

Chapter 1 - Information Systems and Business Strategy

Information systems are everywhere in business. Understanding information systems provides great insight to anyone learning about business.

Information Systems (IS) are computer-based tools that people use to work with information and that support the information and information-processing needs of an organization.

Information Technology (IT) is the acquisition, processing, storage and dissemination of vocal, pictorial, textual and numerical information by a microelectronic based combination of computing and telecommunications.

Management Information Systems (MIS) is the function that plans for, develops, implements and maintains IT hardware, software and applications that people use to support the goals of an organization.

Data are raw facts that describe the characteristics of an object or event.

- Characteristics for a sales event could include the date, item number, item description, quantity ordered, customer name and shipping details

Information is data converted into a meaningful and useful context.

- Information from sales events could include best selling item, worst selling item, best customer and worst customer

Information becomes **knowledge** when information can be acted upon. In this sense, knowledge is actionable information.

Information systems can enable an organization to increase efficiency in manufacturing, retain key customers, seek out new sources of supply, and introduce effective financial management.

An organization's culture plays a large role in determining how successfully it will share information. Culture influences the way people use information and reflects the importance that company leaders attributes to using information in achieving success or avoiding failure.

Four common information-sharing cultures exist in organizations today:

1. Information-Functional Culture: Employees use information as a means of exercising influence or power over others
2. Information-Sharing Culture: Employees across departments trust each other to use information to improve performance
3. Information-Inquiring Culture: Employees across departments search for information to better understand the future and align themselves with current trends and new directions
4. Information-Discovery Culture: Employees across departments open to new insights about crisis and radical changes and seek way to create competitive advantages

An organization's information culture can directly affect its ability to compete in the global market.

Chief Information Officer (CIO) is an executive-level position that involves high-level strategic planning and management of information systems pertaining to the creation, storage and use of information by a business.

- Responsible for overseeing all uses of information systems, and ensuring the strategic alignment of IS with business goals and objectives.
- Broad roles of a CIO include:
 - o Manager
 - o Leader
 - o Communicator

Chief Technology Officer (CTO) is responsible for ensuring the throughput, speed, accuracy, availability and reliability of an organization's information technology.

- Responsible for ensuring the efficiency of IT resources used in information systems throughout the organization.

Chief Security Officer (CSO) is responsible for ensuring the security of information systems, and developing strategies and technical safeguards against attacks from hackers and viruses.

- The role of a CSO has been elevated in recent years because of the number of such attacks.

Chief Privacy Officer (CPO) is responsible for ensuring the ethical and legal use of information within the organization.

Chief Knowledge Officer (CKO) is responsible for collecting, maintaining, and distributing an organization's knowledge.

- The CKO designs processes and information systems that make it easy for people to reuse knowledge.

A **competitive advantage** is a product or service that an organization's customer places a greater value on than similar offerings from a competitor.

- Competitive advantages are typically temporary because competitors often seek ways to duplicate the competitive advantage.

The **first-mover advantage** occurs when an organization can significantly impact its market share by being first to market with a competitive advantage.

- Example: FedEx created a first-mover advantage by creating its customer self-service software.

Environmental Scanning is the acquisition and analysis of events and trends in the environment external to an organization.

- Information technology has the opportunity to play an important role in environmental scanning.

The Five Forces Model - Evaluating Business Segments

The five forces model helps determine the relative attractiveness of an industry and includes:

- Buyer power
- Supplier power
- Threat of substitute products or services
- Threat of new entrants
- Rivalry among existing competitors

Buyer Power is high when buyers have many choices of whom to buy from and low when their choices are few.

- There are two situations in the supply chain where organizations need to be concerned about buyer power:
 - o In their relationships with customers
 - o In their relationship with suppliers
- **Loyalty Programs** reward customers based on the amount of business they do with a particular organization

Supplier Power is high when buyers have few choices to buy from and low when they have many choices.

- **Business-To-Business (B2B) Marketplace** is an Internet-based service that brings together many buyers and sellers.
- **Private Exchange** is a B2B marketplace in which a single buyer posts its need and then opens the bidding to any supplier who cares to bid.
- **Reverse Auction** is an auction format in which increasingly lower bids are solicited from organizations willing to supply the desired product or service at an increasingly lower price.

Threat of Substitute Products or Services is high when there are many alternatives to a product or service and low when there are few alternatives from which to choose.

