A REVIEW OF THE ROLE OF DIFFERENT INFORMATION SYSTEMS IN MODERN ORGANIZATIONS

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ABSTRACT
A good number of information systems have been designed for use in modern organizations. These information systems perform different functions depending on the needs and objectives of the organization which provides a firm with competitive products and services that give strategic advantages over its competitors. This can reinforce a firm to survive and succeed in the long run in the market. Today, organizations use a variety of information systems such as transaction processing systems (TPS) to record the daily routine transactions necessary for the conduct of the business, office automation systems (OAS) to perform office task effectively, management information systems (MIS) to Provide information in the form of pre specified reports and displays to support business decision making, decision support system (DSS) to support unstructured and semi-structured decision making, executive information systems (EIS) that support top managers in decision making, Expert System (ES) that performs the jobs of human experts etc. Each plays a different role in organization's hierarchy and management operations. This study attempts to review the role of different information system (IS) in modern organizations.
Keywords: Information Systems, Types of Information Systems, Computer-based information System, Modern Organizations.

INTRODUCTION
Concept of Information system (IS)
Information system (IS) is a system that provides its users with appropriate, timely and accurate information that helps them in decision-making process. Information systems do not on their own make decisions, nor do there guarantee that managers will make the right decisions all the time. Instead, a well run information system assists people in determining what choices or actions are available (Maidorawa, 2016). According to Afërdta, Berisha (2014), information system is an integrated set of components for collecting, storing and processing data and for delivering information, cards, and digital products. Business firms and Other Organizations rely on information systems to carry out and manage their operations, interact with their customers and suppliers, and compete in the marketplace. It is dynamic area or field monitors changes, perhaps the most important driving force induced by the development of computers. It is a system that works and has to do with the information. The main function of information is to avoid uncertainty and the unknown circumstances creating a solid basis for qualitative decision making in the management and leadership.

O'Brien, & Marakas in (Yaser, Alina & Nor, 2014) opined that information system (IS) can be any organized combination of people, hardware, software, communications networks, data resources, and policies and procedures that stores, retrieves, transforms, and disseminates information in an organization. People rely on modern information systems to communicate with one another using a variety of physical devices (hardware),

information processing instructions and procedures (software) , communications channels (networks) , and stored data (data resources). An information system can be defined technically as a set of interrelated components that collect (or retrieve), process, store, and distribute information to support decision making, coordination and control in an organization. In addition to supporting decision making, coordination, and control, information systems may also help managers and workers analyze problems, visualize complex subjects, and create new products. Information systems contain information about significant people, places, and things within the organization or in the environment surrounding it. By information we mean data that have been shaped into a form that is meaningful and useful to human beings. Data, in contrast, are streams of raw facts representing events occurring in organizations or the physical environment before they have been organized and arranged into a form that people can understand and use
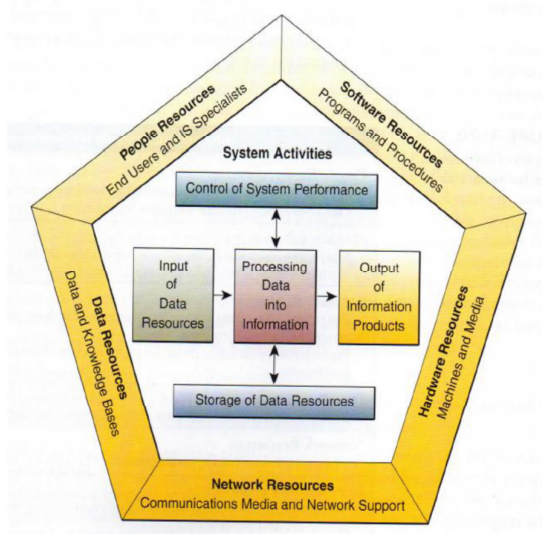

Figure1. Components of Information System (IS)
Source: Ahmed Maidorowa (2016)

Concept of Organization
Human beings cannot live in isolation. They are unable to fulfill their needs and desires alone, because any one individual lacks the strength, ability, time and potential. In simple words, organization is viewed as a group of persons formed to seek certain goals. Organization is not a new and modern invention or phenomenon (Diksha, 2017). Organizations are defined as collectivities that have been established for the pursuit of relatively specific objectives on a more or less continuous basis. Organizations have more or less fixed boundaries, a normative order, authority rank, a communication system and an incentive system which enables various types of participants to work together in the pursuit of common goals. Organization is the process so combining the work which individuals or groups have to perform with the facilities necessary for its execution, that

the duties so performed provide the best channels for the efficient, systematic, positive and coordinated application of the available effort (Diksha, 2017).

