Management of the Modernization Projects from the Technical-Economic Systems

Ph.D. Associate Professor CAMARDA ADINA
Ph.D. Professor PLEŞEA DORU
University „George Baritiu” of Brasov – Romania

Abstract- Lately, as we witness an explosive proliferation of the human beings, of their increasingly complex and numerous desires, as well as of the frequent armed conflicts and of the scientific and technical progress in certain directions, man finds himself on the verge of becoming a true opponent of nature who either threatens to exhaust its resources or maintains within it causes that lead to major deterioration and unbalance, whose consequences are among the most unwanted on the medium- and long-run.

While witnessing the partial effects of industrialization, man realized that it is for his best interest to control his demands and satisfactions so that these do not conflict with the laws which govern nature and ensure its so much needed balance.

Keywords- Modernization, Technical Environment, Technological Environment, Product Progress, Implementation, Dynamic Process.

I INTRODUCTION

The Earth is polluted’ – states the famous researcher Barry Commoner, director of the Centre for the Biology of Natural Systems from Chicago – ‘neither because man is some kind of especially dirty animal nor because there are too many of us. The guilt belongs to human society and to the way it understands to obtain, distribute and use the richness that man labour extracts from the planet’s resources.[1] The numerous alarm bells rung by scientists with respect to the potential consequences of a development lacking in control have lead to the institutionalization of the environmental issue on a global level. Consequently, innovative ideas have been promoted in relation to potential development patterns.

II PECULIARITIES OF THE MODERNIZATION PROJECTS

Within the framework of the technical-economic systems, ‘the modernization-related expenses are more judiciously assigned, in that they are mainly oriented towards building, adapting and structurally improving the active fixed capital, meaning that capital that is directly involved in the attaining of the economic results, such as: the equipments, special constructions, technological lines, etc. In the case of modernizations, the passive fixed capital (buildings) requires a smaller volume of resources since it gets only slightly modified - sometimes for ambient purposes - or not at all modified, a fact that creates the premises for the funds allocated to modernization to be particularly oriented towards those activities which trigger the amelioration of the company's economic results, more precisely the increase in the fixed active capital.[2]

Irrespective of the level at which it is achieved, new ideas and solutions get applied by means of modernization, since, in its very essence, modernization is innovative in character in the same way as a ‘carrier’ and generator of technical progress. Modernization ensures the reduction in the specific material and labor consumption, a fact that entails the decrease in the modernization and production-related effort. In the same time, modernization ensures the reduction in the scrap non-compliance, as well as the diminishing of the losses by increasing the degree of processing of the raw materials, because of using better technological equipments and solutions.

The main influence of the modernization process is related to the impact on the qualitative aspects of the factors that take part in the social-economic life. The modernization also puts pressure on the quality of the technologies by modernizing the existent flows, finding new technological solutions, or adapting the existent ones. The increase in the qualitative level of the labor force, both from the viewpoint of its content and of its structure, is closely connected with the improvement of the equipments and technologies' quality. Because of the improvement of the mentioned factors, the product quality is enhanced, this serving as the final purpose of the modernization activity. The quantitative and qualitative improvement of the economic effects appears because of the advantages put forward by the modernization activity. One of its direct effects is the increase in the obtained production resulting from an extra-production, which can be achieved due to the higher equipment parameters and to the improvement of the quality of the finished products and their structure.

‘The increase in the value of production and of all economic effects in general is also due to the improvement of the consumed resources’ structure, meaning the use of well proportioned raw materials and materials of an adequate quality and observing the requirements of the technological process, but also of human resources capable of living up to the expectations of the operating equipments’ technical level.


and of the products’ qualitative level’[3]. Any incongruity between the three qualitative levels (the capacity of the equipment, the quality class of the products and the employee qualification) may have negative effects on the production process. The modernization of all economic activities is one of the main ways to achieve economic efficiency improvement on all levels, since it can ensure the modification of the balance between efforts and effects. Efforts face a relative decline while the economic effects increase both in volume and in structure. Modernization is also a pre-requisite for the increase in the economic efficiency at the micro- and macro-economic level, an objective factor sufficient to itself, as well as a ‘sine qua non’ condition for economic growth projected on the development background that characterizes today’s world. Some of the main objectives of the modernization process are:

i. The sizing of the industry components and, implicitly, of the relationships between these components, in accordance with the internal and external market demand, determined by statistical and marketing analyses;

ii. The superior utilization of the existing potential: production capacities, experience, reputation, personnel qualification;

iii. The reduction in the consumption of raw materials, especially of energy and fuel, in accordance with the availabilities (internal and export-related) and the global levels of specific consumption;

iv. Ensuring high competitiveness, since the first competitiveness factor is the renewal of the technology or of the product;

v. The re-orientation of the flows from the labor market towards activities from the fields of the infrastructure, services, constructions and agriculture;

vi. The computerization and expansion of the computer use for the purpose of transmitting real-time useful information as well as for decision-taking at the right moment;

The timing for the implementation of the modernization processes within the technical-economic systems must be the right one and shall be determined according to various factors[4]. These factors mainly depend on the anticipation capacities of the organization’s management with respect to the market evolution, the technological progress, and the existing and potential competition. The field of activity is another factor that influences the modernization moment; thus, the fields, which witness a rapid evolution of the technological progress, also require modernization actions to be performed over short periods. The market position, the competitive capacity and the market potential are other markers for the beginning of the modernization activity, any disregard of any of these factors being able to significantly affect these actions’ success.

