

THE RELEVANCE OF COMPUTER BASED INFORMATION SYSTEM IN AN ORGANIZATION

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Abstract

Computer based information system (CBIS) is composed of hardware, software, databases, telecommunications, people, and procedures that are configured to collect, manipulate, store and process data into information. It is highly needed in an organization for speedy processing of data, improved inventory control, remote access to data and information, data protection, confidentiality of information, easy information search, and up to date information. This will bring improvement in the way the organization operates and managed to attain the organization's objectives. But the organization's objectives will only be attained through increased productivity, reduced operational costs, better administration, communication and coordination; better information for decision making, planning and control. These are possible through the effective use of CBIS. However, the paper is of the opinion that simple computerization of manual information system does not guarantee improved system performance and that these benefits do not arise automatically. There must be clear objectives, proper structures and thorough analysis of the real information needs before any computerization is done.

Introduction

An organization is a social arrangement which pursues collective goals, controls its own performance and has a boundary separating it from its environment (Wikipedia, 2010). It is usually artificially contrived structures with procedures and objectives which should adapt to changes in the environment. It is created and maintained to achieve specific objectives. An organization may be a hospital with objectives dealing with healthcare. It may be a local authority with objectives concerned with providing services to the local community or it may be a commercial company with objectives including earning profits, providing a return for varied, and may not be clearly defined. But the modern economies consist of countless organizations, so their efficiency and performance are of critical importance to the society. For effective and efficient performance of any organization, it requires proper management of data, information and other resources like manpower, money, machines, and equipment. This is possible through

a well articulated information system which will also ensure the achievement of the organization's goals and objectives.

Information

Information is data organized for a purpose and presented within a context that gives it meaning and relevance which leads to increase in understanding and decrease in uncertainty (Wikipedia, 2010). It is a collection of facts, (data) organized in such a way that they have additional value beyond the value of the facts (data) themselves (Stair & Reynolds, 1998). The organization of facts involves the processing of the facts to have meaning, so information is obtained from data as a result of processing and manipulation of activities applied to data. However, it is of fundamental importance to understand the way in which data can be structured so that information may be extracted with the greatest speed, efficiency and least possible cost. Information can exist in two main forms as

- written information and
- Oral information

Written information is passed or received through written words, pictures and illustrations. It is transmitted through handwritten, typing, printing, telex, telegram, fax and computer system. So computer based information system (CBIS) is a type of written information, its main advantages is that it is more permanent in nature and main disadvantage is that it is not for an illiterate person.

Oral information is passed or received through verbal communication. It involves either face-to-face communication or discussion or through telephone conversation. It is very effective since action will be taken immediately on receiving it. Its major disadvantage is that it is subject to denial. However, every valuable information must exhibit the following characteristics of accuracy, relevance, flexibility, reliability, simplicity, timeliness, verifiability and accessible to authorize users.

Information system

An information system is a specialized type of system and can be defined in a number of different ways. For our purpose, an information system (IS) is a set of interrelated elements or components that collect, (input) manipulate and store (process) and disseminate (output) data and information and provide feedback mechanism to meet objectives (Stair & Reynold, 1998). The term refers to information technology that is used by people to accomplish a specific organization or individual objectives. The technology may be used in the gathering, processing,

storing, and/or dissemination of information and the users are trained in the use of that technology, as well as in the procedures to be followed in doing so. The specific technologies that collectively comprise information technology are computer technology and data communications technology. Computers provide most of the storage and processing capabilities, while data communications specifically networks - provide the means for dissemination and remote access of information. Computer based information system has a defined characteristics of providing information to users in one or more organizations mainly through network. Information system is different from real-time control systems, message-switching systems, software engineering environments, or personal computing systems. However, the following are among the important characteristics of information system that make their design and construction particularly difficult. They are:

- Their environment is complex, not fully definable and not easily modeled.
- They have a complex interface with their environment, comprising multiple inputs and outputs
- The functional relationships between inputs and outputs are structurally, if not algorithmically complex
- They usually include large and complex databases
- Their 'host' organizations are usually highly dependent on their continuing availability over very long periods, often with great urgency attending their initial provision or subsequent modification (Stair & Reynold, 1998).

Information system should not be confused with information systems. The latter is a professional and academic discipline concerned with the strategic, managerial and operational activities involved in the gathering, processing, storing, distributing and use of information and its associated technologies, in society and organizations. As an area of study, information systems bridge the multidisciplinary business field and the interdisciplinary computer science field that is evolving towards a new scientific discipline (Wikipedia, 2010). However, information system is implemented within an organization for the purpose of improving the effectiveness and efficiency of the organizations. Capabilities of the information system and characteristics of the organization, its working system, its people, and its development and implementation methodologies together determine the extent to which that purpose is achieved. To achieve the organizational goals, the components of information system which includes people, equipment, procedures and data must be used effectively.