DISCUSSION
Types of Information System
Ahmed Maidorowa (2016) classified Information System (IS) into Manual Information System (MAIS) and Computer-based Information System (CBIS)

Manual Information System (MAIS)
Manual information system is a system that requires the use of simple tools, devices, equipment and great human efforts to transform data into information which can be used in decision making. The tools used may include paper, files, cabinets, calculators to record store and calculate totals (Maidorowa, 2016)

Advantages of Manual Information System (MAIS)
1. It is not costly.
2. Useful for small volume of transactions

Disadvantages of Manual Information System (MAIS)
1. It is slow in transforming data into information because most of the computations are done by humans.
2. Poor retrieval of information. It takes great time to retrieve and get information from the system.
3. Inconsistency of data. In manual information system, sharing of data/information is achieved by duplicating the data. This gives problems when data needs to be updated because several copies must be updated. When we cannot update all the copies of data, problem of inconsistency arises and can lead to wrong decisions.
4. Prone to errors. Since most of the work is done by human, there is a high tendency for errors to occur from time to time.
5. It cannot handle large volume of transactions. As the number of transactions grows, the manual information system will find it difficult to handle them within a reasonable time.

Computer Based Information System (CBIS)
Computer Information System employs the use of computers, communication and network devices to process and disseminate information. It can help us overcome all the disadvantages of manual information system. The purpose of a computer based information system is to provide managers and various categories of employees with the appropriate information to help them make decisions. (Maidorowa, 2016). There are six types of computer-based information system, which serves different levels of management. These are:
1. Transaction Processing System for lower managers
2. Management Information System for middle managers
3. Decision Support System for middle managers

4. Executive Support System for top managers
5. Office Automation System for all levels and non-managers
6. Expert System for all levels and non-managers

According to O'Brien & Marakas in (Yaser, Alina & Nor, 2014), the applications of information systems that are implemented in today's business world can be classified in several ways. For example, several types of information systems can be classified as either operations (Support of business operation) or (Support of managerial decision making). The types used in support of business operation such as transaction processing systems, process control systems and Enterprise collaboration systems (office automation system). While the systems in support of managerial decision making are management information system, decision support system and executive information systems. Patterson (2015) maintained that there are several categories of information system such as data Processing Systems, Management Information Systems, Decision Support Systems and Executive Information System.
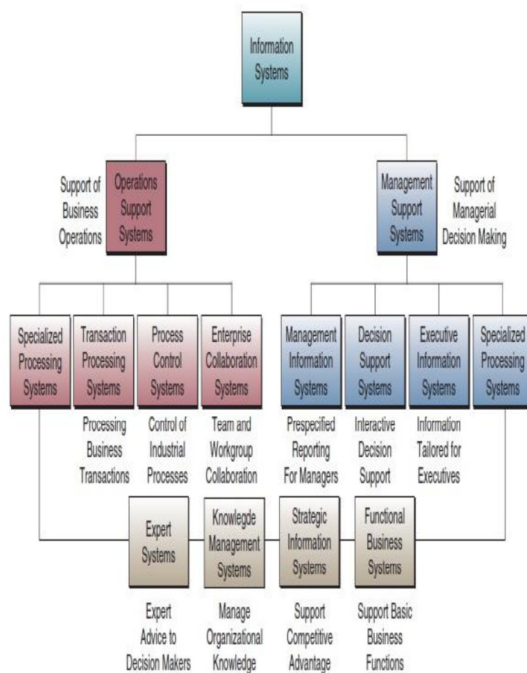

Figure2. Operations and Management Classifications of Information Systems
Source: O'Brien & Marakas in (Yaser, Alina & Nor, 2014)

The Roles of Different Types of Information System in Modern Organizations
A. Transaction Processing Systems
Transaction processing systems (TPS) are the basic business systems that serve the operational level of the organization. A transaction processing system is a computerized system that performs and records the daily routine transactions necessary for the conduct of the business. At the lowest level of the organizational hierarchy, we find the transaction processing systems that support the day-to-day activities of the business (Maidorawa, 2016)

B. Process Control Systems

Process control systems are systems that monitor and control industrial or physical processes. Examples: petroleum refining, power generation, and steel production systems. For example, a petroleum refinery uses electronic sensors linked to computers to monitor chemical processes continually and make instant (real-time) adjustments that control the refinery process. A process control system comprises the whole range of: equipment, computer programs, operating procedures (Yaser et'al, 2014)

C. Enterprise Collaboration Systems (Office Automation Systems)

Office automation systems are some of the most widely used types of information systems that will help managers control the flow of information in organizations. Enterprise collaboration systems (office automation systems) enhance team and workgroup communications and productivity. Office automation systems are other types of information systems are not specific to any one level in the organization but provide important support for a broad range of users. Office information systems are designed to support office tasks with information technology. Voice mail, multimedia system, electronic mail, video conferencing, file transfer, and even group decisions can be achieved by office information systems.

