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INFORMATION TECHNOLOGY OR INFORMATION SYSTEM: SOLUTION FOR EFFECTIVE BUSINESS COMMUNICATION IN OPERATION, MANAGEMENT AND DECISION MAKING

Abstract: Today, managing a business without a computer is simply unthinkable. Computers have long been firmly established in such areas of management as accounting, warehouse management, assortment and procurement. However, modern business requires a much wider application of information system in enterprise management beforehand. The viability and development of information technology is due to the fact that modern business is extremely sensitive to errors in management. Improving experiences in operation, managing system and high level of decision making extremely important modern problems in global economy. Capital transfer, investment, transfer technology and idea, stable economic growth and human capital index can be raised in international standard while held reforms in these fields. In order to make any competent growth in any sectors decision making in conditions of uncertainty and risk, misunderstanding it is necessary to constantly keep under control various aspects of technical, financial and economic activity. Therefore modern management approach involves investing in both fields simultaneously.

Key words: information technology, information system, business, management, human capital, effectiveness.

Language: English

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Introduction

At the age of science and technology widespread introduction of information technologies and systems are major factor of socio-economic development of any countries. The role of information and communication services in the development of economic prospective society for the living style in

prosperity is predominantly actual. In modern emerging economies production, service and other sectors expansion and growing of division of labor and capital, the development of society and meeting the needs of the population are growing sharply.

Several years of operation of the system has led to many interesting insights, both in the use of

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technical solutions and software. They can be useful both in its further development as well as in the creation of a new system from the ground up by other cities or regions that will want to use this type of tools to promote their values [1].

Since the application of computers in administrative information processing began in 1954 [Davis and Olson 1985], computers have become a key instrument in the development of organizations' formal information processing. The rapid development of information technology has helped to firmly establish the general attitude that information systems (ISS) are a powerful instrument for organizational problem solving. This opinion has been strengthened by popular theories of organizational behavior, which view organizations primarily as information-processing systems [March and Simon 1958; Galbraith 1977 or control systems [Landry and Le Moigne 1977; Verrijn-Stuart 1979] [2].

Whereas the above opinion is widely held in the IS community, it is not, however, in line with the evidence gained from studies on how computer technology changes organizational performance [Cron and Sobol 1983; Earl and Hopwood 1980; Ouchi 1978]. In many empirical investigations information systems have been found to be perceiving and understanding these problems. We classify major IS problems and explore a number of approaches and perspectives that have been suggested for resolving these problems. Each perspective is reflected in theories, models, and research results. In this way, we evaluate the success of various perspectives in coping with particular IS problems and indicate what sort of empirical support exists for such evaluations. The reader is expected to have a general exposure to the problems and issues of systems design as, for example, covered in standard textbooks on information systems [Davis and Olson 1985] [3].

The concept of information has not been defined unambiguously yet [4]. The interpretation of this word cause a lot of trouble in terminology and agreement between professionals in this area can be reduced to saying that there is no strict, unambiguous and comprehensive definition of information [5]. The researchers often abandon analyzing the definition of the term, and stay with intuitive, common understanding, or supplementing it with auxiliary terms [6] N. Wiener, as the father of cybernetics, introducing the concept of information, stated "(...) it is the name of the contents of the external world [7]. In turn, R. Ashby, contented himself with saying that "(...) information is a transfer of diversity" [8], and S. Beer, author of one of the first work on applications of cybernetics in management, although in his work often refers to the concept of information - did not specify it [9]. Polish Standard PN-71-T-01016 adopted the term, according to which "information is the meaning (content) used in the relevant conventions assigned to data" [10] and E. Niedzińska cites French saying that: "With no matter, there is nothing, without power all is still, with no information there is chaos.

"In any case, it is true to say that, the information is a factor increasing the knowledge of reality. The aim should be to achieve full knowledge on the topic, which in the case of huge complexity of the problem is in fact impossible [11]. Information theory states that lack of knowledge is the greater, the greater the complexity and diversity of considered fragments of reality. In general, a gap between the full knowledge and the knowledge generally available is formed [12,13]. The superior goal of information is to provide news from news source to the object of their destination. Forwarding a message consists of sending them in space from one place to another or moving it in time (remembering, recording) [14,15].

