

# ***The Methodology Of Determining Asymmetry Of The Stakeholders' Income Distribution Within The Industrial Park Structures As An Effective Tool For Strategic Management In The Face Of New Industrialization Challenges***

Andrey Plakhin

Ural State University of Economics  
Ekaterinburg, Russian Federation  
apla@usue.ru

Irina Tkachenko

Ural State University of Economics  
Ekaterinburg, Russian Federation  
apla@usue.ru

***Abstract***—The article outlines the provisions allowing to use the asymmetry of the distribution of additional effects as an effective tool for the strategic management of industrial park structures from the point of view of the stakeholder approach also in global aspects, in particular, the authors emphasize the applicability of theoretical and methodological provisions in the formation of the targeted orientation of the behaviour of stakeholders in the industrial park structure in the face of new industrialization challenges. As part of the methodology for identifying the strategic priorities of stakeholders in the industrial park structure, the authors set out to identify the strategic priorities of the stakeholder of the industrial park structure and determine their dependence on the strategic position and the opportunity to assign a large share in the asymmetry of the distribution of additional effects formed within the industrial park structure under local and world influence due to the new industrialization. In fact, this methodology reflects the dualism of the stakeholder's position of the industrial park structure, which is the duality of the goals of the stakeholder on the one hand trying to realize his own commercial success, and on the other, ensure the successful functioning of all stakeholders of the industrial park structure. Within the framework of the model of target priorities of stakeholders of the industrial park structure, the authors suggest two main vectors: the first of them achieving commercial success and the second - ensuring the successful development of the territory, which ultimately ensures the achievement of overall sustainable development goals.

***Keywords***—*stakeholder approach, global stakeholders, asymmetry of stakeholders' income, structural positions of stakeholders, industrial park structure (IPS), residents of the IPS, new industrialization*

## I. INTRODUCTION

Changes in the concept of strategic management, taking into account the development of adaptation tools, led to the emergence of the stakeholder approach in the mid-80s of the twentieth century. The idea proposed by E. Freeman on the decomposition of the parameters of the company's activity as a set of interests of interested parties allowed a new look at the structural and market interrelations of the economic entity [1, 2]. The principal difference of the proposed stakeholder approach was the consideration of all the company's activities, as well as the corresponding adoption of strategic decisions from the position of stakeholders.

Thus, the stakeholder approach is a direction in strategic management, linking the development parameters of a certain management object with the activities of stakeholders. At the same time, the subject-specific description of the stakeholder category includes elements of the internal and external environment of the company, such as personnel, suppliers, consumers, government structures, the population of the territory on which the company is located, public organizations, shareholders, etc. [3]. Some authors, for example R. Ackoff, include the future generations in the category of stakeholders [4]. However, from the point of view of strategic management, the complete on-site research and description of the entire set of possible links between the object of research, namely the industrial park structure [5-6] and its stakeholders, taking into account the nature and scale of the links, does not appear to be necessary in the author's opinion because of the varying degree of possible influence of those or other stakeholders on the processes of functioning and development of the park structure and / or other stakeholders. This circumstance, in our opinion, allows us to limit the circle of stakeholders to a factor that determines the degree of

possible influence on the activity of the industrial park structure directly or indirectly.

According to the authors, the processes of strategic management of the development of park structures should be based on the use of adaptive management tools, the integrated use of which relates to the stakeholder approach to management. This methodology makes it possible to take into account the specific features of the interests of groups of persons participating in activities and using their own criteria for assessing the effectiveness of the park structure in terms of its own interests. A step-by-step mechanism for analyzing relationships with stakeholders has been proposed by several authors [7-11].

In our opinion, the use of the stakeholder approach in the strategic management of industrial park structures also makes it possible to theoretically substantiate provisions that allow using the asymmetry of the distribution of additional effects as instruments of strategic management, in particular, in forming the target orientation of the stakeholders' behavior in the industrial park structure.

The formation of a management system based on the stakeholder approach requires, first of all, the identification and classification of stakeholders. The most common classification of stakeholders involves dividing them into external and internal in relation to the activity of the park structure. To the category of internal should include business owners, personnel; to the category of external - government agencies, consumers, suppliers, environmental elements [12-14].

