Information technology serving to the managements of organizations

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Abstract:

Time in which we live is characterized by extremely great development of science and technology, which permanently changes all the pores of economic and social life. Furthermore in the contemporary conditions of business development, role of information technology and information system has become critical and information technology has gained importance when it comes to the success and efficiency of the business, as in performing daily operations as well as in making strategic decisions. Management of organizations has changed a lot in recent decades, especially when considering the development of information technology and its progress that occurred in the last decade. Thus, information technology every day more and more is becoming a key factor in all dimensions of human life and society, whether in private life as well as in society and work. At the same time we can say that information technology has become an integral part of the society in which its role and importance have a very strong and undeniable impact in its organizing and functioning in general. So, given the fact that information has a key role in all fields of life, then it is clearly understood how important it is also for the employees and managers in organizations. In this scientific paper I have presented some of the components of the computing system for each element explaining the role and importance that they have for the general organization and management in particular, and also for the support that it provides to the management in decision making for employees and the organization.

Key words: management, organization, information technology, information, systems.

The components of information system

Computer systems about which we speak include computers with all its parts, because computers and its devices can be used in different ways to produce information. Firstly they can serve as a device for storage and reuse of data. Secondly, computers can be used to calculate totals of (amounts and general amounts), percentage, minimum, maximum, sum-up, subtract, then different calculations for various projects by three dimensional graphics presentations, and other important information. Furthermore they can serve as communications equipment and finally through computers can present information for reproduction of tables, graphics, various reports and formalized statistics.

Modern computers work with data in digital form, because in this way can save, search, use and efficiently send various data and information to large distances via computer networks of . Data, text, photography, animation or sound can digitalized through the keyboard entry, through scanning, voice digitizing voice or by reducing through digital cameras that is a combination of computer hardware, databases, telecommunications, peoples and procedures, all organized to introduce or process data into information.[1]

Information Systems have at least five components: ***humans, procedures, data, computers and programs***. Organizations today are transferring quickly as a result of the application of information technology and digital economy.[2]

As it is known, an information system is based on high tech computing which includes:

- ➡ ***Computer hardware*** - including all physical equipment.
- ➡ ***Computer software*** - which includes programs, instructions and different applications. But for these two

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[1] Beqiri. E. Computing basics page 69
[2] Berisha - Namani. M: Business information, page 77

components will talk more extensively in figure 1, where all the components of the computing system are included, then

➡ *Data bases* - otherwise storage of information on computer media (USB disk or magnetic tape), which can be accessed by the computer directly to the use of data and information that they have.

➡ *Procedures* - including manuals or instructions for use of computing system and its applications, and

➡ *Working staff* – **involves** (computer operators, programmers and analytics of computer system).[3]

Figure 1. As we mentioned above we shall see the main components of computing system:
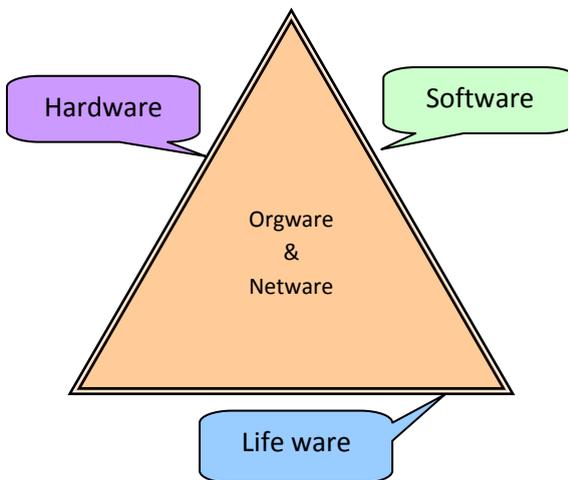

Fig. 1. Computing system components.

Contemporary computing system based on computers is a synthesis of its key resources through which activities on summing up, processing information and delivering them to the user are carried out.[4]

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[3] Ruseti. B. And Sevrani. K. Management information systems, pages, 48-49
[4] Beqiri. E. Compuing basics page. 25

The key elements of computing system are:

Hardware – which includes all devices for collecting, processing and saving information, as well as other physical devices that are used for communication, namely Computer Hardware, is the physical parts of the computer that constitute a computer system. It refers to physical parts or computer components such as the monitor, keyboard, hard disc, mouse, etc.[5]

Software includes programs and instructions that direct a computer's processor to perform specific operations. The software presents the union of programs, which serve to control the hardware and programs that enable the use of computer system based on computer for carrying out different tasks demanded by the user.

Software can be divided in three basic groups:[6]

- ► *System software*
- ► *Applicative software (exploiting)*
- ► *Software with technical testing programs.*

System Software contains the programs and data without which the computer could not be activated at all and without which there it cannot be able to perform tasks that the user sets therein.

Software application contains the programs and data by which specific problems are resolved demanded by the user, such as programs that users make them for resolving certain problems like the calculation of VAT or percentage, tables, charts and many other important things etc.

Technical Testing software includes dedicated programs for certain testing of computer system itself.

