LESSON THREE: MANAGEMENT INFORMATION SYSTEMS IN ENTERPRISES

Management Information Systems (MIS) is the term given to the discipline focused on the integration of computer systems with the aims and objectives on an organisation. The development and management of information technology tools assists executives and the general workforce in performing any tasks related to the processing of information. MIS and business systems are especially useful in the collection of business data and the production of reports to be used as tools for decision making.

ADVANTAGES OF MIS

i. It facilitates planning: Acting as a communication and planning tool, MIS improves the quality of plans by providing relevant information for sound decision - making. Due to increase in the size and complexity of organizations, managers have lost personal contact with the scene of operations.

ii. It minimizes information overload: MIS change the larger amount of data into summarized form and there by avoids the confusion which may arise when managers are flooded with detailed facts.

iii. MIS Encourages Decentralization: Decentralization of authority is possibly when there is a system for monitoring operations at lower levels. MIS is successfully used for measuring performance and making necessary change in the organizational plans and procedures.

iv. It brings Coordination: MIS facilities integration of specialized activities by keeping each department aware of the problem and requirements of other departments. It connects all decision centers in the organization

v. It makes control easier: MIS serves as a link between managerial planning and control. It improves the ability of management to evaluate and improve performance. The used computers have increased the data processing and storage capabilities and reduced the cost

vi. Companies are able to identify their strengths and weaknesses; due to the presence of revenue reports, employees' performance record etc. Identifying these aspects can help a company improve its business processes and operations.

vii. Giving an overall picture of the company.

viii. The availability of customer data and feedback can help the company to align its business processes according to the needs of its customers. The effective management

of customer data can help the company to perform direct marketing and promotion activities.

ix. MIS can help a company gain a competitive advantage. Competitive advantage is a firm's ability to do something better, faster, cheaper, or uniquely, when compared with rival firms in the market.

Importance/ Role of Information Systems in an Organization

Organizations strive to be market leaders in their given industry. In climates where factors such as recession, inflationary pressures and increased competition can hinder the achievement of this goal, companies look for strategies that lead to *competitive advantages.*

One such strategy is the adoption of information systems within the company. Information systems help a company make adequate use of its data, reduce workload and assist with compliance with various mandatory regulations.

Information systems can help you make effective decisions. To gain the maximum benefits from your company's information system, you have to exploit all its capacities. Information systems gain their importance by processing the data from company inputs to generate information that is useful for managing your operations. To increase the information system's effectiveness, you can either add more data to make the information more accurate or use the information in new ways. Information systems will also provide business analysis and assist with business processes.

1. Information Storage and Analysis/Record keeping.

Through the adoption of information systems, companies can make use of sophisticated and comprehensive databases that can contain all imaginable pieces of data about the company. Information systems store, update and even analyze the information, which the company can then use to pinpoint solutions to current or future problems. Furthermore, these systems can integrate data from various sources, inside and outside the company, keeping the company up to date with internal performance and external opportunities and threats.

Your company needs records of its activities for financial and regulatory purposes as well as for finding the causes of problems and taking corrective action. The information system stores documents and revision histories, communication records and operational data. The

trick to exploiting this recording capability is organizing the data and using the system to process and present it as useful historical information. You can use such information to prepare cost estimates and forecasts and to analyze how your actions affected the key company indicators.

2. Assist with Making Decisions

The long-term success of a company depends upon the adequacy of its strategic plans. An organization’s management team uses information systems to formulate strategic plans and make decisions for the organization's longevity and prosperity. The business uses information systems to evaluate information from all sources, including information from external references such as Reuters or Bloomberg, which provide information on the general economy. This analysis of and comparison to market trends helps organizations analyze the adequacy and quality of their strategic decisions.

The company information system can help you make better decisions by delivering all the information you need and by modeling the results of your decisions. A decision involves choosing a course of action from several alternatives and carrying out the corresponding tasks. When you have accurate, up-to-date information, you can make the choice with confidence. If more than one choice looks appealing, you can use the information system to run different scenarios. For each possibility, the system can calculate key indicators such as sales, costs and profits to help you determine which alternative gives the most beneficial result

3. Assist with Business Processes/operations

Information systems aid businesses in developing a larger number of value added-systems in the company. For example, a company can integrate information systems with the manufacturing cycle to ensure that the output it produces complies with the requirements of the various quality management standards. Adoption of information systems simplifies business processes and removes unnecessary activities. Information systems add controls to employee processes, ensuring that only users with the applicable rights can perform certain tasks. Further, information systems eliminate repetitive tasks and increase accuracy, allowing employees to concentrate on more high-level functions. Information systems can also lead to

better project planning and implementation through effective monitoring and comparison against established criteria.

