INFORMATION SYSTEM IN ORGANIZATIONS IMPLEMENTING THE NONCONVENTIONAL TECHNOLOGIES

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ABSTRACT: The ounce to a significant extent in the process of production in modern organizations of the energies produced by the use of nonconventional technologies represents a real advantage in obtaining a higher productivity and quality compared to the use of classical energy sources. In this context, the organization of the complex ensemble of the information structure influences in the highest degree the activity of the modern organizations with field of activity processing using nonconventional technologies and implies an organizational structure that ensures the collection, processing, transmission and supply of the necessary information to the management especially if they are used energies produced by nonconventional technologies. Between the organizational structure and the information system there is a close inter-connection and a mutual inter-conditioning. The information system influences the content and configuration of the organizational structure and this, in turn, determines to a significant extent the organization of the information system. All these desires are presented in this research, which is intended as a global review type research in this field without having the intention of being able to give unique visualization and problem-solving solutions.
KEYWORDS: Nonconventional technologies, quality, information system, information, management of nonconventional technologies.

1. INFORMATION SYSTEMS

The information is stored and processed through data (facts, notions, instructions represented in a suitable form for communication, interpretation or processing).

The complexity of human activities has led to the need of handling a huge amount of information, for which the data volume is very large. The way information flows within an organization forms the information system of this unit. By information system we mean the set of material and financial resources that use information technologies to collect, process, store, retrieve, transmit and visualize the information used in the processes that take place within the perimeter of an organization. This system consists of data, information, information processing methods, data processing methods and physical equipment. The information-management system can also be defined as the set of data, information, information flows and circuits, methods and means of handling information meant to contribute to the establishment and achievement of the organization's objectives. It should be noted that such a definition of the information system has a comprehensive character that includes, unlike the definitions given by other persons skilled in the art (professionals), information, information flows and means of data processing. Defining the information system starting from its role in the whole activity of the organization is the main condition for the correct understanding not only of the informational issue, but also of the management thereof in general [1]. The computer system is a part of the information system through which the automatic processing of data is ensured, in order to obtain the information required by multiple users.

2. THE DESIGN AND IMPLEMENTATION OF THE INFORMATION SYSTEM IN AN ORGANIZATION WITH THE ACTIVITY OBJECTIVE IN THE FIELD OF NONCONVENTIONAL TECHNOLOGIES

The methods of designing and implementing an information system are complex and may affect the entire system of an organization. Further on everything concerns an industrial organization with an object of activity in the field of nonconventional technologies. The existence within an organization, as mentioned before, of a reliable information system implies the development of an efficient management, capable of managing the entire flow of information within the organization. The design of a new information system is also stimulated by the need to refine the existing procedures or to obtain a competitive advantage from the exploitation of a new opportunity. This process is a demanding one which involves many of the material, human and financial resources of the organization. The basic criterion of the design, in the case of an organization with an object of activity in the field of nonconventional technologies, consists in eliminating the redundant information that is carried out in several stages:

a) The comparative analysis of the components of the organizational structure in order to identify sub-components that have similar or identical functional attributions;

b) The analysis of the competences specific to each fundamental attribution of the organizational components, in order to eliminate the parallelisms in the exercise of the tasks;

c) The analysis of the activities specific to each competence with the elimination of the redundancies derived from the existence of activities that serve the same objective, but which are on different levels of competences or functionality;

d) Building a relationship diagram that includes the relations between the activities specific to each functional competence and the relations between the complementary activities, but which are on different functional competence levels, and the purpose is to eliminate the relations that could generate overlaps of informational circuits. or doubling of flows;

e) Attenuation of the recording, transmission and repeated processing of some information, caused by the absence or the faulty coordination of certain segments of the system;

f) Graphical representation of the information circuits specific to each relationship, definition of the content of each information, of the information carriers and their trajectories;

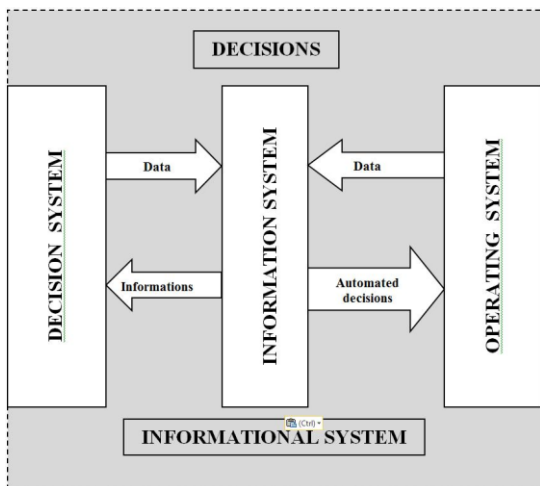g) Computerization of the information system.

Figure 1. Position of the information system within the informational system

The information system is composed of: information conveyed, human resources, means of communication, systems of storage, processing and transmission (usually, automatic) of information, etc.
The various interactions between people, processes, data and technologies form, in a global vision, an information system. In this context, the term does not refer only to the aspects of Information Technology that an organization uses, as well as to how people interact with it to provide support for business processes [2]. The organization in a unitary conception of the whole of information flows and circuits defines an information system.

