BCA

Semester: V

MIS and E-Business

Introduction to Management Information System

Reference Note

Unit-3: Introduction to Management Information System

Data:

Data is defined as the raw facts and figures. It could be any numbers, pictures, sound, alphabets or any combination of it. Which do not provide clear meaning. Examples, 101, Hari, Bharatpur etc.

1. **Primary Data:** Facts and figures newly collected. Examples, observation data, questionnaire data, surveys data etc.
2. **Secondary data:** Facts and figures already collected. Examples, Financial statements, customer list, sales report, census report etc.

Data Processing:

Data processing is the mechanism of converting unprocessed data into meaningful result or information.

Information:

When data are processed using a database program or software, they are converted to the meaningful result, called information. Information provides answers to "who", "what", "where", and "when" questions. Examples, Hari lives in Bharatpur-11, Chitwan.

Data Processing

Management:

Management covers the planning, control, and administration of the operations of a concern. The top management handles planning; the middle management concentrates on controlling; and the lower management is concerned with actual administration.

System:

System is a set of interacting or interdependent components forming an integrated whole. A system can be described as a set of objects joined together for a common objective.

Information System:

It is the integrated form of people and technology with good management to make decision for problem solving.

Information Technology:

It is the study about computer as well as communication system.

Properties
✓ Accuracy
✓ Timely
✓ Relevance
✓ Value

MIS:

➢ MIS is defined as that information system which is used in organization to make right decision at right time by integrating people with technology. MIS is a computer based system.

➢ A management information system (MIS) is an **information system used for decision-making,** and for the coordination, control, analysis, and visualization of information in an organization. The study of the management information systems involves people, processes and technology in an organizational context.

➢ *Management Information System or 'MIS' is a planned system of collecting, storing, and disseminating data in the form of information needed to carry out the functions of management.*

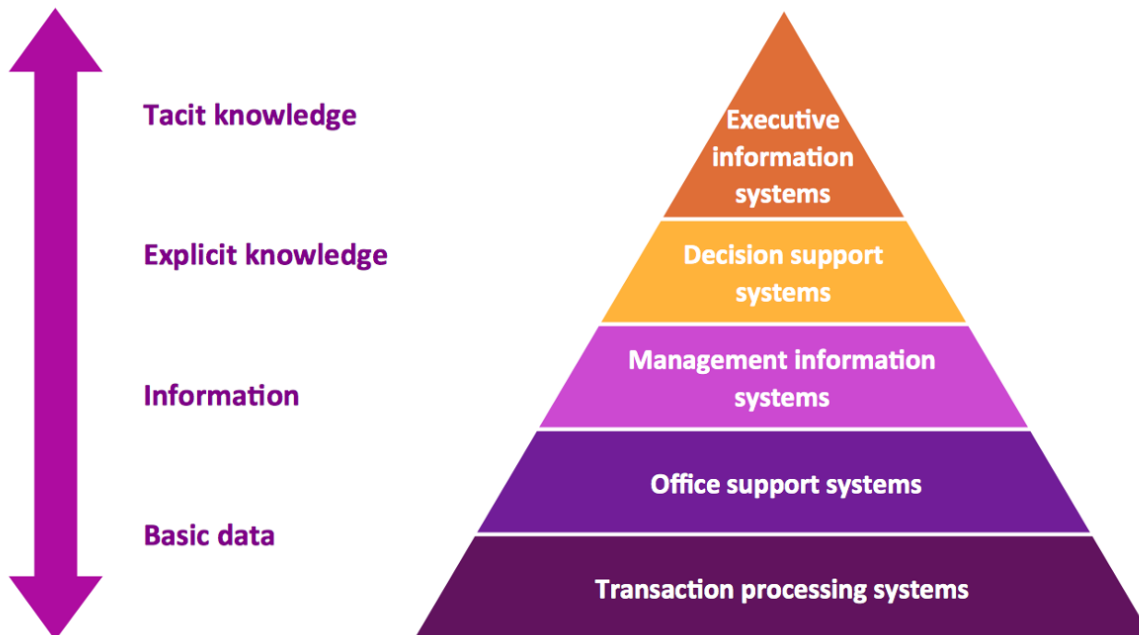| Information System |
| Information Technology | → MIS |
| People |

Computer-based Information system:

The third category of an information system depends mainly on the computer for handling business applications. System analysts develop several different types of information system to meet a variety of business needs. There is a class of systems collectively known as Computer Based Information Systems.

