

: *What is a Management Information System?*

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Broadly defined, a Management Information System (MIS) refers to any computer-based system or application that provides one or more managers with data, information and reports to help manage an entire business or more often a department in a company or organization. In general, Management Information Systems support the management activities and functions of an organization. Management Information Systems are built using various information technologies to assist and support managerial decision-making and control. More generally, MIS are computer-based systems that provide managers with tools and information to choose, control, evaluate and manage projects, tasks and resources within an organization. A major purpose of an MIS is to improve the efficiency and effectiveness of a managers' decision-making and action-taking. Management Information Systems especially help managers make decisions to support ongoing operations of an organization.

Let's examine the component concepts of MIS. Management refers to the intended user(s) of an MIS. Information is the output or product of an MIS, The information is hopefully relevant, timely, decision assisting facts provided in the relevant decision making context. Finally, system means that data, processes, people, hardware and software are well organized and provide integrated functionality to users.

MIS are built using computers. They are limited by the data and the software in terms of usefulness and functionality. Edward Esber (1987), an early technology leader, noted "A computer will not make a good manager out of a bad manager. It makes a good manager better faster and a bad manager worse faster." MIS is not the solution to all management problems.

Initial Management Information Systems were developed to support managers in large companies. These systems focused on providing managers with structured, periodic printed reports. Much of the data used to create the reports came from accounting and order processing transaction systems. In 1974, Gordon Davis, a Professor at the University of Minnesota, published his influential text **Management Information Systems: Conceptual Foundations, Structure, and Development**. He asserted the MIS concept was "a substantial extension of the concepts of managerial accounting taking into consideration the ideas and techniques of management science and the behavioral theories of management and decision making (p. 8)."

Davis defined a Management Information System as "an integrated, man/machine system for providing information to support the operations, management, and decision-making functions in an organization. The systems utilize computer hardware and software, manual procedures,

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management and decision models, and a database (p. 5)."

The information provided by a Management Information System is based upon factual data primarily generated from operations activities, e.g., a sales or purchase transaction, a new employee hire, or production data. An MIS provides data summarization, historical comparisons, and context about data sources. Inputs to an MIS come from other systems and directly from managers using the MIS. Both routine, regular "reports" and non-routine, special requests are processed by an MIS. Middle and front-line managers are the primary or targeted users of MIS.

Data can be described as unprocessed facts and figures. Data is the raw material that is organized, structured, and interpreted to create useful information systems. Information is interpreted data; created from organized, structured, and processed data in a particular context. According to Davis and Olson (1985), "Information is data that has been processed into a form that is meaningful to a recipient and is of real or perceived value in the current or the prospective action or decision of a recipient."

From a different perspective, the phrase Management Information Systems (MIS) refers to the academic study of people, technology, organizations, and the relationships among them. Management Information Systems (MIS) is one name for an academic discipline that studies how people use information technology to manage and operate organizations, and the interactions and relationships among three elements, people, information technology and organization operations. MIS also refers to a category of professionals who help a firm benefit from investments in information technology and improve business processes -- MIS professionals.

Two articles by freelance writers David Ingram and Bert Margraf in the Houston Chronicle online edition discuss Management Information Systems. Ingram, a small business owner, defines a Management Information System (MIS) as "a set of systems and procedures that gather information from a range of sources, compile it and present it in a readable format." Margraf, who started a small IT business, states "An effective MIS assembles data available from company operations, external inputs and past activities into information that shows what the company has achieved in key areas of interest, and what is required for further progress." Both of these definitions have some good points and some limitations. Margraf rightly notes an MIS processes data into information. Ingram makes a vague assertion that MIS gather information from a range of sources. Ingram does correctly note that some non-computerized procedures may be considered part of an MIS. Margraf says an effective MIS shows what is required for further progress. Margraf creates an unrealistic expectation. Confusion and misunderstandings about the term Management Information System (MIS) remain an ongoing problem.

Watson, Carroll, and Mann (1987) define MIS as "an organizational method of providing past,

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present and projected information related to internal operations and external intelligence. It supports the planning, control and operation functions of an organization by furnishing uniform information in the proper time frame to assist the decision makers."

Managers and their support staffs need to consider what information and analyses are actually needed to support management and business activities. Some managers need both detailed transaction data and summarized data. Most managers only want summaries of transactions. Managers usually want lots of charts and graphs; a few only want tables of numbers. Many managers want information provided routinely or periodically and some want information available on-line and on demand. Managers want financial analyses and some managers want primarily "soft", non-financial or qualitative information. Managers help design an MIS. Specific MIS differ based upon management needs. An MIS for a marketing manager will be very different than a manufacturing MIS. A financial MIS will perhaps only store financial data and provide access only to reports on budget and spending issues rather than human resources or production data. Enterprise databases that contain many types of functional data could support multiple Management Information Systems. MIS provide relevant information in the decision making process, cf., Simon (1960). In the Intelligence stage of decision making, an MIS can provide information about internal as well as external environments. In the design stage, MIS can help identify viable alternative actions in a situation. Finally, in the choice stage, MIS can help provide facts about the desirability of alternative actions.

In general, an MIS can provide timely, relevant information and can help managers understand business operations and performance issues. Power (2000) noted of MIS that "a computerized system can help managers understand the status of operations, monitor business results, review customer preference data and investigate competitor actions. In all of these situations, management information and analyses should have a number of characteristics. Information must be both timely and current. These characteristics mean the information is up-to-date and available when managers want it. Also, information must be accurate, relevant and complete. Finally, managers want information presented in a format that assists them in making decisions. In general, management information should be summarized and concise and any support system should have an option for managers to obtain more detailed information." As Urbaczewski (2013) reminded us "It isn't the storage of the data that is valuable, rather it is the retrieving it; being able to access it in an accurate and efficient manner that makes it meaningful."

The definition of an MIS has gotten a bit fuzzy over time, but the purpose remains important. A Management Information System provides a manager with information that helps him/her manage. A modern MIS provides information accessed from a smartphone, a desktop PC, or a tablet computer at anytime from anywhere about many business control and operations topics. An MIS is a customized computer-based tool, MIS is an academic discipline and major area of study, and MIS professionals help keep our organizations operating. **MIS is all about helping managers manage.**

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