectations. • Strong Project Leadership: Real time project-participation and not restricting to mere provision of moral support should be the principle followed by the project leaders. In case the leaders are lacking knowledge on some particular areas, they should gain the same by way of attending training programs. They should gain understanding on the business process modeling tools, business process maps, and obtain a broader view of processes. They should also ensure that the team-members are committed and competent enough to handle change and redesign processes.
Block-5: Enterprise Functions and E-Business 54 •
Efficient and Capable Project Leader: Integrating organizational and information technology (IT) skills for change management will be a better way of ERP implementation. Employee involvement makes them receptive to change. 'Integrated change' refers to a combination of IT change, business process change, organizational and individual change. The project leader should be efficient in handling the impact of all these elements on the organization and its employees. • Balanced Teams: With the growing complexity of the systems environment in an organization, it will be sensible to have the implementation comprised of employees from various departments. This will enable them to gain a process view. Systems analysts can provide customization of the systems and then the responsibility of upgradation and improvisation is transferred to the users. • Approaches to ERP Implementation: Two approaches are generally followed in ERP implementation. They are the big bang approach and the phased approach explained in the Table 18.1. Table 18.1: Two Approaches to ERP Implementation Big Bang approach Phased approach ? Entire ERP implementation in one shot ? Forceful change at rapid pace ? Realignment of processes at a rapid pace ? Results in creation of pressure on organization's resources ? Resistance to change is observed ? ERP implementation is in logical phases and are in sequence ? Beginning of a new phase requires successful completion of previous phase ? System is tested for integration of all modules ? Realization of benefits is in phased manner ? Preferred method of implementation Irrespective of the implementation method, the design for ERP system and roadmap for implementation are developed in advance. The business goals and the expectations from ERP system should be clearly established by the top management. The top management should be prepared to commit sufficient resources and efforts to achieve the desired benefits of the ERP system.
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Activity: A manager of a telecom company plans to implement an ERP solution. What factors should s/he consider in order to successfully implement ERP? Answer: Check Your Progress-2 7. Which of the following are the characteristics of the Big Bang approach of ERP implementation? i. Implementation of all ERP modules in one shot ii. Forces employees to become receptive to change iii. Break-down of ERP modules into stages iv. Over-utilization of organization's resources a. Only ii and iii b. Only i, iii, and iv c. Only i, ii, and iv d. Only ii and iii 8. Following are some statements with regard to the big bang approach of ERP implementation. Indicate true or false. a. Rapid realignment of processes True/False b. Resistance offered by employees True/False c. The ERP implementation project is divided into logical phases True/False d. Focus on a key area in each stage True/False 9. Between the two approaches of ERP implementation, which of the following is true with regard to the phased approach implementation?
Block-5: Enterprise Functions and E-Business 56 i.
Higher demand for organizational resources ii. Higher level of commitment iii. One stage of implementation at one time iv. Higher resistance by employees a. Only i b. Only ii and iii c. Only iv d. Only iii 10. Communicating the need for change as a result of ERP implementation should be a constant activity in the organization. For this communication to be successful, the organization should maintain what form of expectations from its employees? 11. The following are some observations on ERP project implementation in an organization. Which of the following would contribute favorably to the successful completion of a project? i. Use of business process maps by the project leader ii. Competent team with lower commitment iii. Training for better understanding iv. Moral support by project managers with no involvement in real- time project implementation a. Both i and iv b. Both ii and iv c. Both i and iii d. Both ii and iii 12. Integrated change is a term used to refer to changes with regard to: 18.8 Effect of ERP on the Company Implementation of ERP can yield both direct and indirect benefits to the company. 18.8.1 Lead Time Reduction The time gap between the date of order placement and receiving products is known as lead-time. Prior anticipation of demand, avoiding out-of- stock situation are few measures taken to reduce lead time. However, caution should be ensured in not maintaining excess inventory. A well integrated inventory management system makes the tracking of inventory easier. In this regard, ERP system serves well because it automates the
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entire tracking system and also due to its sound integration the procurement activity in every department becomes easier. In comparison to the traditional systems, the key advantages of well integrated systems are as follows • Integration of the organization's system with suppliers' system facilitates issue of automatic requisition to the preferred supplier. • Use of technologies like Electronic Funds Transfer (EFT) and Electronic Data Interchange (EDI) also contribute to the reduction of lead time. 18.8.2 Punctuality in Shipment In order to transform from make-to-stock to make-to-order type of production, modification in production and planning methods to achieve cost and time efficiencies is required. ERP systems provide the required amount of flexibility with regard to modification in modules. It reduces the costs involved with frequent modifications and allows modifying at any stage of production. Overall, they support the entire gamut of production activities and ensure higher efficiency. ERP integrates all the functions responsible for the timely delivery of products to the final customers. This level of integration minimizes the time taken for data transfer and ensures smooth and coordinated information flow. 18.8.3 Reduction in Cycle Time The time gap between the receipt of the order and the delivery of the product is called cycle time. In make-to-stock systems, the distribution and delivery systems are maintained manually and if they are computerized then score low on integration levels. The time spent within the department and then outside the department for order approval increases the cycle time. However, with ERP systems, component availability check, approval and final product delivery occurs in minutes reducing the cycle time to significant extent. More so in make-to-order systems, the reduction in cycle time is drastic. 18.8.4 Enhanced Customer Satisfaction Customers are satisfied most when the products and services offered by the company exceed their expectations. A firm should make frequent assessment on parameters like product features that are considered valuable by the customers; give timely response to the customer demands, meet customer perception on quality, and offer products matching with the specifications of customers at no extra costs. The ERP system helps in developing customized products for the customers. Web- enabled ERP systems facilitate assistance by the firm at the customers'

desktop. With advancement in technology, ERP systems are expected to further improve customer satisfaction by offering more convenience and customer support. 18.8.5 Improved Supplier Performance The supplier's ability to deliver products on time determines the success of a company to a large extent. Problems if any should be fixed at the earliest. The ERP system provides all the information needed by the management to ensure better negotiation on quality, prices and delivery schedules. Partnerships with suppliers should be established and relationships should be mutually beneficial. The procurement support systems offered by ERP packages quicken processes like requests for quotations, release of purchase orders and online settlement of payments etc. In traditional procurement process, management of supplier relationships demands more time for interactions, negotiations, conflict resolving, communication etc. The procurement support systems speed up all these processes is a short period. In firms involving procurement from several suppliers, manual management of the entire process is tiresome. In such cases, ERP systems simplify tracking of contracts and provide quicker access to desired information. Certified suppliers supply critical components and the less critical components are supplied by approved and probationary suppliers. TQM application in ERP can be used to improvise supplier certification programs and enhancement of quality standards. Real-time information transfer will be facilitated by connecting suppliers system with the organization's ERP system. ERP systems provide procurement analysis tools that help in getting information useful for negotiations with their suppliers. 18.8.6 Flexibility and Reduction in Quality Cost Organizations should be flexible enough to facilitate changes in product designs. Flexibility should be such that it could facilitate minor or complete change and produce products with required specifications. The ability of the organization to switch between traditional large scale manufacturing facilities and modern make-to-order approach determines its flexibility and efficiency. Two types of approaches used in the production of flexible products are the assemble-to-order approach and the engineer-to-order approach. The former offers limited options and features to customers and the latter helps in offering highly customized products. ERP systems help in maintaining the flexibility of the manufacturing process as well as the entire organization. They automate the organizational processes and make the information readily available

to all departments. This helps companies react quickly to changing market conditions and improve profitability. Quality management systems in ERP packages help companies in adopting country specific standards for quality assurance or Good Manufacturing Practices (GMP) worldwide. They also allow flexibility in sample selection, sampling rules, testing methods, inspection of quality, adoption of various testing options, etc. The material testing is integrated with modules ensuring efficient and effective quality of materials. Quality controls are exercised at every stage of production rather than only testing the quality of the final product. With all these features, ERP systems help in reducing the cost of quality maintenance. 18.8.7 Improved Resource Utility There is growing emphasis to reduce excess inventory and minimize adverse affect on production costs, price, and quality of customer service due to raw material wastage. ERP systems offer a capacity planning feature that helps the management to develop a quick rough initial plan as well as a detailed capacity plan. Some of the key aspects that have to be paid attention are production requirements for each resource, order schedules, capacity of work centers and machines, critical work centers, speed of labor, machine, and finally a detailed capacity plan is prepared. Simulation of various capacity and resource utilization scenarios is possible with ERP systems and helps organizations optimize the utilization of their capacity and resources. 18.8.8 Improved Information Accuracy The availability of relevant information in an organization should be such that it enables decision making at the right time. ERP systems automate different procedures across the organization and integrate the various systems used. This avoids repeated data entry and inaccuracy of information. Decision makers can access required information based on their requirements. Essentially, the time spent by the senior executives in collecting information from various isolated systems is reduced. Activity: Computer Zone Ltd., one of the leading PC manufacturers in India, wants to integrate its global operations and is planning to implement ERP systems. How should the company go about implementing ERP and what benefits will it derive after the implementation?