Types of Information System

For most organizations, there are varieties of requirements for information. Top management of organization needs information to help them in organizational planning and control. The middle management needs more detailed information to help them monitor and control the organizational activities. The employees with the operational roles need information to guide them in carrying out their duties effectively. As a result, organizations tend to have different types of information system operating at the same time in the organization.

Information system is constantly changing and evolving as technology continues to grow. Very importantly, the types information system described below are not mutually exclusive and some, especially expert systems, management information system, and executive information system can be seen as a subset of Decision Support Systems. However, these examples are not the only overlaps and the divisions of these information systems will change over time. At present, there are different types of information system in an organization, which are listed briefly below.

Transaction Processing System (TPS): As the name implies, TPS is designed to process routine transactions efficiently and accurately. It processes the detailed data necessary to update records about the fundamental business operations of the organization. A TPS collects and stores information about transactions, and controls some aspects of transactions. A transaction is an event of interest to an organization like sales of a store. So, TPS is a basic business system comprising of order entry, inventory control, payroll, accounts payable, accounts receivable and general ledger to name just a few. TPS is a basic business system of an organization that serves the most elementary day-to-day activities of an organization. This is very often critical to the survival of the organization and need to be fault-tolerant (Kelly, 2008).

Decision Support System (DSS): DSS is an organized collection of people, procedures, databases and devices used to support problem-specific decision making. It is specifically designed to help management make decisions in situations where there is uncertainty about the possible outcomes of those decisions. It helps strategic management (Senior/top management) in making decisions by providing information, models, or analysis tools. DSS comprise tools and techniques to help gather relevant information and analyze the options and alternatives. DSS often involves use of complex spreadsheet and databases to create "What-if models. DSS is flexible, adaptable and quick in operation. The user controls the inputs and the outputs. It supports the decision process and often in sophisticated modeling tools so that managers can make simulations and predictions.

Knowledge Management System (KMS): KMS exist to help organization create and share information. These are typically used in organization where employees create new knowledge

and expertise. This is shared by other people in the organization to create further commercial opportunities. Good examples include firms of lawyers, accountants and management consultants. KMS are built around systems which allow efficient categorization and distribution of knowledge. For example, the knowledge itself might be contained in word processing documents, spreadsheets, power point presentations, internet pages. To share the knowledge, a KMS would use group collaboration systems such as an intranet

Management Information System (MIS): MIS is an organized collection of people, procedures, databases and devices used to provide routine information to managers and decision makers. The forms of an MIS are an operational efficiency and internal sources of information. MIS usually takes data from the TPS, condenses and converts the data into information for monitoring performance and management of the organization. Transactions recorded in TPS are analyzed and summarized into series of management reports by MIS. MIS usually have large quantities of input data and produce summary reports as output. MIS reports tend to be used by middle management and operational supervisors. An example is an annual budgeting system.

Office Automation System (OAS): OAS provides individual effective ways to process personal and organizational data, perform calculations, and create documents, for example word processing, spreadsheets; file managers, personal calendars, and presentation packages. OAS is a system that tries to improve the productivity of employees who need to process data and information and reducing "paper warfare". Perhaps the best example is the wide range of software system that exists to improve the productivity of employees working in an office, (e.g. Microsoft Office XP). OAS software tools are often integrated (e.g. Word Processor can import a graph from a spreadsheet) and designed for easy operation.

Expert Information Systems (EIS): This is built with decision-making rules, and they can ask humans a series of questions to narrow down the correct answer. It imitates experts in many different fields of expertise. It contains rules such as decision tables that help a human to answer expert questions. The expert system rule out options with each question until there remains an option with high probability. With this now, it provides expertise information. It stores more information than human and is available 24 hours a day.

Executive Information System (EIS): This is also known as Executive Support System (ESS). Stair & Reynolds, (1998) said that ESS or EIS is a specialized DSS that includes all hardware, software, data, procedures and people used to assist senior-level executives within organization. It is designed to help senior management make strategic decisions. It gathers, analyzes and summarizes the key internal and external information used in the organization. It provides

executive information in a readily accessible and interactive format. EIS is a form of MIS intended for top-level executive use. An EIS usually allows summary over the entire organization and also allows drilling down to specific levels of details. It also use data produced by the ground-level TPS, so that the executives can gain an overview of entire organization.