One can also consider a two-faceted division involving primary and secondary stakeholders in terms of the degree of influence, as well as social and non-social stakeholders. The category of primary social stakeholders includes residents of industrial park structures, personnel, consumers of products and the local community. This category has a high responsibility and has a direct impact on the performance of the parking structure. The group of secondary social stakeholders includes state authorities, competitors and the media. The actions of this group are included in the interests of the industrial park structure. The category of primary non-social stakeholders is the environment and future generations, and the group of secondary non-social stakeholders includes institutions of social development [15-17].

In the context of the study of the strategic priorities of stakeholders in the industrial park structure, the authors set the task not only to identify the strategic priorities of the stakeholder of the industrial park structure, but also to determine their dependence on the strategic position and the opportunity to assign a large share in the asymmetry of the distribution of additional effects formed within the industrial park structure. In essence, the proposed methodology will reflect the dualism of the position of the stakeholder of the industrial park structure, which is the duality of the goals of the stakeholder, on the one hand trying to realize his own commercial success, and on the other hand, ensure the successful functioning of all stakeholders [18].

## II. TARGET ORIENTATION OF STAKEHOLDERS OF INDUSTRIAL PARK STRUCTURES

The whole set of target priorities of stakeholders can be tried to fit into the following main vectors presented in Figure

1. Within the framework of the presented model, it is proposed to distinguish two main vectors: achievement of commercial success and ensuring successful development of the territory.

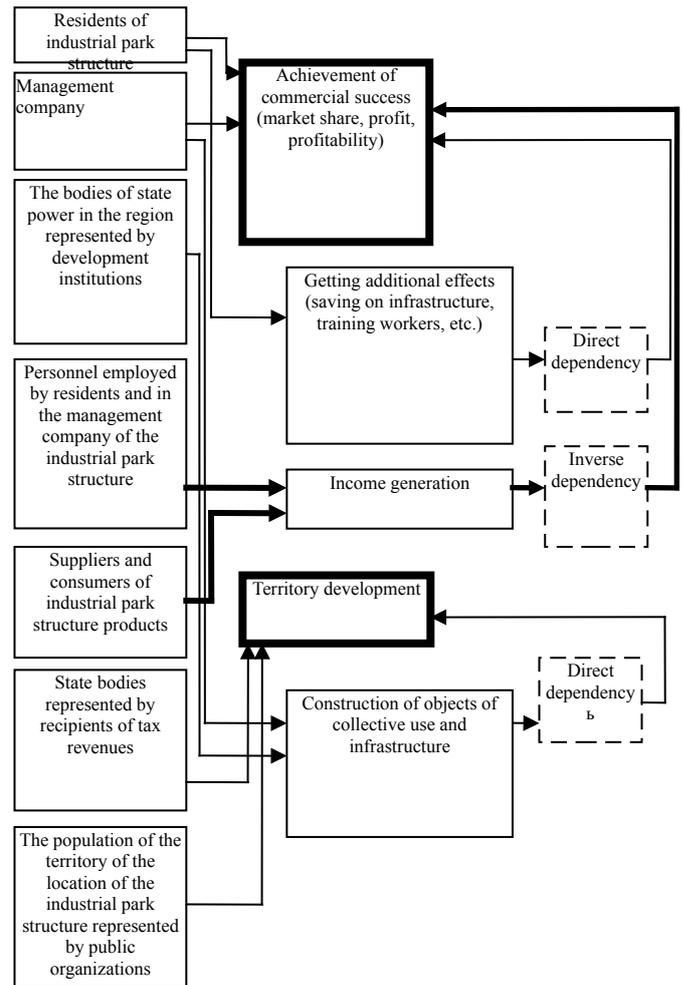


Fig. 1. Target priorities of stakeholders of the industrial park structure

Directly the goal of "achieving commercial success" should be characteristic of the residents and the management company. Accordingly, the higher the impact of these stakeholders, the greater the likelihood that the development strategy of the park structure will depart from the vector determining the development of the territory, in particular, there will be a refusal to create infrastructure facilities or objects of collective use. The reverse impact on the achievement of this vector is provided by the resource providers and personnel employed by the residents and the management company with the priority of obtaining their own income.