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Answer: Check Your Progress-3 13. Given below are statements with regard to ERP implementation. Indicate true/false. a. It involves modification of manufacturing and planning methods by reorganizing the workplace or plant layout True/False b. It may involve changes in production method at any stage of manufacture of the product True/False c. A production method under an ERP project cannot be changed at any stage of its life cycle True/False d. The time taken for data transfer is less due to higher integration between departments True/False 14. From the following factor/s, select those that enable the firm to enhance customer satisfaction through web-enabled ERP systems. i. Deliver perceived value to customers ii. Respond quickly to customer demands iii. Ensure high quality of products and services iv. Deliver customized products on time without any extra cost a. Only i b. Only ii & iii c. Only iv d. All of the above
Unit 18: Enterprise Resource Planning 61 15.
Given below are statements with regard to e-procurement. Indicate true/false. a. Leads to conflict with negotiators True/False b. Enables to network with suppliers True/False c. Quick tracking of contracts True/False d. Enhanced time & effort True/False 16. The approach followed to allow more flexibility in the manufacture of products by offering limited options and features to customers is _____. 17. The ERP systems help maintain not only flexibility of manufacturing process but also flexibility of the entire organization. For which areas does ERP provide information? 18. The time interval from placing an order for a particular product to the date of receiving the product is known as _____, while the time interval between the receipt of the order and delivery of the product is known _____. 19. From the following statements, which of them is/are true for suppliers and procurement processes? i. Most critical components are procured from certified suppliers ii. Less critical components are procured from approved suppliers iii. Less strategic materials are procured from certified suppliers iv. TQM can be used for certification of suppliers a. Only i and ii b. Only iii and iv c. Only ii and iii d. Only i, ii, and iv 18.9 Overview of ERP Modules The event time-line leading to the transformation of material resource planning (MRP) into ERP is given as follows. • Mid-1960s – Material Requirements Planning (MRP) method was developed. • Mid-1970s – Use of MRP method by a large number of companies.
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Mid-1980s – Introduction of MRP II, a closed-loop model with a central database that recorded, managed, and generated reports on the various activities of the company. • Late 1980s – Apart from manufacturing functions, other business functions such as human resource management and financial accounting were integrated with MRP II and it was transformed into ERP. An ERP solution package comprises of several modules such as finance & accounting, manufacturing, sales & distribution, human resource management, plant maintenance, marketing, and inventory control. Modules and features of ERP vary from vendor to vendor. Generally, the ERP modules are integrated and facilitate inter-departmental information exchange. German based SAP is well known for its ERP packages. Given below in Table 18.2 is a brief overview of the modules that form a part of the ERP suite offered by SAP AG. Table 18.2: Various ERP Modules and their Features Module Features Finance & Accounting • Management and access of financial data • Controls all the finance related transactions and caters to the requirements of accounting department • Provides budgeting and variance analysis • Consists of several sub modules relevant for entire accounting function • Integrates financial reporting processes and ensures compliance with regulations Manufacturing • Supports multiple manufacturing processes such as build-to-order or build-to-stock • Integrates the technology and the business processes • Production planning and execution process module is a real time system. It is further divided into two sub-modules – PP-PI and Production General. • Helps in capacity planning using various manufacturing methods Sales & Distribution • Helps in planning sales and distribution strategies to achieve operational efficiencies • Sub-modules comprise Master Data Management, Warehouse Management, Sales Support, Order Management, Pricing, etc.

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Unit 18: Enterprise Resource Planning 63 Module Features •
Integrates the customer order management process with materials management, financial accounting, production planning, and execution modules • Help organizations in managing bulk orders Human Resource Management • Employee details, compensation, appraisal etc., of any workforce size is managed • Generates reports as per the formats desired by HR managers • Integrates employee record management process with other modules Plant Maintenance • Control and maintain factory equipment minimizing breakdown • Operations carried on machines are stored in a database • Work assignments are clearly assigned and documented • Schedules for the day or month can be generated based on requirement • Details of breakdown can be tracked and appropriate tools required for maintenance are listed • Sub-modules in plant maintenance include Equipment Tracking, Component Tracking, and Preventive Maintenance Control. • Integrated with the financial module; hence it enables cost monitoring • More usage in capital-intensive industries Check Your Progress-4 20. Present-day ERP packages emphasize a. Materials requirement planning (MRP) b. Master production schedules c. Manufacturing resource planning d. Integration of various functions in the organization 21. _____ is the SAP module that is increasingly used by large businesses in capital-intensive industries and is usually integrated with the financial module to enable cost monitoring.
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ERP Investments in the US As per a survey of CIOs conducted in the US, in 2006, investments in ERP systems are one of the three priority areas. In the order of importance, the top three areas of ERP investments are industry specific extensions, business intelligence, and general ERP upgradations. • Industry-specific Extensions: Most of the companies in the US have implemented basic elements of ERP software which help in managing key operating processes. Extensions to such systems help in enhancing the productivity of the operating processes. Retailers are keen on applications that provide sector specific information for decision making. • Business Intelligence: Transactional systems like ERP, CRM help in effective management of daily routine activities. Application business intelligence tools are business intelligence software specifically designed for use in conjunction with transactional systems and yield beneficial results. These tools help in the following ways: ? Enable extraction of data from transactional systems like ERP and CRM. They are pre-configured with data schema, application programming interfaces, security mechanisms, business logic; thus making data extraction quicker. ? Maintain up-to-date information. ? Preconfigured report templates and self-service capabilities make the processes simple for the users. • General ERP Upgradations: General upgradations are made to the ERP systems used by Organizations to ensure adherence to the government regulations such as the Sarbanes-Oxley Act (SOX). Check Your Progress-6 22. What are the benefits delivered when the Application Business Intelligence software supplements the transactional software systems? 23. From the following options, which of them are preconfigured in an Application Business Intelligence Suite to enhance the speed of data extraction? i. Data schemas ii. Application programming interfaces (APIs)
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iii. Security mechanisms iv. Business logic a. All except iii b. All except ii c. All except iv d. i, ii, iii, and iv 18.11 ERP Market – The Indian Scenario The average IT investments by the organizations in India shall witness an increase in the year 2006-07 over 2005-06. The major areas of investment include hardware and enterprise packaged software. Growth of the manufacturing segment and their increased interest in the implementation of ERP software has made the growth of ERP market more impressive. The manufacturing segment is estimated to be worth US$ 250 million by the year 2009. The manufacturing firms face challenges in the form of reduced prices and decreased profit margins. ERP solutions in manufacturing units can provide decision makers with the required information visibility along the value chain. Most of the manufacturers in India are small in comparison to their global counterparts. They require ERP systems that are easy to process, flexible to local needs, able to solve specific requirements etc. These ERP systems are leveraged by SMEs across verticals. 18.12 ERP Implementation Problems The most important problem in ERP implementation is the failure of organizations to understand what ERP is all about and what exactly is required for implementing the project effectively. Some of the problems faced by organizations while implementing ERP and the activities to be focused on for eliminating them are listed in Table 18.3.
Block-5: Enterprise Functions and E-Business 66
Table 18.3: Activities 'To Avoid' and Activities 'To Focus' in ERP Implementation ERP Implementation Activities to avoid Activities to be focused • Not getting a clear understanding of the implementation costs from the ERP vendors • Lack of planning the project implementation details leading to confusion and delays in implementation • Skipping of important procedures in order to reduce implementation period • Change in the long-standing culture of the organization • Shift from job-perspective to organization perspective • Training employees on new systems • Consistent working patterns • Clear understanding on the benefits of ERP systems One of the best examples of successful implementation of an ERP solution in shortest time was demonstrated by Advantec Coils Private Limited (ACPL). 18.13 Emerging Trends in the ERP Industry Two trends that are going to significantly change the business operations of ERP industry are service-oriented architecture (SOA) and XERP (Extended ERP) products. • Service-Oriented Architecture (SOA): In simple terms, SOA can be described as an approach towards design, implementation, and deployment of information systems. SOA links all independent applications in a network enabling it to create custom composite applications. These are developed from components (referred as 'services') that possess the ability to implement separate functions. These services are loosely integrated providing flexibility for their re-use and recombination in creation of new business functions. Implementation of SOA should be in smaller phases. • XERP Products: Companies using applications that will be dependent on connectivity and web services are referred to as XERP (Extended ERP) products. XERP vendors find it challenging to convince customers about the ability to gain good return on investments made by the customers by buying their products.
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Problems of XERP vendors: The problems faced by XERP vendors are discussed below: Focused solution: XERP vendors need to provide a focused solution to their customers. The solution must tackle the problems faced by the customers. Non-uniform pain points: The specific problem points as identified by XERP companies are not yet accepted to the level that XERP vendors can sell similar products to different companies. Limitations of single vendor: Because of the huge amount of work at a single point, a single vendor may find difficulty in addressing the different pain points for different companies. Integration-based solution: There is a proliferation of the XERP companies, each of which going after a specific integration-based solution based on the feedback from a handful of customers. • Future of XERP: XERP companies should create a very thin layer of functionality that is customizable. The rest of the functionality can have additions based on the requirements of the customers. This would help in gaining a better understanding of the customer's pain points. When such processes are spread over a span of years, it will lead to better sharing of opinions on the benefits of connecting ERP externally and internally. Implementation of several part-custom solutions will provide the vendors with the knowledge of the aspects that can be generalized. • ERP solutions provided an opportunity to integrate business processes like never before. However, businesses operate in an extremely fast changing environment and need a flexible ERP system to support integration of processes. Exhibit 18.1 presents ERP trends in 2021 EXHIBIT 18.1: EMERGING TRENDS IN ERP Inflexible ERP solutions could well slow down digital transformation for a company it is meant to serve. Following the transitioning of ERP to the cloud, following are the emerging trends as regards ERPs for 2021: 1. Cloud based ERPs help minimize maintenance & updates of software. Companies must now focus on integrating hybrid ERP solutions so as to combine the benefits of cloud based and on- premises ERP solutions.

