ACADEMIC PROGRAMME: Bachelor of Business & Information Technology

COURSE CODE AND TITLE: SIT 400 Management Information Systems

LECTURER'S NAME: John Kihiu

LECTURER'S CONTACTS: Phone No.: 0724402062 **Email**: jkihiu@mut.ac.ke

Impact of MIS

Expected Learning Outcomes:

By the end of this lesson, you should be able to: (Arial, font size 12)

i) Explain concept of MIS
ii) Discuss role and Impact of MIS in business and organizational environment
iii) Describe advantages of good MIS
iv) Analyze the impact of Big Data to MIS

Concept, Role and Importance Of MIS

CONCEPT

The MIS is an idea which is associated with man, machine, marketing and methods for collecting information's from the internal and external source and processing this information for the purpose of facilitating the process of decision-making of the business.

MIS is not new, only the computerization is new, before computers MIS techniques existed to supply managers with the information that would permit them to plan and control business operations. The computer has added on more dimensions such as speed, accuracy and increased volume of data that permit the consideration of more alternatives in decision-making process.

Management information system is an integrated set of component or entities that interact to achieve a particular function, objective or goal. Therefore it is a computer based system that provides information for decisions making on planning, organizing and controlling the operation of the sub-system of the firm and provides a synergistic organization in the process.

The component of an information system includes: a hardware which is used for input/output process and storage of data, software used to process data and also to instruct the hand-ware component, data bases which is the location in the system where all the organization data will be automated and procedures which is a set of documents that explain the structure of that management information system.

There are various driving factors of management information system for example:- Technological revolutions in all sectors make modern managers to need to have access to large amount of selective information for the complex tasks and decisions.

The lifespan of most product has continued getting shorter and shorter and therefore the challenge to the manager is to design product that will take a longer shelf life and in order to do this, the manager must be able to keep abreast of the factors that influences the organization product and services thus, management information system come in handy in supporting the process.

There are huge amount of information available to today's manager and this had therefore meant that managers are increasingly relying on management information system to access the exploding information. Management information services helps manager to access relevant, accurate, up-to-date information which is the more sure way of making accurate decisions. It also helps in automation and incorporation of research and management science techniques into the overall management information system for example probability theory.

The management information services are capable of taking advantage of the computational ability of the company like processing, storage capacity among others.

Based on this relevancy, management information system should be installed and upgraded in various organizations since today's managers need them to access information for managerial decision making and also management functions.

The scope and purpose of MIS is better understood if each part of them is defined individually, thus

MANAGEMENT: Management has been define in process or activities that describe what managers do in the operation for their organization plan, organize, initiate and control operations. They plan by setting strategies and goals and selecting the best course of action to achieve the goals. They organize the necessary tasks for the operational plan, set these tasks up into homogenous groups and assign authority delegation; they control the performance standards and avoiding deviation from standard.

The decision-making is a fundamental prerequisite of each of the foregoing process, the job of MIS is facilitating decisions necessary for planning, organizing and controlling the work and functions of the business so that specified goals of business are achieved.

INFORMATION: Data must be distinguished from information and the distinction is clear and important for present purpose. Data are facts and figures that are not currently being used in a decision-making process and usually are taken from the historical records that are recorded and filled without immediate intent to retrieve for decision-making.

Information consists of data that have been retrieved, processed or otherwise used for information or interference purpose, argument or as a basis forecasting or decision-making regarding any business unit. Information is knowledge that one derives from facts for effective functioning of systems placed in the right context with the purpose of reducing uncertainty regarding the alternative courses of action as they are based on description and measurement of attributes of various entities associated with the enterprise.

SYSTEM: The system can be described as a set of elements joined together for a common objective. A subsystem is a part of a larger system with which one is concerned. All systems for our purpose the organization is the system and the parts (divisions, departments, functions, unit etc) are the subsystem.

The system concept of MIS is, therefore one of optimizing the output of the organization by connecting the operating subsystems through the medium of information exchange.

