



IMPACT REPORTING THE RESULTS OF THE IMPLEMENTATION OF AUTOMATED EQUIPMENT ON THE COMPETITIVENESS OF COMPANIES

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Abstract: *The present study aims to show the direct and indirect impact of process automation on the degree of competitiveness of a company. The subject of comparison are the approaches in the choice of a model of technological equipment and the social and economic efficiency. The relationship between benefits and risks in making such important for business development decisions is analyzed.*

Key words: *engineering logistics, competitiveness, efficiency, automation*

Automated systems play an important role in improving the working environment and facilitating work. This is achieved by adapting the characteristics of the work process to human capabilities. Their importance for the implementation of rational forms of organization and support of the processes is of great importance. In its even more modernized ergonomic version, the set of automated equipment with jointly controlled functions provides more complex solutions for a smooth way out of various situations, both on an informational and physical level. This combination sets high standards in the management of building installations and logistics structures.

It is an indisputable fact that automation increases the capabilities of companies and is both a factor for financial success and improving competitiveness. Through it, organizations determine their place in the market by comparing their strengths with those of their competitors. In this way, they model new approaches, indicating the influence of the market structure itself and gaining superiority over their competitors. The present study will examine the ways in which the introduction of automation is established as a condition for competitiveness.

Competitiveness can be analyzed at several levels:

- National level;
- Sectoral level;

➤ In-house level.

The national level is subject to scrutiny in decision-making and the drawing up of international marketing strategies. The industry is to determine the competitiveness of a company compared to others in the sector. The internal company is necessary in determining the relative share of the value of sales and the main competitive advantage of the particular company. When choosing the degree and model of automation, the most in-depth attention is paid to the industry competitiveness of the company. In its evaluation, the company's strategy, management style and scientific discoveries related to automation are important at the time of the study. In a thorough analysis, they lead to several factors (fig. 1) [7].