- Ideally an organization prefers to be in a market in which there are few substitutes for the products or services it offers.
- **Switching Costs** are costs that can make customers reluctant to switch to another product or service.

Threat of New Entrants is high when it is easy for new competitors to enter a market and low when there are significant entry barriers to entering a market.

Rivalry Among Existing Competitors is high when competition is fierce In a market and low when competition is more complacent.

An organization can follow Porter's three generic strategies when entering a new market:

1. Broad cost leadership
2. Broad differentiation
3. Focused strategy

A **business process** is a standardized set of activities that accomplish specific tasks, such as processing a customer's order.

An organization creates value by performing a series of activities that Porter identified as the value chain.

The **value chain** approach views an organization as a series of processes, each of which adds value to the product or service for each customer.

To create a competitive advantage, the value chain must enable the organization to provide unique value to its customers.

- To achieve a competitive advantage, the firm must perform one or more value creating activities in a way that creates more overall value than its competitors.

Business Information Driven Systems: information systems that are implemented to support a company's competitive business strategy.

Chapter 2 - Decision Making and Business Processes

Primary Reasons For Growth of Decision Making Information Systems

1. People need to analyze large amounts of information
2. People need to make decisions quickly
3. People must apply sophisticated analysis techniques, such as modeling and forecasting, to make good decisions
4. People must protect the corporate asset of organizational information

A typical organization similar to a pyramid with three different levels. The different levels require different types of information and types of decisions to address challenges and capture opportunities.

Operational Level: employees develop, control and maintain core business activities required to run day-to-day operations.

- Operational decisions are considered **structural decisions**, which arise in situations where established processes offer potential solutions.
 - o Structural decisions are made frequently are almost repetitive in nature, and they affect short-term business strategies

Managerial Level: employees are continuously evaluating company operations to hone the firm's ability to identify, adapt to, and leverage change.

- A company that has a competitive advantage needs to constantly adjust and revise its strategy to remain ahead of the competition
- Managerial decisions cover short- and medium-range plans, schedules, and budgets, along with policies, procedures and business objectives for the firm
- They also allocate resources and monitor the performance of organizational sub-nits, including business units, divisions, process teams, project teams and other work groups. These types of decisions are considered **semi-structured decisions** and they occur in situations in which a few established processes help to evaluate potential solutions, but not enough to lead to a definite recommended decision.

Strategic Level: managers develop overall business strategies, goals, and objectives as part of the company's strategic plan. They also monitor the strategic performance of the organization and its overall direction in the political, economic, and competitive business environment.

- Strategic decisions are highly **unstructured decisions**, occurring in situations in which no procedures or rules exist to guide decision makers toward the correct choices.
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Transactional Data encompass all the raw facts contained within a single business process or unit of work, and their primary purpose is to support performing daily operational tasks.

- Example: Purchasing stocks, making an airline reservation, or withdrawing cash from an ATM.

Analytical Information encompasses all summarized or aggregated transactional data, and its primary purpose is to support performing analysis tasks. Analytical information also includes external information such as that obtained from outside market and industry sources.

- Examples: Trends, aggregated sales amounts by region, product statistics, and future growth projections.

Online Analytical Processing (OLAP) is the analysis of summarized or aggregated information sourced from transaction processing systems data, and sometimes external information from outside industry sources, to create business intelligence in support of analytical and strategic decision making.

- **Consolidation**: involves the aggregation of information and features simple roll-ups to complex groupings of interrelated information.
- **Drill-down** enables users to view details, and details of details, of information
- **Slice and Dice** is the ability to look at information from different perspectives

Business Intelligence is a broad, general term describing information that people use to support their analytical and strategic decision-making efforts.

Key Performance Indicators (KPI) are the measures that are tied to business drivers. Metrics are the detailed measures that feed those KPIs.

Efficiency IS Metrics measure the performance of the information system itself such as throughput, speed and availability.

- Common Types:
 - o Throughput
 - o Transaction Speed
 - o System Availability
 - o Web Traffic
 - o Response Time

Effectiveness IS Metrics measure the impact IS has on business processes and activities including customer satisfaction, conversion rates, and sales through increases.

- Common Types:
 - o Usability
 - o Customer Satisfaction
 - o Conversion Rates
 - o Financial

Benchmarking is a process of continuously measuring system results, comparing those results to optimal system performance and identifying steps and procedures to improve system performance.