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Use of real time data by ERPs for faster alignment of processes, improving customer experience and providing detailed insights. 3. Integrating IoT and ERP would greatly increase the scope of ERP besides providing much greater volumes of data for analysis. 4. Mobile support for ERPs so as to enhance communication besides making data capture more convenient and accurate. The very wide use of smartphones and tablets greatly improves speed of decision making and adds to efficient operations. 5. Personalized ERP solutions in keeping with the increased focus on personalization and the fact that businesses often have their unique requirements that are critical too. 6. AI Integration to ensure that as much of unstructured data is analysed for extracting valuable business information and delivery processes improved as per customer needs. 7. ERPs for digital marketing so that not only does the marketing campaign take into account latest data, the campaign can also tap into the immense power & reach of social networking platforms. These emerging trends mean that ERPs will continue to play a critical role in driving business successes in 2021 too.

Source: https://erpnews.com/top-7-erp-trends-for-2021/

Check Your Progress-7 24. From the following options, identify the statement that is false with regard to Extended ERP (XERP) products? a. A single vendor would find it difficult to address the different pain points for different companies. b. XERP applications customers favor a more focused solution that answers specific problems. c. XERP vendors can sell similar product to different companies. d. Both (a) and (c) 25. _____ links all independent applications in a network enabling the network to create custom composite applications 18.14 Future of ERP Applications Globally, the use of ERP solution has increased but it cannot be concluded that they are the best solutions for business integration. They

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should be able to achieve flawless integration and flexibility in operations. For an ERP solution to be effective, it should comprise of following components. • Dynamic configuration: As ERP solutions are not one-time solutions, there should be scope for reconfiguration in response to changing business needs. Since the future requirements of the customers are not certain, the ERP systems should have a simple business logic template that can be easily modified. • Components: ERP systems integrate various independent modules. They should also have the ability to integrate with the third-party service providers. The components or modules should be such that they can function even as independent modules. • Incremental improvement: The implementation of an ERP system should not be a long process. It should enable the organization to progress steadily from one phase to another, rather than waiting for a long period to have the whole project installed. • Managing multiple supplier relationships: Apart from automation and integration functions, the ERP systems should facilitate monitoring of the various processes and supplier relationships. An ideal process to improve the efficiency of the operations should also be developed. 18.14.1 ERP – Evolving to Link with Supply Chain Planning Organizations should aim to integrate their ERP systems with the systems of external business partners, including customers and suppliers. The ERP systems should be supported by Supply Chain Planning (SCP) systems enabling extraction of data from each component and presentation of data in required format to the top management. SCP systems help in developing production plans and provide inputs to management for analyzing impact of the plan. The SCP systems should be supported by supply chain execution and selling-chain management tools, to ensure execution and subsequent evaluation of plans. The complexity of an ERP system is directly proportional to the number of modules that it has to integrate with. Some of the tools used in the management of ERP systems are: • Use-management tool: It manages applications when they are being accessed by the users.

Service management tools: They monitor the performance of various ERP applications. These tools analyze numerous transactions that occur simultaneously in an ERP system. • System administration tools: They manage the network and systems. The above tools help in achieving the desired returns on the ERP systems related investments. Check Your Progress-7 26. To develop an ERP solution, certain elements have to be considered. From the options given below, indicate those which support and do not support the development of an effective ERP solution? a. Static and rigid configuration of the ERP system Support/Do not Support b. Components of ERP system should be well-integrated with third- party service providers Support/Do not Support c. The ERP system should be implemented as a one-time event Support/Do not Support d. ERP system should be able to monitor various processes and supplier relationships that affect the business activity Support/Do not Support 27. To tackle the problem of increasing complexity of ERP systems, certain tools are used. The tool that helps the management monitor the performance of various ERP applications is _____. 18.15 Summary • ERP refers to the management of various functions in organizations such as production planning, purchasing, inventory management, supplier relations, customer service, as well as the functions of finance and HR departments with the help of multi-module application software. • ERP integrates different functional modules and can be run on a single technology platform facilitating real-time updation across all the enterprise systems.

Unit 18: Enterprise Resource Planning 71 • While implementing ERP, a firm develops an ERP architecture that takes business processes, goals, objectives, and strategies of an organization into consideration. • The success of ERP implementation depends on factors such as understanding corporate needs and culture, business process redesign, effective communication across the organization, strong project leadership, organizational and IT skills, and balanced teams. • An ERP solution package comprises of several modules such as finance & accounting, manufacturing, sales & distribution, human resource management, plant maintenance, marketing, and inventory control. • ERP implementation yields various benefits to the company such as lead time reduction, punctuality in shipment, reduction in cycle time, enhanced customer satisfaction, improved supplier performance, flexibility in operations, improved resource utility, and improved information accuracy. • Companies in the US have implemented ERP for successful implementation of key business processes. • The average IT investments by the organizations in India shall witness an increase in the year 2006-07 over 2005-06. The major areas of investment include hardware and enterprise packaged software. • The most important problem in ERP implementation is the failure of organizations to understand what ERP is all about and what exactly is required for implementing the project effectively. • The emerging trends in the ERP include service-oriented architectures and Extended ERP products. • An effective ERP solution should have a dynamic configuration integrating various models. It should be implemented in a phased manner while monitoring various business processes and maintaining supplier relationships. 18.16 Glossary • Assemble-to-order: A method of production which a tentative estimate of the requirements is prepared and the inventory of components and subassemblies is accordingly maintained. • Cycle time: The time gap between the receipt of the order and the delivery of the product.