Lifeware, is constituted by experts: users, computer operators, programmers and organizers or analytics of computer system.

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[5] http://en.wikipedia.org/wiki/Computer_hardware
[6] Beqiri. E. Computing basics page. 26

Orgware, includes organizational actions, methods and ways of adaptation and interconnecting the first three components in one harmonic, functional, and economic.

Netware is a computer network or operative system and it has been developed by Novell.[7]

Types of computing system

In general, information systems are classified into several types depending on the character of classification but also in the sphere of their use. Like all other systems can be simple and complicated as well as information systems can be simple and complex or complicated if taken based on the volume of data that must be processed. Also, depending on the relationship between inputs and outputs information systems can be:

a) *Neutral systems* - when their input is equal to the output, the input does not undergo any change and we say that this system is only a transmitter of information.

b) *Intelligent systems - when inputs are larger than the outputs, for that we say that the system is more passive as it receives more information and processes them less and the output is smaller.*

c) *Governance computing system - is the creative system, because in this system inputs are smaller than outputs. During the processing of data the system creates new quality, therefore we say that this system is creative and in the governance function.*

Information systems can be classified according to some other criteria.[8]

➕ According to areas of use, information systems can be: technical and technological information systems,

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[7] http://en.wikipedia.org/wiki/NetWare
[8] Berisha - Namani. M: Business computing, pages 65, 66

> scientific information systems, marketing information systems etc.

- According to character there are distributive information systems and combined information systems.
- According to organization manner, information systems can be centralized and decentralized.
- According to the organizing way, integrated systems are distinguished. Their priority of these systems is their synergy that is expressed in the whole system as well as reduction of costs and increase of efficiency in comparison to centralized and decentralized systems.

With the introduction of mini-computers and personal computers a large number of computer systems which existed previously began to become redundant. Computing system enabled to shorten the data processing path so much that an important tip from one corner of the world to reach the next corner within few seconds.

There is large number of types of computerized information systems, constituting the following:

1. Electronic transaction data processing systems
2. Office Automated Systems for office activities,
3. Information management systems and
4. Managerial support systems.[9]

Transaction Processing System – TSP serve for leading every day and routine transactions. Office Automated System - OAS) include computer devices and software packages needed to process documents and orders (text processing, electronic mail and similar).

Management Information System – MIS means system union for supporting managerial activities in all decision making activities. Management Information systems produce summary

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[9] Laudon, K. C.; Laudon, J.P.; Management Information Systems: New York, SHBA, 1988 fq 6, 7

information that allows the management to improve inputs in order to change outputs in future.

Management Support System – MSS are mainly these systems affect directly to the managerial staff in decision making. It should be emphasized that there are other information systems that support decision making but we mentioned some of the most important ones.[10]

To be more clear and to assist readers of this scientific paper and to meet for the first time this issue we will present the following table information systems mentioned above and the other with their original names in English as well as their abbreviations that they can be found in other literature. It will also be shown on the effects that they have on supporting decision making.

Table. 1. Types of information systems

Information systems	English designation	Initials	Support on business decision making
Transaction Processing Systems	Transaction Processing Systems	TPS	Indirect
Office Automatization Systems	Office Automatization Systems	OAS	Indirect
Management Information Systems	Management Information Systems	MIS	Direct
Management Support Systems	Management Support Systems	MSS	Direct
4.1 Decision Support System	4.1 Decision Support System	DSS	Direct
4.2Group Decision Support System	4.2Group Decision Support System	GDSS	Direct
4.3 Expert System	4.3 Expert System	ES	Direct
4.4 Executive Support System	4.4 Executive Support System	ESS	Direct

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[10] Sikavica P, Bebek B, Skoko H, Tipiroc D. Business decision making page 276

All these information systems should be linked and integrated in entirety and be used to support decision-making process (decision makers), which will be introduced figuratively.[11]
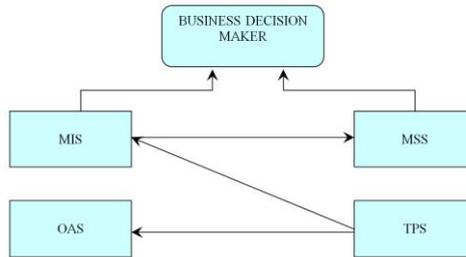

Fig. 2. Information systems

Furthermore, the information system can be divided into several parts, each is responsible to carry out one of the goals described initially:

➡️ *Transaction processing system (Operative system) serves for business process development.*
➡️ *Decision for supporting decision making (information system,*
➡️ *The system for communication, collaboration and individual work (office system).*[12]

Also, we should note that decision support systems such as DSS systems and GDSS systems as special types of information system which began to be used since 1970 (DSS) and 1980 (Group Decision Support System-GDSS). Decision Support Systems - DSS, presents a collection of tools that allow decision makers to communicate directly with other computers to create necessary information in the decision making process semi-structured and structured. Decision support systems are offered as software which offers the possibility of alternative testing in the preparatory phase of the decision-making process. Here, the computer role is not to replace but to assist decision makers in

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[11] Sikavica P, Bebek B, Skoko H, Tipiroc D. Business Decision making page, 277, 278

the decision making process. Decision support systems are interactive computer systems based on computers who use specialized databases and settlement patterns.[13]

They enable decision makers to combine their estimates with computer output in dialogue subsystem for production of information that will be used in the decision making process.[14]

Considering the above we ascertain that: The DSS systems concept could have been developed at the moment when with information technology it was possible to implement interactive computing system based on computer.[15]

DSS systems and artificial intelligence nowadays became an equal component of modern information technology. Below we present the model which is constituted to support decision making which can be visualized in five interrelated stages.

