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**USE OF THE METHOD OF THE ANALYSIS OF BENEFITS AND COSTS FOR
DECISION MAKING ON THE DEVELOPMENT OF ENTERPRISE FINANCIAL
RELATIONS WITH GROUPS OF ECONOMIC INFLUENCE (STAKEHOLDERS)**

Abstract. The expediency of using the method of analysis of benefits and costs for the evaluation of the effectiveness of the development of enterprise financial relations with groups of economic influence (stakeholders) is substantiated. This method is a method of making administrative decisions which is used under the condition of complex alternatives or when the information on the entity's operating environment is not entirely clear. The method is based on the concept of rational choice according to which individuals choose an alternative that involves exceeding benefits over costs. The main stages of carrying out such analysis in the process of implementation of measures (projects) of the enterprise cooperation with stakeholders are distinguished. The following stages are: formation of goals and objectives of the analysis of benefits and costs for the assessment of the relations between the company and stakeholders; identification of possible solutions to problems, arrangement them by time, capacity and components; determination of the composition of factors the change of which must be taken into account during the analysis; determination of the volumes of benefits and expenses and their reduction to comparable meters; calculation of the total determined value of the present value of the net benefit from realization of measures for the development of relations with stakeholders and analysis of its sensitivity to the requirements of individual factors; analysis of the risks of implementation actions; making a final decision on the implementation of measures or projects during the investment horizon. Such an analysis requires careful selection of factors (parameters) for assessing changes in the activity of the enterprise from its cooperation with stakeholders, building a model of incremental effects of benefits and time costs and calculating the volumes of current value of net profit of an enterprise. The method of calculation of incremental effects on the change in benefits and costs volume due to the changes in enterprise activity parameters as well as determination of the amount of the current value of enterprise net benefits from the implementation of measures aimed at improving relationship with a certain group of stakeholders, taking into account alternative options of investing limited financial resources is offered. The need to assess probabilities of the deviation of the values of the analyzed parameters from the basic level in the process of identifying the risks of the projects of the development of enterprise relations with stakeholders is emphasized.

Keywords: analysis, method of the analysis of benefits and costs, enterprise financial relations, making managerial decisions, groups of economic influence (stakeholders).

JEL Classification G32, D92, L32

Formulas: 0; fig.: 1; tabl.: 3; bibl.: 12.

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ВИКОРИСТАННЯ МЕТОДУ АНАЛІЗУ ВИГІД І ВИТРАТ ДЛЯ УХВАЛЕННЯ РІШЕНЬ ЩОДО РОЗВИТКУ ФІНАНСОВИХ ВІДНОСИН ПІДПРИЄМСТВА З ГРУПАМИ ЕКОНОМІЧНОГО ВПЛИВУ (СТЕЙКХОЛДЕРАМИ)

Анотація. Обґрунтовано доцільність застосування методу аналізу вигід і витрат для оцінювання ефективності розвитку фінансових відносин підприємства з групами економічного впливу (стейкхолдерами). Цей метод є методом управління управлінських рішень, що його використовують за умови складних альтернатив діяльності або коли інформація щодо середовища функціонування суб'єкта господарювання є не зовсім визначеною. Метод ґрунтується на концепції раціонального вибору, згідно з якою індивіди обирають альтернативу, що передбачає перевищення обсягів вигід над обсягами витрат. Виокремлено основні етапи здійснення такого аналізу у процесі реалізації заходів (проектів) співпраці підприємства зі стейкхолдерами. Такими етапами є: формування мети і завдань аналізу вигід і витрат для оцінювання взаємовідносин підприємства зі стейкхолдерами; визначення можливих варіантів розв'язання проблеми, узгодження їх за часом, обсягами і компонентами; установлення складу чинників, зміну яких варто враховувати у процесі аналізу; визначення обсягів вигід і витрат та їх зведення до зіставимих вимірників; обчислення сумарного детермінованого значення поточної вартості чистої вигоди від реалізації заходів розвитку взаємовідносин зі стейкхолдерами та аналіз її чутливості до вимог окремих чинників; аналіз ризиків реалізації заходів; ухвалення остаточного рішення щодо реалізації заходів чи проектів за період інвестиційного горизонту. Такий аналіз вимагає ретельного вибору чинників (параметрів) оцінювання змін у діяльності підприємства від його співпраці зі стейкхолдерами, побудови моделі приріст них ефектів вигід і витрат у часі та обчислення обсягів поточної вартості чистої вигоди підприємства. Запропоновано метод розрахунку прирістних ефектів щодо зміни обсягів вигід і витрат, зумовлених зміною параметрів діяльності підприємства, і визначення суми поточної вартості чистої вигоди підприємства від реалізації заходів, спрямованих на поліпшення взаємовідносин із певною групою стейкхолдерів з урахуванням альтернативних варіантів вкладення обмежених фінансових ресурсів. Акцентовано увагу на необхідності оцінювання імовірностей відхилення значень аналізованих параметрів від базового рівня у процесі визначення ризиків проектів розвитку взаємовідносин підприємства зі стейкхолдерами.