Block-5: Enterprise Functions and E-Business 72 • Enterprise Resource Planning (ERP): A software application that helps an organization integrate various functions, make optimum utilization of management resources, and improve its process efficiency. • Lead-time: The time lag between the date of placing an order for a particular product and the date of receiving the product. The lead- time is an important factor that is considered by managers in purchasing and inventory control. • Service-Oriented Architecture (SOA): An approach towards the design, implementation, and deployment of information systems. These information systems are developed from components (or services) that possess the ability to implement separate functions. 18.17 Self-Assessment Test 1. Explain the need for implementing an ERP solution in an organization. 2. What are the approaches followed in the implementation of an ERP solution? Explain. 3. Implementation of ERP yields several benefits to an organization. Explain these benefits. 4. Give a brief overview on various ERP models. 5. What components are required for an ERP solution to be effective? 6. What are the problems faced while implementing ERP? 18.18

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Answers to Check Your Progress Questions Following are the answers to the Check Your Progress questions given in the Unit. 1. (c) It emphasizes the function view. ERP emphasizes the process view in contrast to the function view, which traditional enterprise emphasizes. 2. Developing ERP architecture ERP architecture is multi-layered and eases communications and transactions among members of the supply chain. ERP architecture helps organizations to determine if a particular package serves the organization's requirements and thereby does the groundwork for successful ERP package selection and implementation. 3. Integrated process view By adopting the integrated process view, the management can develop architecture specifying all the functional modules required in an ERP package. 4. (a) ARIS ARIS (Architecture of Integrated Information System) is the most widely used method for an integrated process view. As per the ARIS framework, a complex business process can be viewed
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in terms of data, function, organization and process views. SAP, JD Edwards and Baan are vendors offering ERP packages. PeopleSoft had acquired JD Edwards in 2003. Later, Oracle Corporation acquired PeopleSoft in 2005. Similarly, Baan has been acquired by SSA Global. 5. i, iv – p; ii – r; iii – q The function view breaks each function into a set of activities and establishes hierarchical relationships between them. The organization view looks at all the departments and the people working in it. It can be represented by an organization chart. 6. (c) Data view According to the ARIS framework, a complex business process can be viewed in terms of data, function, organization and process views. The function view breaks each function into a set of activities and establishes hierarchical relationships between them. The organization view looks at all the departments and the people working in it. It can be represented by an organization chart. The process (control) view integrates all the three views. By adopting the process view, the management can develop an architecture specifying all the functional modules required in an ERP package. (c) Only i, ii, and iv The big bang approach advocates the implementation of all ERP modules at one go. This puts excess pressure on organizational resources in terms of time, money and people. Moreover, employees are forced to accept and adapt to rapid changes. 7. Statements i and ii are true while statements iii and iv are false. The big bang approach of ERP implementation calls for rapid realignment of processes, greater commitment from the organization in terms of time and resources, and greater cooperation from employees in terms of longer hours of work. This can result in undue pressure on the organization's resources. People may resist the change and the implementation process may get delayed. Contrary to this, in a phased approach the ERP implementation project is divided into logical phases and the phases are implemented one at a time. Each phase focuses on a

particular key area and before progressing to the next phase, the management ensures that the previous phase has been successfully implemented and the users have started using the system. 8. (d) Only iii The phased approach breaks down the ERP project into certain stages. Each stage is taken one at a time for implementation and is finished completely before moving to the next stage. 9. Realistic expectations The training exercise found most useful in communicating the need for change is realistic modeling. Having high expectations from employees could lead to more stress and frustration. On the other hand, having very low expectations could make employees complacent. 10. (c) Both i and iii The use of business process maps will help project leaders to obtain a broader view of processes. Managers should undergo the required training to understand the system and its applications well. The team handling the change and redesigning process should be highly committed and competent. Along with providing moral support, leaders should be actually involved in real-time implementation of the project. 11. information technology, business process, organization, and individual: Earlier, IT change, business process change, organizational and individual change were viewed as separate areas with change as the common factor. Change in one factor brings about changes in other factors, and so the term used is known as integrated change. 12. Statements ii and iv are true while statements i and iii are false. The ERP system offers organizations the flexibility to modify manufacturing and planning methods without reorganizing the workplace or the plant layout. A production method may be changed at any stage of manufacture of the product and at any stage of its life cycle as the change involves minimum or no costs.
 13. (

d) All of the above An organization can satisfy its customers only when it can provide them the products and services which meet or exceed their expectations. Web-enabled ERP systems enable customers to place orders, track the real-time status of the orders, make the payment and obtain technical support in case any problem arises – all from their desktops. As technology advances, ERP systems are expected to further improve customer satisfaction by offering more convenience and customer support. 14. Statements ii and iii are true while statements i and iv are false. In ERP-enabled systems, the network with suppliers is well developed. This helps carry out most activities such as requests for quotations, negotiation of contracts, release of purchase orders and online settlement of payments on product delivery. For businesses managing a large number of suppliers, tracking of contracts is easier. In traditional businesses, the scope for conflict is more and resources spent, including time and people, is also more. 15. Assemble-to-order approach The assemble-to-order approach is followed to allow more flexibility in the manufacture of products by offering limited options and features to customers. If organizations are rigid in product production procedures and minimum flexibility is not allowed, they may end up with accumulated inventories of obsolete and unwanted products. 16. ERP systems automate the organizational processes and make information readily available to all departments. This helps companies to react quickly to changing market conditions, design appropriate entry strategies for new markets, fight competition in the market, and improve and maintain profitability. 17. lead time; cycle time Lead-time is an important factor considered by managers in purchasing and inventory control. It is the time interval from placing an order for a particular product to the date of receiving the product.

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d) Only i, ii, and iv Less critical and strategic materials are procured from approved and probationary suppliers. Organizations can use the tool to improve their supplier certification programs and enhance the quality standards for procurement. 19. (d) Integration of various functions in the organization The first generation ERP packages developed in the 1970s emphasized Materials Requirement Planning (MRP) and Master Production Schedules. In the 1980s, the focus of ERP packages was on manufacturing resource planning. It was attempted to improve processes such as processing, manufacturing and distribution. Gradually, the packages extended their focus to finance, human resources and project management. Another limitation of a majority of ERP systems was that they facilitated integration only at the enterprise level and failed to integrate with external business partners like customers and suppliers. Next generation ERP systems should provide intelligent decision- support capabilities and seamless integration capabilities. 20. SAP's Plant Maintenance module SAP's Plant Maintenance module is used by large businesses in capital-intensive industries. It is integrated with the financial module and thus enables cost monitoring. The module facilitates storage of data related to plant maintenance activities and tracks the history to schedule them in the future. The sales and distribution module integrates the customer order management process with materials management, financial accounting, production planning and execution modules. SAP's production planning and execution process module is a real time system and has a production controller which reacts quickly to the changes in demand and supply. 21. One of the biggest advantages that Application BI tools provide is the extraction of data from transactional systems like ERP and CRM. Contrary to general BI suite data schemas, application programming interfaces (APIs), security mechanisms and business logic of the transactional systems are all preconfigured in the Application BI suite. This helps in enhancing the speed of data extraction from the transactional systems. Changes in the transactional systems are automatically identified by the Application BI tools and conveyed to the BI metadata and reports.

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Application BI tools are preconfigured with report templates and self service capabilities. These help ensure satisfaction amongst users. 22. (d) i, ii, iii & iv One of the biggest advantages that application BI tools provide is the extraction of data from transactional systems like ERP and CRM. Contrary to a general BI suite, the data schemas, application programming interfaces (APIs), security mechanisms and business logic of the transactional systems are all preconfigured in the Application BI suite. Such configuration helps in enhancing the speed of data extraction from the transactional systems. 23. (c) XERP vendors can sell similar product to different companies XERP products available as of now cannot address problems of all organizations. Identification of a single problem point requires considerable time in terms of understanding the business processes. It would therefore be difficult for a single XERP vendor to address different pain points as the nature of companies differ. Most of the XERP applications customers opt for are more focused solutions that answer specific problems faced by their organization. Hence, XERP vendors cannot sell the same product to different companies. 24. Service Oriented Architecture SOA links all independent applications in a network enabling it to create custom composite applications. Sharing the Application Programming Interface enables easy working on products of different companies. New applications that would be dependent on connectivity and web services are XERP products. ERP is a transactional system used to manage the daily routine activities and Application Business Intelligence is used to extract data from these systems. 25. Options (b) and (d) support while options (a) and (c) do not support. ERP systems are not a one-time solution for all current and future business problems. They keep changing and should therefore have room for flexibility. ERP implementation should not be a one time event. It has to be done in phases. As non-core activities

are outsourced by a majority of firms, the components of the ERP system should be well integrated with third-party service providers. 26. Service management tool Service management tools need to be powerful as they have to analyze the thousands of transactions that occur simultaneously in an ERP system. Use management tools schedules jobs, monitors events, data output, backup and recovery. It manages the applications when they are being accessed by users. System administration tool manages the network and systems for ERP. It manages inventory and assets, configures software, modifies applications when needed, and distributes software.