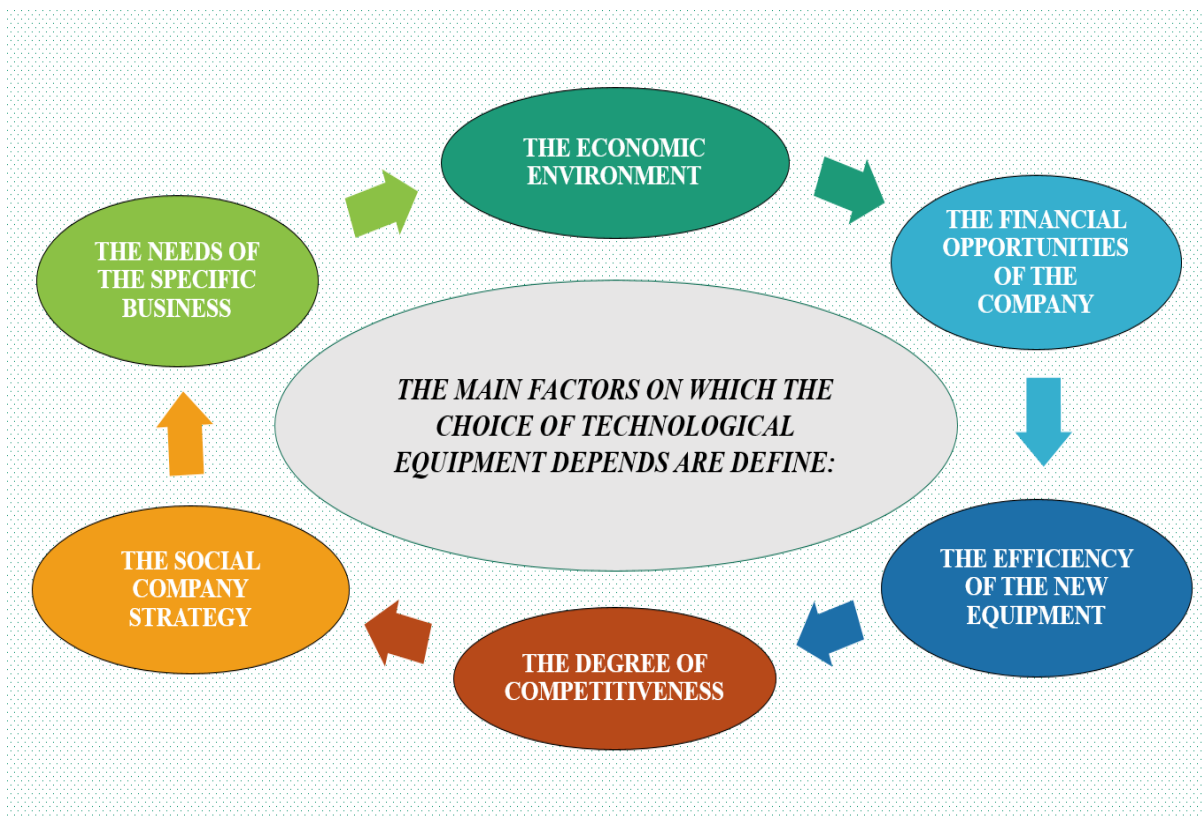


Fig.1 Factors influencing the choice of degree and model of automation

The competitiveness of a company is a state of long-term profitability, which is above the average for the industry. The strength of the impact on competitiveness depends on the intensity of competition between existing competitors in the sector, suppliers, consumers, substitutes for products and services, labor, social services, cost and availability of capital, lobbies and protections, infrastructure, know-how and others.

The existing relationship between the competitive advantages of the organization and its success is a consequence of its desire to provide a better price, more speed, quality and flexibility in supply and demand. Following these opportunities, modern organizations, regardless of their field of activity, seek to purchase technological equipment to increase their productivity and efficiency. The effect of automation can be considered in economic and social aspects. The economic effect is obtained as a result of the reduction of human resources in the production of certain products, the increase of productivity and the increase of the quality of the products. The economic effect can be determined as a result of the reduction of the cost of production. The social effect is expressed in the reduction of hard, monotonous and physical work, often associated with unhealthy working conditions - polluted environment, high noise, shock loads, high temperature, radioactive environment, etc. [5, 2].

In order to compare the level of its advantages with those of its competitors, each organization must make periodic assessments. In this way, the changes are monitored in a timely manner and new goals are set. The following values of the degree of automation could be used in the assessment of competitiveness: 1-2 - low; 3,4,5 - average; 6-7 - high (Table 1).

After evaluating each indicator, the results for each factor that have a quantitative dimension are compared with those of key competitors and / or industry leaders [8].

Table 1

COMPETITIVENESS ASSESSMENT							
Factors	Low grade		Medium grade			High grade	
	1	2	3	4	5	6	7
Level of automation
Quantity
Quality
Prices
Expenses
Management system
Service
Partnerships
Total

In the process of assessing competitiveness, the question arises about the ability to change the value, quantity and quality of products and services, which will attract more customers. In solving this problem, the three main approaches to process automation must be considered:

- Automation of existing machines and equipment, based on existing technologies;
- Design of new automated facilities, based on the introduction of new technologies;
- The implementation of the latest methods and tools for automation in combination with traditional ones.

In the automation of existing machines and equipment, the flow of parts is mainly automated, as universal machines and semi-automatic machines are converted into automatic machines. In these cases, productivity growth is usually in the range of 1.1 to 2. When designing new machinery and equipment, productivity growth is usually in the range of 2 to 5, but there may be significantly higher values, for example up to 50 [2]. This is possible with the introduction of new innovative automated technologies. Each of the three models of introduction of automation hides its economic benefits and risks related mainly to the return on investment and social benefits and risks associated on the one hand with the improved social package of workers, and on the other with the risk of increasing of unemployment (fig. 2).

