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Vatuiu, Teodora

Constantin Bracusi University of Targu Jiu

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The utilization of the executive informatics systems for management challenge implementation

Teodora Vătuuiu¹, phd. lecturer of Constantin Brancusi University, Tg-Jiu

***Abstract:** In the central point of the change management is situated the problem of the change, which is the study we are going to reach to in the future, leaving from the actual state and the structured and organized process, that will allow us the transition from a stage to another.*

The professional practice leads to a certain reaction, but the utilization of the executive informatics systems for management challenge implementation its a solution and offers un answer for the changes which the organization doesn't control or it does this only in a small part, (for instance the legislative changes, the transformation of the social or political climate).

This research presents the main aspects of the executive information systems (EIS), a concept about how to take strategically decisions. First, the terminology is defined, and then architecture of EIS and the technologies used on these systems are also presented. The research ends with the comparison between decision support systems (DSS) and executive information systems, both of them dedicated to top-management.

1. General considerations concerning the levels of the reform

For the implementation of the management of change, one can use a large range of methods, models, techniques and other instruments used as contents or subject of the material which supposes a certain expertise.

This one is assigned by the sociology, psychology, economy, industrial engineering, system engineering, by the study of the behaviors.

The essence of the management of the change consists in a set of abilities, techniques and disciplines by which the complexity and the specialization are transformed in actions and results or outputs, using the organizing.

The adoption of the methods of the change management is a difficult process, but a necessary, that's why it does continue despite of the difficulties.

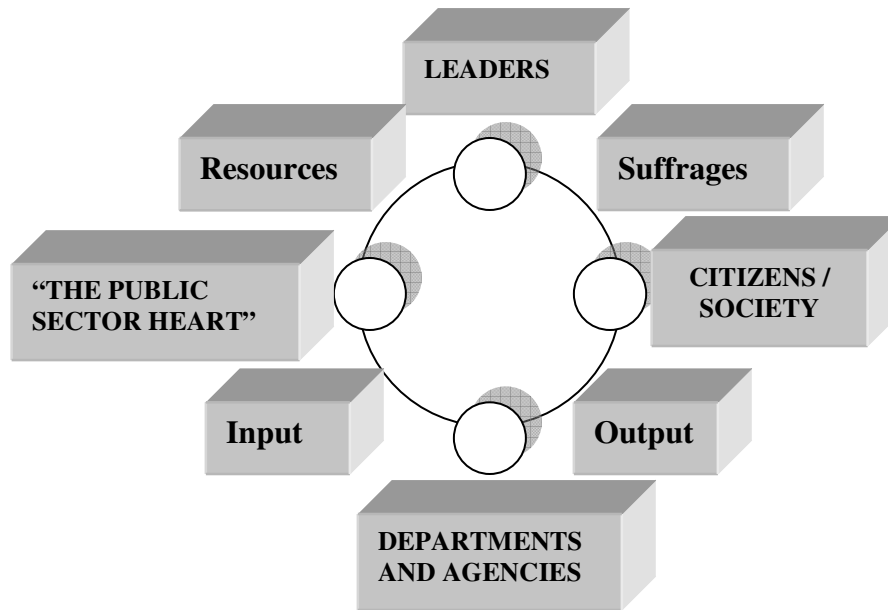
The reform processes are featured by changes at four levels; the 4 levels of the reform are:

- 1) **the state reform** – new responsibilities
- 2) **the public sector reform** may be accomplished, for instance, through decentralization, foundation of new ministries or by merging the existing ones;
- 3) **the organizational development** – which involves the development of the new procedures, the creation of new departments, the **implementation of the executive informatics systems**

¹ Teodora Vatuuiu, Stefan cel Mare Street, No. 1, Tg-Jiu, Institutia Prefectului, Gorj, Romania, 0353409477, v_teodora@yahoo.com

4) **the development of new competences at individual level for the public employees – The state reform**

An aspect of the state reform is represented by the new responsibilities at the level of the Government or of the specialty organizations from the public administration able to permit the development of the economic sector with the participation of the civil society.