How you manage your company's operations depends on the information you have. Information systems can offer more complete and more recent information, allowing you to operate your company more efficiently. You can use information systems to gain a cost advantage over competitors or to differentiate yourself by offering better customer service. Sales data give you insights about what customers are buying and let you stock or produce items that are selling well. With guidance from the information system, you can streamline your operations.

4. **Communication**

Part of management is gathering and distributing information, and information systems can make this process more efficient by allowing managers to communicate rapidly. Email is quick and effective, but managers can use information systems even more efficiently by storing documents in folders that they share with the employees who need the information. This type of communication lets employees collaborate in a systematic way. Each employee can communicate additional information by making changes that the system tracks. The manager collects the inputs and sends the newly revised document to his target audience.

Information System Classification: -

In any given organization information system can be classified based on the usage of the information.

Therefore, an information system in an organization can be divided into operations support system and management support system:

a) Support of Business Operation /operation support system: (Transaction Processing System, Process Control System, Enterprise Collaboration System)
b) Support of Managerial Decision-Making/Management support system: (Management Information Systems, Decision Support System, Executive Information System)
c) Cross Functional Information System

A. Information system for business operation/operation support system:

In an organization, data input is done by the end user which is processed to generate information products i.e. reports, which are utilized by internal and or external users. Such a system is called operation support system. The purpose of the operation support system is to facilitate business transaction, control production, support internal as well as external communication and update organization central database. OIS/OSS produce a variety of information product that can best be used by the managers. Further processing by management information system is usually required.

a) **Transaction processing system**: In manufacturing organization, there are several types of transaction across department. Typical organizational departments are Sales, Account, Finance, Plant, Engineering, Human Resource and Marketing. Across which following transaction may occur sales order, sales return, cash receipts, credit sales; credit slips, material accounting, inventory management, depreciation accounting, etc. These transactions can be categorized into batch transaction processing, single transaction processing and real time transaction processing. TPS records and process data resulting from business transaction, such as sales, purchase and inventory.

b) **Process control system**: In a manufacturing organization, certain decisions are made by a computer system without any manual intervention. In this type of system, critical information is fed to the system on a real-time basis thereby enabling process control. This kind of systems is referred as process control systems. In it decision related to physical production process are automatically generated by computers.

c) **Enterprise collaboration system**: In recent times, there is more stress on team effort or collaboration across different functional teams. A system which enables collaborative effort by improving communication and sharing of data is referred to as an enterprise collaboration system. ECS is a group of hardware, software, data and network resources to support communication, coordination and collaboration among the members of business terms and work group.

B. Information system for managerial decision-making (MSS)/Management Support System:

Managers require precise information in a specific format to undertake an organizational decision. A system which facilitates an efficient decision making process for managers is called management support system. Management support systems are essentially categorized as management information system, decision support system, expert system and accounting information system.

a) **Management information system**: Decision Making information system usually designed to generate timely, accurate and relevant information needed for effective decision-making by managers, are called MIS. The information technology is required to support the management tasks in general and decision-making in particular Management information system provides information to manager facilitating the routine decision-making process. In a management information system, modern, computerized systems continuously gather relevant data, both from inside and outside an organization. This data is then processed, integrated, and stored in a centralized database (or data warehouse) where it is constantly updated and made available to all who have the authority to access it, in a form that suits their purpose.
b) **Decision support system**: It is an interactive, computer based information system that uses decision models and specialized database to assist the decision-making processes of managerial end user. Decision support system provides information to a manager facilitating specific issue related solution.
c) **Executive information system**: used to get the information needed in generals, memos, periodical and report produced manually and also by computer generated and also through telephone call meeting etc. An organized approach to the study of the information needs of an organization's management at every level in making operational, tactical, and strategic decisions. Its objective is to design and implement procedures, processes, and routines that provide suitably detailed reports in an accurate, consistent, and timely manner.

C. Cross Functional Information System:-

CFIS is the establishment of the mechanisms and links that facilitate the needed coordination of the activities of different functions to ensure that these functions work together efficiently to achieve overall objective of the organization. Such integration is also needed across

different organization to create well managed, integrated supply chain of co-operative organizations with high responsiveness and low transaction cost.

