Types of Information Systems

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Information requirement of organizations differ from each other, as each organization is an independent entity in its own. Also, the information requirement of each level of management and functional units of the organizations differs. So, different types of information systems are required to satisfy and target information requirements of organization, different level of management and different functional units of organizations. On the basis of features and functioning, information systems can be categorized.

Let’s consider hierarchy of management to see types of information system used in each level of management. There are three levels of management in the organization in general (that may differ from organization to organization):

Ø Operational (Low level management): Operational level or low level of management is concerned with daily routine tasks and activities. Taking orders, paying bills, selling products, clearing cheques etc are the daily activities performed in different organizations. Organizations need information system to streamline these daily routine works. The information system used in this level of management is termed as Transaction Processing Systems (TPS). TPS is used to collect data that are produced on daily basis from the routine works. TPS has user interface that is form with fields to input data to the system. TPS enables to store and arrange data in the format which can be processed by other information system easily. More than 90% of data for the information systems are collected by TPS. The user interface of TPS must be user friendly and easy to use.

Ø Middle level of management: Middle level management is concerned with short term decision problems. Managers of the middle level have to face with different types of situation and have to make several short term decisions; increasing sales, allocating salesperson, deciding how many products to keep in store etc are the activities performed in the middle level management. Management Information System (MIS) and Decision Support System (DSS) are the two information systems used in the middle level management. MIS takes data from TPS and produces fixed reports like how many products sold last week, how much deposits were made in last month etc. The information provided by MIS can be used to make short term decisions. For example, the information about last week’s sales enables to know which the products are selling in good number and which products not selling in good number. This information can be used to optimize store and also develop schemes to increase sales of products which are not selling in good number.

DSS also take data from TPS, but it also takes data from MIS. DSS is more powerful than MIS as DSS has analytical power. That is managers can change values of variables involved in the problem and see the result of change. For example, suppose six salespersons are allocated in the front desk, they can serve 78 customers in one hour. From the MIS report of the last week it is seen that there are 89 customers coming to store per hour. That means customers are not getting efficient service, they have to wait for service. So, how many salespersons are required to serve more 89 customers per hour. This type of decision can be made easily with the help of DSS.
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DSS. Using DSS, number of salespersons required to service 'n' number of customers can be computed easily.

Ø **Top Level Management:** Top level management is concerned with the long term decision problems. They make long term decision like increasing capacity of the organization, launching new product etc. **Executive Support System (ESS)** is an information system used in the top level management. ESS takes data from MIS and DSS. Using that data it enables top executive managers to make long term decisions keeping track of changes in the environment. For example, suppose MIS report showed that existing human resource is not able to serve customers properly, there is requirement of new employees with better knowledge and skill level to handle existing flow of customers. This problem can be solved by top level managers with the help of ESS. ESS will enable managers to calculate how much fund have to allocated for new required human resources, what type of human resources are required, how many new employees are required.

Organizations have different functional units; features and functioning of information system can also be differentiated by functional units of the organization. The main functional units of the organization are:

Ø **Sales and Marketing:** The main concern of this functional unit is to increase sales of product/services, increase customer base and make profit. For this purpose, organizations make different marketing strategies, study customers demand. Information system used in this functional unit enables organization to promote products/services of organization, increase customer base by spreading information about products/services to wider range of customers of different geographical reasons. For example, Information System at this unit will enable to study likelihood and preferences of customers and make marketing strategy accordingly.

Ø **Manufacturing and Production:** The main concern of this functional unit is to streamline the production and manufacturing of products/services by allocated raw materials, machines, factory floor, distributors etc. Information system will enable to calculate how much raw materials are required to produce certain number of products studying the market demand.

Ø **Account and Finance:** This unit is concerned with the funds of the organization; how much money organization has to pay, how much money it has to take from others, how much assets it has, how much fund it can invest on its own, from where to borrow funds etc. information system for account and finance can help organization to know all the financial status of the organization immediately. It also to know how much money organization to take back and how much money it has to pay. There will be many features in that kind of system which will enable organizations to use funds wisely, help in borrowing decision etc.

Ø **Human resource:** This unit stores detailed data about each employees of the organization, and enables to evaluate the performance of employees, reward or degrade employees, provide training etc. Information system for human resource stores detailed information about employees, their knowledge and skill level, experience, performances; that information system will enable to evaluate performances of employees and help to decide to whom award and to
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whom not to award. It also helps to decide, who are the employees that can be assigned if someone is absent; who are the employees needing trainings and what kind of training? That is human resource system enables organization to keep track of employees, their performance and their requirements.

**Relationship between different types of information system used in different level of management hierarchy**

TPS is used in lower (operational) level of management. The purpose of TPS is to streamline and ease routine, daily activities basically concerned with data collection. So, it is said that around 90% or more of the data are collected by TPS. The working of TPS is very important as it enables to perform routine and daily activities and data collection process and if TPS stops working even for few hours, whole organization may be affected; the regular jobs are stopped. So, the working of TPS all the time is very important.

MIS and DSS are used in the middle level of management to produce summarized reports for making short term decisions. These systems take data collected by the TPS in the lower level of management and process those data to produce summarized reports. DSS is powerful compared to MIS. MIS handles problems for which structure is defined; **here structured problems** mean that kind of problem for which method of deriving solutions are predefined; the knowledge about the variables involved in the problem situation are known initially. Basically MIS handles structured decision making situations.

DSS can handle structured and semi-structured or unstructured problems as it has analytical power, it allows to make changes in the variables involved in the problem situation. Here **unstructured problems** mean those problems for which precise way of getting answer is not defined; knowledge about the variables involved in the problem situation is also not clear. Semi structured problems lie between structured and unstructured problems; in case of semi-structured problems only some knowledge not all about problem situation is available.

ESS takes outputs of given by MIS and DSS. It is used for making long term decisions. ESS may not have analytical power as DSS used to have. ESS enables managers to use and study the reports produced by MIS and DSS, so that it can make decision on the basis of those summary reports.
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Relationship between different Information systems

Question and Answer

Why are there different types of information system?
Answer: Information system are developed for different purposes, one information system developed for account purpose may not work for human resource management. Also requirements of managers of organization differ, so they need different types of information system.

What are the different types of information system?
Answer: Transaction Processing system (TPS) used in operational level

Management Information System (MIS) and Decision Support System (DSS) are used in strategic (middle) level.

Executive Support System (ESS) used in executive or top level of management.

What is the difference between MIS and DSS?
Answer: MIS produces fixed reports only; it has no provision of making changes in the decision problem situation. But DSS has analytical power; it allows managers to see the effect of changes made in the variables involved in the problem situation. DSS is more powerful compared to MIS. DSS takes data from MIS also.