2. The utilization of executive informatics systems (EIS) in the management of change

The development of management informatics systems (*MIS*) was a big step in providing necessary information for the management, in order for it to take better decisions and to implement the change. Still, this was not enough, because they didn't offer decision variants and therefore couldn't find solutions for decision-taking problems, not having the ability to solve management problems. Consequently, the decision support systems were created (*DSS*), which offered assistance in the process of taking decisions.

With all their success in the tactic management of organizations, these systems have failed in providing the support that executive managers within organizations need. (Watson, Rainer, 1991)

As it is made clear in (Thierauf 1991), "executives are managers with a formal authority upon the entire organization or upon a functional unity". They are responsible for the results of their actions and must answer to other executives positioned higher on the organizational scale or to the owners of the organization.

An important characteristic of the executives' role is the decisions-taking at high level, which implies the evaluation of opportunities and possibilities of action on short and long term, and the selection and initiation of these possibilities (Mintzberg, 1975).

In order to take decisions, executives need high quality, relevant, easy-to-access information, which come in a comprehensive form.

Consequently, a new request appeared, of designing informatics systems able to answer to the executives' needs and objectives. These new types of systems were given different names: executive informatics systems, informatics systems for executive directors, executive support systems, or strategic informatics systems.

The term executive informatics systems (*EIS*) was used for the first time in the (Rockard, Treacy, 1982) paper, in order to describe the type of systems used by an organization in the process of decisions-taking by the executive managers.

In literature, the term "executive support system" (*ESS*) is used simultaneously with the term "executive informatics system". In the (Rockard, DeLong, 1988) paper, the ESS term was defined and used as being a system with a bigger number of facilities in comparison to EIS. An EIS is an informatics system suitable for top managers, which allows quick access to necessary information. It offers direct access to management reports, has a friendly interface due to a suitable kind of graphics and it allows the investigation and report of exceptions.

On the other side, an ESS is defined as a support informatics system for top managers, which, in comparison to EIS, offers higher facilities in what concerns communication, automation, analyze support and business intelligence. ESS offer support for electronic mail and teleconferences and for data analyze, the calculus papers, applications' language, DSS, as well as other organizational instruments. Concerning this differentiation, in the (Watson, Rainer, 1991) paper, it is stated that the higher facilities offered by the ESS can increase the technical demands of the system in the same way in which they provide a plus of functionalities.

This differentiation is purely theoretical, because both systems refer to the same facilities for executive managers, the differences presented above not being able to justify 2 names for the same type of systems. In the specialized literature, the term of "executive support system" is used with the same meaning with the "executive informatics system" one, in order to describe informatics systems for executive managers.

Ian McNaught Davis, director at Comshare company (implied in the development and catering of informatics solutions for management and business performance), suggests that **the objectives of an executive informatics system** should be the following:

- decrease the quantity of information that the managers have to face;
- increase the relevance of information which reach the executives;
- increase the comprehension of the presented information;
- facilitate the communication with other persons.

These objectives are found in other papers too, but presented and grouped in another way.

I consider that the main objective of EIS is that of allowing the assistance of decision-taking process on superior levels of decision through the catering and on-line presentation of some useful information and variants of short time decisions, all these in a friendly manner adapted to the managers' knowledge.

The functional characteristics, which are relatively common to all EIS are:

- ✓ they have a separated data base for executive personnel, which incorporates key information from the organization's operational system, from external systems as well as from other data processing systems;
- ✓ they have a user-friendly interface, offering, besides keyboard, other alternatives of interaction with the executive informatics system, such as the point-and-click ones (touch-screen, lightpen);
- ✓ they have a flexible menu in what concerns data analyze, which allows fast movement from one side of the system to another, without having to select multiple menu options, sometimes even having to use icons;
- ✓ offer a high quality of the graphics and therefore the possibility of displaying and comparing the performances of time indicators, as well as the possibility of translating any tabular data in graphic or numeric formats;
- ✓ have data aggregation facilities;
- ✓ have many facilities of analyzing trends, offering the possibility of planning and forecasting;
- ✓ allow access to a wide range of internal and external data.