In turn, the vector "development of the territory" is a priority for most stakeholders of the industrial park structure, but directly this goal is stated primarily by the population of the territory of the industrial park structure in the form of public organizations, as well as state bodies represented by the recipients of tax revenues. This goal is indirectly traced in the management company and state authorities of the region in the person of development institutions through the realization of the goal "Construction of objects of collective use and

infrastructure". Accordingly, it can be stated that the higher the influence of stakeholders supporting the "territory development" vector, the greater the volume of funds will be spent on financing infrastructure and social projects.

Next, we compare each target vector with the indicators by which we can estimate the degree of achievement of the chosen goal, table 1.

TABLE I. INDICATORS CHARACTERIZING THE TARGET ORIENTATION OF STAKEHOLDERS OF THE INDUSTRIAL PARK STRUCTURE

Stakeholders	Target orientation of stakeholders	Indicators
State bodies represented by recipients of tax revenues	Budget efficiency	The volume of tax revenues (for the last year, in the dynamics for a few years and the cumulative total) The volume of investments from budgets of different levels and an estimation of efficiency of investments on parameters NPV, IRR, PP, DPP, IP, ARR, MIRR
The bodies of state power in the region represented by development institutions	Socio-economic efficiency and social effect	Total number of employees Number of high-performance jobs created Share of import-substituting products average salary The number of small and medium-sized businesses per 1000 population (total for the sectors of the economy and for the last several years) Average number of employees at SMEs Turnover of SMEs Share of turnover of SMEs in GRP The share of SMEs that took advantage of government support measures The volume of investments in fixed assets (total and in dynamics by branches of the economy over several years) Indicators of development of socially significant markets
		Integration of industrial park structure into economic ties of the country / region Number of counterparties in the country / region Trade balance with Russian counterparties
		Personnel characteristics Number of employees Number of newly created jobs, incl. high-performance average salary
		Commercial efficiency Profitability indicators Indicators of financial sustainability Indicators of business activity Liquidity indicators Investment performance indicators (NPV, IRR, PP, DPP, IP, ARR, MIRR)
Management company of industrial park structure	Effectiveness of international activities	Number of foreign counterparties Trade balance with foreign counterparties Number of international events held The number of participants in the industrial park structure, who took part in international events, incl. at the expense of the management company The amount of funds of the management company aimed at the development of international activities of participants in the industrial park structure
	Getting additional effects (saving on infrastructure,	Presence of a business incubator Presence of scientific and educational center The presence of a technology transfer center (commercialization of innovations) The presence of an intellectual property

Stakeholders	Target orientation of stakeholders	Indicators
	training workers, etc.)	center Number of services provided to residents by the management company The income of the management company from services provided to participants in the industrial park structure The volume of raised funds to finance projects of participants in the industrial park structure Commercial efficiency of investment projects implemented with the participation of a management company The share of the management company in the capital of participants in the industrial park structure Market value of the management company
Residents of industrial park structure	Commercial efficiency	Profitability indicators Indicators of financial sustainability Indicators of business activity Liquidity indicators Market value of the company [19] Investment performance indicators (NPV, IRR, PP, DPP, IP, ARR, MIRR)
	Effectiveness of innovation activity	The volume of research and development Share of innovative products in total output Number of registered patents
	Effectiveness of international activities	Share of import / export in purchases / sales of the company Import / export volume in purchases / sales
	Personnel characteristics	Number of employees Number of newly created jobs, incl. high-performance average salary
	Characteristics of production activities	Number of fixed assets Average age of equipment Percentage of equipment depreciation The share of equipment not older than 5 years Volume of capital investments in fixed assets

Source: (compiled by the authors)

The procedure for determining budgetary and commercial effects is based on an analysis of prospective income from activities of residents of the industrial park structure and the management company. Their definition is constructed in the first case from the point of view of state bodies presented by recipients of tax revenues, and in the second from the point of view of the commercial participant.

