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татів при його здійсненні. Перевірка вірогідності даних – найважливіша умова успішної роботи у справі спостереження. Щоб забезпечити вірогідність даних, необхідно повсякденно, систематично контролювати, чи вірно зрозумілі і застосовуються статистичні програми та інструкції, чи забезпечується повнота одержаних зведень, правильність даних бухгалтерського і оперативного обліку [4].

Статистичне спостереження виступає одним з найголовніших методів статистики. Правильне визначення одиниці спостереження має істотне значення для організації і проведення статистичного дослідження.

Література:

1. Сущность и задачи статистического наблюдения. – [Електронний ресурс] Режим доступа: Структурная группировка <http://tema.studentochka.ru/89523.html>
2. Опря А. Т. Статистика (модульний варіант з програмованою формою контролю знань) [Текст]: навч. посібник / А.Т. Опря; Полтавський ін-т економіки і права. – К.: ЦУЛ, 2012. – 448 с.
3. Статистика: підручник / С.С. Герасименко, А.В. Головач, А.М. Єріна та ін.; за наук. ред. д-ра екон. наук С.С. Герасименка. – 2-ге вид., перероб. і доп. – К.: КНЕУ, 2000. – 467 с.
4. Лугинін О.Є. Статистика: підручник / О.Є. Лугинін. – 2-е видання, перероблене та доповнене. – К.: Центр учбової літератури, 2007. – 608 с.

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ANALYSIS OF EXISTING METHODS FOR INNOVATIONS ATTRACTIVENESS EVALUATION ADVANTAGES AND DISADVANTAGES

The development and realization of enterprise's innovation potential is impossible without its adequate evaluation, dynamic analysis and prediction of trends [1]. Today a significant number of different methods for innovation's attractiveness evaluation are offered in scientific literature. Most of them demonstrate the complexity of this process in relation to the problem of qualitative information quantitative description [2]. Below we will consider the advantages and disadvantages of the most widely used of them.

The percentage ratio method. The point of this method is to compare the innovation potential of different objects using simple mathematical techniques, which show how each value differs from the other one. The advantages of this method are possibility of displaying results in tables, graphs and diagrams; simplicity of use, and

mobility, which allows changing parameters while evaluating the object's development. The main disadvantage of this method is a problem of parameters compatibility for all the investigated objects [3].

The **graphical method** of innovation potential analysis is based on using the radar plot, where the number of rays stands for the number of structural components of innovation attractiveness, and each ray corresponds to the results received. The advantages of this method are flexibility (number of evaluation parameters may vary); possibility to analyze innovations attractiveness not only in general, but to compare its components as well; simplicity of calculation; visualization of results. The disadvantages of this method are: data availability problems; simplified problem solution approach, which may not give an adequate results; inability to take into account the weights of components or parameters and their correlation; inability to evaluate absolute and relative parameters at the same time [2].

Competitiveness evaluation method was developed under the auspices of the USA National Science Foundation. Four integrated parameters have to be calculated to identify the competitiveness level by using this method, which namely are national orientation (HO), socio-economic infrastructure (CI), technology infrastructure (IT) and productivity (P). Advantages of this method are ability to use a large amount of statistical data and expert estimates, and to evaluate the innovation attractiveness of national economies. The disadvantages of this method are complicacy and expensiveness; a need to survey a large number of experts; long duration and high labour intensity needed to develop questionnaires and conduct a survey; inability to evaluate enterprise's innovation attractiveness [4].

Method of innovation attractiveness estimation through comparing components of parameters between each other or with their limit values are widely used in the innovation potential evaluation systems at the level of industry, region and enterprise. Comparison of innovation attractiveness parameters of enterprises can be carried out by the following methods: comparison of the actual value of the parameter with its limiting value; comparison of the actual values of some parameters with their medium or best complex values for related enterprises; determination of the parameter dynamics (parameter comparison over time); comparison of the separate interconnected parameter values [5].