Ключові слова: аналіз, метод аналізу вигід і витрат, фінансові відносини підприємства, ухвалення управлінських рішень, групи економічного впливу (стейкхолдери).

Формул: 0; рис.: 1; табл.: 3; бібл.: 12.

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ИСПОЛЬЗОВАНИЕ МЕТОДА АНАЛИЗА ВЫГОД И ЗАТРАТ ДЛЯ ПРИНЯТИЯ РЕШЕНИЙ ПО РАЗВИТИЮ ФИНАНСОВЫХ ОТНОШЕНИЙ ПРЕДПРИЯТИЯ С ГРУППАМИ ЭКОНОМИЧЕСКОГО ВЛИЯНИЯ (СТЕЙКХОЛДЕРОВ)

Аннотация. Обосновано целесообразность использования метода выгод и затрат для оценивания эффективности развития финансовых отношений предприятия с группами экономического влияния (стейкхолдерами). Выделены основные этапы проведения такого анализа в процессе реализации мероприятий (проектов) сотрудничества предприятия со стейкхолдерами. Предложен метод расчета приростных эффектов изменения объемов выгод

и затрат, обусловленных изменением параметров деятельности предприятия и определения суммы текущей стоимости чистой выгоды предприятия от реализации мероприятий, направленных на улучшение отношений с определенной группой стейкхолдеров с учетом альтернативных вариантов вложения ограниченных финансовых ресурсов. Обоснована необходимость оценивания вероятностей отклонения значений анализируемых параметров от базового уровня в процессе определения рисков проектов развития взаимоотношений предприятия со стейкхолдерами.

Ключевые слова: анализ, метод анализа выгод и затрат, финансовые отношения предприятия, принятия управленческих решений, группы экономического влияния (стейкхолдеры).

Формул: 0; рис.: 1; табл.: 3; библи.: 12.

Introduction. In order to maintain and strengthen their competitive positions in the market today, enterprises have not only to use existing material, technical, labor, financial and information resources effectively, but also establish and develop interaction with major groups of economic influence (stakeholders). The availability of effective relations between the enterprise and its suppliers, buyers, investors, creditors, and its positive image among employees, managers, owners, state authorities and local governments allows them to receive additional revenues and discounts, attract resources and receive other benefits on preferential terms. However, when deciding on the development of relationships with one or more stakeholders that are usually connected with the need to invest resources, the enterprise has also to take into account the consequences of their influence on the system of market factors acting upon it and its business partners. Consequently, the complexity and stochastic nature of the influence of a large number of different factors on the interaction of the enterprise with stakeholders lead to the need for the development and use of clear decision-making algorithms on the development of this interaction, taking into account expected benefits and costs, which will increase the efficiency of the use of enterprise limited financial resources.

Analysis of the research and task formulation. The fundamentals of the methodology of the analysis of benefits and costs were developed by the French scientist Jules Dupuit in 1844 to measure the usefulness of public projects. Over the next few years, this methodology was actively promoted by the well-known scholars, including Nobel Prize winners in the field of economics — K. Arrow, R. Frish, J. Hicks, J. Tinbergen, P. Samuelson, A. Sen [1]. The conceptual foundations and practical aspects of the analysis of benefits and costs were grounded by A. Bordman, D. Greenberg, R. Winning, D. Weimer [2]. The essence of the methodology of benefits and costs is disclosed in the works of D. Weimer, E. Weining [3], Yu. Nemets, G. Wright [4], J. Stiglitz [5] and F. Reh [6]. The work of Yu. Chuchman [7], P. Landau [8] and T. Watkins [9] is devoted to the analysis of benefits and costs in the process of evaluating the expediency of public and private investment projects. The methodological approaches to the socio-economic analysis of benefits and costs in the course of implementing public and private partnership projects are presented in the work of N. Babiak and Ye. Nahornyi [10]. The special features of the analysis of benefits and costs associated with the implementation of forestry projects are disclosed in the work of Yu. Schvediuk [11]. At the same time, the issues of using the methodology of the analysis of benefits and costs for the purpose of determining the expediency of implementing projects for the development of relations between the enterprise and the main groups of economic influence, taking into account the peculiarities of the current market environment, remain inadequately investigated. The aim of writing the article is reasoning the decision-making procedure on the development of the enterprise interaction with groups of economic influence on the basis of the use of the method of the analysis of benefits and costs, in particular, distinguishing the main stages of conducting such analysis, presenting the methodology of calculating the volumes of changes in benefits and costs and the amount of the current value of the enterprise net benefits as a result of the implementation of the mentioned decisions.

