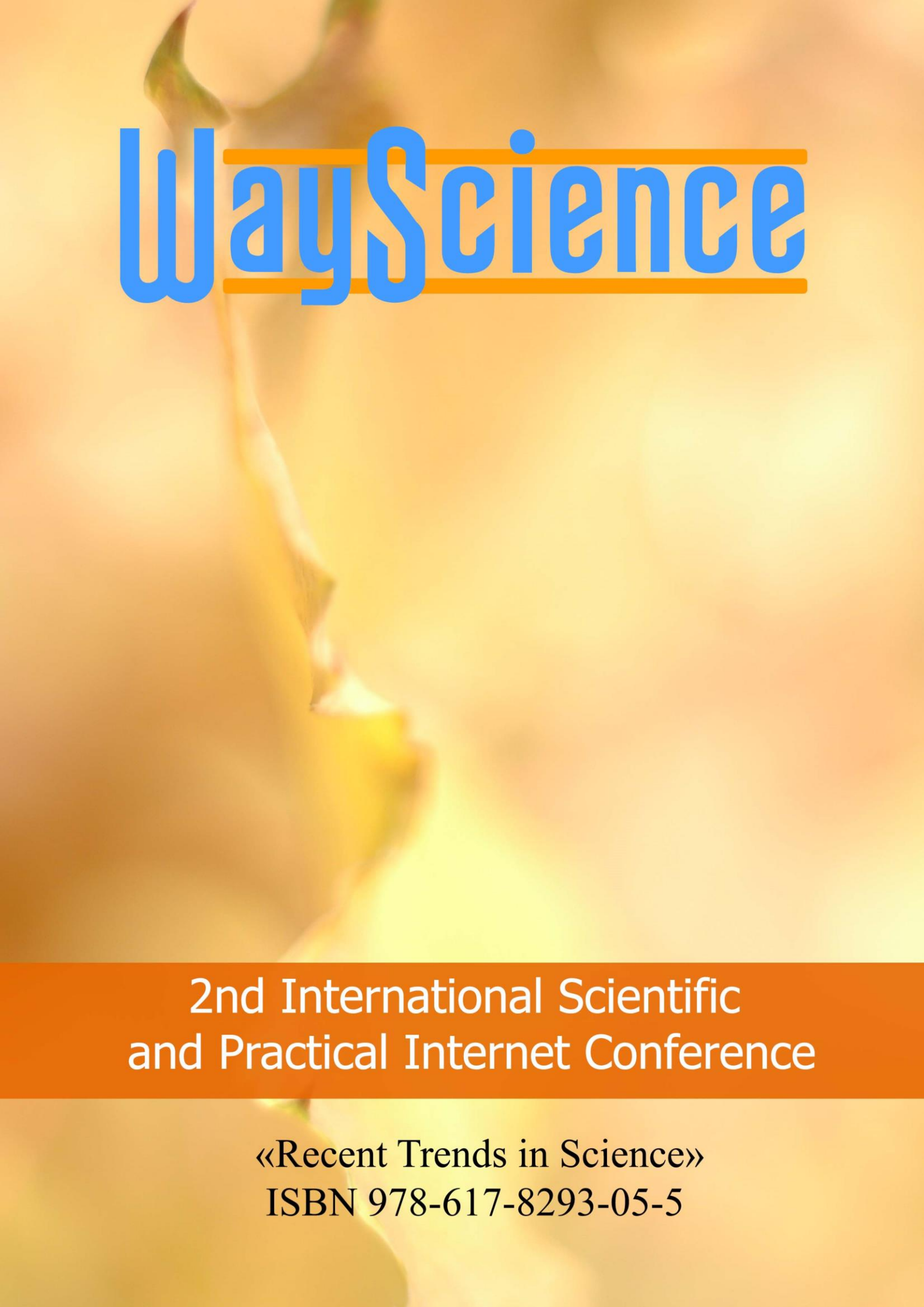




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and Practical Internet Conference

«Recent Trends in Science»
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ANALYSIS OF THE IMPACT OF INFORMATION TECHNOLOGIES FOR MAKING MANAGEMENT DECISIONS, INCLUDING PROJECT ONES

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At each level of management, information appears that serves as the basis for making appropriate management decisions. A qualitative assessment of the impact of it on managerial decision-making can be represented as follows (Table 1).

Among the considered approaches to assessing the effectiveness of IT, there is not one that would be best suited to justify any project. Therefore, using only one of them is irrational. In addition, each specific project requires clarification and adjustment of the methodology chosen for its evaluation. Businesses implementing IT projects, it is necessary to determine the indicators and criteria that characterize the costs and results, and find a methodology for assessing the economic efficiency of the project, suitable for their specifics. When evaluating an implemented IT project, it is necessary to determine the methodological base – a system of evaluation indicators, with the help of which economic efficiency will be justified. Abroad, some quantitative and qualitative indicators are also used for this.