Unit 19: CRM and E-Business Structure 19.1. Introduction 19.2. Objectives 19.3. Defining CRM 19.4. Functions of CRM 19.5. The E-CRM Architecture 19.6. E-CRM Infrastructure Requirements 19.7. CRM for E-Customers 19.8. Challenges in
Implementing E-CRM Projects 19.9.
Summary 19.10. Glossary 19.11. Self-Assessment Test 19.12. Suggested Readings/Reference Material 19.13. Answers to Check Your Progress Questions 19.1

Introduction In the last unit, we
have
learnt about

the important role played by enterprise resource planning in integrating different functional modules in an organization. We have seen that enterprise resource planning helps in reducing lead time and cycle time, and in enhancing customer satisfaction, supplier performance, and information accuracy. In this unit, we shall discuss customer relationship management (CRM) and electronic customer relationship management (E-CRM). The Internet has led to an increase in general awareness among consumers. With it emerging as an important tool of communication, consumers are being informed instantly about the availability of various products and services. They are able to compare the prices of an organization's product those of its competitors' products before making a purchasing decision. The increasing demand by consumers for a high level of customer service has led to the evolution of e-CRM. E-CRM is a combination of the customer relationship management processes and related technologies. It enables an organization to understand the needs and preferences of the customers better. It also helps in building

Unit 19: CRM and E-Business 81 relationships with customers. Organizations are using e-CRM as a tool for achieving a competitive advantage. In this unit, we shall define CRM and the functions of CRM. We shall also discuss the E-CRM architecture and the infrastructure requirements of E-CRM. The unit ends with a discussion on the role played by CRM on the e-customers, an emerging concept, and the challenges in implementing E-CRM projects. 19.2
Objectives By the end of this unit, you should be able to: • Explain the
concept and objectives of CRM. • List the functions of CRM. • Discuss the E-CRM architecture and components of E-CRM. • Determine the requirements of E-CRM infrastructure. • Justify the need for enhancing communication with customers using CRM. • Assess the challenges involved in the implementation of E-CRM projects. 19.3 Defining CRM Customer relationship management or CRM refers to the methodologies and software applications employed by organizations to maintain long- term relationships with their customers. Organizations can use the Internet to implement CRM. This process is called e-CRM. Other factors that have led to the evolution of e-CRM include the increase in the number of customers, increasing levels of globalization, rising competition among companies, and the costs associated with servicing new customers. Organizations are making attempts to enhance and personalize the experience of online customers with the help of e-CRM tools such as e-mail organizers, help-desk software, and web development applications. The objectives of e-CRM business framework are: • Strengthening Relationships with Existing Customers: The main objective of e-CRM is to strengthen the organization's relationship with existing customers as the costs associated with attracting new customers is higher than that of retaining existing customers. The cost of acquiring a new customer is about 6 to 7 times higher than the costs incurred on retaining an exiting customer.
Block-5: Enterprise Functions and E-Business 82 • Using Customer Information to Provide Better Service: Organizations collect information about customers so that they can provide better customer service. They try to reply promptly to customers' queries for any product/service as this will result in increased customer satisfaction. Organizations can improve the level of customer service by using e-CRM tools. • Creating Customer Value and Loyalty: Organizations aim to personalize the online experience of customers in order to know their needs and preferences and take steps to fulfill them. Organizations enhance their interaction with customers in order to meet their demands. This will in turn result in increased customer loyalty. A high level of personalization can be achieved with the help of e-CRM tools like inference-based and rules-based software. Inference-based software is used in cross-selling. This is used in businesses that have a wide array of products and product lines. In case the organizations have little or no knowledge about the customers, inference-based software can be used as it tracks the consumers with similar buying behavior and groups them together with other people, referred to as mentors, who show similar buying behavior. The mentor, in conjunction with the search engine, gives suggestions on various products to the customer. For example, Amazon uses inference-based software and when a buyer makes a purchase online, the software lists other products bought by customers who have purchased the same product. However, the problem often faced with referrals is that a product cannot be recommended unless someone else has already bought it. Rules-based software is used for selling specific products and services during marketing campaigns. When an online user browses a particular web page, the special offers associated with those products are displayed in the form of a list. The products are displayed based on the prior online marketing experience or website analysis by experts. The rules-based software tracks the products/services browsed by online users so that organizations can use this record as a future reference for offering personalized and customized products/services to its customers. For example, vendors like Accrue Software Inc. and Macromedia Inc. use rules-based software's Webclickstream analytic application, 1 which helps in tracking the 1 The Webclickstream analytic application involves collecting, analyzing, and reporting aggregate data about the pages visited by the users on the Internet and the order in which they visit them. The result of the mouse clicks made by each user is the clickstream.

Unit 19: CRM and E-Business 83 buying patterns of online customers so that they can be used to enhance their marketing campaigns in future. In addition to e-business applications that enhance personalization, user-driven personalization can also be used. This involves personalization with the help of the consumer. For example, Lands' End 2 started an initiative called My Virtual Model, wherein the users could enter the measurements of their clothes and try them on a three-dimensional model. Over 1.5 million people were reported to have tried out this user-driven personalization. • Implementing Integrated CRM Solution Strategy: Organizations should focus on reliable interaction with customers in order to attain a competitive advantage. Organizations which do not have proper interaction with customers may end up in losing customers. Hence, organizations should integrate e-CRM application software with their business functions of sales, marketing, and servicing. Activity: The marketing manager of a hotel plans to offer its customers customized services using e-CRM tools and techniques. How should the manager go about implementing this e-CRM project? What e-CRM tools and techniques do you think should be used? Explain. Answer: Check Your Progress-1 1. _____ is the e-CRM tool used to personalize online experiences of customers and answer queries. 2. Given below are statements with regard to e-CRM tools used for personalization of products and services. Indicate true or false. a. Inference-based software is used for cross-selling True/False 2 Lands' End is a direct merchant that sells traditional clothes for the family, soft luggage, and home products. The products are offered through catalogs on the Internet and through its inlet stores.

Block-5: Enterprise Functions and E-Business 84 b. Rules-based software keeps track of products/services that the online visitor has browsed True/False c. Tracking of customer behavior and grouping customers exhibiting similar behavior is possible through rules-based software True/False d. Rules-based software is used for personalization of all products True/False 3. Name the e-CRM software which is used for personalization of products and services and for cross selling. 19.4 Functions of CRM CRM results in significant benefits for an organization in the form of enhanced revenues and higher profits and helps in managing relationships with customers. The three basic functions of CRM are attracting new customers, generating more business from existing customers, and retaining profitable customers. These are discussed here. • Attracting New Customers: In order to attract new customers, organizations develop and implement a CRM strategy. The organizations have to interact with the customers to inform them about their latest and innovative product offerings. The products offered should be coupled with good customer service such as prompt reply to queries or efficient handling of their problems. For example, Dell Computers provides E-Support for helping its online customers. Any customer facing a problem receives information, alerts, and automated support for resolving the problem. • Generating More Business from Existing Customers: Organizations enhance their relationship with existing customers by cross-selling and up-selling. Cross-selling is a strategy of selling other complementary products to the customer who has already purchased a product from a vendor. This strategy is used to increase the customer's reliance on the company, reducing the likelihood of his/her switching to a competitor. For example, ICICI cross-sells its insurance products to its banking customers. Up-selling is used by organizations to sell a costly or better quality product to an existing customer.

Unit 19: CRM and E-Business 85 • Retaining Profitable Customers: Marketing experts cite the Pareto's Principle - 80-20 rule 3 that says that 20% of something is always responsible for 80% of results. According to this rule, an organization derives 80% of its business from its top 20% customers. Hence, organizations need to make efforts to retain more customers. Customer retention is not an easy task as organizations should understand the needs and demands of customers. Customer retention programs are of three types. They are as follows: • Discount programs: Customers making repeat purchases are offered price discounts by organizations. For example, insurance companies offer discounts to customers taking auto insurance if the customer has already taken home insurance. • Loyalty programs: Customers making repeat purchases, using new channels such as a website or a kiosk and referring the company's products to other prospective customers are offered loyalty points by the company. They can redeem these points for discounts or rewards. For example, airlines have frequent flyer programs that give loyalty points to regular flyers. These points can be accumulated to get discounts when the flyer buys an air ticket. • Card-based programs: A card-based program can be a discount or a loyalty program. For example, supermarkets offer cards called "valued customers." The customer making a purchase at any point of sale (POS) can swipe the card and get discounts on the items purchased. Activity: A retail store manager is trying to retain customers. Which customer retention program would be most appropriate for the retail store and how should the manager go about implementing this program? Answer: 3 In 1906, Vilfredo Pareto, an Italian economist, created a mathematical formula to describe the unequal distribution of wealth in his country. The formula was created after he observed that 20% of people owned 80% of wealth. Hence, the 80-20 rule was attributed to Pareto and was called Pareto's Principle 80-20 rule.