Table 1. Value of Information Factors.

Correctness	Accessibility	Timeliness
Precision: What is expected is what is collected.	Security: Information available to users who need it.	Response time: Information retrieval from request to delivery is reasonable time.
Accuracy: What is collected is what is entered.	On-line: Information can be accessed from user's workstation.	Up-to-date: Information is current.
Bug-free: What is entered is what is reported.	Barrier-free: Information in not requested through another.	Work flow: Data entry to information output is efficient.
Utility: What is entered can be used for information.	Equipment: Appropriate hardware for information processing for user.	Reliable: Information is available when needed.

Source: Valerie Bryan, Information Technology Management, Florida Atlantic University, p 312.

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The concept of an information system is interpreted differently, depending on the context. A fairly broad understanding of the information system implies that its integral components are data, hardware and software, as well as personnel and organizational measures. The concept of “information system” is widely interpreted by the information system the totality of information contained in databases and information technologies and technical means ensuring its processing.

RESULTS

In an organization, an information system is considered as software that implements an organization’s business strategy. The goal is to create and deploy a unified corporate information system that satisfies the information needs of all employees, services and departments of the organization. However, in practice, the creation of such a comprehensive information system is too difficult or even impossible, as a result of which the enterprise usually operates several different systems that solve particular groups of tasks: production management, financial and economic activities, electronic document management, etc.

Information systems are also classified:

- Functional purpose: production, commercial, financial, marketing;
- Objects of management: information systems for computer-aided design, process control, enterprise management (office, firm, corporation, organization);
- Nature of the use of the resulting information: information retrieval, designed to collect, store and issue information at the request of the user; information advisors, offering the user specific recommendations for decision-making (decision support systems); information managers, whose result information directly participates in the formation of control actions.

The information management concept Information management has been defined as the organization-wide capability of creating, maintaining, retrieving and making immediately available the right information, in the right place, at the right time, in hands of the right people, at the lowest cost, in the best media, for use in decision making (Langemo, 1980).

In the same vein, Best (1988) defines information management as the economic, efficient and effective co-ordination of the production, control, storage and retrieval and dissemination of information from external and internal sources, in order to improve the performance of the organization.

Management information system (MIS), are regarded as valuable organizational resources. Simply put, an information system is a system for accepting data/information as a raw material and through one or more transmutation processes, generating information as a product.

- perception – initial entry of data whether captured or generated, into the organization;
- recording – physical capture of data;
- processing – transformation according to the “specific” needs of the organization;
- transmission – the flows which occur in an information system;
- storage – presupposes some expected future use;
- retrieval – search for recorded data;
- presentation – reporting, communication; and
- decision making – a controversial inclusion, except to the extent that the information system engages in decision making that concerns itself [16]

The attributes indicated above can be considered as major attributes or essential elements for developing an information system concept in an organizational context. In order to understand the information system concept further, Salton (1975) highlighted the most important computer-based information systems as follows:

Information Types

- Personal information;
- Operational information;
- Administrative information;

Departmental information

- information retrieval system (IR);
- question-answering system;
- database system (DBS);
- management information system (MIS);
- decision support system (DSS). [17]