A **transaction processing system (TPS)** is the basic business system that serves the operational levels in an organization. A TPS performs OLTP and handles transactional data.

- Example: Payroll system or an order-entry system

A **decision support system (DSS)** models data and information to support managers, analysts, and other business professionals during the decision-making process for more analytical purposes.

- A DSS can be used on transactional data or analytical information, depending on the level and depth of analysis desired.
- 3 Quantitative Models used by DSS:
 - o Sensitivity Analysis: The study of the impact that changes in one or more parts of the model have on other parts of the model
 - o What if Analysis: checking the impact of a change in an assumption on the proposed solution.
 - o Goal Seeking Analysis: finding the inputs necessary to achieve a goal such as a desired level of output

An **executive information system (EIS)** is a specialized DSS that support senior-level executives within the organization.

- An EIS differs from a DSS because an EIS typically contains information from external sources as well as information from internal data sources.

A common feature of an EIS is a digital dashboard. **Digital Dashboards** integrate information from multiple components and tailor the information to individual preferences.

- 3 categories that measure business performance
 - o Market pulse: examples include daily sales numbers, market share and subscriber turnover
 - o Customer service: examples include problems resolved on the first call, call center wait times, and on-time repair calls
 - o Cost driver: examples include number of repair trucks in the field, repair jobs completed per day, and call center productivity

Intelligent Systems are various commercial applications of artificial intelligence

Artificial Intelligence simulates human intelligence such as the ability to reason and learn. AI systems can learn or understand from experience, make sense of ambiguous or contradictory information, and even use reasoning to solve problems and make decisions effectively.

- Examples of AI
 - o Expert Systems
 - o Neural Networks
 - o Genetic Algorithms
 - o Intelligent Agents
 - o Virtual Reality

Expert Systems are computerized advisory programs that imitate the reasoning processes of experts in solving difficult problems.

Neural Networks is a category of AI that attempts to emulate the way the human brain works. The types of decisions for which neural networks are most useful are those that involve pattern or image recognition because a neural network can learn from the information it processes.

- Neural network features include:
 - o Learning and adjusting to new circumstances on their own
 - o Lending themselves to massive parallel processing
 - o Functioning without complete or well-structured information
 - o Coping with huge volumes of information with many dependent variables
 - o Analyzing non-linear relationships
- **Fuzzy Logic** is a mathematical method of handling imprecise or subjective information. This basic approach is to assign values between zero and one to vague or ambiguous information. The higher the value, the closer it is to one.

Genetic Algorithms is an AI system that mimics the evolutionary, survival-of the fittest process to generate increasingly better solutions to a problem.

Intelligent Agent is a special purpose knowledge based information system that accomplishes specific tasks on behalf of its users. Intelligent agents use the knowledge base to make decision and accomplish tasks in a way that fulfills the intentions of a user.

- A **shopping bot** is software that searches several retailer Web sites and provide a comparison of each retailers offerings, including price and availability.

Virtual Reality is a computer-generated environment that can be a simulated world or an imaginary world.

A **business process** is a standardized set of activities that accomplish a set of tasks, such as processing customer's order.

Customer-facing processes result in a product or service that is received by an organization's external customer

Business-facing processes are invisible to the external customer but essential to the effective management of the business and include goal setting, day-to-day planning, and performance feedback, rewards and resource allocation.

Business Process Improvement attempts to understand and measure the current process and make performance improvements accordingly.

Business Process Re-engineering (BPR) is the analysis and redesign of workflow within and between enterprises. BPR relies on a different school of thought than business process improvements.

Business Process Modeling is the activity of creating a detailed flow-charts work flow diagram, use case diagram or process map showing process inputs, tasks and activities in a structured sequence.

As-is Process Models represent the current state of the operation that has been mapped.

To-be Process Models show the results of applying change improvement opportunities to the current process model.

Business Process Management integrates all of an organization's business processes to make individual processes more efficient. BPM can be used to solve a single glitch or to create a unifying system to consolidate a myriad of processes.

- Key reasons for BPM
 - o To improve service
 - o To reduce operational costs
 - o To improve organizational agility
 - o To improve process visibility
 - o To meet regulatory compliance
 - o To deal with integration issues
 - o To introduce greater efficiencies/improved productivity.

Chapter 3 – The Internet and E-business

E-Business is the conducting of business on the Internet, not only buying and selling, but also serving customers and collaborating with business partners.