The Management information system (MIS) is a concept of the last two decade or two. It has been understood and described in a number of ways. It is also known as the Information System, the Information and Decision System, the computer based Decision System.

Information is the life blood of an organization, particularly in the case of system approach management. The MIS or Information system can be define as the knowledge communicated by others or obtained from investigation or study. It is a system providing needed information to each manager at the right time in the right form and relevant one which aids understanding and stimulates the action.

MIS is an organized method of providing past, present and projection information relating to internal operations and externals intelligence. It supports the planning, control and operational functions of an organization by furnishing uniform information in proper time frame to help the process of decision-making.

Management Information System is generally defined as an integrated user-machine system for providing information to support operations, management and decision-making functions in an organization. The system utilizes computer hardware and software, manual procedure, models for analysis. Information is viewed as a resource much like land, labor and capital. It must be obtained processed, stored, manipulated and analyzed, distributed etc. An organization with a well-defined information system will generally have a competitive advantage over organization with poor MIS and no MIS.

The MIS is defined as a system which provides information support for decision-making in the organization.

1. **The MIS is defined as an integrated system of man and machine for providing the information to support the operations, the management and the decision-making function in the organization.**

2. **The MIS is defined as a system based on the database of the organization evolved for the purpose of providing information to the people in the organization.**

3. **The MIS is defined as a computer-based information system.**

Though there are a number of definitions all of them converge on a single point, i.e. the MIS is a system that support the decision-making function of the organization. The difference lies in defining the elements of MIS. However, in today's world, the MIS is a computerized business processing system generating information for the people in the organization to meet the information needs for decision-making to achieve the corporate objective of the organization.

MIS is a computer-based system that provides flexible and speedy access to accurate data. The organizational information system which in general relates to the planning, operation and control of an enterprise are the most important among them. MIS refers primarily to such an organizational system which is generally large, sophisticated, structured and dynamically evolving and of immense commercial values. A large number of programmers and system analysts are employed by many organizations to build a variety of MIS. Thus, the education of programmers and system analysts as well as general manager, the subject of MIS, has occupied a key position.

Thus, MIS is a set of computer-based system and procedures implemented to help managers in their routine job of decision-making and planning, expansion and development.

The objective of MIS is to provide information for a decision support process of management. It should help in such a way that the business goals are achieved in the most efficient manner. Since the decision-making is not restricted to a particular level, the MIS is expected to support all the levels of the management in conducting the business operations. Unless the MIS becomes a management aid, it is not useful to the organization.

Modern management system relies on MIS, the complexity of business management and competitive nature of business requires handling of business operations with skill and foresight to advert the crisis. The management process is executed through a variety of decisions taken at each step of planning, organizing, staffing, directing, coordinating and controlling. If the management is able to spell out the decision required to be taken, then the MIS is designed suitably.

The actual MIS process relates to:

1. Collection
2. Organization
3. Distribution
4. Storage of wide information
5. Managerial control and analysis of data

Hence MIS focuses on:

1. Organization-wide information
2. Decision-making process
3. Managerial control and analysis
4. Computer-based system

CONCLUSION: Management Information Systems is sets of inter-related procedures using information system infrastructure in a business enterprise to generate and disseminate the desired information. Such systems are designed to support decision-making by the people associated with the enterprise in the process of attainment of its objectives.

The MIS gets data and other resources of IT infrastructure as inputs from the environment and process them to satisfy the information needs of different entities associated with the business enterprise. There are subsystems of control over the use of IT resources and feedback system offers useful clues for increasing the benefits of information system to business. The MIS are subsystem of business system and by themselves serve the function of feedback and control in business system.

ROLE OF MANAGEMENT INFORMATION SYSTEM

The role of the MIS in an organization can be compared to the role of heart in the body. The information is the blood and MIS is the heart. In the body the heart plays the role of supplying pure blood to all the elements of the body including the brain. The heart work faster and supplies more blood when needed. It regulates and controls the incoming impure blood, processed it and sends it to the destination in the quantity needed. It fulfills the needs of blood supply to human body in normal course and also in crisis.