Information System:

An information system is a computer based system which is an integrated set of different components for collection, process, storage and transmission of data. Simply, it us a system which processes supplied/collected data and generates information that can be used for decision making at different levels for the betterment of an organization.

Information system is a system which processes supplied/collected data and generates information that can be used for decision making at different levels.

Tacit knowledge — Executive information systems

Explicit knowledge — Decision support systems

Information — Management information systems

— Office support systems

Basic data — Transaction processing systems

The types of information system are:

1. **Transaction processing systems (TPS):** It processes data resulting from business transactions, updates operational database such as sales and inventory processing and accounting systems.
2. **Office Automation systems(OAS):** The information system that supports general office work for handling and managing documents and facilitating communication is known as office automation systems.
3. **Management information systems (MIS):** It is the integrated modern approach of management, information and computerized system. It provides information to support the operations, management, decision making functions of an organization.
4. **Decision support systems (DSS):** It is the information system at the organization's senior level management that combines data and sophisticated analytical models or data analysis tools to support semi-structures and unstructured decision makings.

5. ***Executive support systems (ESS):*** It is also known as executive information system. It operates on the executive level of management. It provides critical information from many sources customized to the information needs of executives.

In Details:

As we have different types of transportation system such as highway systems, railway systems, and airline systems; computer-based information systems are also of too many types. They are classified as:

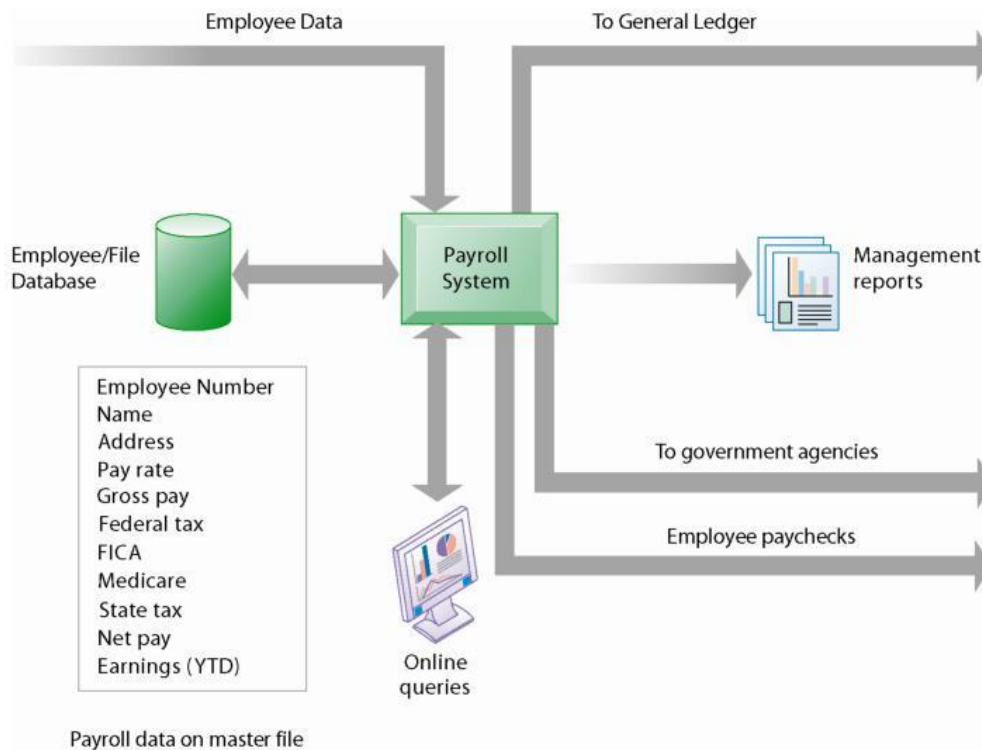**Transaction Processing Systems (TPS)**

A Transaction Process System (TPS) is a type of information system that collects, stores modifies and retrieves the data transaction of an enterprise. A transaction is any event that passes the ACID (Atomicity, Consistency, Isolation, and Durability) test in which data is generated or modified before storing in an information system.

> **Information Processing Tasks:**
> - ✓ Capturing
> - ✓ Conveying
> - ✓ Creating
> - ✓ Communicating

A transaction processing system is a computerized system that performs and records the daily routine transactions necessary to conduct business, such as sales order entry, hotel reservations, payroll, employee record keeping, and shipping.