Research results. The method of the analysis of benefits and costs, as a method of making managerial decisions, is used provided existing activity alternatives are complicated or information on the environment of the entity's operation is uncertain. The method is based on the concept of a rational choice, according to which individuals choose an alternative in which the volume of benefits exceeds the volume of costs. The general model of the procedure of analyzing benefits and costs includes:

- identification of activity alternatives;
- coordination of alternatives in order to ensure their correct comparison;
- data adjustment provided benefits and costs are connected with different activity time periods;
- determination of benefits and costs, including those that are difficult to assess in monetary terms (for example, social benefits and costs, benefits and costs connected with environmental changes, reducing risks to people's health and safety);
- determining the level of data uncertainty;
- representation of benefits and costs in a format that is useful for decision-making [12, p. 25].

Given the enterprise limited budget, when the same resources cannot be used for various tasks, the use of the analysis of benefits and costs allows determining which of the measures (investment options) will result in the greatest return and will be the most useful for the enterprise in terms of obtaining tangible and intangible assets, the growth of net cash flows and its market value. The solution of this problem is especially relevant in the process of establishing and developing relations between the enterprise and stakeholders.

Having a large number of potential opportunities for the cooperation with different groups of internal and external stakeholders and trying to use them to improve their competitive position, enterprises are usually forced to choose certain priorities in their activities, refusing the other options, which are also rather promising ones. There are cases when the enterprise has to decide on financing new development programs at the expense of the funds allocated to already existing projects (for example, whether to further develop a bonus program for sales managers or to expand the network of distributors).

Therefore, the enterprise needs to clearly understand the implementation of which projects to develop relationships with certain groups of stakeholders will have the most significant impact on the processes of increasing the volume of value formation, the growth of the enterprise equity and market value in the current and long-term periods. It is advisable to carry out the analysis of benefits and costs associated with the development of the enterprise relations with stakeholders both at the stage of determining ways of balancing the interests and contributions of counterparties and in the process of identifying available reserves for improving performance results.

The effectiveness of the relationship between the enterprise and stakeholders depends not only on a large number of different factors, but also on the peculiarities of their actions, which often have stochastic nature. Therefore, in order to ensure a logical sequence of analyzing the benefits and costs of such relationships, it is advisable to distinguish its main stages. These stages are shown in Fig. 1

At the first stage, it is necessary to identify and study the problems of the relationship that need to be resolved (for example, the imbalance of interests and contributions of the enterprise with respect to certain suppliers or buyers), to identify existing legal, economic, financial, social and other constraints, and to formulate the purpose and objectives of the analysis of relevant benefits and costs.

After that, it is necessary to identify a set of the most promising options for solving the problem, based on the implementation of appropriate measures (projects). In order to ensure the correctness of alternatives comparison, it is necessary to coordinate them by time, volumes and components (main assets, communication channels, infrastructure objects, etc.) that the enterprise already uses in its activities.