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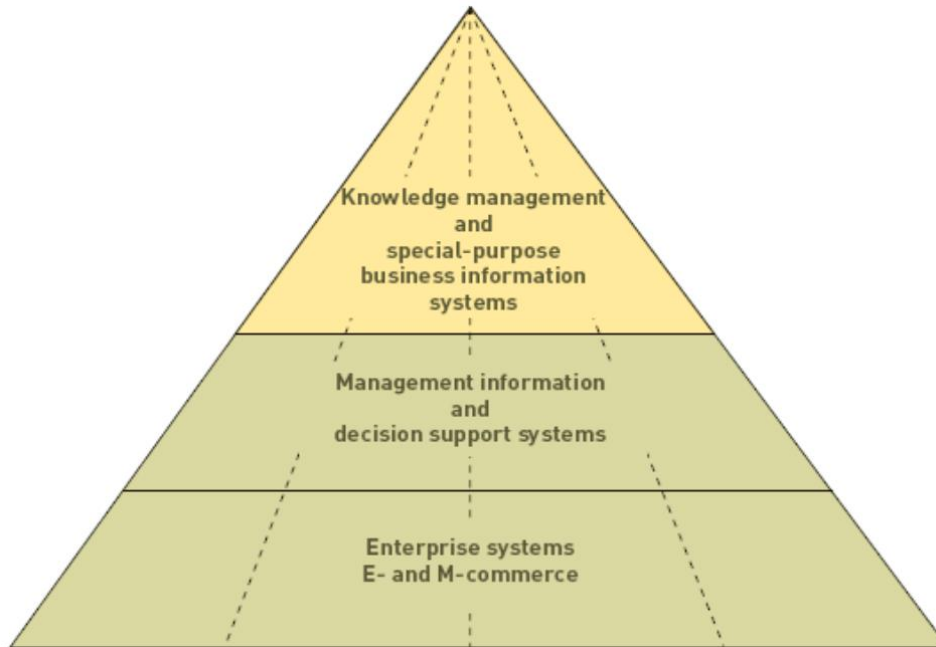


Figure 1. Business Information Systems [18]

Source: Fundamentals of Information Systems, Fifth Edition, Chapter 1 An Introduction to Information Systems in Organizations, Course technology, Cengage learning, P 22.

DISCUSSION

Information Systems and Information Technologies as a Strategic Weapon

Some essential capabilities such as business system thinking, architecture planning, and informed buying are the core requirement to address these challenges. These capabilities along with technical, business and interpersonal skills are necessary for a company to sustain a competitive advantage by means of its IT.

IT has changed the competitive environment in six basic ways:

- Products and services enhanced with computer capability,
- Cost displacement,
- Enhanced decision support,
- Revision of the mission or objectives of the enterprise,
- Business interrelationships, and
- Creation of new products and services [19]

Problems with MIS

There is abundant evidence from numerous surveys conducted in developed countries, particularly in the UK and USA, that existing MIS, often using advanced computer equipment, have had relatively little success in providing management with the information it needs. Reasons discovered include the following:

- lack of management involvement with the design of the MIS;
- narrow or inappropriate emphasis of the computer system;
- undue concentration on low-level data processing applications particularly in the accounting area;
- poor appreciation by information specialists of management's true information requirements and of organizational problems; and
- lack of top management support. [20]

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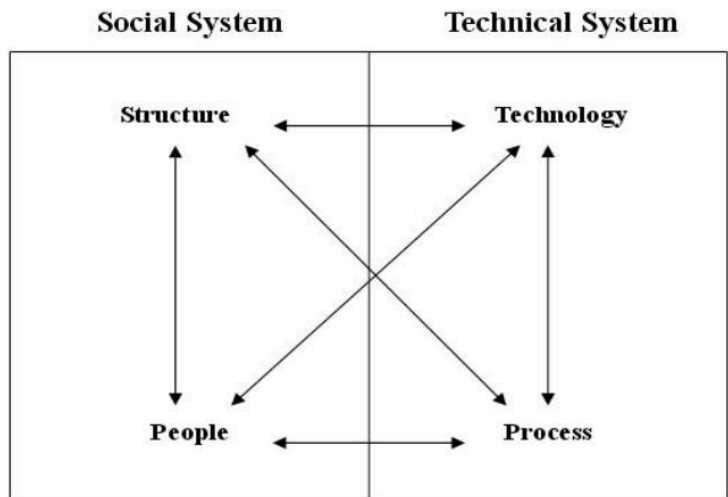


Figure 1. The four components of an information system

An information system is defined as a socio-technical system comprised of two sub-systems: a technical sub-system and a social sub-system. The technical sub-system encompasses the technology and process components, while the social sub-system encompasses the people and structure components. The critical insight from the examples introduced earlier is that for an information system to perform and achieve its objectives, all four components have to be present and working together. We now define and describe the four components of a modern information system [21]

Consciously or unconsciously promoting a falsely positive image of IT:

- all of the hardware and software and training companies that survive through the trade in IT;
- all of the IT consultants whose jobs depend on IT;
- all of the academics who work in computer science or information systems departments;
- all of the journalists and other workers who produce IT magazines;
- all of the staff within organizational IT or DP departments whose jobs depend on IT;
- all of the managers who want a 'quick fix' for their problems and/or who want themselves or their organizations to appear up-to-date and proficient with the latest technologies. [22]