The MIS plays exactly the same role in the organization. The system ensures that an appropriate data is collected from the various sources, processed and send further to all the needy destinations. The system is expected to fulfill the information needs of an individual, a group of individuals, the management functionaries: the managers and top management.

Here are some of the important roles of the MIS:

1. The MIS satisfies the diverse needs through variety of systems such as query system, analysis system, modeling system and decision support system.
2. The MIS helps in strategic planning, management control, operational control and transaction processing. The MIS helps in the clerical personal in the transaction processing and answers the queries on the data pertaining to the transaction, the status of a particular record and reference on a variety of documents.
3. The MIS helps the junior management personnel by providing the operational data for planning, scheduling and control , and helps them further in decision-making at the operation level to correct an out of control situation.
4. The MIS helps the middle management in short term planning, target setting and controlling the business functions. It is supported by the use of the management tools of planning and control.
5. The MIS helps the top level management in goal setting, strategic planning and evolving the business plans and their implementation.
6. The MIS plays the role of information generation, communication, problem identification and helps in the process of decision-making. The MIS, therefore, plays a vital role in the management, administration and operation of an organization.

IMPACT OF THE MANAGEMENT INFORMATION SYSTEM

MIS plays a very important role in the organization; it creates an impact on the organization's functions, performance and productivity.

The impact of MIS on the functions is in its management with a good MIS supports the management of marketing, finance, production and personnel becomes more efficient. The tracking and monitoring of the functional targets becomes easy. The functional managers are informed about the progress, achievements and shortfalls in the activity and the targets.

The manager is kept alert by providing certain information indicating and probable trends in the various aspects of business. This helps in forecasting and long-term perspective planning. The manager's attention is bought to a situation which is expected in nature, inducing him to take an action or a decision in the matter.

Disciplined information reporting system creates structure database and a knowledge base for all the people in the organization. The information is available in such a form that it can be used straight away by blending and analysis, saving the manager's valuable time.

The MIS creates another impact in the organization which relates to the understanding of the business itself. The MIS begins with the definition of data, entity and its attributes. It uses a dictionary of data, entity and attributes, respectively, designed for information generation in the organization. Since all the information systems use the dictionary, there is common understanding of terms and terminology in the organization bringing clarity in the communication and a similar understanding of an event in the organization.

The MIS calls for a systematization of the business operations for an effective system design. This leads to streaming of the operations which complicates the system design. It improves the administration of the business by bringing a discipline in its operations as everybody is required to follow and use systems and procedures. This process brings a high degree of professionalism in the business operations.

The goals and objectives of the MIS are the products of business goals and objectives. It helps indirectly to pull the entire organization in one direction towards the corporate goals and objectives by providing the relevant information to the organization.

A well designed system with a focus on the manager makes an impact on the managerial efficiency. The fund of information motivates an enlightened manager to use a variety of tools of the management. It helps him to resort to such exercises as experimentation and modeling.

The use of computers enables him to use the tools and techniques which are impossible to use manually. The ready-made packages make this task simple. The impact is on the managerial ability to perform. It improves decision-making ability considerably high.

Since, the MIS work on the basic system such as transaction processing and database, the drudgery of the clerical work is transferred to the computerized system, relieving the human mind for better work. It will be observed that lot of manpower is engaged in this activity in the organization. Seventy (70) percent of the time is spent in recording, searching, processing and communicating. This MIS has a direct impact on this overhead. It creates information –based working culture in the organization.

IMPORTANCE OF MIS

It goes without saying that all managerial functions are performed through decision-making; for taking rational decision, timely and reliable information is essential and is procured through a logical and well structured method of information collecting, processing and disseminating to decision makers. Such a method in the field of management is widely known as MIS.