Integral evaluation method is based on the fact that enterprise's potentials are compared as something general. To use this method it's necessary to merge selected parameters in a comprehensive (integral) one. One of such approaches allows determining the components of the innovation attractiveness as follows:

$$P_i = \sum_{j=1}^{m_i} S_{ij} n_{ij}, \quad (1)$$

where P_i is an attractiveness of the i -th component;

S_{ij} is a weight coefficient of the j -th parameter of innovation attractiveness of the i -th component (determined by experts, here equals to $\sum_{j=1}^{m_i} S_{ij} = 1$);

m_i is a number of parameters used for evaluation of innovation attractiveness of i -th component.

n_{ij} parameter is calculated according to the formula:

$$n_{ij} = 2 \frac{k_{ij}^*}{k_{ij}}, \quad (2)$$

where k_{ij} is a j -th parameter of innovation attractiveness of the i -th component;

k_{ij}^* is a corresponding averaged parameter of the economic systems' group (static model) or the economic system's parameter in the previous period (dynamic model).

The integral parameter of innovation attractiveness is evaluated according to the formula:

$$P = \sum_{i=1}^M r_i P_i, \quad (3)$$

where r_i is a weight coefficient of innovation attractiveness of the i -th component (determined by experts, here equals to $\sum_{i=1}^M r_i = 1$),

M is a number of innovation attractiveness components of economic system.

P is a result innovation attractiveness function, varying from zero to one. P -value > 0.5 indicates a positive dynamic of innovation attractiveness potential [5].

The integrated assessment of innovation attractiveness based on a mathematical method of distances can be provided according to the following algorithm:

$$P_i = \sum_{i=1}^n (1 - \alpha_i) b_i, \quad (4)$$

where P_i is an assessed value of the i -th's innovation attractiveness component;

n is a number of parameters;

b_i is a weight coefficient of the i -th parameter;

α_i is a relative value of the i -th parameter.

α_i is calculated according to the following rules:

$\alpha_i = \Pi_i / \Pi_{max}$, if a higher parameter value is better;

$\alpha_i = \Pi_{min} / \Pi_i$, if a lower parameter value is better;

where Π_i is a value of the i -th parameter;

Π_{min} is the smallest value from the compared plurality of parameters;

Π_{max} is the biggest value from the compared plurality of parameters [5].

The advantages of the integrated assessment are: synthesis of the effects made by all parameters and coefficients included in research; innovation attractiveness evaluation comes down to the one quantitative value greatly simplifying the economic interpretation of the results. Disadvantage of this method lays in the fact that there is a single assessment algorithm for those parameters, which value is better while increasing,

and those, which value is better while reducing. Another disadvantage is an ability to use this method only for positive non-zero parameter values.

Determination of the innovation attractiveness of enterprises can also be made through using **expert survey approach**, which is widely used for economic system's qualitative parameters analysis [5]. The most important problem of this method's implementation is evaluation of the consistency degree of all surveyed experts. An expert method of pairwise comparisons or T. Saaty hierarchy method is also used for parameter weight determination. Though, this approach is too comprehensive., subjective and inaccurate.

Provided analysis of existing methodological approaches to innovation attractiveness evaluation indicated that currently there are many methods of economic system's innovation attractiveness evaluation, but all of them have numerous substantial disadvantages, which significantly decrease the evaluation accuracy in practice.

In the authors' opinion, the assessment approach, which can eliminate disadvantages listed above, is based on the fuzzy-neural network technologies, allowing to appreciate the powerful pluralities of qualitative parameters that determine the impact of both external and internal environments on the evaluation process, improve its accuracy and reduce final cost.

Literature:

1. Innovation Potential of Ukraine: monograph / A.A. Mazaraki, T. M. Melnyk, V. V. Ukhimenko [and others]. – K.: KNTEU, 2012. – 592 p.
2. Innovation Potential of the enterprise [Text]: monograph / Fedulova I. V., Kundeeva G. O.: National university of Food Science. – K.: [Medinform], 2010. – 346 p.
3. Trifilova A.A. Evaluation of the enterprises' innovation developments effectiveness. M. : Finance and statistics, 2005. – 304 p.
4. Methods of innovation potential assessment for small and medium enterprises. . [Electronic resource]: <http://www.rscme.ru>. 2003. – 79 p.
5. Fedulova I. V. Research of methodologies of innovation potential assessment of industries / I. V. Fedulova // Countries and regions. Series: Economics and Business. – 2008. – № 4. – p. 240-244.