# CHAPTER TWO: LITERATURE REVIEW

# 2.0 Introduction

This chapter contains literature related to online research information management system, information systems, information database systems, and related management information systems from different sources and scholars’ written literature and information. So we are going to explain deeply these points listed above in subsections.

# 2.1 Information System

The term systems as described by Liddell (2000) are derived from a Greek word system which is literally translated as an organized relationship among functioning units and components. In computer science, a system is a set of devices working together to accomplish a specific task. This can include input, output and processing components of a computer and not forgetting humans who act as the system users. A system is also referred to as a set of devices, procedures and operating systems designed to the user needs to produce information and communicate it to the user for proper planning, control and performance.

According to Farley (2017), an information system (IS) is the collection of technical and human resources that provide the storage, computing, distribution, and communication for the information required by all or some part of an enterprise with a combination of hardware, software, infrastructure and trained personnel all together to facilitate planning, control, coordination and decision making in an organisation. A special form of an Information System is management information system (MIS), which provides information for managing an enterprise. An information system (IS) refers to a collection of multiple pieces of equipment involved in the dissemination of information. Hardware, software, computer system connections and information, information system users, and the system’s housing are all part of an Information System.

**Typical Components of Information Systems**

Al-adaile (2009) noted that while information systems may differ in how they are used within an organization, they typically contain the following components.

**Hardware**: Computer-based information systems use computer hardware, such as processors, monitors, keyboard and printers to receive input and produce output.

**Software**: These are the programs used to organize process and analyze data.

**Databases**: Information systems work with data, organized into tables and files.

**Network**: Different elements need to be connected to each other, especially if many different people in an organization use the same information system.

**Procedures**: These describe how specific data are processed and analyzed in order to get the answers for which the information system is designed. These components are part of the general information technology (IT) of an organization. Procedures, the fifth component, are very specific to the information needed to answer a specific question.

## ****2.1.1 Advantages of Information Systems****

**The following are some of the advantages of Information Systems**

**Increases production and saves time:** Business use technology to automate tasks.  A good example is a bakery which uses automated temperature sensors to detect any drop or increase in room temperature in a bakery. These censors will send information directly to the operator and report any temperature change. This saves the bakery time and it also results into quality products.

**Improves communication through communication technology:** With the help of communication technology tools like phones, video conferencing , electronic mail, databases just to mention but a few. Movement of information within an organization or business has become easy and first. Employees can easily move information across departments without having any interruptions. Tools like electronic mail, e-fax, mobile phones and text messaging enhance the movement of information among employees, customers and business partners or suppliers.

**Improves data storage and file management**: Businesses use cloud hosting services to store and backup business data. Also it saves on paper work and makes transfer and access of data remotely. With services like **Dropbox.com**, business owners can access their data any time anywhere. Information and data are very important tools for a business, so it is very essential to store them safely and also access them at any time of need.

**Improves financial management**: Accounting software like Quick Books, Bookkeeper, Sage 50, Tally ERP and Account Edge can be used in performing various accounting tasks in a business. Business owners can easily balance their books with less experience in accounting because these software’s are well equipped with every tool needed in accounting and they also have a help section which can be referred to  in case a user is stuck.

**Cuts costs of operation and increases on research** Communication technology and social technology have made business promotion and product launch affordable. Many small businesses have found ways to use social technology to increase on their brand awareness and get more clients at a minimal cost. In business, factors like cost of operation play a big role in the development and growth of that business. So when businesses use information technology to cut down on costs of operation, then their research will increase which will result into business growth.

**Improves business to consumer relationship** Businesses have embraced the social technology to interact with their consumers and fans. This creates a strong business to consumer relationship and it results into business growth and expansion. Information technology can be used to improve customer service in so many ways. For example, businesses can use internet to inform their customers about great deals and discounts, this makes customers feel special and it can drive their desire to buy. A good customer service can be used as a great tool by any small business to gain competitive advantage.

**Improves on business competitive advantage**: Companies have used technology to gain competitive advantage over their competitors.  A business will improve on its technology and improve on its services and products which will make its customers happy this will turn these happy customers loyal to that business and also invite more friends to use that service or product.

**Availability**. An information system has made it possible for businesses to be open all the time all over the globe. This means that a business can be open anytime anywhere, making purchases from different countries easier and more convenient. It also means that you can have your goods delivered right to your doorstep with having to move a single muscle.