At the same time, the evaluation of the parameters of the development of the territory is not so unambiguous, since it depends on the specific conditions for the implementation of the industrial park design, and requires the collection of additional information on the specific conditions of manifestation. Methodological approaches to the identification and quantitative description of the objectives of the development of the territory during the establishment and operation of the industrial park structure are primarily related to the effects of creating new jobs, due to the emergence of new enterprises on the territory of the industrial park structure. It is obvious that improving infrastructure conditions should lead to intensive development of entrepreneurship on the territory of gravitation to a new facility. The quantitative assessment of this effect for the development of the territory is

reduced to calculating the growth of tax revenues for income taxes, both individuals and entrepreneurs and organizations.

### III. ASYMMETRY OF INCOME DISTRIBUTION OF STAKEHOLDERS WITHIN THE INDUSTRIAL PARK STRUCTURE

The proposed methodology for determining the asymmetry of the income distribution of stakeholders within the industrial park structure is shown in Figure 2.

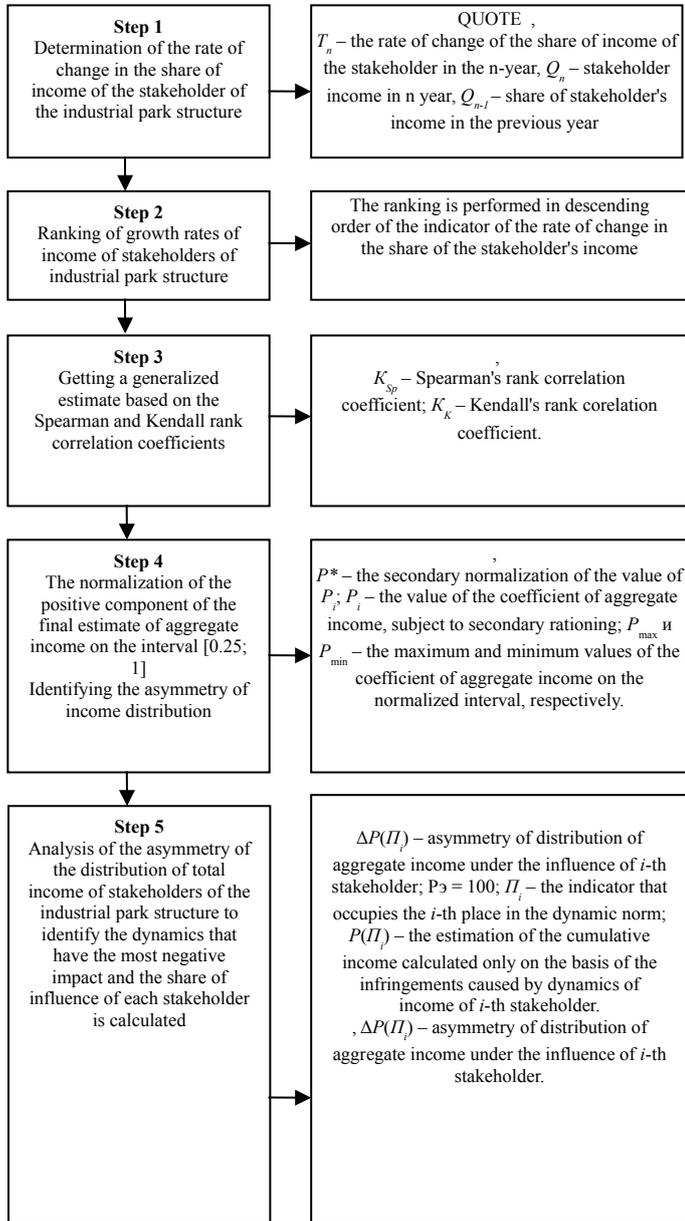


Fig. 2. Methodology for determining the asymmetry of the distribution of the total income of stakeholders within the industrial park structure

In order to reveal the asymmetry of the income distribution of stakeholders within the framework of industrial park structures, the authors proposed the use of an index-based performance standardization model [20], according to which the entire set of income of stakeholders of the industrial park structure is transformed into relative rates of change in the

share of income of each stakeholder. This fact determines the dynamic nature of the model used, because it provides for an assessment of the dynamics of the structure of income distribution and its compliance with a reference model that reflects the development of the entire industrial park structure.