TPS – PayRoll Example

A TPS for payroll processing captures employee payment transaction data (such as a time card). System outputs include online and hard-copy reports for management and employee paychecks.

Figure 2-2

Characteristic of transaction processing system:

1. A TPS records internal and external transaction for a company. It is repository of data that is frequently accessed by other system.
2. A TPS performs routine, repetitive tasks. It is mostly used by lower level manager to make operational decisions.
3. Transaction can be recorded in batch mode or online. In batch mode, the files are updated automatically at later time; in online, transaction is recorded at it occurs.

There are six steps involve in processing a transaction.

They are data entry, data validation, data processing and revalidation, storage, output generation, and query support.

Office Automation Systems (OAS)

Office automation refers to the varied computer machinery and software used to digitally create, collect, store, manipulate and relay information needed to office for accomplishing basic tasks and goals. Raw data storage, electronic transfer and the management of electronic business information comprise the basic activities of an office automation system. Office automation helps in optimizing or automating existing office procedures. The backbone of office automation is a LAN, which allows users to transmit data, mail and even voice across the network.

Management Information System (MIS)

- A Management Information System (MIS) is a system or process that provides the information necessary to manage an organization effectively.
- MIS and the information it generates are generally considered essential components of prudent and reasonable business decisions.
- Management information system is the study of information and impact on the individual, the organization, and society also, systems that create, process, store, and retrieve information.
- A system is a collection of parts that work together to achieve a common goal. The primary goal of MIS is to support organizational decision making. It is well integrated system that meet tactical information needs of middle managers.
- It a specific category of information systems serving middle management. MIS provide middle managers with reports on the organization's current performance. This information is used to monitor and control the business and predict future performance.
- MIS summarize and report on the company's basic operations using data supplied by transaction processing systems. The basic transaction data from TPS are compressed and usually presented in reports that are produced on a regular schedule.
- These system generate summary report.

MIS serve the management level of the organization that serve the function of planning, controlling and decision making by providing routine summary.

Decision Support Systems (DSS)

Decision Support System (DSS) is computerized information system that helps in the decision-making process of an organization. In other words, DSS are a specific class of computerized information system that supports business and organizational decision-making activities. It helps to analyze the business information and data for making better and suitable decisions.

Decision-Support Systems (DSS) is a set of well integrated, user friendly, computer-based tools that combine internal and external data with various decision making models to solve semi-structured and unstructured problems. Among the functions of a DSS are "What if'" analysis, model building, goal seeking, and graphical analysis.

- A DSS can present a manager with different pricing alternative and help answer "What if" Question such as these: what if the price of raw materials increases by 4.5% a years? What if demand for a product increase by 10%? What if a competitor reduces its price for a similar product by 20%.
- A DSS also allows managers to perform goal-seeking, which specifies the actions a manager should take in order to accomplish a certain goal. For example suppose the goal of the company is to increase sales of product A by 10%. A DSS can help a marketing manager decide on the course of action to take regarding

A DSS has the following characteristics: .

1. It facilitates semi-structure and unstructured decision making by bringing together data, models, and human judgment.
2. It can provide decision support for several interdependent decisions.
3. It supports a wide variety of decision-making processes and Business intelligence
4. It assists the decision maker to make decision under dynamic business condition.
5. It helps the decision maker address ad hoc queries.

6. Business intelligence is type of software applications used for organizing, analyze current and historical data to find patterns and trends and aid decision-making. It support middle and senior management.

Executive support systems (ESS)

It is also known as executive information system. It operates on the executive level of management. It provides critical information from many sources customized to the information needs of executives.

Characteristics of an ESS

DSS and ESS have many functions in common. Including "what-if "analysis, goal seeking, risk analysis, And graphical analysis, in addition to these an EIS has two special functions:

Derived-information function:

A function of an EIS that allows mangers to find the cause certain problem through detailed data analysis. Like a portal, which uses a Web interface to present integrated personalized business content.