In today's world of ever increasing complexities of business as well as business organization, in order to service and grow , must have a properly planned, analyzed, designed and maintained MIS so that it provides timely, reliable and useful information to enable the management to take speedy and rational decisions.

MIS has assumed all the more important role in today's environment because a manager has to take decisions under two main challenges:

First, because of the liberalization and globalization, in which organizations are required to compete not locally but globally, a manager has to take quick decisions, otherwise his business will be taken away by his competitors. This has further enhanced the necessity for such a system.

Second, in this information age wherein information is doubling up every two or three years, a manager has to process a large voluminous data; failing which he may end up taking a strong decision that may prove to be very costly to the company.

In such a situation managers must be equipped with some tools or a system, which can assist them in their challenging role of decision-making. It is because of the above cited reasons, that today MIS is considered to be of permanent importance, sometimes regarded as the name centre of an organization. Such system assist decision makers in organizations by providing information at various stages of decision making and thus greatly help the organizations to achieve their predetermined goals and objectives.

On the other hand, the MIS which is not adequately planned for analyzed, designed, implemented or is poorly maintained may provide developed inaccurate, irrelevant or obsolete information which may prove fatal for the organization.

In other words, organizations today just cannot survive and grow without properly planned, designed, implemented and maintained MIS. It has been well understood that MIS enables even small organizations to more than offset the economies of scale enjoyed by their bigger competitors and thus helps in providing a competitive edge over other organizations.

ADVANTAGES OF GOOD MANAGEMENT INFORMATION SYSTEM:

1. **To control the creation and growth of records**

Despite decades of using various non-paper storage media, the amount of paper in our offices continues to escalate. An effective records information system addresses both creation control (limits the generation of records or copies not required to operate the business) and records retention (a system for destroying useless records or retiring inactive records), thus stabilizing the growth of records in all formats.

1. **To reduce operating costs**

Recordkeeping requires administrative dollars for filing equipment, space in offices, and staffing to maintain an organized filing system (or to search for lost records when there is no organized system).

It costs considerably less per linear foot of records to store inactive records in a Data Records Center versus in the office. [Multiply that by 30% to 50% of the records in an office that doesn't have a records management program in place], and there is an opportunity to effect some cost savings in space and equipment, and an opportunity to utilize staff more productively - just by implementing a records management program.

1. **To improve efficiency and productivity**

Time spent searching for missing or misfiled record is non-productive. A good records management program (e.g. a document system) can help any organization upgrade its recordkeeping systems so that information retrieval is enhanced, with corresponding improvements in office efficiency and productivity. A well designed and operated filing system

with an effective index can facilitate retrieval and deliver information to users as quickly as they need it.

Moreover, a well managed information system acting as a corporate asset enables organizations to objectively evaluate their use of information and accurately lay out a roadmap for improvements that optimize business returns.

1. **To assimilate new records management technologies**

A good records management program provides an organization with the capability to assimilate new technologies and take advantage of their many benefits. Investments in new computer systems whether this is financial, business or otherwise, don't solve filing problems unless current manual recordkeeping or bookkeeping systems are analyzed (and occasionally, overhauled) before automation is applied.

1. **To ensure regulatory compliance**

In terms of recordkeeping requirements, China is a heavily regulated country. These laws can create major compliance problems for businesses and government agencies since they can be difficult to locate, interpret and apply. The only way an organization can be reasonably sure that it is in full compliance with laws and regulations is by operating a good management information system which takes responsibility for regulatory compliance, while working closely with the local authorities. Failure to comply with laws and regulations could result in severe fines, penalties or other legal consequences.

1. **To minimize litigation risks**

Business organizations implement management information systems and programs in order to reduce the risks associated with litigation and potential penalties. This can be equally true in Government agencies. For example, a consistently applied records management program can reduce the liabilities associated with document disposal by providing for their systematic, routine disposal in the normal course of business.