This technique is an effective management tool, because the desired levels of regulation of the indicators of change in the income of stakeholders and their priority is set by the subject of management on the basis of the principle of preference for the rate of growth of income of a specific stakeholder.

Thus, the measurement of the total income of an industrial park structure acquires a formalized basis: a measured number of estimates of the growth rate of income of stakeholders of the industrial park structure [21].

As a classification model for the formation of the basic system of indicators of total income, it is proposed to base on the model presented in Figure 2.

The mathematical basis for the application of this technique is that during the evaluation, the proximity of two rank orderings of the indicator is measured based on the calculation of the Spearman and Kendall rank correlation coefficients in the interval from +1 to -1.

Positive values of the estimates obtained indicate an increase in the implementation of the function of an industrial park structure, negative ones will indicate the emergence of an asymmetry in the distribution of income of stakeholders, leading to a decrease in the operating parameters of the entire industrial park structure. The estimate obtained using the Spearman Ratio characterizes the volume side of the change in total income. Estimation using the Kendall coefficient shows the structural dynamics of changes in the aggregate income of an industrial park structure, which makes it possible to move to a controlling effect through income distribution mechanisms.

It should be noted that some of the influence groups receive income not directly, but through the mediation of direct participants in the operational process. For example, the state governing the distribution of tax revenues forms many aspects of the activity of the park structure.

Unfortunately, using the modern statistical monitoring system, it is possible to test the distribution of additional effects from the activities of enterprises within the industrial park structure only by the example of the distribution of additional income, therefore the author narrowed the field of research and compiled a method for determining the income asymmetry of stakeholders, although from a theoretical point of view get a description of indicators such as the distribution of transfer payments between stakeholders of industrial park structure, the formation of long-term assets and even the appearance of image effects.

The third stage of the proposed methodology is to obtain a generalized estimate of total income, obtained on the basis of two correlation criteria (by variance and by inversion). The coefficient of the generalized assessment varies in the range from 0 to 1. The coincidence of the actual and given in the dynamic standard order of indicators indicates the highest level of realization of the objectives of the industrial park structure.

At the fourth stage, the rationing of the positive component of the final estimate of total income in the interval [0.25; 1].

At the fifth stage, the analysis of the total income of the stakeholders of the industrial park structure is carried out to identify the dynamics that have the most negative impact. To determine critical indicators, the method of isolated influence of each stakeholder on the change in total income is used. In the model for measuring the total income of an industrial park structure, it is stipulated that the dynamics of indicators-factors are maintained either at the statutory fixed level or below it, therefore, a generalized estimate of the total income of the park structure is not based on comparison with the actual (past) state, but with the ideal established. In this regard, the influence of factors is estimated by how much they have reduced the estimate of the total income of the industrial park structure in comparison with the ideal.

In other words, according to the factors, it is not the actual estimate of total income itself that is expanded, but the difference between the maximum and actual estimates. For greater clarity and ease of use, the share of the influence of each stakeholder on the overall decline in the level of total income of an industrial park structure is calculated.

#### IV. CONCLUSION

Thus, within the framework of this study, the strategic target priorities of the industrial park structure stakeholders are identified, which include embedding into two main vectors: achieving commercial success and ensuring successful development of the territory. In fact, the dual position of the industrial park structure stakeholder has been identified, which represents the duality of the goals of the stakeholder, on the one hand trying to realize their own commercial success, and on the other hand ensure the successful functioning of all stakeholders of the industrial park structure.

Residents of the industrial park structure and the management company are characterized primarily by the goal of achieving commercial success, and, therefore, the higher the influence of these stakeholders, the greater the likelihood that the development strategy of the park structure will leave the vector defining the development of the territory, in particular, there will be a rejection creation of infrastructure or collective objects. Suppliers of the industrial park structure and the Personnel employed by the residents and the management company of the industrial park structure with the priority to receive their own income have a reverse impact on the achievement of this vector. As a result, the author has developed a detailed list of indicators describing the target orientation of all stakeholders of the industrial park structure.