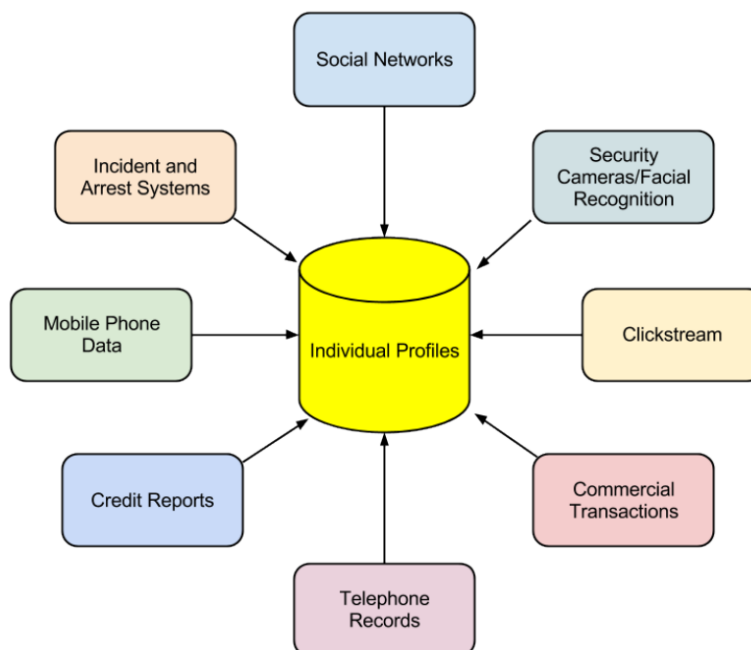


Figure 2. Information system structure [23]

Source: David T. Bourgeois, PhD, Information Systems for Business and Beyond, Saylor P 146, URL: <http://www.saylor.org/courses/bus20>

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The structure of information systems is a collection of its individual parts, called subsystems. Functional subsystems implement and maintain models, methods and algorithms for obtaining control information. The composition of functional subsystems is very diverse and depends on the subject area of use of the information system, the specifics of the economic activity of the object, and management.

The composition of providing subsystems usually includes:

- information support - methods and means of building the information base of the system, including information classification and coding systems, unified

document systems, information flow diagrams, principles and methods for creating databases;

- technical support - a set of technical means involved in the technological process of converting information in the system. First of all, these are computers, peripheral equipment, equipment and data transmission channels;

- the software includes a set of regular use programs needed to solve functional problems, and programs that make the most efficient use of computing equipment, mathematical software ;

- linguistic support - a set of language tools used in the system in order to improve the quality of its development.