Table 1. The impact of IT on Management Decision Making

Indicators	Mechanism and nature of influence
Qualification of managers and employees	1) continuous learning and self-improvement
Labor costs of employees, managers	1) increased control in the management of human resources; 2) the number of employees, managers decreases and the productivity of their work increases.
Labor productivity (employees, managers)	1) the number of managerial decisions is growing; 2) the speed of making managerial decisions increases.
Quality of communications	1) direct access to external and internal databases; 2) speeding up the exchange of information.
Quality of strategic and managerial decisions	1) the ability to quickly select a strategy using software products, economic and mathematical modeling; 2) the ability to follow the global market conditions.
Risks associated with production and economic activities	1) visual representation of the trend of changes in risks using graphs in electronic form; 2) accuracy of risk calculation using specialized products, modeling.
Return on capital investments from the implementation of an IT project per 1 € invested	1) increasing sales volume; 2) reduced production costs after the payback period of the project; 3) increasing employee productivity.
Product price	1) reduced cash costs; 2) reduced labor costs; 3) material costs are reduced.
Material and monetary resources for the production of products after the payback period	1) increased control in resource management; 2) maintaining old and conquering new markets; 3) attraction of new suppliers and consumers.
Management costs	1) liquidation of individual links of the organizational structure.
Product quality	1) new modern technologies are applied; 2) increasing the qualifications of employees
Time spent on information processing, storage, transmission	1) processing speed is increased due to the use of digital data processing methods.

Companies are ranked in accordance with indicators, the totality of which gives an index of the efficiency of using IT in them (Table 2). This rating is widely used in business practice.

Table 2. IT Performance Index Parameters

№ п/п	Parameter	Parameter characteristic	Specific weight, %
1	Budget	Annual IT spending as a percentage of average industry revenues	25
2	Market value	The modernity of information equipment, measured as a percentage of the current market value of the equipment to the company's revenues	20
3	Profit	Company profit for the last 15 years	15
4	Staff price	Information staff costs as a percentage of the information budget	10
5	Cost of education	The cost of staff training as a percentage of the cost of information systems	10
6	User access	Degree of user access to technology (ratio of the number of computers and terminals to the total number of employees)	20

The assessment of economic efficiency is proposed to be carried out on the basis of the ratio «results – costs». First, the costs of introducing information technologies are detailed. The result of the use of IT will be a reduction in the costs of its use. Based on this, the criteria for evaluating the effectiveness are reworked, and an economic and mathematical model is compiled in accordance with the theory of options, which evaluates the cost of IT, taking into account risk factors and uncertainty.

Next, a system of evaluation indicators is formed. There are two groups of indicators. The first group is the costs of the IT project, the second is the savings that result from the implementation of IT (Table 3).

Table 3. IT Implementation Assessment Parameter System

№ п/п	Parameter	Parameter characteristic
<i>IT implementation costs</i>		
1	Acquisition of computer equipment	Purchase of computers, peripheral and network equipment
2	Purchasing software	Acquisition of ready-made software tools, their adaptation and maintenance
3	Payment of third-party organizations and specialists related to IT	Costs for consulting services on technical means, software and information support, data processing; maintenance and repair; software development
4	Employee training	Training of employees by third-party organizations and specialists, as well as employees of the enterprise
<i>IT usage costs</i>		
5	After-sales service	Includes costs for the purchase of components, literature and additional software versions
6	Electricity	–
<i>Results from IT implementation</i>		
7	Savings from the release of workers	Is a consequence of increasing labor productivity, shows the value of saving social time, which is achieved as a result of the use of IT

The result of the introduction of IT is the savings from the release of workers, which is calculated by the following formula (U_i – number of redundant workers from the i -th investment subject ($i = 1, 2, \dots, n$); B_i – amount of income per one average worker):

$$\xi = \sum_i^n U_i \cdot B_i$$

Net present value (NPV) as the main criterion of economic efficiency from IT implementation is considered. The main result of IT implementation is cost savings. This means saving money to meet the socio-cultural needs of the working people. Therefore, the formula for evaluating the effectiveness of the proposed IT project can be transformed as follows (E – total amount of savings from the introduction IT; z – total costs for the implementation of IT; $E(t)$ – savings in period t ; $z(t)$ – costs in period t ; p – discount rate reflecting the time exchange value of money; t – period of time ($t = 1, \dots, T$):

$$NPV = E - z = \sum_{t=1}^Q \frac{E(t)}{(1+p)^t} - \sum_{t=1}^Q \frac{z(t)}{(1+p)^t} > 0$$

Thus, the method is proposed wants to show the value of an IT project, taking into account changes in future conditions.

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