COMPUTER BASED INFORMATION SYSTEM (CBIS)

A Computer Based Information System (CBIS) is composed of hardware, software, databases, telecommunications, people and procedures that are configured to collect, manipulate, store and process data into information. A computer based information system is also known as a business technology infrastructure (Stair & Reynolds, 1998). This is because CBIS consists of the shared information system resources that form the foundation of the information systems. More so, the components of information system that is people, equipment, procedures, and data are part of the CBIS.

THE NEED OF CBIS IN ORGANIZATION

Over time, organizations have developed systems to process and manage their information. Traditionally, these were systems using manual methods, but modern information system is almost entirely computer based. This is owing to trends towards globalization and the ever increasing rate of change. More so, organizations now operate in dynamic and uncertain environments and markets unlike before. (Lucey, 2005). However, in the subsequent paragraphs we are going to discuss the inherent benefits in using CBIS. Understanding the type of information that is required by the organization, and how properly designed CBIS can help to manage these resources more effectively, may bring many improvements in the way the organization operates and being managed. These include:

Speedy Processing: With CBIS, the processing of data into information is done with great speed without delay. Timely receipt of information is very vital for the management of an organization in this computer age. Organizations are usually ahead of its counterpart based on timely receipt of information. Speedy processing of data into information and timely receipt of information is not independent of computer system. This gives the organization management opportunity to have immediate information to take decision.

Improved Inventory Control: Organizations using CBIS will have improved inventory control. It gives the organization opportunity to know their stock position at any time. With good management, the organization will never run out of stock at any time.

Simultaneous And Remote Access To Data: Multiple managers can access the organization's record or data simultaneously from many different locations for the interest of the organization. With the recent advent of data security transmission over the web, the managers can now review, and audit organizational records from anywhere in the world. This is only possible if the managers are authorized to do so.

Legibility of record: CBIS makes the organizational record, data and information to be legible unlike handwritten ones. Handwritten records, data and information especially with poor handwriting are notoriously difficult to read. However, on-screen or printed text is often far more legible than handwritten.

Safe Data: New users of CBIS often fret over the potential lost of data due to system malfunctions. With a well designed and tested backup scheme and disaster recovery systems, a computer based information is much more reliable and less prone to data loss than conventional paper based information.

Confidentiality of Information: Information access can be restricted and monitored automatically. Each user can have specific levels of access to various information types. Audit logs can be screened electronically to look for statistical abnormalities which may signal unauthorised information access in case of unauthorized access. This is not the case in paper based information system.

Easy Information Search: In a small fraction of the time required using a manual system, computers can search for information with ease. It can also be used to search for structured data, to find a specific data value or to determine whether a particular item has ever been recorded.

Greater range of information output modalities: There are different ways of presenting information to users in CBIS. Information can be presented to users via computer generated voice, e-mail, monitor display etc. In addition, instructions can be sent to external computer controlled devices. Those presentations are easily done unlike paper based information system which has one means of doing that. More so, information can be printed using a variety of fonts, colours, and help focus the user's attention on important information. In addition, images can be combined with textual data to create a more complete understanding of the information.

Up To Date: With real-time and on-line processing systems, CBIS is always up to date provided that all the electronic information is integrated. This makes information to be immediately available to all users regardless of their physical location as soon as the information is entered

into the computer system. This eliminates the problems associated with several users, keeping some information in their offices or departments in the organization.

Recommendations

For any organization to benefit from CBIS, it must adhere to these recommendations.

- The real information needs of an organization must be identified before computerization of the information system.
- There must be clear objectives, proper structure and thorough analysis of the information needs of the organization.
- The systems analysis of information system of the organization must be done before embarking on computerization of the process.
- The users of the CBIS should be properly trained in handling the computerized system in order to ensure efficient usage of the CBIS.
- Alternative to the public power supply should be available in case of electricity outage from public supply
- Each user should have a limit of accessing information in the CBIS. Accessing limit above his limit must be authorized by the top management.
- Precautionary measures must be taken in respect of CBIS usage. This is to ensure that data integrity and security are maintained.
- Confidential information from the CBIS should be made available to the top managers, especially for vital decision making in respect of the organization's objectives.

Conclusion

This paper has discussed the need for CBIS in an organization and found out that, to be an effective and efficient manager of an organization one need to understand that information is one of the organization's most valuable and important resources. Hence, CBIS is increasingly being used as a means to create, store and transfer information within the organization and outside it. However, it is important to stress that the simple computerization of a manual information system does not guarantee improved system performance. If the underlying information system is flawed, the act of computerizing it might only magnify the impact of these flaws. So, no amount of the most up-to-date and powerful equipment can overcome deficiencies in pre-planning and the definition of the real needs of the organization.

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