- Must be innovative; add value and provide useful information.
- The site must build a sense of community and collaboration, eventually becoming the port of entry for business.

Digital Darwinism implies that organizations that cannot adapt to the new demands placed on them for surviving in the information age are doomed to extinction.

A **disruptive technology** is a new way of doing things that initially does not meet the needs of existing customers.

- These tend to open new markets and destroy old ones

A **sustaining technology** produces an improved product that customers are eager to buy, such as a faster car or larger hard drive.

- Sustaining technologies tend to provide us with better, faster and cheaper products in established markets.

ARPANET – Advanced Research Project Agency

Internet is a global public network of computer networks that pass information from one to another using common computer protocols

Several entities oversee the Internet and set standards including:

- IETF - Internet Engineering Task Force: the protocol engineering and development arm of the Internet
- IAB - Internet Architecture Board: responsible for defining the overall architecture of the Internet, providing guidance and broad direction to the IETG
- IESG - Internet Engineering Steering Group: Responsible for technical management of IETF activities and the Internet standards process

Protocols are standards that specify the format of data as well as the rules to be followed during transmission

The **World Wide Web (WWW)** is a global hypertext system that uses the Internet as its transport mechanism.

Hypertext transport protocol (HTTP) is the Internet standard that supports the exchange of information on the WWW.

- Allow web authors to embed hyperlinks in web documents by defining universal resource locators (URLs) and how they can be used to retrieve resources anywhere on the Internet.

Digital divide occurs when those with access to technology have great advantages over those without access to technology.

Internet's Impact on Information

- **Easy to compile:** searching for information on products, prices, customers, suppliers and partners is faster and easier when using the Internet
- **Information Richness** refers to the depth and breadth of information transferred between customers and businesses. Businesses and customers can collect and track more detailed information when using the Internet
- **Information Reach** refers to the number of people a business can communicate with, on a global basis. Businesses can share information with numerous customers all over the world.
- **Improved Content** provides more relevant content.

Web 2.0 is a set of economic, social and technology trends that collectively form the basis for the next generation of the Internet.

Web Mash up is a website or web application that uses content from more than one source to create completely new service.

- Allows users to mix map data, photos, video, news feeds, blog entries and so on.

Contents used in mash ups are typically sourced from an **application-programming interface (API), which** is a set of routines, protocols and tools for building software applications.

Mash up editors is WYSIWYG (What you see is what you get). They provide a visual interface to build a mash up, often allowing the user to drag and drop data points into Web applications.

Web 3.0 is a term that has been coined with different meanings to describe the evolution of web usage and interaction among several separate paths.

- Includes transforming the web into a database, a move toward making content accessible by multiple non-browser applications, the leveraging of artificial intelligence technologies or the semantic web.

Web 3.0 includes

- Transforming the web into a database
- An evolutionary path to artificial intelligence
- The realization of semantic web and service-oriented architecture
- Evolution towards 3D

Semantic Web is an evolving extension of the World Wide Web in which web content can be expressed not only in natural language, but also in a format that can be read and used by software agents, thus permitting them to find, share and integrate information more easily.

4 Common tools for accessing Internet information

Intranet is an internalized portion of the Internet, protected from outside access that allows an organization to provide access to information and application software to only its employees.

Extranet is an intranet that is available to strategic allies (such as customers, suppliers and partners).

Portal is a website that offers a broad array of resources and services, such as email, online discussion groups, search engines, and online shopping malls. Ex. eBay, Yahoo!, Netscape, Microsoft.

Kiosk is a publicly accessible computer system that has been set up to allow interactive information browsing.

- The computer's operating system is hidden from view, and the program runs in a full-screen mode, which provides a few simple tools for navigations.
 - o INDIGO

3 Common forms of service providers

Internet Service Provider (ISP) is a company that provides individuals and other company's access to the Internet along with additional related services such as Web site building.

- An ISP has the equipment and the telecommunications line access required to have a point of presence on the Internet for different geographic areas.

- **Wireless Internet Service Provider (WISP)** is an ISP that allows subscribers to connect to a server at designated hotspots or access points using a wireless connection.

Online Service Provider offers an extensive array of unique services such as its own version of a web browser. AOL

Application Service Provider is a company that offers an organization access over the Internet to system and related services that would otherwise have to be located in personal or organizational computers.

- **Service Level Agreements (SLA)** define the specific responsibilities of the service provider and set the customer expectations.