3. The architecture of an EIS

The architecture of an EIS is similar to that of a DSS and can be structured on three different levels: data processing, models processing and a communication subsystem (interface).

Data processing is the level represented by data storages and originating sources for important data.

Models processing is the level where data is processed and includes models of data analyze and forecast, intended to the gratification of high level managerial requests.

The **interface**, through which the user can communicate with the EIS and can control it, must be designed so that its final users (executive managers) won't need extra assistance and that they will be able to interact easy with the system.

Level 1 is formed from the data storage's server, or, in most cases, from a relational data basis server. Level 2 is based on an OLAP server, which is usually implemented using either an OLAP relational model (ROLAP) or a multidimensional one (MOLAP) and level 3 is the client level which contains instruments for interrogations and reports, analyze instruments and/or data mining instruments.

The OLAP instruments are based on the data multidimensional representation, allowing a quick and interactive data analyze through operations such as roll-up, drill-down, slice or dice. Data mining instruments assure the transformation of data into knowledge, using techniques of statistics analyze or artificial intelligence, which allow the identification of correlations, rules and useful knowledge for the decision-taking process.

4. Comparative aspects between DSS and EIS

Both types of systems have also disadvantages when it comes to their utilization for an organization's management. Choosing an EIS over a DSS depends on the type of analyze which one wants to make. A comparative analyze of the two types of systems is presented in table 1.

Table 1. Comparative analyze between DSS and EIS

Criteria	DSS	EIS
Level of decision	Tactic and strategic	Strategic
Beneficiaries of the system	Group of managers from the tactic level	Executive managers
Level of knowledge in the field of informatics	Medium	No special knowledge
Types of exit data of the systems	Detailed information and analyses	Synthesis information
Instruments of exits' description	Moderate support for external data; little graphic facilities	High facilities of graphic presentation of the situations
Types of elaborated decisions	Structured and Non-structured	Non-structured

These two types of informatics systems appeal to different hierarchical levels. DSS creates a support for operative and strategic management, whereas EIS is used by the executive managers who must make strategic decisions.

A DSS is designed especially to help discover alternative solutions to the problems and then explore the consequences of choosing one of the alternatives. The group of middle managers or analysts interacts with DSS in order to enter data or suppositions, develop models, test the effects caused by the change of data and suppositions and report to the executives, who will take final decisions.

On the other hand, an EIS is usually used only by one person (a top executive) in order to see the information in a format specially designed for his needs. On the basis of this information, an executive can detect a problem or a competitive opportunity that requests investigation.

One of the EIS objectives is to have a friendly interface, so that their use doesn't imply informatics knowledge or a qualified experience in this domain. Unlike EIS, DSS are easy to use by analysts, but require some sort of qualified experience, which makes them more difficult to use for managers who don't possess any computer knowledge.

EIS provides in an operative way synthesis information needed by executive managers, unlike DSS, which provides detailed data and analyze for informed operative decisions.

While EIS filters data for a better time-management, this type of systems can lead to more insecure and less trustworthy data. DSS examines multiple alternatives, trying to find the most suitable one, but these

operations take time and sometimes decisions need to be taken quick. These systems need preparation and analyze time, being details-oriented.

EIS offer strong instruments for graphic presentations of the synthesized situations and assure support for external data, whereas DSS provides only moderate support for external data and low graphic facilities.

DSS help solve semi-structural and nonstructural problems, while EIS is used almost exclusively for nonstructural problems.

The decision of whether to use a DSS or an EIS should be made taking into account the requirements of an individual situation.

5. Conclusions

In the conditions of today's management, the use of new types of systems and new informatics technologies is a must.

The facilities offered by the executive informatics systems and the informatics support for this type of systems, created by software firms, impose their utilization for a better knowledge of the organization's trends in a competitive medium which is becoming more and more sophisticated and hard to get to know.

These systems help executive managers in making better decisions for a profitable evolution of the firms and have an impact on subordinates too, causing them to accept easier the innovative managerial changes.

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