Block-5: Enterprise Functions and E-Business 86 Check Your Progress-2 4. What are the functions of CRM? 5. In an organization, CRM has several roles to play and one is attracting new customers. In relation to CRM, which of the following statements is/are false? a. For innovative products, providing customer service is not important b. Improves level of customer service c. Ensures swift response to customer queries d. Allows offering innovative products & services on a continuous basis 6. Existing customers can be leveraged by organizations for generating more revenue. Name the strategies which can be effectively used to leverage existing customers. 19.5 The E-CRM Architecture In order to acquire new customers and retain existing ones, organizations have to develop effective e-CRM architecture 4 . The effectiveness of an organization's e-CRM architecture can be analyzed by answering the following questions. • Does the e-CRM architecture merely automate the organization's processes related to its customers? • Does the e-CRM architecture help in tracking the valuable customers of an organization? • Does the architecture provide customized and personalized products in order to meet the demands of the customer? • Does the architecture track customer interaction irrespective of the geographic location of the customer? • Is the e-CRM architecture consistent across all access locations? The e-CRM architecture in addition to marketing, selling, and carrying out other business functions of an organization must focus on meeting the 4 The architecture refers to the broad outline of the system design including its hardware and software components.

Unit 19: CRM and E-Business 87 requirements of the customer. The organization should take feedback from the customer and integrate it in its CRM processes. 19.5.1 E-CRM Components The components of e-CRM that help in successful implementation of the e-CRM project are: • Cross-selling and up-selling software: Organizations use cross- selling and up-selling software in order to identify potential customers. They track details related to their buying behavior and purchase patterns, which they then forward to the salespeople. Organizations use cross-selling and up-selling software for scheduling sales calls, tracking order progress, and recording sales transactions. The cross-selling and up-selling efforts of an organization can be linked with the customer's life cycle. For example, insurance companies can link their insurance services with the customer's life cycle. They can offer various insurance plans for retired employees and investment plans for children. • Direct marketing and fulfillment: In direct marketing, a promotional message is targeted at an individual customer using direct media like advertising, sales promotion, personal selling, public relations and direct marketing, etc., to obtain an instant response. The advertising campaigns and sales promotion techniques specify information related to the product that will enable customers to make a purchasing decision. Automating this function is essential when there are multiple marketing programs that need to be handled across multiple channels. Fulfillment is aimed at handling the request or query made by a customer in the quickest possible time. Fulfillment has to be integrated well with the sales and marketing functions. A good fulfillment package provides a timely reply to customers' inquiries on products and services. • Customer support and service: Organizations provide various support services to consumers related to the products/services. The customer support function consists of several activities like conducting consumer surveys, servicing the request made by customers, etc. The organizations use Help-desk software that allows the support staff to handle multiple customer queries efficiently. For example, HelpSpot software provides self-help functionality to customers, thereby reducing the costs of the organization and enhancing the experience of the customer.
Block-5: Enterprise Functions and E-Business 88 • Field service operations: Field service involves face-to-face contact with the customer and usually involves large product purchases and service contracts. Organizations perceive field service as an opportunity as it provides new avenues for selling its products through cross-selling or up-selling. Field service software helps in managing preventive maintenance programs and scheduling service orders, thereby reducing the costs associated with maintenance programs. The software also handles customer contracts, manages accounts, and keeps track of the logistics and inventory systems. For example, Evron Computer Systems' Evron's Service Package (ESP) solution software helps in automating the field service life cycle. It provides services such as managing service contracts, tracking and billing, dispatching sales personnel, and performance monitoring. • Retention management: Organizations focus on retaining customers with the help of an effective CRM solution. A Decision Support System (DSS) helps in segmenting the customers. The DSS contains detailed information about customers so that organizations know who their profitable customers are and make efforts to retain them. Example: Hewlett-Packard's e-CRM Architecture Hewlett-Packard (HP) has developed an e-CRM Architecture in order to enhance interaction with the customer. For interaction to be effective, HP identified customers' needs, held interactions with them on serving them more effectively, and aimed to use the knowledge gained during interaction to build up a relationship with the customers. At the core of the e-CRM Architecture is a Decision Engine Component. This component uses a set of Business Rules called "Customer Recommended Actions" or CRA. The Decision Engine takes the customer's profile and his/her contact details as input and applies the Business Rules, resulting in the creation of recommended actions for the customer. Other components in the e-CRM architecture include: • Business Rules Management: This enables business rules to be created, deleted, stored, and analyzed in a repository. • Customer Profile Management: This component is generated based on the data present in the Customer Information Warehouse and Customer Information File (CIF). • Contact Management Component: This component captures and stores relevant customer information. • CRA Effectiveness Analysis Component: This component uses data mining tools in order to facilitate the effectiveness of customer interaction. Contd. .....

Unit 19: CRM and E-Business 89 • Treatment: This component contains unique data about the customer and the company's products/services. With this e-CRM Architecture, HP aims to enhance user experience by providing functionality that enables effective interaction with the customer during the process of sales and marketing. Adapted from Janjicek Rose, "CRM Architecture for Enterprise Relationship Marketing in the New Millenium," http://h71028.www7.hp.com/enterprise/downloads/CRMArchitecture_Whitepaper_HPC.pdf. Activity: Executive Bank is seeking to expand its customer base and to increase its market share in the insurance business. Toward this end, it plans to cross-sell its insurance products to its existing banking customers. How can cross-selling software help in implementing this plan? Answer: Check Your Progress-3 7. When there are multiple marketing programs that need to be handled across multiple channels, the function that needs to be automated is a. Indirect marketing b. Production c. Service delivery d. Direct marketing 8. _____ is an integral part of the sales and marketing function that provides timely replies to customer queries on products and services. 9. What are the various components of e-CRM? 10. The purpose of cross-selling and up-selling software in the e-CRM implementation process is given below. Identify the correct sequence of steps.
Block-5: Enterprise Functions and E-Business 90 a. Identification of prospective customers – Tracking customer details – Forwarding customer details to salespersons b. Forwarding customer details to salespersons – Identification of prospective customers – Tracking customer details c. Tracking customer details – Forwarding customer details to salespersons – Identification of prospective customers d. Identification of prospective customers – Forwarding customer details to sales- persons – Tracking customer details 11. While handling multiple marketing programs across multiple channels, which of the following aspects of e-CRM is essential? a. Cross-selling software b. Up-selling software c. Automated direct marketing & fulfillment d. None of the above 12. An element of the retention management component in e-CRM that helps customer segmentation is _____. 13. The software used for identifying prospective customers, tracking their details and forwarding them to salespersons is known as _____. 19.6 E-CRM Infrastructure Requirements Organizations can leverage on the e-CRM infrastructure to make the organization customer-centric. By integrating all the activities of the organization with e-CRM, organizations enhance the user experience. This improves the effectiveness of various processes and drives brand loyalty. The three fundamental elements of e-CRM infrastructure are customer data computing architecture, business rules for coordinating interactions, and systems and processes that facilitate integration of legacy, analytic, and operational CRM systems. A well-established e- CRM infrastructure integrates the multiple contact points of the customer, defines new business processes, adds new components to the existing system, increases the sources of data, and provides support services to multiple users at the same time. The four types of business integration that are prerequisites for an efficient e-CRM infrastructure are:

Unit 19: CRM and E-Business 91 • Integration of Customer Content: With the advent of e-CRM, companies started focusing on collecting and structuring customer data and integrating it with their business operations. This is done in order to effectively handle customer requirements and improve customer service. • Integration of Customer Contact Information: Contact management refers to capturing, sharing, and storing of customer information through electronic means and making it accessible to the entire organization. Organizations use contact management software to capture customer information, share it with the team, and provide effective solutions to the customers. Customers can place queries through call centers, the Internet, or any other electronic means. With the help of contact management software, customers can receive the latest information about a product/service. Moreover, information can be provided to customers with ease round the clock with the help of contact management centers. These centers use a centralized database for providing solutions to customer requests, both online and off-line. For example, WebAsyst Contact Manager is a contact management software that allows an organization to organize information related to its clients, customers, and vendors and to store it in a secure online database. This software allows sharing of information with the company's contacts. • Integration of the Extended Enterprise: Cross-functional process integration is gaining importance with the growing demand for a high level of customer service. With the advent of the Internet, companies have integrated their activities related to sales and services. Organizations aim to look beyond integrating their business processes and extending their interaction with their vendors and business partners. They must employ inter-enterprise integration applications in order to take advantage of extended enterprises. These applications are aimed at facilitating collaboration with the organization's vendors and business partners through the Internet, which further enhances the interaction between them. • Integration of Systems: An effective CRM solution helps an organization understand the needs of its customers. This requires integration of an organization's databases, telephone, and web technologies in order to provide effective solutions to the customer. The four enabling technologies for integrating systems are: • Legacy systems: The old systems of an organization are integrated into the CRM infrastructure with the help of middleware and messaging tools. The integration of CRM infrastructure with legacy