According to the final destination of the modernization process, the corresponding strategies may be oriented towards products or technologies and technological processes. To be able to measure the extent of the modernization impact, as well as its organizational and competitive implications, one must assess the degree of novelty introduced in accordance with the market and its demands. The main ways of organizing the modernization processes are:

A. The Product Modernization allows the technical

Economic systems to offer the best products/services on the market and increased functionality, or to allow the same functionality in a more efficient, simple and low-cost manner. The implementation of the product modernization process may take several forms:

The concept modernization, which can be the answer to a new product idea or to a new function of an existing product;

The modernization of the raw materials and materials that shall be part of the future products;

The design modernization, which implies plain modifications in the products’ shape and design performed based on certain functionality and ergonomic requirements;

The modernization of the services that accompany the products of the economic agents, meaning the quantity and quality of the pre- and after-sales services.

B. The modernization of the technological processes

The modernization of the technological processes is destined to improve and increase the rate, smoothness, quality, flexibility, etc. performance of the technical-economic system. This involves the optimization of the manufacturing processes by means of investments that lead to the promotion and introduction of the technical progress in the current activities and to the more efficient use of the earned experience. The implementation of the technological process


modernization strategy also implies an increase in the quality of the human resources involved in these processes and technologies.

Irrespective of its dimensions, extent, object and purpose, the modernization activity can only be performed by means of investments as the material support for the economic growth. The correlation between the volume and structure of the investments and the modernization process is fundamental for all economic activities, no matter their field.

IV TENDENCIES AND PERSPECTIVES IN THE MODERNIZATION OF THE TECHNICAL-ECONOMIC SYSTEMS

Though, initially, the modernization actions focused on the improvement and growth of the organizations’ technical-economic parameters, the current tendencies, the dynamics of the technical and technological progress that ‘floods’ into the current activity and the increasingly important needs require a multiple perspective systematic approach.

Any modernization measure must be approached from the viewpoint of the heterogeneity of its implications on the main ‘actors’ of the social-economic life, namely institutions, local and central authorities, the internal and external technical and technological environment (tools, equipments, technologies, human resources) and the organization’s management team. This is because any action entails modifications that have a bearing on each of the involved factors. Thus, the modernization of a system may signify for authorities the increase or decrease of the financial contribution, the development of new activity sectors, the possibility to get authorities involved in public-private partnerships, etc.

The management team of the technical-economic system senses the influence of the implemented modernizations by means of the new business dimensions, from the viewpoint of the activity conforming to the national and international requirements and standards, because of the need to observe the environmental performance, etc. This same team must manage the issues related to the presence of competent human resources for the purposes of the project execution and operation, or to the organization of the training and instruction programs focusing on the personnel needed for the technological transfer.

The substantiation of such a development project must also rely on the analysis of the information regarding the promoter’s economic interest, the characterization of the project’s external environment, the project’s place and role in the general strategy of the initiating company, and the project’s potential risks[5].

The synthesis of the criteria that I suggest should be taken into consideration on the substantiation of such modernization projects is presented in figure 1 hereinafter.

Modern tendencies in the organization of these projects require the definition, from the very project design stage, of the responsibilities corresponding to each existing phase or stage, as well as the definition of deadlines associated with this phase/stage, aware of the fact that any delay may affect the global result of the project. In the case of the modernization projects, time is an extremely important variable to which the project team must permanently relate. Starting with the identification stage of the modernization needs and until the project completion, time must be carefully justified due to aspects such as:

i. If modernization implies the seizing of a market opportunity, then the project identification, design, implementation and completion time must perfectly correlate with the existence of the respective opportunity;

ii. If modernization implies a technological transfer, namely the implementation of a new technological solution, then the identification and implementation of the optimum solution must be carried out as soon as possible, since the ‘optimum’ notion is time-limited;

iii. The delays with respect to the time needed for the completion of a modernization project can cause changes in the project’s substantiation conditions taking into account that certain considered premises may no longer be relevant.

In my opinion, special attention should be paid to the quantification of all the modernization project’s parameters, as well as to the determination of the measuring units both for the needed efforts and for the anticipated effects. If the solution to the problems related to the economic and financial elements can be easily found (the current assessment systems include numerous quantification options), the evaluation of the social and ecological costs and benefits proves more difficult.

From this perspective, modernization projects should rely both on quantitative as well as on qualitative analyses, aware of the fact that in certain contexts it is impossible to quantify all the aspects involved.

V CONCLUSIONS

The transfer from plain modernization activities to complex projects that are well substantiated and oriented causes the technical-economic systems to face certain challenges and constraints. These mainly refer to the dimension of the needed efforts, the relevance of the activities projected on the background of the micro- and macro-economic level tendencies, as well as the rate and coherence of the implementation. From this point of view, I estimate that, prior to the design of a modernization project, technical-economic systems must realize their necessity and capacity to face the efforts generated by the viability and long-lastingness of the estimated results.

VI REFERENCES