	TPS	MIS	DSS	EIS
Targeted Audience	Operational management	Operational /Middle management	Middle management	Top management
Primary purpose	Capture transaction data	Generate summary and exception report	Facilitate decision making	Generate clear, concise, enterprise-wide information
Nature of tasks	Highly structured	Highly structured	Semi or unstructured	Semi or unstructured
Kind of data	internal	Internal	Internal and externals	Internal and external

WHAT IS SUPPLY CHAIN MANAGEMENT?
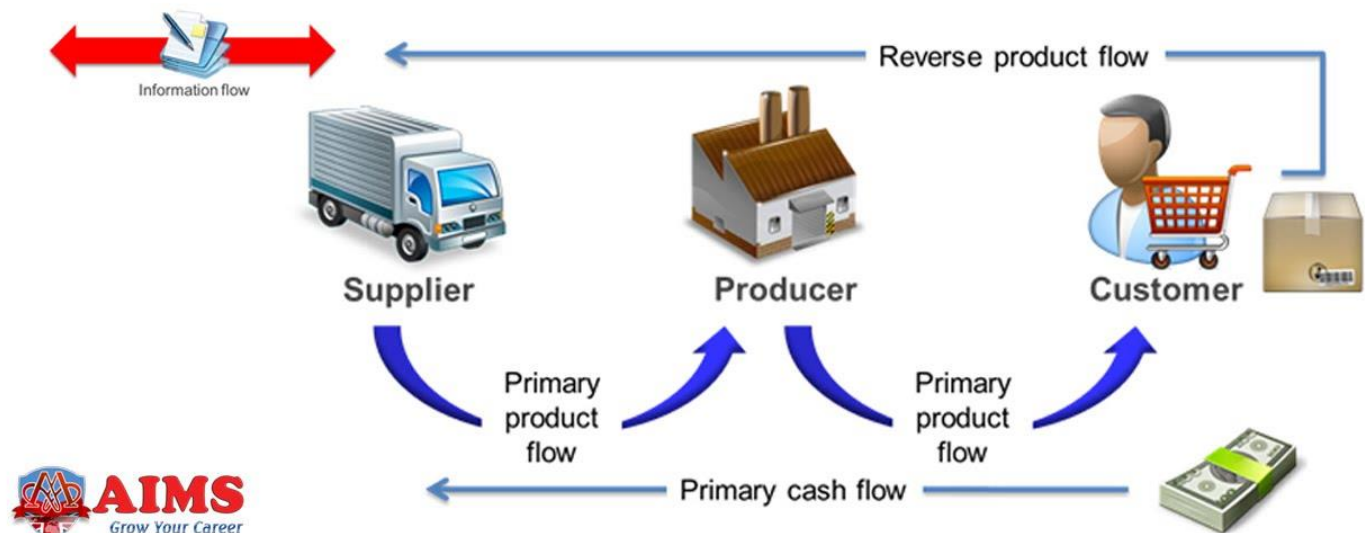
SCM

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

- Supply chain management (SCM) is the centralized management of the flow of goods and services and includes all processes that transform raw materials into final products.
- By managing the supply chain, companies can cut excess costs and deliver products to the consumer faster and more efficiently.
- Good supply chain management keeps companies out of the headlines and away from expensive recalls and lawsuits.
- The five most critical elements of SCM are developing a strategy, sourcing raw materials, production, distribution, and returns.
- A supply chain manager is tasked with controlling and reducing costs and avoiding supply shortages.

Pats of SCM

1. Planning
2. Sourcing
3. Manufacturing
4. Delivering
5. Returning

Supply chain management (SCM) systems:

➢ It help manage relationships with their suppliers. These systems help suppliers, purchasing firms, distributors, and logistics companies share information about orders, production, inventory levels, and delivery of products and services so that they can source, produce, and deliver goods and services efficiently.

➢ The ultimate objective is to get the right amount of their products from their source to their point of consumption in the least amount of time and at the lowest cost.

➢ These systems increase firm profitability by lowering the costs of moving and making products and by enabling managers to make better decisions about how to organize and schedule sourcing, production, and distribution.

➢ A firm's supply chain is a network of organizations and business processes for procuring raw materials, transforming these materials into intermediate and finished products, and distributing the finished products to customers.

➢ It links suppliers, manufacturing plants, distribution centers, retail outlets, and customers to supply goods and services from source through consumption.

➢ Materials, information, and payments flow through the supply chain in both directions Goods start out as raw materials and, as they move through the supply chain, are transformed into intermediate products (also referred to as components or parts), and finally, into finished products.

➢ The finished products are shipped to distribution centers and from there to trailers and customers. Returned items flow in the reverse direction from they back to the seller.