#### References

- [1] R. E. Freeman *Strategic Management: A Stakeholder Approach*. – 1st ed. Boston, USA: Harpercollins College Div, 1984.
- [2] R.E. Freeman, S.R. Velamuri *A New Approach to CSR: Company Stakeholder Responsibility*. Charlottesville, USA: Business Roundtable Institute for Corporate Ethics, 2006.
- [3] I.N. Tkachenko The impact of globalization on the development of a corporate governance model, *Journal of the Ural State University of Economics*, vol. 1, 2013, pp. 19-37.
- [4] R.L. Ackoff *Creating the Corporate Future: plan or be planned for*. New York, USA: John Wiley & Sons, 1981.
- [5] M. Mani, S.M. Hosseini, T. Ramayah *Parks as business opportunities and development strategies*, *Business Strategy Series*, No. 13(2), 2012, pp. 96-101.
- [6] T. Ratinho, E. Henriques *The role of science parks and business incubators in converging countries: Evidence from Portugal*, *Technovation*, No. 30(4), 2010, pp. 278-290.
- [7] M. Mădălina, P.A. Constantin *Industrial parks and business incubators as clustering incipient forms*, *Quality - Access to Success*, No. 18, 2017, pp. 304-307.
- [8] I.N. Tkachenko, K.K. Sivokoz *Using Agile and Scrum's flexible technologies to manage project stakeholders*, *Upravlenets -The Manager*, vol. 4 (68), 2017, pp. 85-95.
- [9] I.Ju. Zhdanov *Managing the development of the enterprise on the basis of optimal interaction with stakeholders*, *Management of economic systems: electronic scientific journal*, vol. 9 (33), 2011, pp. 71-77.
- [10] A.A. Malceva, A.V. Gridchina, A.L. Baskakova, and N.S. Dorofeeva *Application of the theory of stakeholders to manage the technology park structure*, *Economy. Entrepreneurship. Environment*, Iss. 3, vol. 67, 2016, pp. 9-16.
- [11] A.E. Plakhin, E.S. Ogorodnikova *Conceptual and methodological foundations of the formation of agro-industrial park structures*. Moscow, RF: Infra-M, Scientific Thought Series, 2017.
- [12] L.A. Gorshkova, V.A. Poplavskaja *Organizational development of a large industrial enterprise, taking into account the interests of stakeholders*, *Management and business administration*, vol. 3, 2017, pp. 123-131.
- [13] M.V. Bikeeva *Restructuring of modern business: stakeholder approach*, *Management in Russia and abroad*, vol. 6, 2016, pp. 33-39.
- [14] D.H.T. Walker, L.M. Bourne, A. Shelley *Influence, stakeholder mapping and visualization*, *Construction Management and Economics*, vol. 26, Iss. 6, 2008, pp. 645-658.
- [15] A.A. Guglja *Stakeholder approach to ensuring sustainable business development*, *Bulletin of the Nizhny Novgorod State Institute of Engineering and Economics*, vol. 3 (46), 2015, pp. 33-37.
- [16] E.V. Petruhina *Stakeholder approach to managing the development of corporate systems*, *Theoretical and applied issues of the economy and services*, vol. 13-2, 2013, pp. 90-96.
- [17] A.M. Hein, M. Jankovic, W. Feng, and B. Yannou *Stakeholder power in industrial symbioses: A stakeholder value network approach*, *Journal of Cleaner Production*, No. 148, 2017, pp. 923-933.
- [18] K.S. Chumljakov, D.V. Chumljakova *Determination of the degree of stakeholder involvement in the implementation of the company's strategic goals*, *Eurasian Law Journal*, vol. 12 (103), 2016, pp. 108-109.
- [19] I.V. Ivashkovskaja *Stakeholder approach to managing the increment of company value*, *Corporate Finance*, Iss. 6, vol. 1 (21), 2012, pp. 14-23.
- [20] A.A. Batov *Evaluation of the effectiveness of the industrial corporation based on indicators of management accounting, the author's abstract of the dissertation of the candidate of economic sciences*, Izhevsk, Russia: Izhevsk State Technical University, 2005.
- [21] N.V. Tereshhenko, N.S. Jashin *Model of an integrated assessment of the effectiveness of the QMS*, *Quality Management Methods*, vol. 4, 2006, pp. 12-17.