Types of Business Information Systems

No single system can provide all the information an organization needs. Even small firms have a collection of different systems: e-mail systems, sales tracking systems, etc.

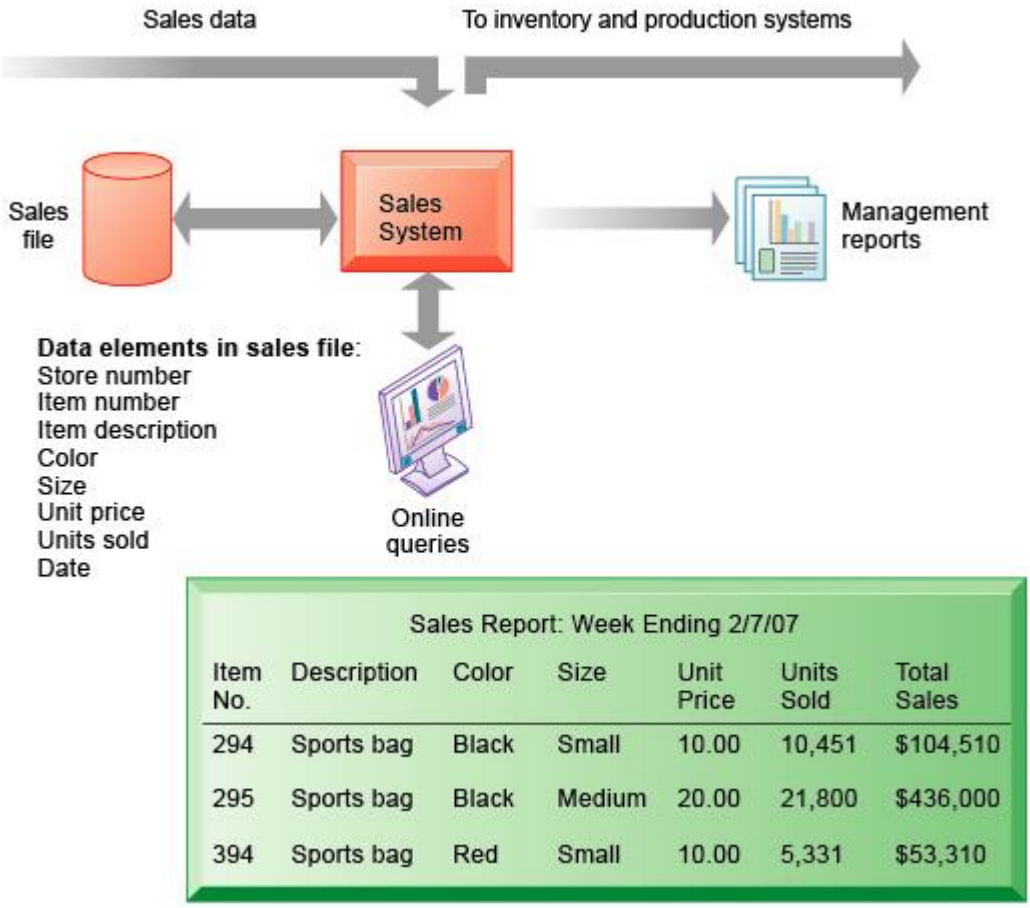
Different systems can be described through:

- **A functional perspective**: Identifying systems by their major business function
- **A constituency perspective**: Identifying systems in terms of the major organizational groups that they serve

There are four main types of information systems that serve ***different functional*** systems:

1. **Sales and marketing information systems** help the firm with marketing business processes (identifying customers for the firm's products or services, developing products and services to meet their needs, promoting products and services) and sales processes (selling the products and services, taking orders, contacting customers, and providing customer support).

Example of a sales information system



Sales Report: Week Ending 2/7/07

Item No.	Description	Color	Size	Unit Price	Units Sold	Total Sales
294	Sports bag	Black	Small	10.00	10,451	$104,510
295	Sports bag	Black	Medium	20.00	21,800	$436,000
394	Sports bag	Red	Small	10.00	5,331	$53,310

This system captures sales data at the moment the sale takes place to help the business monitor sales transactions and to provide information to help management analyze sales trends and the effectiveness of marketing campaigns.