E-commerce is the buying and selling of goods and services over the Internet.

- E-commerce refers only to online transactions. E-business, derived from the term e-commerce, is the conducting of business on the Internet, not only buying and selling, but also servicing customers and collaborating with business partners.

Advantages of E-business

Expanding global reach

- **Information richness** refers to the depth and breadth of details contained in a piece of textual, graphic, audio or video information
- **Information reach** measures the number of people a firm can communicate with all over the world.

Opening New markets

- **Mass customization** is the ability of an organization to tailor its products or services to the customers' specifications.
- **Personalization** occurs when a company knows enough about a customer's likes and dislikes that it can fashion offers more likely to appeal to that person, say by tailoring its website to individuals or groups based on profile information, demographics or prior transactions
- **Long tail** is the tail of a typical sales curve
- **Intermediaries** are agents, software, or businesses that provide a trading infrastructure to bring buyers and sellers together.
- **Disintermediation** occurs when a business sells directly to the customer online and cuts out the intermediary.
 - o This strategy lets the company shorten the order process and add value with reduced costs or a more responsive and efficient service.
- **Reintermediation** finds ways to add value to the business process.
- **Cybermediation** refers to the creation of new kinds of intermediation that simply could not have existed before the advent of e-business, including comparison-shopping sites.

Reducing costs

Improving operations

Improving effectiveness

- **Interactivity** measures advertising effectiveness by counting visitor interactions with the target ad, including time spent viewing the ad, number of pages viewed and numbers of repeat visits to the advertisements.
- **Clickstream data** people can observe the exact pattern of a consumer's navigation through a site.

E-business model is an approach to conducting electronic business on the Internet

- Transactions take place between two major entities -business and consumers.
 - o B2B
 - o B2c

Business-to-business (B2B) applies to businesses buying from and selling to each other over the Internet.

- **Electronic Marketplaces** or **E-Marketplaces** are interactive business communities providing a central market where multiple buyers and sellers can engage in e-business activities.
 - o Their primary goal is to increase market efficiency by tightening and automating the relationship between buyers and sellers.

Business-to-consumer (B2C) applies to any business that sells its products or services to consumers over the Internet.

- **E-shop, e-store or e-tailor** is a version of a retail store where customers can shop at any hour of the day without leaving their home or office.
- **E-mall** consists of a number of e-shops; it serves as a gateway through which visitor can access other e-shops.

Consumer-to-business (C2B) applies to any consumer that sells a product or service to a business over the Internet.

Consumer-to-consumer applies to sites primarily offering goods and services to assist consumers interacting with each other over the Internet. EBay

Types of business

1. **Brick and Mortar business** is a business that operates in a physical store without an internet presence
2. **Pure-play (virtual) business** is a business that operates on the internet only
3. **Click and Mortar business** is a business in a physical store and on the Internet.

Online Auction Types

- Electronic Auction (e-auction) is when sellers and buyers solicit consecutive bids from each other and prices are determined dynamically
- Forward Auction is an auction that sellers use as a selling channel to many buyers and the highest bid wins
- Reverse Auction is an auction that buyers use to purchase a product or service, selecting the seller with the lowest bid

Types of C2C Communities

Communities of Interest – people interact with each other on specific topics, such as golfing and stamp collecting

Communities of Relations – people come together to share certain life experiences, such as cancer patients, senior citizens and car enthusiasts

Communities of Fantasy – people participate in imaginary environments, such as fantasy football teams and playing one-on-one with Michael Jordan

Types of Online Consumer Payments

Financial Cybermediary is an Internet based company that facilitates payments over the Internet. Paypal

Electronic Cheque is a mechanism for sending a payment from a chequing and savings account

Electronic bill presentment and payment (EBPP) is a system that sends bills over the Internet and provides an easy to use mechanism to pay the bill

Digital wallet is both software and information – the software provides security for the transaction and the information includes payment and delivery information

Types of Online Business Payments

Electronic Data Interchange (EDI) is a standard format for exchanging business data.

- A **value added network (VAN)** is a private network, provided by a third party, for exchanging information through a high-capacity connection.
- **Financial Electronic Data Interchange** is a standard electronic process for B2B market purchase payments

Maintenance, repair and operation materials (indirect materials) are materials necessary for running an organization but do not relate to the company's primary business activities.