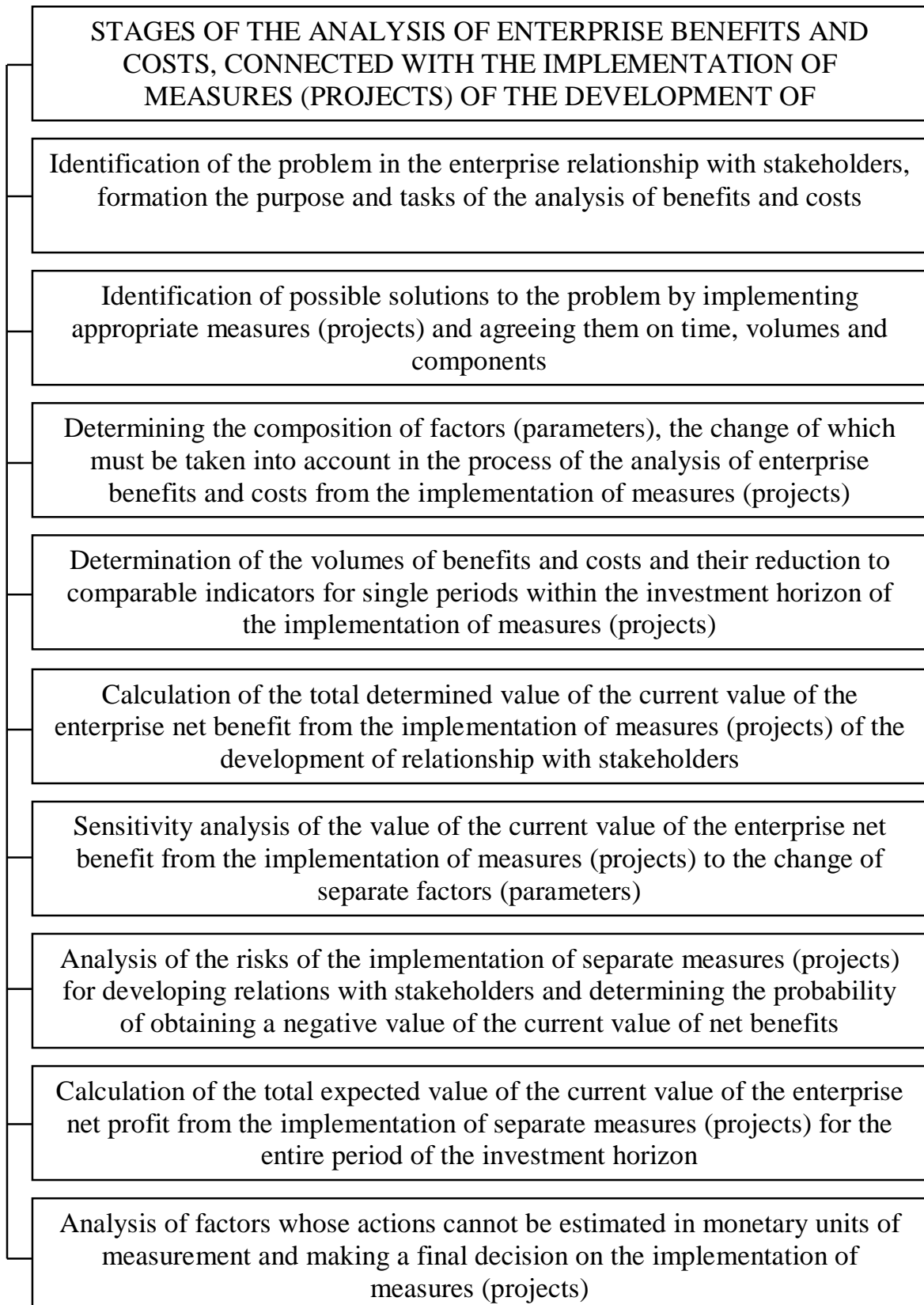


Fig. 1. Main stages of the analysis of the enterprise benefits and costs associated with the implementation of a measure (space) for the development of relations with stakeholders

The third stage involves establishing the composition of factors (parameters), the change of which must be taken into account in the process of calculating benefits and costs, in particular, to determine the incremental effects of benefits and costs (both in material and immaterial forms) and to

provide data on the volumes of benefits and costs in monetary units according to the periods of investment horizons of the implementation of certain measures (projects).

Another important stage of the analysis should be the calculation of enterprise benefits and costs connected with the implementation of individual measures (projects) to comparable indexes within investment horizons, in particular, their adjustment to the inflation rate.

The next analysis stage should be the development of a deterministic model for determining benefits and costs distributed over time by their discounting and calculating the total determined value of the current value of net benefit — net current value (NCV) for the implementation of certain measures (projects) of developing relationships with a particular stakeholder or a group of stakeholders.

Next it is necessary to analyze the sensitivity of the value of the current value of the enterprise net benefit from the implementation of certain measures (projects) to the change of the main factors (parameters), set the range of influence and determine which of these factors will have the most significant impact.