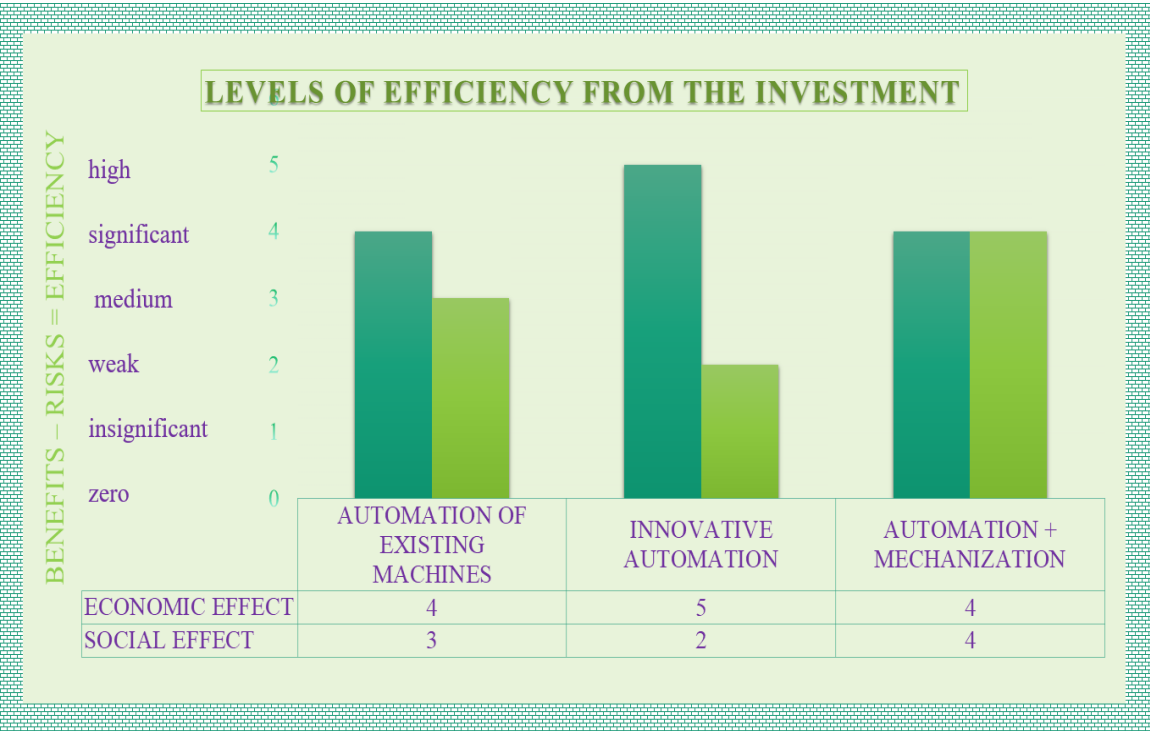


Fig.2 Degrees of efficiency according to the approach in automation

Description: Initially, the factors for strategic investment planning derived from my research did not give a clear idea of the effectiveness of the types of automation, therefore I had to distribute them in the histogram under two main evaluation criteria, namely:

- benefits - social and economic (for the person, for the company, for the society);
- risks - organizational and managerial, financial, operational, legal, contractual, operational, health.

To each of them I set degree values for weight according to a six-point system and the result formed in this way turned out to never reach the maximum expectations. They remain a goal and an incentive to upgrade companies and a major driving factor of scientific and technological progress.

Based on the comparison, it was found that the most accurate criterion for the effectiveness of process automation is obtained as a result of the difference between benefits and risks.

After the analysis, it was unequivocally proved that automation is both a factor for financial success and improving competitiveness, which satisfies the main goals of business organizations. The preliminary determination of the criteria for implementation efficiency depends on the number of assessment factors, the choice of the appropriate configuration of automated technological units and the needs of the specific business.

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