**Cost effectiveness and productivity.** Information System applications promote more efficient operation of the company and also improves the supply of information to decision-makers; applying such systems can also play an important role in helping companies to put greater emphasis on information technology in order to gain a competitive advantage. IS has a positive impact on productivity, however there are some frustrations can be faced by systems users which are directly linked to lack of training and poor systems performance because of system spread.

## 2.1.2 Disadvantages of Information Systems

**Some of the disadvantages of Information Systems include the following;**

**Unemployment and lack of job security. Im**plementing the information systems can save a great deal of time during the completion of tasks and some labor mechanic works. Most paperwork’s can be processed immediately; financial transactions are automatically calculated, etc. As technology improves, tasks that were formerly performed by human employees are now carried out by computer systems. Technology has replaced most positions which humans used to occupy. Accounting is now being done by software, so accountants run out of opportunities.

**Dominant culture: W**hile information technology may have made the world a global village, it has also contributed to one culture dominating another weaker one. For example it is now argued that US influences how most young teenagers all over the world now act, dress and behave. Languages too have become overshadowed, with English becoming the primary mode of communication for business and everything else.

**Security issues:** Thieves and hackers get access to identities and corporate saboteurs target sensitive company data. Such data can include vendor information, bank records, intellectual property and personal data on company management. The hackers distribute the information over the Internet, sell it to rival companies or use it to damage the company’s image. For example, several retail chains were targeted recently by hackers who stole customer information from their information systems and distributed Social Security numbers and credit card data over the Internet.   Since businesses store their data on remote cloud servers which can be accessed with a user name and password, they risk losing that data to wrong minded knowledge works, hackers or viruses, which can harm the business.

**Implementation expenses**: To integrate the information system it require pretty good amount of cost in a case of software, hardware and people. Software, hardware and some other services should be rented, bought and supported. Employees need to be trained with unfamiliar information technology and software. Small businesses fail to afford this expensive technology so they end up losing their clients to a business which has improved its technology and provides a better service or product.

**Internet security issues**:  For the merchant to process an order online, a consumer has to provide their financial details. Experienced hackers can use this lop hole to channel this information and use it for their own needs.

**Faulty products and duplication**: In most cases auction websites have products that are not real. So a user can bid on a shoe thinking it is original, upon delivery, they discover that the shoe is fake and it does not resemble the picture on auction.

**Restricted Individual Privacy: E**commerce websites collect personal data using cookies to know more about us and suggest products basing on that information. This data is collected without any notice, but with selfish intent.

**Over dependence on information technology makes students less active and innovative.** Students no longer take time to solve equation and tasks, all they do is query that task in a search engine and a solution will be provided.

# 2.2 Type of Information Systems

There are many types of information systems, depending on the need they are designed to fill. An operations support system, such as a transaction processing system, converts business data (financial transactions) into valuable information. Similarly, a management information system uses database information to output reports, helping users and businesses make decisions based on extracted data. The following are some of the types of information systems (Davis and Olson 2015)

* Operations support systems, including transaction processing systems
* Management information systems
* Decision support systems
* Executive information systems

## 2.2.1 Management Information System (MIS)

According to (Davis and Olson, 2015) A management information system (MIS) is a broadly used and applied term for a three-resource system required for effective organization management. The resources are people, information and technology, from inside and outside an organization, with top priority given to people. These systems assist lower management in problem solving and making decisions. They use the results of transaction processing and some other information also. It is a set of information processing functions. It should handle queries as quickly as they arrive. Davis, G.B., & Olson, M. H. (2015), an important element of MIS is database. A database is a non-redundant collection of interrelated data items that can be processed through application programs and available to many users. Thus a management information system collects, transmits, processes, and stores data on an organization's resources, programs, and accomplishments. The system makes possible the conversion of these data into management information for use by decision makers within the organization. A management information system, therefore, produces information that supports the management functions of an organization.

## 2.2.2 Executive Information System (EIS)

Al-adaile, R.M. (2009), an executive information system (EIS) is a decision support system (DSS) used to assist senior executives in the decision-making process It does this by providing easy access to important data needed to achieve strategic goals in an organization. An EIS normally features graphical displays on an easy-to-use interface and can be used in many different types of organizations to monitor enterprise performance as well as to identify opportunities and problems (McLeod 1995)..