- Typical MRO goods include office supplies, equipment, and furniture, computers and replacement parts.
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E-procurement is the B2B purchase and sale of supplies and services over the Internet

- Electronic catalogue presents customers with information about goods and services offered for sale, bid or auction on the internet

E-business security methods

Encryption scrambles information into an alternative form that requires a key or password to decrypt the information

Secure Socket Layer (SSL) creates a secure private connection between a client and server computer, encrypts the information and sends the information over the internet.

Secure Electronic Transaction is a transmission security method that ensures transactions are secure and legitimate.

E-Business Benefits

1. Highly Accessible
2. Increased customer loyalty
3. Improved information content
4. Increased convenience
5. Increased global reach
6. Decreased cost

E-Government uses strategies and technologies to transform government by improving the delivery of services and enhancing the quality of interaction between the citizen-consumer within all branches of government.

M-Commerce is the ability to purchase goods and services through a wireless Internet enabled device.

Constituent-to-government (C2G) mainly constitutes the areas where a constituent interacts with the government. It includes community spaces where people themselves can post information and opinions about government and talk to politicians and government decision makers directly.

Government-to-business (G2B) includes all government interaction with business enterprises whether it is procurement of goods and services from suppliers or information regarding legal and business issues that is transmitted electronically

Government-to-constituent (G2C) - governments around the world are now dealing with constituents electronically, providing them with updated information. Governments are also process applications for visas, renewals of passport and driver's licenses, advertising of tender notices and other services online

Government-to-government (G2G) - governments around the world are now dealing with other governments electronically.

Chapter 4 - Enterprise Computing Challenges and Enterprise Resource Planning

Innovation is the introduction of new equipment or methods.

- Innovate is to cut costs, while still creating a competitive advantage

Six Best Practices of Innovation

1. Find the relevant edge
2. Assemble innovation hothouses
3. Reward risk takers
4. Celebrate diversity
5. Look around
6. Mix practitioners and developers

Social Responsibility implies that an entity, whether it is a government, corporation, organization or individual has a responsibility to society.

Corporate Policy is a dimension of social responsibility that refers to the position a firm takes on social and political issues

Corporate Responsibility is a dimension of social responsibility that includes everything from hiring minority workers to making safe products

Sustainable or Green IT describes the manufacture, management, use, and disposal of information technology in a way that minimizes damage to the environment, which is a critical part of corporation's responsibility.

Cutting energy consumption

- Sun microsystems: throughput computing
- Virtualization: a framework of dividing the resources of a computer into multiple execution environments
 - o This software allows IT managers to easily load multiple programs on a single machine and move programs from one computer to another on the fly to make maximum use of a cluster or servers.
 - This significantly reduces energy use
- Energy Rebate programs
- Smart cooling
- Alternative Energy sources
- Biology meets chip
- Government involvement

Sustainable IT disposal refers to the safe disposal of IT assets at the end of their life cycles. It ensures that **e-waste** or old computer equipment does not end up in a landfill, where the toxic substances it contains can leach into groundwater, among other problems.

- Take back programs

Virtual Worlds

Mobile Commerce

Telematics is the blending of computers and wireless telecommunications technologies with the goal of efficiently conveying information over vast networks to improve business operations

Electronic Tagging is a technique for identifying and tracking assets and individuals via technologies such as radio frequency identification and smart cards.

Second Life

Enterprise Resource Planning (ERP) integrates all departments and functions throughout an organization into a single information system so that employees can make decisions by viewing enterprise-wide data on all business operations

- It is a logical solution to the mess of incompatible applications that had sprung up in most businesses
- ERP addresses the need for global information sharing and reporting
- ERP is used to avoid the pain and expense of fixing legacy systems.

ERP systems are replacing legacy systems.

Legacy systems is an older computer technology that remains in use even though there are newer systems available.

Functional systems are information systems that serve a single business unit, such as accounting.

If a single department decides to implement a new system without considering the other departments, inconsistencies can occur throughout the company.

The Heart of ERP

The Evolution of ERP

The Three most common core ERP components focusing on internal operations are

1. Accounting and finance
 - a. Manage accounting data and financial processes within the enterprise with functions such as general ledger, accounts payable, accounts receivable, budgeting, and asset management.
2. Production and materials management
 - a. Handle the various aspects of production planning and executing such as demand forecasting, production scheduling, job cost accounting and quality control.
 - b. Companies typically produce multiple products, each of which has many different parts.
 - c. The company must then define sales forecasting for each product to determine production schedules and materials purchasing.
3. Human resources
 - a. Tracks employees data, including payroll, benefits, compensation and performance assessment and assure compliance with the legal requirements of multiple jurisdiction and tax authorities.

