

METHODOLOGICAL APPROACH TO THE EVALUATION OF INNOVATIVE PRODUCTS' UTILITY AT AN ENTERPRISE

Annotation. The main methods of evaluation of products' utility are described. The new ways of improving the existing techniques are offered. The estimation of economic and social utility of innovative products is considered in terms of innovative efficiency for producers and consumers.

Анотація. Описано основні методи оцінки корисності продукту на підприємстві. Подано нові шляхи вдосконалення існуючих методів. Розглянуто оцінку економічної та соціальної корисності інноваційного продукту з позицій виробника та споживача.

Аннотация. Описаны основные методы оценки полезности продукта на предприятии. Предложены новые пути совершенствования существующих методов. Рассмотрена оценка экономической и социальной полезности инновационного продукта с позиций производителя и потребителя.

Keywords: product's utility, innovation, efficiency of innovation, economic efficiency, social efficiency.

Introduction of innovations have always played an important role in the development of production. In the modern economy, the role of innovation increases significantly. They are increasingly becoming a major factor of economic growth.

In author's opinion, the utility of innovation can be described as the measure of satisfaction that the subject (in this case the enterprise and the society) receives from goods consumption or any action associated with these goods.

Utility is the effectiveness or the relative effect (of innovation) which is defined by the ratio of the effect (result) and costs (expenses, resources) necessary to achieve the usefulness taking in account external and internal conditions, enterprise's and consumer's interests [1, p. 87].

The problem of the comprehensive evaluation of the effectiveness of capital investments is constantly in the center of attention of economists, managers and practitioners of various levels and ranks [2, p. 4].

While analyzing the statistical data on innovation activity in Ukraine it is necessary to say that the process of inventions is growing year by year and the issue of estimating the effectiveness is crucial and important. From 2005 till 2011 the share of firms introducing innovations has been raised up to 4.6 % each year, and now it is 12.8 %. Also, during the same period 12,465 new technological processes were introduced while the expansion rate is almost 29 % each year and more than 2,400 new items of innovation products are developed per year [3]. The tendency shows that innovations in Ukraine are well developing and it is appropriate to admit that evaluating is natural process. This proves the actuality of this scientific research.

There are a lot of methods of evaluating the utility of innovation technologies of the enterprise, but it is appropriate to calculate the value of innovation according to two groups of indicators: economic (importance of innovation product for the enterprise) and social one (for consumers). And in this scientific research the most effective way of estimation will be shown.

The evaluation of the utility of innovative technologies is a significant element in the economy of an enterprise because it helps to understand whether the company's efficiency and customer's satisfaction is declining or increasing.

Typical approaches are: a comprehensive economic analysis of the efficiency of economic activity, the analysis of the technical and organizational level of the production, the analysis of the use of production resources and the analysis of the relative cost, output and profits.

Innovation's utility appears when the efficiency of its activity is increasing. Therefore, to determine the effective use of a particular factor of production, a system of specific indicators is used: labour productivity, labouriousness, capital productivity, capital intensity, material productivity, material capacity, profitability, energy intensity, financial solvency. To define the social factor as a part of utility's evaluation it is correct to use such indicators as: customer's satisfaction, the conformity to consumer's expectations, the share of the buyer's expenses, client's base, the retention rate of new customers, product design satisfaction, "price/quality" satisfaction. All of these factors are described in Table 1 [1, pp. 95–98].

The factors used for calculating the product's utility for an enterprise

Indicator	Characteristic
Labour productivity	Describes the efficiency. It is defined as the ratio of output to the number of workers engaged in the production, or to the number of man-hours worked in a given period of time
Labouriousness	Reverse to the labour productivity which determines the cost of human labour spent per unit of production
Capital productivity	Characterizes the efficiency of fixed capital (labour). It is calculated as the ratio of the cost of output to the cost of capital stock
Capital intensity	Reverse to capital productivity which captures the cost of capital cost per unit of output
Material productivity	Characterizes the efficiency of the objects of labour and shows the quantity of the product produced out of the material resources. This data is calculated as the ratio of the cost of output to the cost of material resources expended
Material capacity	Reverse to the material productivity which calculates the cost of material resources expended for a unit of production.
Profitability	Comprehensively shows the efficiency of using the material, labour and financial resources as well as natural resources. The coefficient is calculated as the ratio of profit to assets, resources and flows that make this profit
Coefficient of the equity ratio	Indicates the relative proportion of equity used to finance a company's assets
Coefficient of the financial dependence	Indicates how enterprise assets are financially depended on the borrowing funds
Growth of production	The ratio of the volume of new production to the number of the old one
Growth of profit	The ratio of the net profit for the reporting period to the net profit for the previous period

The above-listed indicators are the most widely used ones that are applied for defining enterprise's utility of innovative product. Firstly, these indexes are necessary to evaluate the level of the usage of different types of resources, its costs, and degree of providing organizational and technical actions and the overall result of production activities for a certain period.

To calculate the second important component of the utility of innovative product (social efficiency) the next factors are used: the standard of living, namely the level of wealth, comfort, material goods and necessities available to a socioeconomic class in a certain geographic area.

For correct evaluation of innovation's product utility it is necessary to take into account the customer's benefit. To define general positive or negative influence and utility of innovation products it is appropriate to define the coefficients in Table 2 [4, p. 22; 5].

Table 2

The factors used for calculating the product's utility for a customer

Indicator	Characteristic
Customer's satisfaction	The component of customer's loyalty, his/her attitude to the brand. If the product cannot satisfy the basic needs of a buyer and the expectations from using of the product it will never be purchased anymore
The conformity to consumer's expectations	Indicates the level of satisfaction. It is defined by the ratio of number of satisfied (by functionality, quality or other) customers to the total number of respondents
The share of the buyer's expenses	The percentage of the total number of purchases in a category of innovation products that the buyer makes. It can be 100 % share of the expenses of the buyer if the latter spends the entire budget to buy the products in this category
The retention rate of new customers	Represents the percentage of customers who have made purchases for the first time and returned for the second time within a certain period of time, which is based on a cycle of repeated purchases. It is calculated by ratio of the number of new customers to the total number of consumers
Product design satisfaction	The ratio of number of consumers satisfied with product design to the total number of consumers
"Price/quality" satisfaction	The ratio of number of consumers satisfied with the quality and price to the total number of consumers

To unite and calculate the real utility of innovation introduction into enterprise's production the next integral indicator is used:

$$I_n = \sum_{i=1}^n b_i \frac{X_{i-act}}{X_{max}}$$

where b_i is ponderability of the indicator (is calculated with the help of expert's assessing),

X_{i-act} is actual value of the indicator,

X_{max} is maximal value of the indicator (standard).

For analyzing these indicators it is convenient to use the Harrington's Scale 1 [6, pp. 95–101].

Thereby, in this scientific research the method of evaluating the product's utility was improved. It differs from the other existing approaches because it is based on justification and evaluation of the complex system of particular indicators relative to economic and social efficiency.

Economic factors include the labour productivity, labouriousness, capital productivity, capital intensity, material productivity, material capacity, profitability, energy intensity, financial solvency.

Introducing the methodical recommendations on the evaluation of utility in practice of enterprise's activity will help to define those innovation products that have commercial value and give the advantage of the economic entities as well.

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