At the next stage, it is necessary to analyze the risks of implementing the measures (projects) and determine whether the range of factor changes includes a transition point at which the value of the current value of net benefit is zero, that is, whether the change of a certain factor can lead to a negative assessment of the prospects for the implementation of a particular measure (project).

It is also reasonable to calculate the total expected value of the current value of the enterprise net profit as a result of the implementation of separate measures (projects) for developing relations with stakeholders for the entire period of the investment horizon.

The final stage involves carrying out detailed quantitative and qualitative analysis of factors (measures) that cannot be assessed in monetary units (the impact of such factors should be assessed on a grade scale) and making a final decision on their implementation.

It is advisable to focus the greatest attention in the process of analyzing benefits and costs caused by the development of the enterprise relationship with a certain group of stakeholders on the choice of factors (parameters) for assessing changes in activities, forming the model of incremental effects of benefits and costs in time, as well as on the calculation of the current value of enterprise net benefits.

Consider the example of using the method of the analysis of benefits and costs connected with the implementation of the project of the development of the enterprise interaction with a group of stakeholders — buyers. The enterprise considers the relationship improvement with buyers through:

- a) implementation of the project to increase the time and improve the quality of work of departments that provide after-sales service of high-tech products (Project A) with the investment costs of 50,000 UAH. As a result, the following annual growth is forecast:
 - the number of units of sold products by 5% for the first and second year and by 4% for the third year;
 - the number of employees of departments of after-sales service of products per capita. To do this, there is a possibility to transfer an employee who currently works in another structural subdivision of the enterprise with an average monthly basic salary of 7,000 UAH;
 - additional payments to the basic salary of employees of after-sales service departments by 2% in the first year and by 1% in the second and third year;
- b) the investment of 50,000 UAH of investment resources into the project to improve the information presentation to buyers on the company's website (Project B). It is forecast that this will give an opportunity to increase enterprise sales volumes by 3% annually.

At the current (basic) moment, the sales price of a unit of the enterprise production is 10,000 UAH; the basic volume of sales in natural units — 1,000 units; the list number of employees of after-sales services departments is 20 people; the average monthly salary of one employee of after-sales service departments — 10,000 UAH. (120,000 UAH per year); the share of payments on materials (spare parts) per unit price — 20%; the investment range — 3 years; the weighted average cost of the enterprise's capital is 12%.

Using the offered approach to the analysis of benefits and costs, the authors first make a table of parameters, that is, variables that will be taken into account in the process of the analysis of benefits and costs (see Table 1).

Table 1

Output data (parameters) to calculate the benefits and costs associated with the project implementation to improve the relationship between the enterprise and a group of stakeholders (buyers)

Parameter number	Parameter title	Parameter value
Project A		
Parameter 1	Increase rate in the number of units sold	1 st and 2 nd years — 3 %; 3 rd year — 4 %
Parameter 2	Increase in the number of department employees	1 st year — 1 person 2 i 3 years — 0 persons
Parameter 3	Growth of surcharges to the basic salary of department employees	1 st year — 2 %; 2 nd and 3 rd years — 1 %
Project B		
Parameter 1	Increase rate in the number of units sold	3 % annually

Source: made up by the authors

The second stage of the analysis involves determining the amount of increase in enterprise benefits and costs in monetary units (see Table 2). In calculating the changes in the volume of enterprise costs connected with the project implementation to improve the work of after-sales service departments, it must be taken into account that an additional employee will be drawn in these subdivisions from another structural subdivision of the same enterprise and that his average monthly basic salary is 7,000 UAH (84,000 UAH per year). Consequently, the enterprise's expenses volume for the payment of the employees' basic salary of the departments before the implementation of Project A is 2,400,000 UAH (12,000 x 20), and after the implementation of Project A will make 2,436,000 UAH. (120,000 x 20 + (120,000 — 84,000) x 1).