Block-5: Enterprise Functions and E-Business 92 systems is a difficult task. Organizations may aim to integrate their activities with a vendor using a CRM system. This may not result in effective integration as there could be differences in the version of the CRM system being used. For instance, an organization may use a client-server accounting system while the vendor uses a web-based accounting system. In this case, the integration may not take place easily due to architectural differences. • Computer Telephony Integration (CTI): CTI is a system that integrates the interaction between the computer and the telephone. In this system, the computer accepts incoming calls that are then routed to the appropriate person. CTI helps identify an authentic caller, provide Interactive Voice Response (IVR) to callers, manage video or voice conferences, and provide help to the caller by initiating a smart agent application. • Data warehouses: This is a centralized repository of enterprise-wide data that enables managers and employees to access the desired information in the desired format at any point of time. The warehouse stores huge volumes of data that can be used to get real time customer information. The data warehouse acts as a powerful e-CRM tool. • Decision support technology: The decision support technology includes modeling tools and analysis that help in decision making for customers. With the growth in the number of delivery channels, consumer information increases, and so becomes difficult to store. Hence, e-CRM tools such as decision support technology are used for effective handling of customer data in order to take appropriate decisions. Example: Cisco's Computer Telephony Integration The Cisco Intelligent Contact Management (ICM) Enterprise Edition and Cisco IP Contact Center (IPCC) Enterprise Edition implement a single solution for businesses and blend multiple channels of communication such as voice, the Internet, and e-mail. This enables the customer to interact with the contact center via e-mail, the Web, or the telephone. Cisco Computer Telephony Integration (CTI) is an alternative provided to customers by Cisco's ICM and IPCC. With the help of CTI, companies deploy a network to desktop strategy while providing enterprise-wide functionality to the company's workstation. The CTI is integrated with the contact centers to provide Contd. .....
Unit 19: CRM and E-Business 93 companies with the best solutions for various business applications. It delivers the customer profile and information present at the contact center to the company's desktop. The CTI enables companies to effectively use their corporate resources by using information collected through automatic call distributors (ACDs), interactive voice response (IVR) systems, and the Internet. Hence, CTI cost-effectively unifies customer contact centers across the enterprise with minimal system integration. In short, with the help of CTI, a company can attain high levels of customer satisfaction by enhancing interaction with the customer. Adapted from "Cisco Computer Telephony Integration Option," http://www.cisco.com/en/US/products/sw/custcosw/ps14/index.html. Check Your Progress-4 14. Which of the following statements is false with regard to contact center management? a. Contact centers receive customer queries b. They do not entertain offline information requests c. They manage online information requests d. They provide opportunities for other departments to interact with customers 15. Contact centers are able to respond to the information requests both online and offline through _____. 16. What are the tools used for integrating old systems into the CRM infrastructure? 17. Well established e-CRM infrastructure does not include the following feature/s i. New business processes & data ii. New system applications & components iii. Several customer contact points and managing them separately iv. Support to multiple users simultaneously
a. Only i b. Only iii & iv c. Only iii d. Only ii & iv 18. _____
helps maintain consistency in handling calls.

Block-5: Enterprise Functions and E-Business 94 19. Capturing, sharing and storing of customer information through electronic means and making it accessible to the entire organization is called _____. a. Content management b. Information capture c. Contact management d. Information sharing 19.7 CRM for E-Customers Customers who interact with an organization through electronic means are called e-customers. E-customers can be categorized into business partners and consumers. • Business partners are those who collaborate with the company through web-based systems using electronic documents such as electronic data interchange (EDI) or extensible markup language (XML). • Consumers are those who purchase products on the Internet. Over the years, customers have faced problems with companies due to the lack of proper interaction and their inability to handle customer queries. In order to counter problems associated with traditional marketing, e-CRM provides solutions that enhance interaction with the customers and fulfill their requirements. Customers can interact with the companies through electronic channels of communication such as e- mails, pagers, etc. • Targeting E-Customers: Companies make efforts to target e- customers. Some of the strategies used include maintaining multiple web stores and establishing online communities and online trading hubs that help them to do business with the online trader's buyers and sellers. Online communities are used by companies to target e- customers to promote their brands, products, and services. For example, in October 2006, Google acquired YouTube 5 , a popular free video sharing website, for targeting customers in the online video market by placing videos from YouTube on Google's search engine's AdSense network. This encouraged the surfers to follow 5 YouTube, based in San Bruno, California, USA, was established in February 2005. The website allows users to upload, view, and share video clips. It began as a personal video sharing service and has rapidly gained in popularity with more than 121 million videos being viewed by people across the world on a daily basis.

Unit 19: CRM and E-Business 95 links from website publishers, thereby generating advertising revenues for Google. • Acquiring E-Customers: Organizations can acquire more customers if they offer customized and personalized products/services to them. A search engine facility should also be provided so that users get information based on the keyword, code, or any other search criteria with links to the appropriate websites. Other factors include providing a secure online payment and ordering system. Organizations must also inform the customers about their new products/services offerings. • Retaining E-Customers: Organizations should make efforts to retain existing customers. In order to enhance user communication, companies should adopt sophisticated customer interaction techniques to fulfill the requirements of the customer such as processing queries through chats/mail/fax or through Frequently Asked Questions (FAQs). WAP (wireless application protocol) and POP (point of purchase) devices also help in enabling customer interaction. WAP is a communication protocol that enables customers to check prices, stock levels, and pricing of merchandise through mobile phones. POP is an important aspect of merchandising and advertising. Customers whose interaction with organization is primarily through electronic means require an enhanced approach to relationship management. Such customers are often better placed to tap the benefits of digital transformation and AI. Exhibit 19.1 presents integrating CRM for ecustomers Exhibit 19.1: CRM for e-CUSTOMERS E-Customers or customers whose interaction with companies is built around electronic communication are better equipped to get the best out of innovative CRM solutions. Innovations that are driving CRM trends include: 1. Integration of AI & CRM: AI can add much to the CRM capability and has the potential to push global business revenue to $ 1.1 Trillion by the end of 2021 by adding to efficiency at multiple points in the business chain. AI would inevitably help companies optimize their sales & tech stack and enhance role of conversational technology. 2. Integration with IoT to comment more data and carry out better assessment of potential threats and performance deficit than ever before so as to provide vastly improved customer experience. Contd. .....

Block-5: Enterprise Functions and E-Business 96 3. Better understanding of every customer and their expectations: With companies moving to towards personalization, customers expect companies to understand their preferences faster & better so as to deliver enhanced products/service. 4. Increased role of self-service: Combining AI, IoT & CRM brings the potential to empower customers enormously and solve their own problems through use of technology without the necessity of any kind of direct interaction. 5. Mobile CRM to piggyback on the increase reach of smartphones and tablets and permit employees to remain connected remotely even while traveling. 6. Technology for voice engagements so as to transform customer experience in a manner never envisaged before. 7. Vertical markets and customizable CRM to not only increase the functionality of CRM platforms, it is also likely to make them more niche oriented. With CRM also integrating with the social networking platforms, we may well be approaching the era of ZaaS i.e. Everything as a Service with CRM connected to every part of businesses. Source: https://focusonforce.com/crm/crm-trends-what-to-expect-in-2021/ Check Your Progress-5 20. _____ are the set of online visitors who make purchases from web stores through the Internet. 21. Which of the following statements is/are true with regard to business partners? a. Business partners collaborate electronically with the company by way of web trading hubs. b. Business partners are a kind of e-customers. c. Business partners are those who purchase products on the Internet. d. Both (a) and (b) 22. The use of electronic documents by business partners is generally dependent on _____ and _____. 23. The online tool/strategy used by companies to target e-customers to promote their brands, products and services is a. Web stores

Unit 19: CRM and E-Business 97 b. Online communities c. Online trading hubs d. Customer feedback 19.8 Challenges in Implementing E-CRM Projects Organizations face several challenges while implementing e-CRM projects. The problems are related to cultural issues, organizational issues, and security and privacy of customer information. All departments may not follow the same approach in their working procedures and this could lead to differences in serving customers and increasing employee resistance. There are some major issues that organizations have to overcome to effectively implement e-CRM projects: • Though e-CRM initiatives benefit the organization as a whole, they may reduce the benefits for employees of individual business departments. Every division may only be interested in furthering its own interests. For instance, the sales representative in the marketing department may be interested in increasing sales but may not be concerned about how the customer service department responds to the customers. • Though e-CRM is implemented for benefiting the entire organization, it may result in hampering the benefits of individual employees. • Organizations must shift from a silo-centric infrastructure that limits information sharing across divisions to a customer-centric infrastructure. However, there could be resistance among organizations on discontinuing old applications. • Companies operating in a global environment may face difficulty in catering to the needs of the local customers and this could result in inconsistency in the implementation of the e-CRM project. • Organizations are not clear about the return on investments obtained after implementing an e-CRM project and hence it is difficult to convince companies to implement e-CRM solutions. In 2004, MR Research found that 28 percent of e-CRM projects reported implementation related failures and in 2005, Forrester Research found that half of the companies were unaware of the return on investment generated through the implementation of e-CRM projects. E-CRM aims to integrate the basic operations of a company with its internal processes like financial planning, strategic decision making and product development. The evolution of e-CRM was aimed at integrating the requirements of the customer with that of the company's products and