Extended ERP Components

Business Intelligence describes information that people use to support their decision-making efforts.

- The business intelligence components of ERP systems typically collect data used throughout the organization, organize and summarize this data in a way that turns this data into information, and apply analytical tools to this information to assist managers and analysts with their decisions.

Customer Relationship Management Components (CRM) involves managing all aspects of customer's relationships with an organization to increase customer loyalty and retention, and profitability for the organization.

- CRM components provide an integrated view of customer data and interactions, allowing organizations to work more effectively with customers and be more responsive to their needs.
- CRM components typically include contact centers, sales force automation, and marketing functions
 - o These improve the customer experience while identifying a company's most valuable customers to better allocate resources

Supply Chain Management (SCM) involves managing data flows between and among stages in a supply chain to maximize total supply chain effectiveness and profitability.

- SCM components help an organization plan, schedule, control and optimize the supply chain from its acquisition of raw materials to the receipt of finished goods by customers.

E-business means conducting business on the Internet – not only buying and selling, but also serving customers and collaborating with business partners.

- **E-logistics** manages the transportation and storage of goods
- **E-procurement** is the business-to-business purchase and sale of supplies and services over the Internet
- **E-business and ERP** complement each other by allowing companies to establish a Web presence and fulfill order expeditiously.

An integrated enterprise infuses support areas, such as finance and human resources, with a strong customer orientation.

Integrations are achieved using **middleware** -several different types of software that sit in the middle of and provide connectivity between two or more software applications.

Enterprise application integration (EAI) middleware represents a new approach to middleware by packaging together commonly used functionality, such as providing pre-built links to popular enterprise applications, which reduces the time necessary to develop solutions that integrate applications from multiple vendors.

Measuring ERP Success

The **balanced scorecard** is a management system, in addition to a measurement system, that enables organizations to clarify their vision and strategy and translate them into action.

- This provides feedback for both the internal business processes and external outcomes to continuously improve strategic performance and results.
 - o The balanced scorecard analyzes their business relative to each of these perspectives

- The learning and growth perspective
- The internal business process perspective
- The customer perspective
- The financial perspective.

Chapter 5 – Operations Management and Supply Chain Management

Production is the creation of goods and services using the factors of production: land, labour, capital, entrepreneurship and knowledge.

Organizations that excel in operations management, specifically supply chain management, perform better in almost every financial measure of success.

Production management describes all the activities managers perform to help companies create goods.

Operations Management (OM) is the management of systems or processes that convert or transform resources (including human resources) into goods and services.

- Operation management is responsible for managing the core processes used to manufacture goods and produce services.

Transformation Process is often referred to as the technical core, especially in manufacturing organizations, and is the actual conversions of inputs to outputs.

Value-added is the term used to describe the difference between the cost of inputs and the price value of outputs.

Operations management is critical to an organization because of its ability to increase value-added during the transformation process.

Operation Management ranges across the organization and include many interrelated activities, such as:

- Forecasting
- Capacity planning
- Scheduling
- Managing inventory
- Assuring quality
- Motivating and training employees
- Locating facilities

Strategic Business Units (SBUs) consists of several stand-alone businesses.

- When companies become really big, they are best thought of as being composed of a number of businesses.

Strategic Planning focuses on long-range planning such as plant size, location, and type of processes to be used.

- **Materials Requirement Planning Systems** uses sales forecasts to make sure that needed parts and materials are available at the right time and place in a specific company.

Tactical Planning focuses on producing goods and services as efficiently as possible within the strategic plan.

- **Global Inventory Management Systems (GIMS)** provide the ability to locate, track and predict the movement of every component or material anywhere upstream or downstream in the business process.

Operational Planning and Control (OP&C) deals with day-to-day procedures for performing work, including scheduling, inventory, and process management.

- **Inventory Management and Control Systems** provide control and visibility to the status of individual items maintained in inventory.
- **Transportation Planning Systems** track and analyze the movement of materials and products to ensure the delivery of materials and finished goods at the right time, to the right place and at the lowest cost.
- **Distribution Management Systems** coordinate the process of transporting materials from a manufacturer to distribution centers to the final customers.