Current EIS data is available company or enterprise-wide, facilitated by personal computers and workstations on local area networks (LANs). Farbey, B et al (2014), Employees can access company data to help decision-making in their individual workplaces, departments, divisions, etc. This allows employees to provide pertinent information and ideas both above and below their company level.

## 2.2.3 Decision Support System (DSS)

A decision support system (DSS) is a computer-based application that collects, organizes and analyzes business data to facilitate quality business decision-making for management, operations and planning Avison, D. E et al (2016), A well-designed DSS aids decision makers in compiling a variety of data from many sources: raw data, documents, personal knowledge from employees, management, executives and business models. DSS analysis helps companies to identify and solve problems, and make decisions. In a decision support system, data is pulled from various sources and then reviewed by managers, who make determinations based on the compiled data (Lucas 1990)..

According to Flynn D.J. (2012) these systems assist higher management to make long term decisions. These type of systems handle unstructured or semi structured decisions and decisions considered unstructured if there are no clear procedures for making the decision and if not all the factors to be considered in the decision can be readily identified in advance. Some recur infrequently or occur only once. A decision support system must be very flexible and the user should be able to produce customized reports by giving particular data and format specific to particular situations. Decision Support system applications are used in many diverse fields, including medical diagnosis, credit loan verification, evaluating bids on engineering projects, business and business information management, agricultural production at the farm and policy levels, forest management and railroad (for evaluation of defective rails).

# 2.3 Online information systems

Singh, M.P. (2004), states that an online information system is an information system which uses Internet web technologies for delivering information and services to users. This technology is a software system and is used to publish and maintain data by hypertext principle. Web-based information system is the combination of one or more web applications, specific functionality-oriented components, basically in this type of information system web browser is used as a front end and all the databases are used as a back end.

## 2.3.1 Feature of an online information management system

Web-based information systems have evolved significantly over recent years with its improvement. Web-based applications have several advantages over traditional software based applications. Some of the core features of web-based applications are given below:

**Cross platform compatibility:** Most web-based applications are compatible in different platforms than traditional installed software. The minimum requirement would be a web browser (Internet Explorer, Firefox, Netscape etc.). You can use different OS such as Windows, Linux or Mac to run the web applications.

**More Manageable:** Online information systems only need to be installed on the server placing minimal requirements on the end user workstation, which makes the system easier to maintain and update as usually it can all be done on the server.

**Multiple concurrent users:** Web-based applications can indeed be used by multiple users at the same time. It's not necessary to share screen or send a screenshot when multiple users see and even edit the same document at the same time. Web conferencing and online collaboration companies regulate some key transformations and users only explore what they really need to work effectively and co-edit documents together.

# 2.4 Database Information Systems

Databases and database systems are an essential component of life in modern society: most of us encounter several activities every day that involve some interaction with a database. (Flynn D.J. 2012) For example, if we go to the bank to deposit or withdraw funds, if we make a hotel or airline reservation, if we access a computerized library catalog to search for a bibliographic item, or if we purchase something online such as a book, toy, or computer chances are that our activities will involve someone or some computer program accessing a database. (Flynn D.J. 2012) Even purchasing items at a supermarket often automatically updates the database that holds the inventory of grocery items.

These interactions are examples of what we may call traditional database applications, in which most of the information that is stored and accessed is either textual or numeric. In the past few years, advances in technology have led to exciting new applications of database systems. New media technology has made it possible to store images, audio clips, and video streams digitally. (Avison, D.et al 1988) These types of files are becoming an important component of multimedia databases. Geographic information systems (GIS) can store and analyze maps, weather data, and satellite images. Data warehouses and online analytical processing (OLAP) systems are used in many companies to extract and analyze useful business information from very large databases to support decision making. Real-time and active database technology is used to control industrial and manufacturing processes. And database search techniques are being applied to the World Wide Web to improve the search for information that is needed by users browsing the Internet (Farbey, B et al 2014)

# 2.5 Chapter Summary

Reviewed Literature Clearly reveals the need for every organization to have a database driven Information management system to help with day to day operations in order to improve efficiency and literature from different scholars about information management systems. And also improve on storage and retrieval of the data within the organisation and manage their information

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