➢ Inefficiencies in the supply chain, such as parts shortages, underutilized plant capacity, excessive finished goods inventory, or high transportation costs, are caused by inaccurate or untimely information.

➢ For example, manufacturers may keep too many parts in inventory because they do not know exactly when they will receive their next shipments from their suppliers. Suppliers may order too few raw materials because they do not have precise information on demand. These supply chain inefficiencies waste as much as 25 percent of a company's operating costs.

➢ If a manufacturer had perfect information about exactly how many units of product customers wanted, when they wanted them, and when they could be produced, it would be possible to implement a highly efficient just-in-time Strategy. Components would arrive exactly at the moment they were needed and finished goods would be shipped as they left the assembly line.

Major task of SCM:

▶ Decide when and what to produce, store, and move
▶ Rapidly communicate orders
▶ Track the status of orders
▶ Check inventory availability and monitor inventory levels
▶ Reduce inventory, transportation, and warehousing costs
▶ Track Shipments
▶ Plan production based on actual customer demand
▶ Rapidly communicate changes in product design

Enterprise resource planning (ERP)

Enterprise Systems:

Enterprise systems features a set of integrated software modules and a central database that enables data to be shared by many different business processes and functional areas throughout the enterprise.

Enterprise resource planning:

(ERP) is a business system that integrates multiple applications relating to accounting, human resources, inventory, orders, shipping, and services. ERP systems have been widely used since the early 1990s and fall under the -umbrella of enterprise applications, as larger businesses often use them.

➢ Today, many ERP systems (ERP suites) run in the cloud as a SaaS (Software as a Service). A cloud ERP makes it easier and more secure for businesses to manage their information. These systems can be maintained by a company who specializes in upkeep on servers and databases, keeping them secure, and can make it easier to scale as your business grows.

➢ For companies that cannot have or do not want their data in the cloud, on premise ERP can run on a company's data center.

➢ Alternatively, a company can have a hybrid ERP that runs some of their system in the cloud and other systems on premise.

➢ For example, when a customer places an order, the order data flow automatically to other parts of the company that are affected by them.

➢ The order transaction triggers the warehouse to pick the ordered products and schedule shipment.

➢ The warehouse informs the factory to restock whatever has been short. The accounting department is notified to send the customer an invoice.

➢ Customer service representatives track the progress of the order through every step to inform customers about the status of their orders.

➢ Managers are able to use firm-wide information to make more precise and timely decisions about daily operations and longer-term planning.

What are the benefits of ERP Software Systems?

➢ Enterprise systems provide much valuable information for improving management decision making.

➢ Corporate headquarters has access to up-to-the- minute data on sales, inventory, and production and uses this information to create more accurate sales and production forecasts.

➢ Enterprise software includes analytical tools for using data captured by the system to evaluate overall organizational performance.

➢ Enterprise system data have common standardized definitions and formats that are accepted by the entire organization.

➢ Performance figures mean the same thing across the company. Enterprise system allow senior management to easily find out at any moment how a particular organizational unit is performing, determine which products are most least profitable, and calculate costs for the company as a whole.

➢ By integrating various facets of the business, it optimizes the efficiency at which you manage your business and immensely contributes to profitability. The following are some of the benefits of ERP software.

➢ We only need one system to manage all our business functions. This will save a lot of money which you would potentially invest in buying multiple software systems, tools, applications etc,

➢ Since it is designed to have a single database, it allows all the users operating at different functions to work faster. Thereby, the efficiency of each function increase.

➢ By automating the various process, it saves a lot of time and efforts involved in managing the business process and computing it.

➢ All the reports and statements are system generated.

➢ Gives a complete view of the business and insights for confident business decisions.

Customer relationship management (CRM)

➢ Customer relationship management (CRM) systems: it help to manage their relationships with their customers. CRM systems provide information to coordinate all of the business processes that deal with customers in sales, marketing, and service to optimize revenue, customer satisfaction, and customer retention.

➢ This information helps firms identify, attract, and retain the most profitable customers; provide better service to existing customers; and increase sales systems:

CRM systems examine customers from a multifaceted perspective. These systems use a set of integrated applications to address all aspects of the customer relationship, including customer services, sales, and marketing.

Benefits:

➢ Companies with effective customer relationship management systems realize many benefits, including increased customer satisfaction, reduced direct marketing costs, more effective marketing, and lower costs for customer acquisition and retention.