1. **To safeguard vital information**

Every organization, public or private, needs a comprehensive program for protecting its vital records and information from catastrophe or disaster, because every organization is vulnerable to loss. Operated as part of a good management information system, vital records programs preserve the integrity and confidentiality of the most important records and safeguard the vital information assets according to a "Plan" to protect the records. This is especially the case for financial information whereby ERP (Enterprise Resource Planning) systems are being deployed in large companies.

1. **To support better management decision making**

In today's business environment, the manager that has the relevant data first often wins, either by making the decision ahead of the competition, or by making a better, more informed decision. A good management information system can help ensure that managers and executives have the information they need when they need it.

By implementing an enterprise-wide file organization, including indexing and retrieval capability, managers can obtain and assemble pertinent information quickly for current decisions and future business planning purposes. Likewise, implementing a good ERP system to take account of all the business' processes both financial and operational will give an organization more advantages than one who was operating a manual based system.

1. **To preserve the corporate memory**

An organization's files, records and financial data contain its institutional memory, an irreplaceable asset that is often overlooked. Every business day, you create the records, which could become background data for future management decisions and planning.

1. **To foster professionalism in running the business**

A business office with files, documents and financial data askew, stacked on top of file cabinets and in boxes everywhere, creates a poor working environment. The perceptions of customers and the public, and "image" and "morale" of the staff, though hard to quantify in cost-benefit terms, may be among the best reasons to establish a good management information system.

Credit: **Kumar Chetan**

BIG DATA AND MIS

Organizations across myriad sectors have embraced the big data revolution. Enterprise analytics spending is expected to increase more than 12 percent to $150.8 billion this year alone,

according to research from International Data Corporation. Why? These tools produce demonstrable results, lending users the scalability needed to effectively navigate the ever-changing modern marketplace. Of course, the development of big data has catalyzed a chain reaction as businesses modify internal practices to support the collection, evaluation and deployment of actionable operational information.

Staff members on the front lines bear the brunt of this transformation, especially those working in the information systems field. These professionals have traditionally performed key data management and evaluation tasks. However, information systems workers should expect to see their roles change as big data picks up further steam. How? Here are some of the key enterprise analytics developments affecting information systems specialists:

The growth of devops

Those in the information systems field have long collaborated with stakeholders in other departments to design data-based business strategies. Most stick firmly in the operations arena, rarely getting involved in the development of the applications they manage. The complexity of new enterprise networking infrastructure associated with big data has eroded this divide between implementers and administrators, leading to the rise of an information technology subfield called devops.

With this approach, administrators and internal system developers work together to create backend solutions that not only meet company technical qualifications but also deploy quickly within everyday workflows, according to research from Deloitte published in The Wall Street Journal. Enterprises that subscribe to this methodology can produce applications on tight timelines that agree with overarching business goals, resulting in fewer costs and maintenance or usage headaches.

With devops in play, information administrators are forced to operate outside of their established internal circles and collaborate with IT peers to create data-backed systems that function in real-world operational environments. This could mean advising developers on how system data should flow throughout the business or offering insights into interface use during the user-experience design phase. While these additional responsibilities may seem tedious, they ultimately make life easier for information systems personnel, who have the opportunity to engage with solutions that can withstand the grind of day-to-day use and fall in line with production goals and other performance metrics.

The rise of automation and Artificial Intelligence

Organizations often engage with big data in an effort to introduce automated workflows. These processes optimize operational efficiency, allowing workers to focus on mission-critical tasks rather than simple background functions. Automated systems, while advantageous from a business perspective, are disrupting the information systems field. Why?

These professionals have long spent their time collecting and crunching numbers via backend databases, activities modern software can perform with ease. Some solutions even come with robust business intelligence engines, capable of spitting out operational recommendations that, in the past, came from information systems specialists.

Currently, an estimated 35 percent of enterprises utilize automated systems, according to research from Deloitte. However, that figure is expected to increase to 74 percent by 2026, meaning adoption is likely to pickup as technology firms perfect their offerings and more automation success stories come to the fore.