D. Management Information Systems

Management information systems are a kind of computer information systems that could collect and process information from different sources to institute decision-making in level of management. Management information systems Provide information in the form of pre specified reports and displays to support business decision making. The next level in the organizational hierarchy is occupied by low level managers and supervisors. This level contains computer systems that are intended to assist operational management in monitoring and controlling the transaction processing activities that occur at clerical level. Management information systems (MIS) use the data collected by the TPS to provide supervisors with the necessary control reports (Yaser et'al, 2014)

E. Decision Support Systems

A Decision Support System is a computer based system intended for use by a particular manager or usually a group of managers at any organizational level in making a decision in the process of solving a semi structured decision (Yaser et'al, 2014)
According to Maidorawa (2016), Decision Support System (DSS) is a computer based information system that provides flexible tool for analysis and helps managers focus on the future. Whereas a TPS record data and an MIS summarizes data, a DSS analyzes data. To reach a decision level of sophistication in information technology, an organization must have established TPS and MIS system first before creating DSS.

F. Executive Information Systems

According to Patterson (2005), an EIS provides senior managers with a system to assist in taking strategic and tactical decisions. Executive Information Systems have been

developed, which provide rapid access to both internal and external information, often presented in graphical format, but with the ability to present more detailed underlying data if it is required. Executive information systems provide critical information from a wide variety of internal and external sources (from MIS, DSS, and other sources tailored to the information needs of executives) in easy-to-use displays to executives and managers (Maidorawa, 2016)

G. Expert Systems

Expert systems are the category of AI which has been used most successfully in building commercial applications (Yaser et'al, 2014). According to O'Brien & Marakas in (Yaser, Alina & Nor, 2014), Expert systems are Knowledge-based systems that provide expert advice and act as expert consultants to users. According to Patterson (2005), an expert system is a computer program that tries to emulate human reasoning.

H. Knowledge Management Systems

Knowledge management systems are knowledge-based information systems that support the creation, organization, and dissemination of business knowledge to employees and managers throughout a company. Knowledge management is the deployment of a comprehensive system that enhances the growth of an organization's knowledge (Yaser et'al, 2014)

I. Strategic Information Systems

Strategic information systems apply information technology to a firm's products, services, or business processes to help it gain a strategic advantage over its competitors. These systems are an important special type of organizational information system used to secure or sustain competitive advantage in the market place (Yaser et'al, 2014)

J. Functional Business Systems (Information Systems from Functional Perspective)

Functional business systems are information systems that focus on operational and managerial applications in support of basic business functions. Examples are information systems that support applications in accounting, finance, marketing, operations management, and human resource management (Yaser et'al, 2014). Functional Business Information system can be classified by the specific organizational function to Sales and marketing systems, Manufacturing and Production systems, Finance and accounting system and Human resource system.

1. Sales and Marketing Information Systems

The sales and marketing function is responsible for selling the organization's product or service. Marketing is concerned with identifying the customers for the firm's products or services, determining what they need or want, planning and developing products and services to meet their needs, and advertising and promoting these products and services. Sales are concerned with contacting customers, selling the products and services, taking orders, and following up on sales. Sales and marketing information systems support these activities

2. Manufacturing and Production Information Systems

The manufacturing and production function is responsible for actually producing the firm's goods and services. Manufacturing and production systems deal with the planning, development, and maintenance of production facilities; the establishment of production goals; the acquisition, storage, and availability of production materials; and the scheduling of equipment, facilities, materials, and labor required to fashion finished products. Manufacturing and production information systems support these activities. According to Hernandez & Rivera (2017), the production information system is a computer program that manages a database of information related to production.

3. Finance and Accounting Information Systems

Finance function is responsible for managing the firm`s financial assets, such as cash, stock, bonds, other investment. The accounting function is responsible for maintaining and managing the firm`s financial records such as receipts, depreciation, payroll etc. This information is organized in an electronic format so as to produce financial statements and can be accessed immediately to assist in the management of the firm. A financial management information system provides financial information to all financial managers within an organization .Financial decisions are typically based on information generated from the accounting system.

4. Human Resource Information Systems

Human Resources Information Systems are process of producing, organizing, storing and distributing manpower information to help the organization managers at various levels, in order to make proper manpower decisions. Nowadays, the majority of successful companies are using human resource information systems to support daily operations of human resources (Yaser et'al, 2014). According to Khanore, et al (2017) in (Yaser, Alina & Nor, 2014), human resources information systems support activities such as identifying potential employees, maintaining complete records on existing employees, and creating programs to develop employees' talents and skills.

CONCLUSION

Information system (IS) is a system that provides its users with appropriate, timely and accurate information that helps them in decision-making process Different types of Information Systems (IS) have been developed for use in modern organizations. Each of these Information Systems (IS) performs unique function or has its area of application. Transaction processing systems records the daily routine transactions necessary to the conduct of the business. Office automation systems are productivity tools used to support staff at different levels of organization to perform their functions effectively. Process control systems monitor and control industrial or physical processes. Decision support systems designed to help manager in decision making that needs modeling, formulation, calculating, comparing, selecting the best option or predict the scenarios. Management information systems provide information in the form of pre specified reports and displays to support business decision making. Executive information systems provide senior

managers with a system to assist in taking strategic and tactical decisions. Expert systems are systems that perform the jobs of human experts. Information system plays a major role in support of strategic objectives of an organization, which provides a firm with competitive products and services that give strategic advantages over its competitors. This can reinforce a firm to survive and succeed in the long run in the market.

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