2. **Manufacturing and production information systems**

It deals with the planning, development, and production of products and services, and controlling the flow of production.

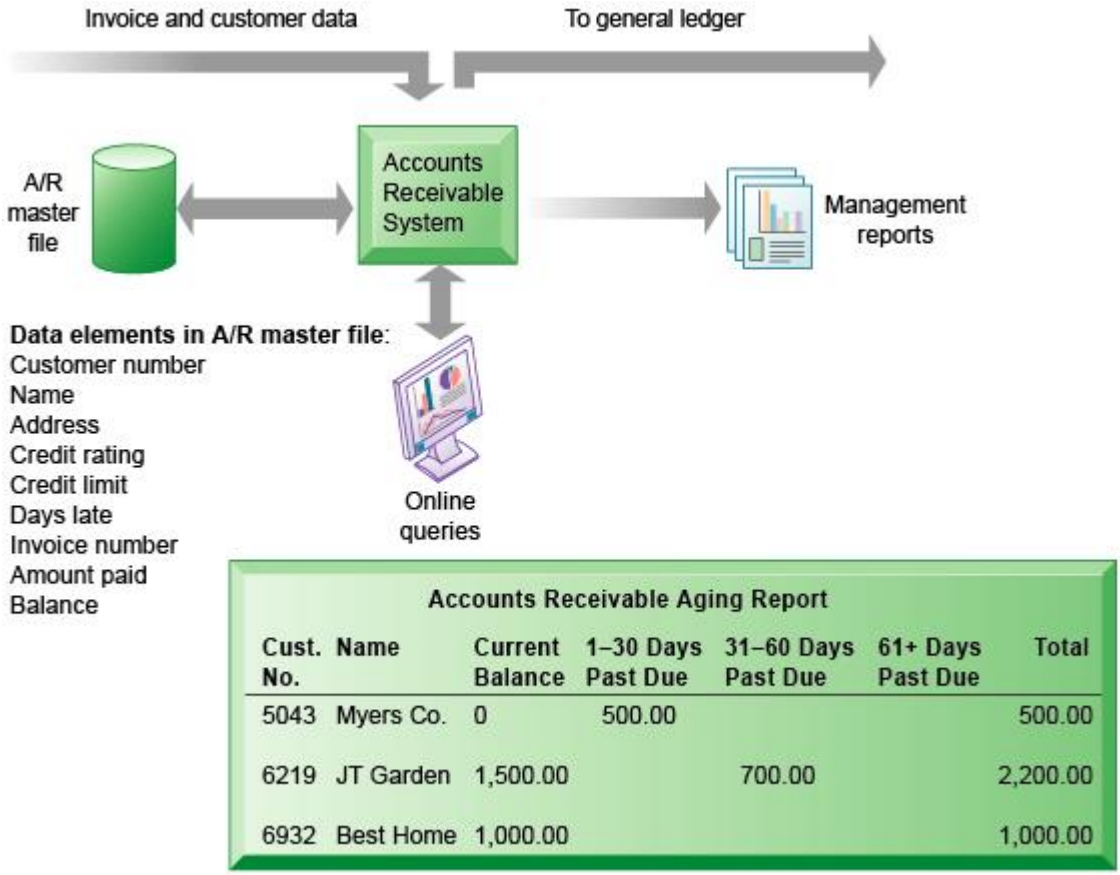
An example is an inventory system

This system provides information about the number of items available in inventory to support manufacturing and production activities.

3. **Finance and accounting information systems**

This system keeps track of the firm's financial assets and fund flows.

Example of an accounts receivable system



An accounts receivable system tracks and stores important customer data, such as payment history, credit rating, and billing history.

4. **Human resources information systems**

   This system maintains employee records, track employee skills, job performance and training, and support planning for employee compensation and career development.