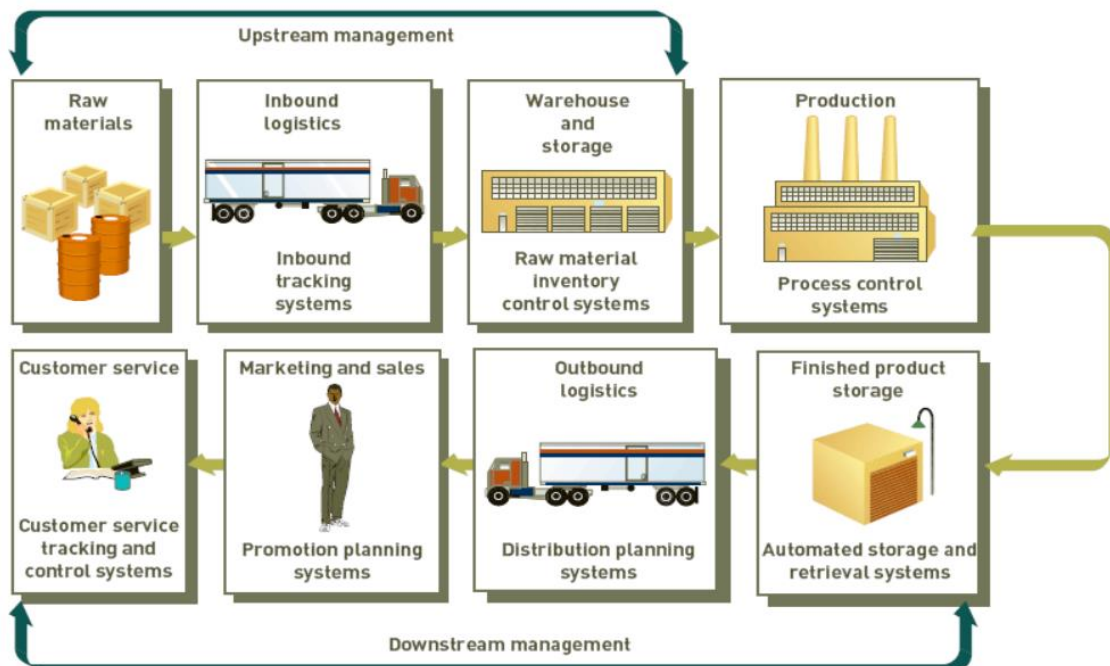


Figure 3. Organizations and Information Systems [24]

Source: Fundamentals of Information Systems, Fifth Edition, Chapter 1 An Introduction to Information Systems in Organizations, Course technology, Cengage learning, P 43.

Organizational subsystems essentially as figure 3 also refer to supporting subsystems, but are primarily aimed at ensuring the effective work of the staff, and therefore they can be allocated separately. These include:

- staffing - the composition of the specialists involved in the creation and operation of the system, staffing and functional responsibilities;

- ergonomic support - a set of methods and tools used in the development and operation of an information system, creating optimal conditions for the activities of staff, for the rapid development of the system;

- legal support - a set of legal norms governing the creation and operation of an information system, the procedure for obtaining, converting and using information;

- organizational support - a set of solutions that regulate the processes of creation and functioning of both the system as a whole and its staff. [25]

Information Systems. Structure and classification of information systems,

In this case, the end user is provided with a number of analytical and navigation functions:

- calculations and calculations for several dimensions, hierarchies and / or members;

- trend analysis;

- selection of subsets of data for viewing on the screen;

- data deepening, to view information at a more detailed level;

- transition to the detailed data underlying the analysis;

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- rotation of the table of displayed data. [26]

Comparison of Information System and Information Technology

Information system and information technology are similar in many ways but at the same time they are different. Following are some aspects about information system as well as information technology.

- **Origin:** Information systems have been in existence since pre-mechanical era in form of books, drawings, etc. However, the origin of information technology is mostly associated with invention of computers.

- **Development:** Information systems have undergone great deal of evolution, i.e. from manual record keeping to the current cloud storage system. Similarly, information technology is seeing constant changes with evermore faster processor and constantly shrinking size of storage devices.

- **Business Application:** Businesses have been using information systems for example in form of manual books of accounts to modern TALLY. The mode of communication has also gone under big change, for example, from a letter to email. Information technology has helped drive efficiency across organization with improved productivity and precision manufacturing [27].

Future of Information System and Information Technology

Information technology has shown exponential growth in the last decade, leading to more sophisticated information systems. Today's information technology has tremendously improved

quality of life. Modern medicine has benefited the most with better information system using the latest information technology. Information systems have been known to mankind in one form or the other as a resource for decision making. However, with the advent of information technology information systems have become sophisticated, and their usage proliferated across all walks of life. Information technology has helped managed large amount of data into useful and valuable information. [28]

When it comes to available careers in the field of information systems, the opportunities are plentiful. Actuarial sciences, analytics and programming, communications, computer security and auditing are a few common fields.

CONCLUSION

IT is a subset of IS. The fields are certainly related, but those interested in a career in technology should research and understand the difference in the two fields. Careers in each area require separate degrees and preparation. While both deal with computers the majority of the time, they have very distinct paths that demand separate education and training [29]. If we analyze current outcomes and findings we can to conclusion that Information system cannot be effective results without information technology and controversy the same. It means in science and technology stage of integration effective business communication can be obtain best results both of the modern achievements of this sectors. Under innovation and transfer innovative technology we will expect more effective standards and reforms in IT and IS sectors.

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