➢ Information from CRM systems increases sales revenue by identifying the most profitable customers and segments for focused marketing and cross-selling. Customer churn is reduced as sales, service, and marketing better respond to customer needs.

➢ The churn rate measures the number of customers who stop using or purchasing products or services from a company.

➢ It is an important indicator of the growth or decline of a firm's customer base.

Knowledge management systems (KMS):

It enables organizations to better manage processes for capturing and applying knowledge and expertise. These systems collect all relevant knowledge and experience in the firm, and make it available wherever and whenever it is needed to improve business processes and management decisions. They also link the firm to external sources of knowledge.

Challenges of Enterprise Systems Implementations:

Challenges in implementing ERP solutions are quite normal. Though it is not completely a technical job, a lot of planning and proper communication is very much essential to implement ERP across the organization.

- ➢ It is very important, that implementation is done in stages. Trying to implement everything at once will lead to a lot of confusion and chaos.
- ➢ Appropriate training is very essential during and after the implementation. The staff should be comfortable in using the application or else, it will backfire, with redundant work and functional inefficiencies.
- ➢ Lack of proper analysis of requirements will lead to non-availability of certain essential functionalities. This might affect the operations in the long run and reduce the productivity and profitability.
- ➢ Lack of Support from Senior Management will lead to unnecessary frustrations work place. Also, it will cause delay in operations and ineffective decisions. So, it is essential to ensure that the Senior Management supports the transformation.
- ➢ Compatibility Issues with ERP Modules lead to issues in integration of modules. Companies associate different vendors to implement different ERP modules, based on their competency. It is very essential that there is a way to handle compatibility issues.
- ➢ Cost Overheads will result, if requirements are not properly discussed and decided during the planning phase. So, before execution, a detailed plan with a complete breakdown of requirements should be worked out.
- ➢ Investment in Infrastructure is very essential. ERP applications modules will require good processing speed and adequate storage. Not allocating suitable budget for infrastructure will result in reduced application speed and other software issues. Hardware and Software Security is also equally important.

International information systems

- ➢ International information systems: This model is characterized by a computer network that operates in more than one nation-state and in which data cross international borders in the process of completing a transaction. This model is now increasingly based on the Internet as its medium of data transfer.

➢ **Outsourcing** refers to an organization contracting work out to a 3rd party while offshoring refers to getting work done in a different country, usually to leverage cost advantages.

➢ It's possible to outsource work but not offshore it; for example, hiring an outside law firm to review contracts instead of maintaining an in-house staff of lawyers. It is also possible to offshore work but not outsource it; for example, a Dell customer service center in India to serve American clients.

➢ **Offshore outsourcing** is the practice of hiring a vendor to do the work offshore, su y to lower costs and take advantage of the vendor's expertise, economics of scale and large and scalable labor pool.

S.N.	Offshoring	Outsourcing
1	Offshoring means getting work done in different country.	Outsourcing refers to contracting work out to an external organization.
2	Offshoring is often criticized for transferring jobs to other countries. Other risks include geopolitical risk, language differences and poor communication etc.	Risks of outsourcing include misaligned interests of clients and vendors: increased reliance on third parties, lack of in-house knowledge of critical (though not necessarily core) business
3	Benefits of offshoring are usually lower costs, better availability of skilled people, and getting work done faster through a global talent pool.	Usually companies outsource to take advantage of specialized skills, cost efficiencies and labor flexibility.

Assignment

1. Explain data, information and information system with example.
2. Why information is important? Explain the characteristics information with example.
3. Explain Management information system and its usage in the organization.
4. Explain Transaction processing System with its major characteristics.
5. How does DSS add value for organization explain with proper example?
6. Comparatively differences among TPS, MIS, DSS, ESS.
7. How do enterprise systems help businesses achieve operational excellence?
8. How do supply chain management systems coordinate planning, production, and logistics with suppliers?
9. How do customer relationship management systems help firms achieve customer intimacy?
10. What types of companies are most likely to adopt cloud-based ERP and CRM software services? Why?
11. What companies might not be well-suited for this type of software?
12. What are the challenges posed by enterprise applications?
13. List and describe the challenges posed by enterprise applications.
14. Explain how these challenges can be addressed?
15. Which enterprise application should a business install first: ERP, SCM, or CRM? Explain your answer.