Modern Quality Control Standards:

- **Six Sigma Quality**
- **ISO 9000**
 - o International Organization for Standardization - a non governmental organization established to promote developing world standards to facilitate the international exchange of goods and services.
- **CMMI**
 - o Capability Maturity Model Integration is a framework of best practices

OM STRATEGY

1. **Cost**
2. **Quality**
3. **Delivery**
4. **Flexibility**
5. **Service**

Supply Chain consists of parties involved, directly or indirectly, in procuring a product or raw material

Supply Chain Management (SCM) involves managing information flows between and among stages in a supply chain to maximize total supply chain effectiveness and profitability

4 Basic Components of Supply Chain Management

- 1. Supply Chain Strategy** – the strategy for managing all the resources required to meet customer demand for all products and services
- 2. Supply Chain Partners** – the partners chosen to deliver finished products, raw materials and services, including pricing, delivery and payment processes along with partner relationships monitoring metrics
- 3. Supply Chain Operation** – the schedule for production activities, including testing, packaging and preparation for delivery. Measurements for this component include productivity and quality
- 4. Supply Chain Logistics** – the product delivery processes and elements, including orders, warehouses, carriers, defective product returns and invoicing.

Effective and Efficient Supply Chain Management Systems Can Enable An Organization To:

- Decrease the power of its buyers
 - Increase its own supplier power
 - Increase switching costs to reduce the threat of substitute products or services
 - Create entry barriers, thereby reducing the threat of new entrants
 - Increase efficiencies while seeking a competitive advantage through cost leadership
-

The supply chain has three main links

1. Materials flow from suppliers and their upstream suppliers at all levels
 2. Transforming materials into semi-finished and finished products – the organization’s own production process
 3. Distributing products to customers and their downstream customers at all levels
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SCM improves ways for companies to find the raw components to make a better product or service, manufacture that product or service, and deliver it to the customers.

The 5 basic supply chain management components

1. Plan: this is the strategic portion of supply chain management. A company must have a plan for managing all the resources that go toward meeting customer demand for products or services. A big piece of planning is developing a set of metrics to monitor the supply chain so that it is efficient, costs less, and delivers high quality and value customers.
2. Source: companies must carefully choose reliable suppliers that will deliver goods and services required for making products. Companies must also develop a set of pricing, delivery and payment processes with suppliers and create metrics for monitoring and improving the relationships
3. Make: this is the step where companies manufacture their products or services. This includes scheduling the activities necessary for production, testing, packaging, and preparing for delivery. This is by far the most metric-intensive portion of the supply chain, measuring quality levels, production output and worker productivity
4. Deliver: during this step, companies receive orders from customers, fulfill the orders to deliver the products and invoice their customers

5. Return: this is typically the most problematic step in the supply chain. Companies must create a network for receiving defective and excess products and support customers who have problems with delivered products.

Supply Chain Visibility is the ability to view all areas up and down the supply chain. Making the change to supply chains requires a comprehensive strategy buoyed by information technology.

Organizations must know about customer events triggered downstream, but so must their suppliers and their supplier's suppliers. Without this info, partners throughout their supply chain can experience a **bullwhip effect**- occurs when distorted product demand information passes from one entity to the next throughout the supply chain.

Demand Planning Systems generate demand forecasts using statistical tools and forecasting techniques. Companies can respond faster and more effectively to consumer demands through supply chain enhancements

Supply Chain Planning (SCP) Systems use advanced mathematical algorithms to improve the flow and efficiency of the supply chain while reducing inventory. SCP depends entirely on information for its accuracy.

Supply Chain Executing Systems (SCE) automates the different steps and stages of the supply chain.

7 Principles of Supply Chain Management

1. Segment customers by service needs, regardless of industry and then tailor services to those particular segments
2. Customize the logistics network and focus intensively on the service requirements and on the profitability of the pre-identified customer segments
3. Listen to signals of market demand and plan accordingly. Planning must span the entire chain to detect signals of changing demand
4. Differentiate products closer to the customer, since companies can no longer afford to hold inventory to compensate for poor demand forecasting
5. Strategically manage sources of supply, by working with key suppliers to reduce overall costs of owning materials and services
6. Develop a supply chain information technology strategy that supports different levels of decision making and provides a clear view of the flow of products, services and information
7. Adopt performance evaluation measures that apply to every link in the supply chain and measure true profitability at every stage.