The decision-making system consists of the set of specialists who, by means of specific methods and techniques, forecast and plan, decide, organize, coordinate, monitor and control the functioning of the operating system, in order to meet the set objectives.
The operational system within an organization with an object of activity in the field of nonconventional technologies represents the set of human, material and financial resources as well as the entire organizational, technical and functional assembly, which ensures the effective achievement of the objectives established by the decisions transmitted by the decision-making system.

The information system within an organization with an object of activity in the field of nonconventional technologies comprises all the information, flows and information circuits, as well as the totality of the means, methods and techniques, through which the data processing necessary for the decision-making system is ensured. It provides the connection between the decision-making system and the operational system in two ways:

a) by processing and transmitting decisions from the decision-making system to the operating system;

b) by recording, processing and transmitting information from the operational system to the decision-making system.

Informational flow within an organization with an object of activity in the field of nonconventional technologies based on which any activity is carried out is the same in any field of economy or social life. In such an organization the information system ensures the connection between the decision-making system and the operational one (management system and execution system); thus, the functioning of the information system involves the following activities:

- entering data into the system;
- their processing in order to provide useful information for the decision-making system;
- obtaining the requested information and making the decisions that will be transmitted to the operating system;
- monitoring compliance with decisions and carrying out control.

2.1 Information Resources

Information resources within an organization with activity in the field of nonconventional technologies are the component whose quality tends to condition to a greater extent the overall content and efficiency of the organization. They can be defined as representing the systemic set of information generated, obtained, available and reusable in the organization. The informational resources condition to a significant extent both the manifestation of the functions of the organization and the design of the organizational structures on which these functions are based.

The elemental component of the information resources, the information, is the result of the processing of the data according to certain logical procedures [3]. Starting from the information concept presented above and its contents, a special place is occupied by the economic information, term whose approach knows two meanings:

- Information in a broad sense, which refers to any information that can be used directly or indirectly by the organization in order to achieve the proposed objectives;
- Information in a restricted sense, within an organization with activity in the field of nonconventional technologies, which refers only to the information that is used directly in the economic processes of the organization.

2.2 Information flows and circuits

In the analysis of the information system, within an organization with activity in the field of nonconventional technologies, we must find the following aspects:

a) Area of scope of the information system that will become the object system for designing and realizing an information system;
b) Reflection of the economic activities and operations specific to the information system;
c) Capture the changes that are required in the organization and functioning of an IT system;
d) Substantiation of a solution of principle that specifies the activity and operations to be computerized, the previously calculated cost of the system.

The analysis stage must follow:

a) Identifying the problems to be solved and determining the system requirements;
b) Structuring the requirements of the new system;
c) Evaluation of information systems;
d) Generation and choice of design variants.

2.3 Information processing methods and means

Informational procedures are the set of elements that establish the modalities of collecting, recording, transmitting and processing information. With the help of information procedures, the following are established:

a) Supports of information used, respectively the materials used for their record and their characteristics;
b) The means used to collect, record, transmit and process the information;
c) The succession of the processing of the information, as well as the operations that they support, the methods and the calculation formulas used.

The functional performances of the managerial information system, within an organization with an object of activity in the field of nonconventional technologies, are largely conditioned by the technical support of the respective information system, respectively by the means of collecting, processing and transmitting information.

2.4 Information system

The information system within an organization with an object of activity in the field of nonconventional technologies is made up of all the elements involved in this whole process of storing, processing and transmitting information electronically.

Within an information system, the computing technique plays an important role in most activities of data storage, processing and transmission. Thus, the primary data can be processed the result being transferred further, to another compartment having the role of processing the received information. By means of computer networks the electronic data transfer is done electronically.

An IT system is made up of computing equipment, data transmission systems, hardware and software components, data processed and not least by the personnel specialized in managing and operating this equipment.

In conclusion, we can say that the information system includes within the information system, the latter being an essential component of the former. In this context it is to be emphasized that the information system should not be confused or completely overlapped with the information system. In general, the information system is interposed between the decision-making and the operational system as in Figure 1. The information system can also be defined as a structured set of electronic

processes, procedures and equipment that allow automatic data processing and information management.

2.5 Components of a computer system

The components of a computer system are hardware, software, telecommunications, databases and data warehouses, human resources, as well as procedures. Hardware, software and telecommunications are the information technology (IT–Information Technology), which is rooted in the operations and management of organizations. A computer system includes the following components:

a) Hardware equipment for data storage and processing - Organizations usually use distributed computing systems, from parallel power-processing systems to server processing to mobile devices. Together with peripheral equipment, such as magnetic disks for data storage, I / O (input / output) devices and telecommunications tools, these are the hardware part of a computer system;

b) Operating systems, programming languages and software application programs used to achieve the objectives of the computer system - can be divided into two major classes: system software and application software. The operating system represents the software of the basic system. It manages hardware, I/O data, program files, and other resources. Application software is designed as a program that has to deal with specific tasks for the user. Examples include general applications that can handle table computing, word processing, applications that serve a particular sector, for example, provide routes, routes, and so on;

c) Telecommunications - represents the totality of the technical means for the remote transmission of information;

d) Databases - are collections of interconnected data (records) that contain the data core required for a computer system;

e) Human resources and procedures - qualified persons are a vital component of any computer system. The technical staff includes development and operations managers, business analysts, systems and design analysts, database administrators, programmers, computer security specialists, and computer operators. These technical personnel implement specific procedures for the use, operation, and maintenance of a computer system.

