

THE TECHNICAL-ECONOMIC SYSTEMS MANAGEMENT

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ABSTRACT

The economic integration and globalization processes, associated with the permanent limitation of resources consumption, have become the current coordinates of the technical-economic systems (TES). Economic efficiency, as a characteristic of any action, reflects its capacity of producing useful results that are estimated to be superior to the efforts, on the whole. The estimated results represent those effects achieved together with the current and perspective needs of a person or of the community. Up-dating the technical-economic systems, determined by results within the efficiency field and the perspectives on medium and long run, involve a high amount of investments, and the evaluation of their necessity and reliability requires adequate methodologies, easy to adapt and apply.

KEYWORDS: *technical-economic systems, economic-efficiency, competitiveness, economic-managerial performance, economic environment*

The processes of economical and global integration have proven the existence of many difficulties. The data provided by the statistics made on a macroeconomic level have shown that, in this period of time, many states have reduced or even shut down activity in different sectors, a number of people lost their job, and the financial resources for development and maintenance.

The strictly unitary and concentrated approach of the economical agents' departments/compartments and factors (with direct or indirect influence) involved in the current activity, with no permanent correlation with the ever-evolving market's requirements can't provide a way out from these crises and can't foreshadow convenient situations for the future.

In these terms, a recovery solution and improving activity for organizations has to do with integrating the 'system' concept and, implicitly, a systemic approach on analyzing its management, organization and functioning.

The modern approaches of companies' organization, functioning and management problems hold their root in applying and using a systemic view of economy.

The system concept, from a mathematical modeling possibility point of view, is a set of interacting entities forming an integrated whole, that comprise technological equipments (construction tools, plumbing, etc.) and human operators integrated under different connections, and having the purpose of accomplishing a goal by manipulating, controlling and guiding its components." (Dodescu Gh et al., 1986.)

The theory and practice of the system's analysis reveals two distinct dimensions, based on which every activity is achieved, as it follows:

a) the functional dimension, which is consisted of the multitude of interactions between the component and function-determining elements of the system

b) the structural dimension, consisted of the hierarchy of component elements, under the aspect of the position, priorities and existing order within the system

The system concept and systemic approach have a large appliance in different domains of technology, economics, biology, etc., and each of them is considered a system, certain type of subsystems, and governed by laws or specific functioning relationships.

The systemic approach involves studying the systems on the basis of the essential and minimizing details, building some hierarchy systems and order between the elements, defining the ensemble of relations between the components. (Radu I, Ursarescu, M, 2005)

The analysis of systems has allowed the reuniting of different categories of factors within the same system, apparently without a direct connection, as component subsystems, and the appearance of the feedback, which has a role in auto-adjusting the system's functioning.

The general theory of the systems applied in technical-economic processes, specific of socio-human activity has lead to the emerging of the concept of technical-economic system.(TES)

Starting from the fact that, in a general vision, the whole surrounding reality or only parts of it (economics, informatics, technology, medicine, including their subdivisions) can be considered, taken separately, as systems of a certain kind, the necessity of defining the concept of technical-economic system takes place.

The making of a system analysis involves the existence of five component types, which are:

- objectives: identifying the expectancies the people who decide have from the system functioning. These objectives must be clear, concise and quantifiable;
- criteria: the modality of quantifying and measuring the performance that allows the analyst to evaluate the level of accomplishing goals;
- alternatives: solutions to the existing problems, as well as ways to accomplish objectives
- resources and constraints: parts of the environment that restricts appliance and use of certain alternatives; they determine what is feasible and reduce the number of potential solutions to a problem
- a model, the element that includes all of the aforementioned elements, so that a comparison of different alternatives as compared to the possibilities of objectives being made can be done (Nicholas, M.I 1990)

The technical-economic system could be defined as an ensemble of elements, of diverse nature, well outlined and delimited in comparison with the external environment, coordinated with the purpose of realizing a technical, economical and social natured objective, based on the consumption of resources, limited to the requirements of durable development.

The establishing of the objectives for the conceiving and functioning of a technical-economic system is made within their exterior, and the adjustment or fitting of its functioning towards these objectives is made by the internal elements, through auto-adjusting subsystems.