DSS model for supporting decision making.[16]
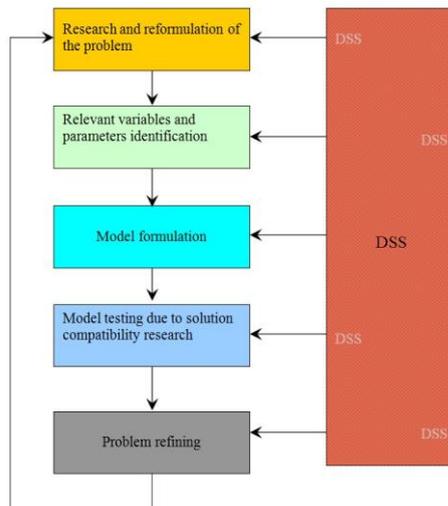
Fig. 3. Decision making Support System.

[12] Çeriq. V, Varga. M. Information technology in business page46.

[13] Berisha-Namani. M: business computing, pages, 97, 98, 101

[14] Sikavica. P, Bebek. B, Skoko. H, Tipiroc. D. Business decision making, page, 285

[15] Beqiri. E. Computing basics, page 362

[16] Sikavica P, Bebek B, Skoko H, Tipiroc D. Business decision making, page 292

Group Decision Support System-GDSS offers group support during the decision-making process, as follows:

- ❖ Group Decision Support System-GDSS) offers group support during the decision-making process, even it as follows: Supports communication of many people simultaneously. This is achieved through E-mail, voice mail, phone, fax etc. Conferences, meetings distances that includes holding meetings via telephone lines (teleconference), and through video footage broadcast or online recordings of meetings (videoconference) and other similar technologies that enable the communication of several persons simultaneously and remotely different with or without visual. P.sh enterprise program Microsoft NetMeeting is possible to keep the virtual meeting and to participate in a discussion with sound, photographs, or text.
- ❖ *Group collaboration support* includes technologies that help decision making in groups, communication within groups, electronic voting, etc. Some of the mentioned technologies can be counted in several "sections" of the system for communication and collaboration.
- ❖ Support of individual work includes many technologies that progress the effectiveness of individual work. It is the duty of frequent data are collected, analyzed and adjusted to be prepared in a form that can be presented at the meeting or be presented to the client. Programs that can be used for this purpose are: (Microsoft Word, Microsoft Excel, Microsoft PowerPoint, Microsoft Outlook, Microsoft Access, etc.).

A good system of communication and collaboration attempts to fully integrate mentioned technologies in a harmonious entirety. The most popular programming systems for building communication system, cooperation and individual work are: Oracle Collaboration Suite and Microsoft Exchange Server.

They integrate into a system email, voicemail, calendar management, servicing of files (documents) functions, with the possibility to search for information, services for cooperation at real time etc.[17]

Conclusions

Contemporary computing system based on computers is a synthesis of its human resources through which activities of collecting are successfully carried out, processing information and giving them to the user. Taking into consideration the management of organizations nowadays, it should be taken into account as a fundamental condition knowledge of information technology as the main supporter of managers in decision-making and effective management of organizations.

Thus, in present times, scientific management has taken primacy of managing organizations compared to classic management, this happened due to the fact that rapid development of information technology, especially in recent decades. Information technology also enables receiving and sending information at real time saving its given quantity and quality from the beginning and sending it to the final user.

Recommendations

Based on the importance and irreplaceable role of information technology in the management of organizations and decision making by management we give these recommendations.

Information Technology must be taken as a priority by the organization's management staff so that it can be advanced and developed as much as possible in all sectors and departments of an organization.

Appropriate training for all staff must be carried out for staff in the organization in order for them to be in the trend of

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[17] Çeriq. V, Varga. M. Information technology in business pages. 48, 49

the time and a step forward towards other competitors in regards of knowledge of information technology. Massive communication must be taken as a priority using information technology and why not let decisions and orders go in this direction from the top down and vice versa.

Completion

Today, organizations have realized that without information there is no successful business, and this is why today so information technology is massively applied.

Information technology strongly affects business, work and life of people. Many authors of management area, computing and decision making, highlight a large number of effects of using information technology in business processes, and organizational decision-making.

This conclusion is confirmed by the huge investments made in information technology and information systems like the one in enterprises as well as in institutions. Thus today it is difficult to find companies and institutions that ignore the role of information technology because they understood the direct impact that this technology that affects the development of the enterprise or institution and increase their profitability and efficiency..

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