Consequently, many in the domain are taking on top-down duties that address the different variables that go into automated workflows, according to Information Age. For example, modern information systems personnel often spend considerable time evaluating the validity of disparate data sources. This might involve evaluating key software such as customer relationship management platforms or enterprise resource planning portals to make sure the data stored in these solutions is valid and actionable. Those in the field may also work with developers to ensure applications tasked with collecting essential operational information are functioning properly. Additionally, information systems professionals block off time to review vendor agreements to make sure that costs remain low and key support services are active.

The diversification of data sources

Modern enterprises deploy a variety of specialized internal systems to track operational activity and collect useable information. This approach, a result of the big data revolution, complicates already complex business processes, most notably those that fall into the information systems realm. Instead of monitoring a few easy-to-distinguish platforms, personnel in the field oversee vast networks of cross-functional integrated solutions, each with varying data streams.

Additionally, most organizations now invest serious resources in cultivating external sources, as these provide real-time insight into customer habits, the Harvard Business Review reported. This means information systems specialists are not only managing internal data but also information from outside the company, most of which is collected via social media and website tracking tools. Many must now handle large amounts of unstructured data as well, according to TechRepublic. Devices associated with the Internet of Things normally aggregate these insights, which IT staff can evaluate using indexing software and other tools. Firms have also added dark data to the mix. Personnel cull this information from long-forgotten company assets such as old paper-based files or archived digital assets.

This widespread thirst for business intelligence presents new challenges for information systems professionals, most of whom are responsible for evaluating, storing, managing and deploying this data. Centralized portals and easy-to-integrate systems and technology firms will continue to create and release new solutions that can streamline this process. They will certainly garner considerable demand, especially as IoT technology matures and more enterprise mobile products enter the workplace. Last year, 6.4 billion portable networking devices connected to the internet, according to research from Gartner. That number is expected to balloon to 20.8 billion

by 2020, opening up even more new data sources to organizations looking to better understand the processes, employees and customers.

The proliferation of cyberattacks

Data security has become a top priority for organizations in most industries. Why? The number of cyberattacks has increased dramatically in recent years due to the growth of big data. Hackers executed 980 major data breaches and stole more than 35.2 million sensitive files in 2016, according to research from the Identity Theft Resource Center. These attacks not only crippled internal applications and risked the privacy of both customers and employees but also bottomed out balance sheets. The average company pays $4 million in mitigation costs per breach, according to data from IBM and the Ponemon Institute. On top of this, hacks can damage reputations, catalyze mass customer exoduses and create long-term revenue stream issues.

Unfortunately, most analysts believe such strikes will happen more often, as nefarious programmers code more of the destructive yet easy-to-use vectors that currently cycle secret online trading posts. With this in mind, enterprises are beefing up internal security protocols, a shift that directly impacts information systems personnel. Now, these professionals must carefully monitor the systems they manage and work with internal IT teams and external security firms to ensure the data that flows through on-premises or cloud-based servers is protected. This requires an immense amount of coordination – another essential duty added to an already lengthening task list. Luckily, most will not have to supervise threat detection solutions, as this work often falls to internal security specialists or external resources.

However, many organizations are adding platforms to track employee networking behavior, especially those with bring-your-own-device programs in place. Hackers often exploit user apathy to infiltrate systems, bombarding employees with malware-infested email or deploying password decryption devices capable of decoding hastily drafted credentials. Companies counter such attacks by monitoring users to make sure they are following internal security protocols. Information systems specialists may be involved in managing networking usage data as it's culled from various applications. Of course, they might also take a more hands-on approach, overseeing information security management systems that not only address cyber threats but also include business continuity and disaster recovery features, according to TechTarget.

Information systems workers represent the first line of defense when it comes to keeping precious internal information safe. In this new era of data security threats, they will likely face more external foes than ever before.