3. INTEGRATION OF NONCONVENTIONAL TECHNOLOGIES IN THE INFORMATION SYSTEM

The need to process the data produced by the systems we find in the field of nonconventional technologies implies their integration into the information structures. Nonconventional energies such as solar energy can be stored in thermal accumulators in the form of thermal energy or can generate electricity using photovoltaic panels. This type of energy is based on the direct production of electricity through silicon cells. When it shines and when the weather conditions are favorable, the sun provides a power of 1 kW / sqm. Photovoltaic panels allow direct conversion into electricity of 10 - 15% of this power. Wind energy is an inexhaustible source, the production of energy using wind as a source is available in virtually unlimited proportions. Theoretically, wind energy can cover the global electricity requirement of up to 40,000 Twh (including losses). On the other hand, the main drawback of this energy source is the wind instability. In periods of extreme temperatures, when the demand for energy is very high, the effect produced by the wind is practically non-existent, which has led to the solution of realizing hybrid installations for the production of electricity, which contain, besides the wind source, and other sources based on renewable energies, with a higher stability in operation, as well as electrical energy storage systems. In the case of high capacity electricity storage systems, the high cost price of these systems, which is still in the development phase, must be considered. The kinetic and potential energy of the water represents the hydroelectric source can be considered the first renewable source of electricity. This is due both to the lower cost price of the capture facilities and to the tradition, already existing in the field. The world potential is an advantage that must be exploited.

Nonconventional cooling and heating systems: Geothermal energy whose modern applications including geothermal pumps (air / ground heat exchangers) can be used to condition the spaces in which the components of the information system operate. The examples highlighted in this chapter do not necessarily refer to nonconventional technologies and so-called nonconventional energies, but the aspects presented are based on the theory and practice of nonconventional technologies known and applied in the technique: electrical erosion, electrochemical erosion, photon jet erosion (laser), erosion. with electron jet, water jet erosion, etc.

4. ADVANTAGES AND DISADVANTAGES OF USING NONCONVENTIONAL ENERGIES

Some of the main advantages of using nonconventional energies are:

a) Zero emission of polluting substances and greenhouse gases, due to the fact that they do not burn fuels;

b) There is no waste. The production of green energy does not involve the production of any kind of waste;

c) Reduced costs per unit of energy produced. The cost of electricity produced by nonconventional technologies has decreased substantially in recent years, to be even lower than in the case of the energy generated from fuels, even if the negative externalities inherent to the use of conventional fuels are not considered [4];

d) Low costs of dismissal. Unlike nuclear power plants, for example, where the start-up costs may be several times higher than the costs of the power plant, in the case of green power generators, the start-up costs, at the end of the normal operating period, are minimal, these they can be fully recycled.

The main disadvantages are:

a) The main disadvantages are the relatively limited energy resource, the inconsistency due to the variation of the wind speed and the small number of possible locations. Few places on Earth offer the possibility of producing enough electricity using wind energy;

b) In the beginning, a major disadvantage of wind power production was the rather high price of energy production and the relatively low reliability of the turbines. In recent years, however, the production price per unit of electricity has dropped drastically, reaching, by improving the technical parameters of the turbines, to figures of the order of 3-4 euros per kilowatt hour [5];

c) Another disadvantage is "visual pollution" - that is, they have an unpleasant appearance - and also produce "noise pollution" (they are too loud). It is also claimed that the turbines affect the environment and the surrounding ecosystems, killing birds and requiring large lands for their installation. Arguments against them are that modern wind turbines have an attractive stylized appearance, that cars kill more birds per year than turbines, and that other sources of energy, such as the generation of electricity using coal, are far more harmful to the environment because they create pollution and lead to the greenhouse effect;

d) Another disadvantage is the high risk of destruction in the event of storms, if the wind speed exceeds the limits allowed for the design. No matter how high the permissible limit is, there is always the possibility that it will be exceeded.

5. CONCLUSIONS

The integrated systems and applications implemented within an organization with an object of activity in the field of nonconventional technologies in order to achieve an efficient management of the nonconventional energies produced, must be able to process large volumes of aggregated data and information in order to optimize and streamline processes [6].

An integrated application system for organizations is a complex, multi-modular software solution, the elements of which are integrated into a common platform, which provides support for the management of resources and the coordination of the different processes within an organization in order to achieve the business objectives. The solution seeks to modernize, integrate economic processes, synchronize the functions of the organization and coordinate the allocation of resources. Also, virtually, the implementation of integrated systems and applications allows the organization to extend beyond its physical limits: towards suppliers, customers and partners [7].

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