Block-5: Enterprise Functions and E-Business 98 services. Hence, e-CRM provides effective solutions that help in building a strong relationship with the customer. 19.9 Summary • E-CRM is a combination of customer relationship management processes and related technologies. It enables the organizations to understand the needs and preferences of their customers better. • E-CRM involves strengthening relationships with existing customers, using customer information to provide better service, creating customer value and loyalty, and implementing an integrated CRM solution strategy. • The three basic functions of CRM are attracting new customers, generating more business from existing customers, and retaining profitable customers. • The e-CRM architecture automates the sales and marketing functions of an organization in order to provide effective customer interaction. The components involved in successful implementation of the CRM include cross-selling and up-selling, direct marketing and fulfillment, customer support and service, field service operations, and retention management. • The four types of business integration which are crucial for an efficient e-CRM infrastructure are integration of customer content, customer contact information, extended enterprise, and systems. • Organizations face certain challenges while implementing e-CRM projects such as maintaining customer information security and handling issues related to culture as it requires several departments to work in synchronization for the successful implementation of the project. 19.10 Glossary • Computer Telephony Integration (CTI) systems: These enable a computer to accept incoming calls and route them to the appropriate device/person. CTI systems are used to maintain consistency in handling calls. • Contact management: It refers to capturing, sharing, and storing of customer information through electronic means and making it accessible to the entire organization. It is used as an effective tool to ensure the availability of current information on customers.

Unit 19: CRM and E-Business 99 • Customer Relationship Management (CRM): It involves all aspects of interaction (including sales, marketing and customer service) of an organization with its customers. • Direct marketing: It includes advertising campaigns and other sales promotion techniques that provide product information and enable customers to make purchases. • Electronic Customer Relationship Management (E-CRM): A combination of customer relationship management processes and related technologies. 19.11 Self-Assessment Test 1. Explain the concept of CRM, focusing on its functions and objectives. 2. Organizations need to develop effective e-CRM architecture for acquiring new customers and retaining the existing ones. What factors should be taken into consideration for developing an effective e-CRM architecture? 3. Examine and comment on the e-CRM components that help in successful implementation of e-CRM. 4. Business integration is a prerequisite for developing an effective e- CRM infrastructure. Explain the types of business integration. 5. Several challenges are faced by organizations while implementing e- CRM projects. What are the challenges that an organization faces in the implementation of e-CRM projects? 19.12 Suggested Readings / References 1. Introduction to Information Technology, V. Rajaraman, PHI learning, 2018 2. Information Technology for Management, 2ed: Advancing Sustainable, Profitable Business Growth, Turban, Volonine, Wood, O.P. Wali, Wiley India Pvt Limited, January 2021 3. Introduction to Information Systems - 6th edition, R. Kelly Rainer; John Wiley & Sons, Inc.2016 4. Information Technology: An Introduction for Today's Digital World, Richard Fox, Chapman and Hall/CRC; 2nd edition (August 21, 2020) 5. Information Technology for Management, Efraim Turban, Carol Pollard, Gregory Wood, Wiley, 2018

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Answers to Check Your Progress Questions Following are the answers to the Check Your Progress questions given in the Unit. 1. Help desk software e-CRM tools such as e-mail organizers, help desk software and web development applications are some of the ways to personalize online experiences of customers and answer queries. Cross-selling and up-selling software is used to identify prospective customers and increase chances of revenue generation. 2. Statements 'a' and 'b' are true while statements 'c' and 'd' are false. Tracking of customer behavior and grouping customers exhibiting similar behavior is possible through inference-based software. Rules-based software is used for personalization in case of specific products and services only. 3. Inference-based software Personalization can be achieved by e-CRM tools like inference- based and rules-based software. Inference-based software is generally used for cross-selling. It tracks customer behavior and groups together customers who have similar behavior. Rules- based personalization is used for selling specific products and services. The software keeps track of the products/services that an online visitor has browsed for. This would enable

Unit 19: CRM and E-Business 101 organization to offer customized products/services to the visitors. 4. CRM involves three important functions. These functions include attracting new customers, generating more business from existing customers, and retaining profitable customers. Organizations must develop a well-planned CRM strategy and implement it to attract new customers. They can attract new customers by continuously offering latest, innovative products and services. Customer relationships can be further enhanced by cross-selling and up-selling. Customer retention requires a thorough understanding of customers which can be made possible through e-CRM technologies. 5. (a) For innovative products, providing customer service is not important Mere delivery of innovative products is not sufficient. Marketers have to offer better customer service for products as well. Organizations should be quick in responding to customer queries and in offering innovative products on a continuous basis. 6. Cross-selling and Up-selling Cross-selling involves selling similar or complementary products in relation to purchases made by customers. Up-selling is sale of a product of better quality to the existing customers. 7. (d) Direct marketing Automating the direct marketing function is essential when there are multiple marketing programs that have to be handled across multiple channels. For instance, campaign management is a marketing process using automated systems to handle responses, manage logistics and convert leads into purchases. 8. Fulfillment A good fulfillment package provides timely replies to customer inquiries on products and services. 9. The various components of e-CRM are cross-selling and up- selling software; direct marketing and fulfillment; customer support and service; field service operations; and retention management. 10. (a) Identification of prospective customers – Tracking customer details – Forwarding customer details to salespersons he basic purpose of software is to identify prospective customers, track their details and forwarding them to

Block-5: Enterprise Functions and E-Business 102 salespersons for required action. The software can be used to schedule sales calls, track order progress, and record sales transactions. 11. (c) Automated direct marketing & fulfillment The objective of fulfillment is to handle customer requests for information quickly and effectively, irrespective of the type of information sought. Fulfillment has to be integrated well with sales and marketing functions. 12. Decision Support System A good DSS gathers detailed customer information and helps organizations understand their highly profitable customers. Help-desk software and web development applications are some ways to personalize online experiences of customers. 13. Cross-selling & up-selling software Cross-selling & up-selling software can be used to schedule sales calls, track order progress and record sales transactions. To make the software more effective, it can be integrated with inventory and customer service software. Cross-selling and up- selling efforts of an organization can be linked with customer life cycle. 14. (b) They do not entertain offline information requests Contact management centers use a central database to reply to information requests, both online and off-line. Maintaining a record of previous transactions will eliminate inconsistencies in contact management. 15. Centralized database Maintaining records of previous transactions will eliminate inconsistencies in contact center management. BOM also maintains details of inventory and any change in information is updated regularly. ERP architecture is multilayered (hardware layer, relational database layer, database access layer, application software layer, etc) that facilitates communication and transactions among members of the supply chain. 16. Messaging tools and middleware Most organizations have old systems that have to be integrated with CRM infrastructure. Messaging tools and middleware are used for integrating the old systems into the CRM infrastructure. These tools help increase the efficiency of data extraction from legacy systems.

Unit 19: CRM and E-Business 103 17. (c) Only iii Well established e-CRM infrastructures create several customer contact points and make efforts to integrate them. 18. CIT systems TI (Computer Technology Integration) systems enable a computer to accept incoming calls and route them to the appropriate device/person. 19. (c) Contact management Contact management opens up opportunities for customer interaction for different departments in an organization. It ensures availability of current information about customers. Moreover, customer information can be made available round the clock, throughout the year, through contact management centers. 20. E-Customers Online visitors who interact with the company electronically are called e-customers. E-customers can be categorized into business partners and consumers. 21. (d) Both (a) and (b) Business partners are those who collaborate electronically with the company, using web trading hubs. Consumers are those who purchase products on the Internet. 22. EDI and XML Business partners normally use electronic documents based on electronic data interchange (EDI) or extensible markup language (XML). 23. (b) Online communities Companies have to make consistent efforts to target e- customers. Some strategies that can be adopt are maintaining one or more web stores, online communities, online trading hubs and encouraging customers to share information.
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the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities." Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers, and customers. In essence, supply chain management integrates supply and demand management within and across companies. Supply Chain Management

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