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CONCEPTUALIZATION OF COMMON PARAMETERS WHICH ARE REQUIRED FOR TECHNICAL-TECHNOLOGICAL ANALYSIS OF INVESTMENTS

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Abstract. *Investments, as important factor of development of every country, represent a complex category of different professions. The basis of every investment is the technical-technological element which needs to be presented and studied in an adequate professional way so that it can, in the economic part of the study, imply costs and benefits.*
Having worked on the projections and evaluation of investment sudies for many years, the authors concluded that projectors for the technical-technological part of the investment studies project the concerned matter differently which, in spite of the specificities of each branch of economy or service, still has some identical and common elements of the contents.
Having the Terms of Reference as the starting point, the common elements of technical-technological analysis for the designing and exploitation phases were identified and collected in this paper, thus offering some guidelines for future projectors. This paper is the result of a conducted research and empiric analysis, thus it can be used as the scientific basis to all projectors in the future period when an influx of foreign investments in Serbia is expected.
Key words: *Investments, technical-technological element, financial resources*

1. INTRODUCTION

The concept of investment in contemporary professional practice and literature is usually considered from two aspects. In our opinion, the first aspect is related to the definition according to which the investments represent the investing of money and other financial resources in present which effects, such as new usability, are recognized in the future. The second aspect includes the concept of investing in securities (or capital) today and its effects will be produced in future. Almost identical understanding of the process makes the investing a universal process which is differentiated based on the understanding of this type of very important man's activity.

In their several year long experience in this field, authors encountered numerous problems regarding the „basis" for every economic investment, and that is the problem of presentation of common elements which depict the characteristics of investment in technical-technological sense.

Thus, a question is raised about common technical and technological elements which can present the production of textile, tobacco, metal, leather, shoes, etc. Naturally, this includes commerce, agriculture, services and other businesses. Answer to the above question should be searched for in the analysis of general production characteristics in an industrial company and the analysis of general case of development of industrial companies.

2. BASIC POSTULATES OF TECHNOLOGICAL PROCESSES

Defined assortment of products and possible placement are the basis for projection of production technology. The technology is the one which practically determines all essential elements of future investment. There are two types of future investments:

- new construction or
- reconstruction.

In this presentation, new construction, as a more complex case, was taken as an example for the analyses below.

Terms of Reference defines the following:

1. General information about the investor and investment
    - name of the investor
    - location of the investor
    - name and location of investment
    - period of construction, etc.
2. Objectives of the investment regarding:

- the production program for final products
- the distribution centers depending on the market
- the production program for assemblies, sub-assemblies and parts that constitute a product
- the production program for spare parts
- quality system
- threshold price and desirable price of final product
- structure of the staff, etc.

3. Documentation for construction
   - valid standards and norms
   - bill of material
   - changes made to documentation, etc.
4. Important terms
   - date of beginning and completion of elaborate study
   - dynamics of the realization of investment
   - dynamics of the exploitation of investment
5. Number of work days and hours per year based on which effective capacity can be calculated

$$T = m * n * s * \eta$$

where:

m – number of work days
s – number of shifts
n- number of work hours
η – time utilization rate

6. Specification of resources available for the investment
   - covered surfaces
   - open-air surfaces
   - equipment, devices, installations and tools
   - staff engaged (their number and qualifications)
7. Requirements and liabilities relating to future development
   - product alterations
   - changes of types and levels of technology
   - changes of the infrastructure
   - changes of the staffing structure
   - liabilities regarding the ecology and preservation, etc.
8. Prices and conversion
   - time and procedure of conversion
   - referential time of preparation of investment program
9. Dynamics of the realization of project and investment
   - time limits and exploitation period
10. Laws, standards, regulations and instructions
    - review of all related laws, standards, norms, and regulations that an investment needs to comply to.

Having the Terms of Reference as its starting point, the technical-technological analysis needs to define:

1. Description of technological process
2. Preparation of technological production processes
3. Preparation of basic normatives: material, tool, time
4. Determining (calculating) the number of units of equipment
5. Determining (calculating) number of staff
6. Determining the storage capacity
7. Defining necessary means of transportation and palletization
8. Defining business and plant inventory
9. Specification of nevessary power and fluids
10. Plan of acquiring „knowledge and right“
11. Defining all other factors relevant for the techno-process and implications it may have

3. MAIN ELEMENTS RELATED TO CONSTRUCTION OF INVESTMENT BUILDINGS

Main information about construction and realization of an investment can be practically taken from the estimated value which is generally formed as follows (table no. 1).

From the aspect of methodology, design and structure of table no. 1 cover the case of reconstruction as well, since the conventions for preparation of investment studies allow input of past costs and development factors to new investment (Marić, 2013.).

Table 1. Table explanation (above the table)

No.	**Technical structure of investment**	**Present condition**	**New investment**	**Total**
1.	Land			
2.	Construction works			
3.	Equipment - foreign - domestic			
4.	Infrastructure			
5.	Material rights			
6.	Start-up cost			
7.	Staff training			
8.	Other			

4. CUMULATIVE – COMMON ELEMENTS OF TECHNICS AND TECHNOLOGY OF INDUSTRIAL (AND OTHER) COMPANIES

Taking into consideration the fact that lifespan of every investment consists of construction period and period of exploitation, the presented elements of technological production processes, that is, the elements of construction and erection of industrial buildings, can be considered as minimum information needed for the presentation of technical-technological analysis of every investment program which later, in the financial analysis, shows costs and expenses.

Construction period	Exploitation period
1.Structure of investment in land (amount)	
2. Structure of investment in buildings (amount)	
3. Structure of investment in equipment (amount)	
4. Structure of investment in infrastructure (amount)	
5. Structure and amount of investment in material rights	
6. Start-up costs (amount)	
7. Staff training (amount)	
8. Other investment (amount)	
	9. Description of technological process
	10.Preparation of technological processes
	11. Overview of necessary equipment
	12. Overview of needed staff
	13. Overview of necessary storage and transportation means
	14. Overview of business and plant inventory
	15. Investment in ecology and safety at work
	16. Overview of power consumption
	17. Other

5. CONCLUSION

In their multiannual experience in the field of investment projections, the authors recognized numerous problems, and the aspect of tcehnical-technological analysis is presented in this paper. Strong interest in common elements of investment and future business resulted in the idea to identify and present general elements which are common for making projections about construction and businesss operation of every investment building in the fields of economy and services. The presented model identifies and describes 17 parameters used for present and future investment projections.

6. REFERENCES

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