Example of an employee record keeping system

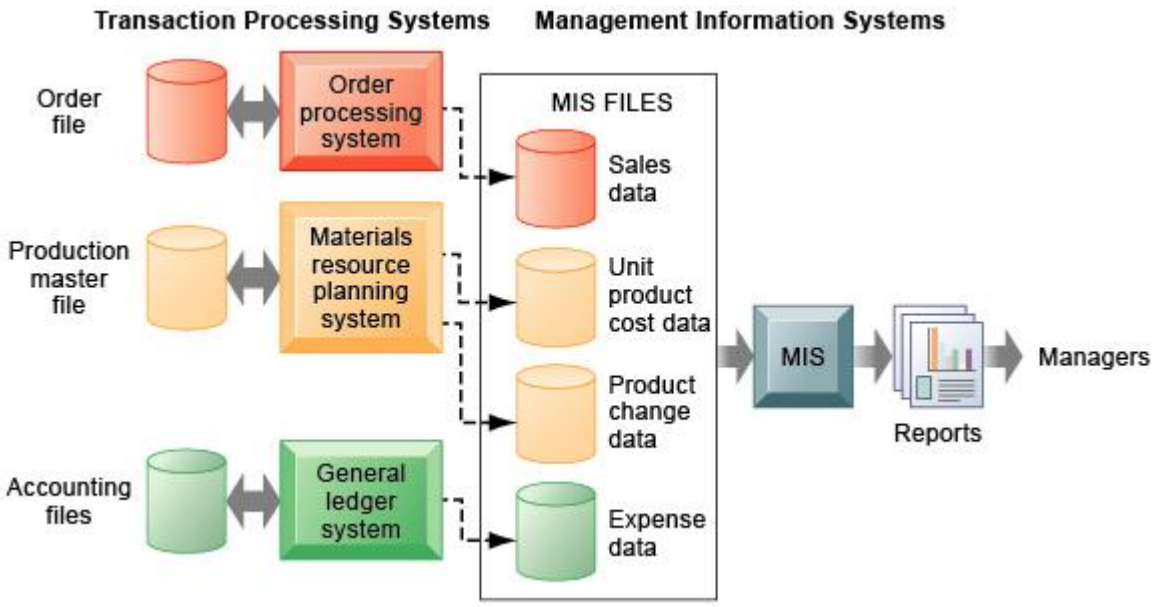
This system maintains data on the firm's employees to support the human resources function.

There are four main categories of systems from a constituency perspective.

1. **Transaction processing systems (TPS)** are basic business systems that serve the operational level of the organization by recording the daily routine transactions required to conduct business, such as payroll and sales receipts.

2. **Management information systems (MIS)** serve middle managers' interests by providing current and historical performance information to aid in planning, controlling, and decision making at the management level. MIS typically compress TPS data to present regular reports on the company's basic operations.

Sample relation of the two systems above



NOTE: The above figure shows how management information systems obtain their data from the organization's TPS.

In the system illustrated by this diagram, three TPS supply summarized transaction data to the MIS reporting system at the end of the time period. Managers gain access to the organizational data through the MIS, which provides them with the appropriate reports.

Sample M.I.S report (below)

This report showing summarized annual sales data was produced by the MIS above.

Consolidated Consumer Products Corporation Sales by Product and Sales Region: 2007

PRODUCT CODE	PRODUCT DESCRIPTION	SALES REGION	ACTUAL SALES	PLANNED	ACTUAL versus PLANNED
4469	Carpet Cleaner	Northeast	4,066,700	4,800,000	0.85
		South	3,778,112	3,750,000	1.01
		Midwest	4,867,001	4,600,000	1.06
		West	4,003,440	4,400,000	0.91
	TOTAL		16,715,253	17,550,000	0.95
5674	Room Freshener	Northeast	3,676,700	3,900,000	0.94
		South	5,608,112	4,700,000	1.19
		Midwest	4,711,001	4,200,000	1.12
		West	4,563,440	4,900,000	0.93
	TOTAL		18,559,253	17,700,000	1.05