Table 2

Calculation of incremental effects on the volumes of benefits and costs due to the implementation of the projects to improve the enterprise interaction with a group of stakeholders (buyers)

Indicators	Range of indicator values by the periods of the investment horizon		
	1 st year ($t_0 - t_1$)	2 nd year ($t_1 - t_2$)	3 rd year ($t_2 - t_3$)
Project A			
Events: Capital investment, UAH	0	0 — 0	0 — 0
Change in sales volumes, units	1,000 — 1,050	1,050 — 1,103	1,103 — 1,147
Change in the number of employees of departments, people	20 — 21	21 — 21	21 — 21
Change in the level of additional payments to a basic salary of employees, %	0.0 — 2.0	2.0 — 3.0	3.0 — 4.0
Consequences: Change in the volume of enterprise income, UAH.	10,000,000 — 10,500,000	10,500,000 — 11,030,000	11,030,000 — 11,470,000
Change in the volume of enterprise expenses for the payment of a basic salary to employees, UAH.	2,400,000 — 2,436,000	2,436,000 — 2,436,000	2,436,000 — 2,436,000
Change in the costs of materials, UAH	2,000,000 — 2,100,000	2,100,000 — 2,206,000	2,206,000 — 2,294,000
Change in the volume of additional payments to a basic salary of employees of departments, UAH	0 — 48,720 (2,436,000 x 0.02)	48,720 — 73,080	73,080 — 97,440
Project B			
Events: Funds investment, UAH	80000 — 0	0 — 0	0 — 0
Change in sales volumes, units	1,000 — 1,030	1,030 — 1,061	1,061 — 1,093
Consequences: Change in the volume of the enterprise income, UAH.	10,000,000 — 10,300,000	10,300,000 — 10,610,000	10,610,000 — 10,930,000

Source: made up by the authors

The next stage of the analysis is to calculate the current value of the enterprise net profit from the implementation of Project A (see Table 3). According to the calculated data, the enterprise benefits consist in an increase in the volume of its income, and the costs include an increase in the

costs of basic wages and surcharges to it to employees of departments, the volume of incremental costs for materials and the amount of enterprise lost profits as a result of the refusal from the implementation of an alternative Project B. The net profit volume is equal to the difference between the volumes of the enterprise benefits and costs due to the implementation of Project A. The current value of net benefits is determined by discounting the net profit volumes at the rate of discounting equal to the value of the enterprise capital.

Table 3

Volumes of the current value of the enterprise net profit as a result of the implementation of Project A, aimed at improving relations with a group of stakeholders (buyers)

Periods of the investment horizon	Volumes of investment resources, UAH	Increase in costs, UAH				Increase in benefits volumes from Project B implementation	Net profit volume, UAH	Current net value (NPV), UAH
		to pay basic wages to employees	to pay surcharges to the main wages of employees	for materials	volumes of lost benefits owing to the refusal of Project B implementation			
t_0	(80000)	–	–				(80000)	(80000)
$t_0 — t_1$	–	(36000) (2436000 – 2400000)	(48720)	(100000)	(300000)	500000	15280	13643
$t_1 — t_2$	–	–	(24360)	(106000)	(310000)	530000	89640	71460
$t_2 — t_3$	–	–	(24360)	(88000)	(320000)	440000	7640	5432
Amount of the current value of net benefits	–							10541

Source: made up by the authors

Since the current value of the enterprise net profit from the implementation of Project A has a positive value (NCV = 10,541 UAH), such a project is effective.

The volumes of benefits and costs calculated during the analysis of a particular solution (the project) can significantly change as a result of the effect of an uncertainty factor, such as changes in the market price of materials, the legislative increase of the minimum level of employees' basic wages, the change in demand for enterprise's products, etc. Therefore, an important stage in the cost-benefit analysis is to determine how probable deviations of the value of certain parameters from a basic level will affect the current value of the enterprise net profit. For this purpose, such methods as sensitivity analysis, scenario analysis, the Monte Carlo method, and others can be used.

Conclusions. In order to ensure market competitiveness in the modern economy, each enterprise needs to establish effective relations with internal and external groups of economic influence. When deciding on the development of such relationships, it is advisable to use the method of the analysis of benefits and costs, through which it is possible to systematically and clearly define rational priorities in activities in the conditions of limited resources, complexity, instability and uncertainty of the surrounding business environment. The analysis of benefits and costs associated with the development of relationships with stakeholders should be carried out both at the stage of balancing interests and contributions of counterparties and in the process of determining reserves to improve the performance. The phased implementation of such analysis enables the enterprise to determine the implementation of which measures (projects) for the development of relations with stakeholders will bring the greatest benefit in the form of an increase in the current value of net benefits.

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Стаття рекомендована до друку 28.02.2019

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The article is recommended for printing 28.02.2019

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