The systemic approach of all activities in organizations implies the knowledge of main characteristics of an TES, a few of them being:

- the existence of an TES implies some activities being made to reach the previously established objectives
- complex hierarchical systems, constituted from a large number of subsystems
- socio-economical systems that integrate into their structure socio-human components, and also technical-economic components

- rapidly-evolving dynamic systems, that have a close connection with the evolution of the environment in which the activity is taking place
- elements that are opposed to accomplishing the set purposes, their level being reflected by the TES's entropy

Regardless of the considered domain, be it industry, construction, economics, or services, the TES archetype is much diversified, and it has internal, as well as external ramification from the analyzed domain.

The European and worldwide activity competition and the commodity market have forced producers to reach superior levels of activity efficiency, in order to last. (Orazem P.F., Vodopivec M –2004)

Therefore, the world's countries and organizations that act within these limits have faced and are still facing a new kind of problems, regarding the bigger global competition, the deterioration of the environment, as well as other economical, political and social problems.

These could turn into difficulties in running the TES activity, but they can also be made into business opportunities. Thus, the deterioration of the environment offers unlimited possibilities for the economical agents that straighten out efficient ways of ecological fabrication, the lack of infrastructure favors the companies that are in construction, transportation, and during the economic stagnation and recession, the only companies that will strike through will be those that can produce and commercialize with low costs. (Koller Ph, 1997)

These difficulties and also opportunities in which TES takes action are based on relations with the environment. On a larger scale, TES's external environment is the aggregate of complex structured factors that it comes in contact with and influences its entire activity.

The TES's performances depend a lot on their capacity to adapt to the permanent requests and modifications that are specific to the external environment. In a more complex approach, through 'environment', one could understand that it is 'the combination of external economical, managerial, demographic, cultural, scientific, psycho-sociologic, educational, ecologic, political and juridical conditions that affect and influence the growth, development, and survival of activity'. (Nicolescu, O. 2002)

The components of TES's external environment have three levels, depending on the nature and frequency of their interactions: microenvironment, mezoenvironment and macro environment.

The TES microenvironment is made of the component ensemble that comes in direct contact with, from the need to accomplish the objectives that are already set (to present and in perspective) (Ivan, M., Foris, A. 2002)

The mezoenvironment is an intermediary concept that studies TES's behavior within the production and social system that it has activity in, by approaching its relationships with the business activity. (Sussan, P. Johnson, W. 2003).

The main components of the macro environment are: the demographic environment, that reflects the number, structure and repartition of the population; the economic environment, represented by the volume and structure of the merchandise offer, the level of income, the level of prices; the technologic environment, the most dynamic component, represented by the number of investments and innovations, the 'explosion' of new products, and perfecting of the old ones; the cultural environment, which is the assembly of values and moral grounds that lead the status of people in a society; the political environment, the institutional and natural environment, which determine the total

of natural conditions that influence location and distribution of human activities. (Nicolescu, O., Verboncu, I., 1995)

The relationships between TES and the environment's components are, by their nature and content, market and competition relationships. The structure of TES relationships with the micro and macro environment can be shown as if follows:

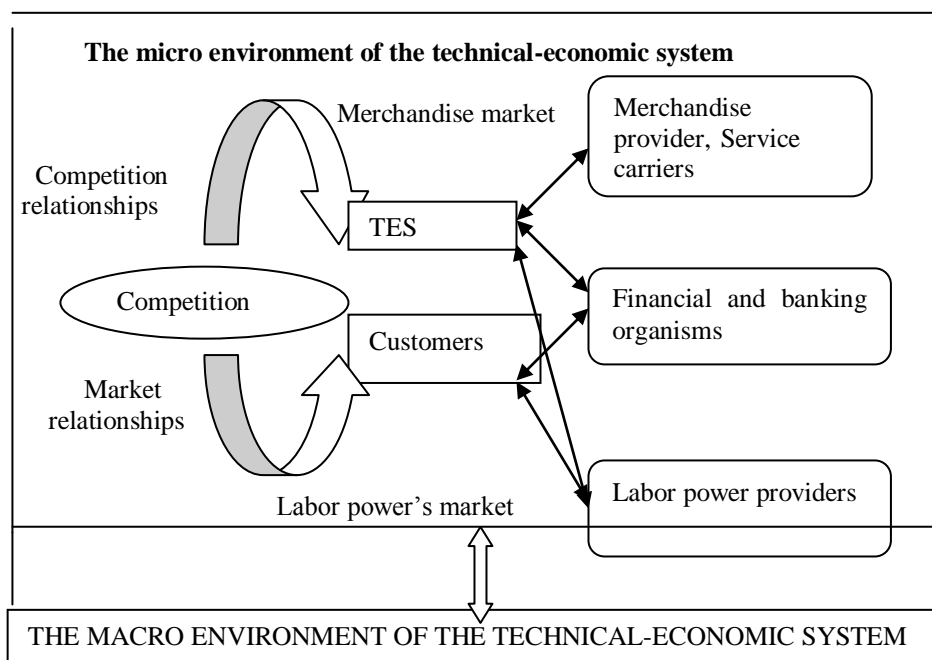


Fig 1. The structure of STE relationships with the micro and macro environment

Market relationships have the purpose of selling and buying merchandise, exchange information, capital, labor power and it is usually made with the providers, service carriers, banking organisms and labor power providers.

The competition relationships constitute disturbing factors for the TES, but at the same time, stimulators for the economical activity taking place. From this point of view, it could be said that 'in the market economy, the competition is an objective necessity, and it constitutes the stimulus for growing, diversification and bettering preoccupations for the product and service offers. (Ivan M., Foris A. 2002)

Within the framework of TES's macro environment, the ethical-social collaboration relationships, with the participating factors, have a special place.

Next, a part of the factors that TES develops collaboration relationships are shown:

The TES activity is oriented and subordinated through the presented relationships on two levels: operational and strategic. On the operational level, the subordination is made towards the governmental and non-governmental organisms, which coordinate the entire activity through programs and strategies. On a strategic level, the activity is subordinated to the every state's sector or domain's macro economical politics, as well as to the development politics of the European Union or other global organizations.

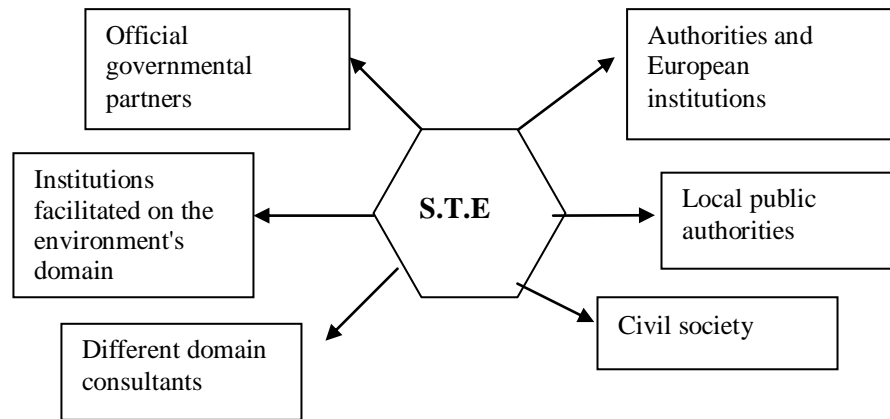


Fig. 2 - TES's collaboration relationships

The central element for development is country strategy, elaborated by the main institutions on a financial, economical plan, as well as ecological or social one.

The market transition phenomenon has been overlapped with other macro economical processes, registered on a global level: globalization, growth of environment protection, the extension of the adhering to the European structures, the appearance of some conflicts between countries.

In between these phenomena manifesting themselves nowadays with a big influence on a country's economy, globalization and economic liberalization in the plan of production, economic exchange, product and service standards imply the most changes and movements in the plan of current activities.

Conclusions

The conditions of integrating in the European Economic Community impose the realization of some levels of economical performance, which imply a refreshment of the organization's dynamic, through some major changes under a systemizing, technical, social report, which ensures the necessary competitiveness for a competing environment. This adaptation must be based on a good knowledge of opportunities, threats, and restrictions which exist on the market, in order to be able to adopt the measures and politics needed for entering and, most of all, remaining on the market. The economical transformations specific to the actual period significantly influence the activity of technical-economic systems, as well as the complex nature of its relationships with the environment have revealed the fact that a new approach and resizing of the whole activity is needed, based on the tendencies on a micro and macro economical level.

I think that the integration and globalization phenomena within the European economic structures, not in a very far away future, will lead to the disappearance of those technical-economic systems that haven't opened their gates to the new and that still think they could function based on the state's subventions, protection measures or momentary opportunities.

But these phenomena offer significant chances of economical growth, of business promoting on the external markets, of diversifying the activities in place, under the conditions of a very tough competition that needs high technical-economic performances.

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