Potential of digital solutions in the conditions of sustainable economic development of industrial enterprise: concept and performance indicators

Alla Golovina, and A. Peshkova

Ural State University of Economics, 8 Marta Str., 62, 620144 Ekaterinburg, Russia

Abstract. As a result of the study the concept of economic potential of digital solutions of the industrial enterprise is developed; the definition of sustainable economic development of the company is clarified; a new indicator of economic efficiency evaluation of the development of digital solutions potential and digital economy is proposed.

1 Introduction

Global and domestic experience [1] shows that considerable attention is paid to the development of digital economy as well as implementation of digital transformation of industrial enterprises. There is strong political support from representatives of the government; national strategies and programs ("Digital Economy of the Russian Federation," "Made in China 2025," "Revitalizing Japan by Realizing Society 5.0: Action Plan for Creating the Society of the Future," "Industrie 4.0" in Germany, "National Net work for Manufacturing Innovation" in the USA) are realized; networks of research institutes are functioning, various mechanisms of financial support for major investment projects in digital transformation are implemented. According to IDC, the total global spending on the digital transformation of industry is expected to grow steadily [2]. The main goal of implementation of these measures is to ensure the sustainable economic development of industrial enterprises [3], which belong to the core of the socio-economic well-being of the country.

Generally accepted definition of "sustainable development" is presented in the report of the World Commission on Environment of the UN "Development and international economic cooperation: environmental problems ". It is understood as the process of change based on the harmony of resource exploitation, direction of capital investments, orientation of technological development, institutional changes which increase the value of current future potential to meet human needs and aspirations [4]. Economics borrowed the term "sustainability" from the theory of systems, which offers a variety of its definitions. According to one of the remarkable approaches, belonging to A.I. Balashov sustainability is "the ability of a system to preserve some property in relation to the uncertainty of some parameters of the system itself or of the external environment" [5]. Speaking about sustainability of socio-economic system T.V. Uskova notes that it is "the ability of the system to function stably and develop in the long term under conditions of rapidly changing internal and external environment". [6]. Within the framework of the study of industrial enterprise's sustainable development several approaches can be mentioned. According to I.A.

Kostromskaya, it is "the ability of the economic system to move towards the intended goal, while maintaining financial stability, a stable position in the market, resource balance and the ability to develop under adverse effects of external and internal factors" [7].

With the focus on digital transformation, we consider it necessary to consider the concept of sustainable economic development of the enterprise, taking into account this specificity. In this regard, summarizing most of the existing positions, the authors identify the following aspects of the concept under consideration:

a) Development is always a change, that is, acquisition by the system of such a quality (property, state), which distinguishes the new state from the previous one;

b) The change is not considered to be only positive. Development is a transition from one state to another, more perfect state;

c) Positive change must be directional, that is, it must have an initial state and a positive goal (effect) which it is aimed at;

d) Change is based on input parameters, resources, acting as generators of effect.

e) System change is not isolated, but is under the influence of multidirectional factors (external and internal) and within the framework of specific processes (integrators), accumulating the effect;

f) The change is conditioned by the presence of a stimulating factor (driver), inducing development;

g) If a number of positive changes are observed over a long period, we can talk about the preservation of development.

2 Conclusions

On the ground of these aspects, the authors conclude that sustainable economic development of the enterprise should be understood as preservation of directed positive changes in financial and economic activities of the enterprise, expressed in the achievement of positive economic effect, taking into account the impact of multidirectional factors in order to achieve better conditions for the enterprise, accompanied by an increase in the welfare of its owners and staff. The driver of this effect is digital technology; the generator of the effect is material, technical, information, human and financial resources of the company. Taking into consideration the specifics of the industrial enterprise, the integrator of the effect includes the processes of production activities, covering the development of production technology, processing of raw materials, creation of means of production and consumer goods.

Integrating the selected elements, the authors introduced the concept of economic potential of digital solutions of the industrial enterprise as one of the key conditions for sustainable economic development of the company in the context of digital transformation, expressed in the ability and capacity of the company to achieve a specific positive economic effect with a certain amount of resources through the use and development of digital technologies in the production activities of the enterprise to improve economic efficiency and meet the needs of the owners and employees of the company as well as its counterparties.

In this regard, there is a need to assess the effectiveness of the development of economic potential of digital solutions of the industrial enterprise. To achieve this goal the authors propose to use a new economic indicator "digital output", which characterizes how many roubles of economic effect returns from each invested rouble in the development of digital solutions potential of the industrial enterprise, calculated by the formula:

$$C = 1 + \frac{E}{I}, \text{ where} \quad (1)$$

C is digital return on investment, \$ units;

E is economic effect from the development of digital solutions potential, roubles;
I is value of initial capital investments in the development of digital solutions potential, rubles.

If $C > 1$, the digital solutions capacity initiative should be accepted; $C < 1$, it should be rejected.

The indicator of digital output is relative and is useful when choosing one digital initiative from a number of alternatives. Its positive change in dynamics indicates the sustainable economic development of the enterprise under the conditions of digital transformations. In addition, this indicator can serve for assessment of effectiveness of industrial digitalization of and the implementation of digital economy as a whole.

References

1. V. V. Akberdina, Proceedings of the Ural State University of Economics, **19(3)**, 82 (2018)
2. International Data Corporation, Worldwide Spending on Digital Transformation Will Be Nearly \$2 Trillion in 2022 as Organizations Commit to DX, According to a New IDC Spending Guide (2018) <https://www.idc.com/>
3. V. Zh. Dubrovsky, E.M. Ivanova, N.V. Chuprakova, Journal of New Economy, **29(5)**, 92 (2019)
4. Report of the United Nations World Commission on the Environment "Development and International Economic Cooperation: Problems of the Environment," (1987) <http://www.un.org/>
5. A. I. Balashov, *Formation of the mechanism of sustainable development of the pharmaceutical industry: theory and methodology* (2012)
6. T. V. Uskova, *Management of sustainable development of the region*, 355 (2009)
7. I. A. Kostromskaya, *Innovative approaches to the formation and implementation of sustainable development strategy of an industrial enterprise*, **3**, 39 (2011)