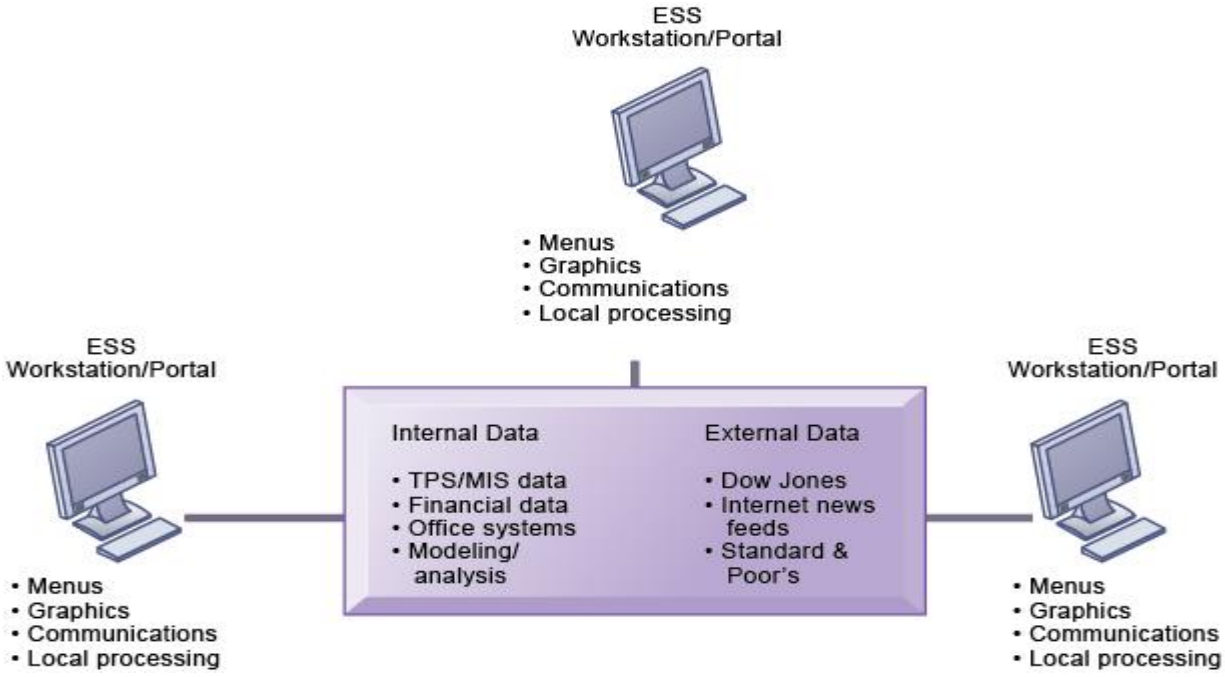
3. **Decision support systems (DSS)**, or business intelligence systems, help managers with non-routine decisions that are unique, rapidly changing, and not easily specified in advance. DSS are more analytical than MIS, using a variety of models to analyze internal and external data or condense large amounts of data for analysis.

   Example-A Voyage-estimating decision-support system

   This DSS operates on a powerful PC. It is used daily by managers who must develop bids on shipping contracts.

4. **Executive support systems (ESS)** provide a generalized computing and communications environment that help senior managers address strategic issues and identify long-term trends in the firm and its environment. ESS address non-routine decisions requiring judgment, evaluation, and insight because there is no agreed-on procedure for arriving at a solution. ESS present graphs and data from many internal and external sources through an interface that is easy for senior managers to use. Often the information is delivered to senior executives through a portal, which uses a Web interface to present integrated personalized business content.

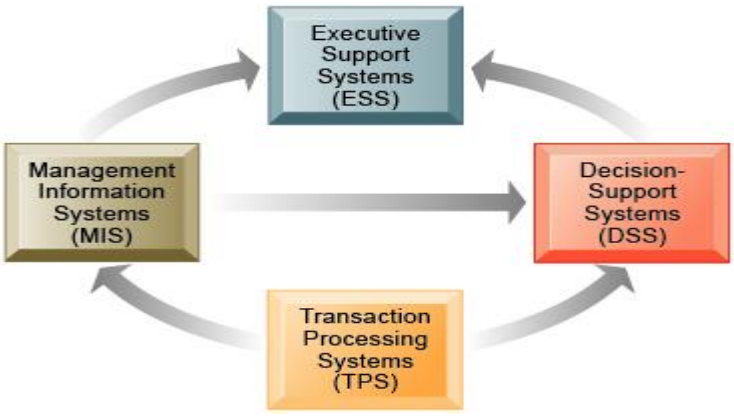
Sample Model of an executive support system



This system pools data from diverse internal and external sources and makes them available to executives in an easy-to-use form.

NOTE: Ideally, these **constituency-based systems** are **interrelated**. TPS are typically a major source of data for other systems, whereas ESS are primarily a recipient of data from lower-level systems and external sources.

See the interrelationships among systems below.



The various types of systems in the organization have interdependencies. TPS are major producers of information that is required by many other systems in the firm, which, in turn, produce information for other systems. These different types of systems are loosely coupled

in most business firms, but increasingly firms are using new technologies to integrate information that resides in many different systems.

TASK:

- Describe the qualities and requirements of Information System Manager