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INNOVATIVE REPRODUCTION OF FIXED PRODUCTION
ASSETS: ECONOMIC CATEGORY

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Abstract

Today, innovative development of enterprises is impossible without the introduction and effective use of new technology and technology in the production of science-intensive products, i.e. without the implementation of innovative reproduction of fixed productive assets. In this connection, analysis and refinement of the conceptual research apparatus were carried out; in particular, it is necessary to define the category of "innovative reproduction of fixed productive assets", which is currently used and its relation to the term "intensive reproduction of fixed productive assets", which was used in the Soviet era. The types of extensive and intensive development of the enterprise are investigated; their essence and main characteristics are determined. The following forms of an intensive type of reproduction are distinguished: a capital-intensive one, when the growth of labour productivity is achieved through an increase in the costs of production funds per unit of output, and a savings-saving one, in which the increase in labour productivity is accompanied by the saving of production funds per unit of output. Depending on these or other ways of saving production resources, there are several types of background-saving intensification: labour-saving; capital-saving; complex. Also the main types of innovation implemented today at the enterprise level are considered and it is determined that the innovations are divided into four types: product, process, marketing and organizational. In accordance with the purpose of the study to determine the content.

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1. Introduction

In modern economic conditions, the further innovative development of industrial enterprises is impossible without the introduction and effective use of new technology and technology in the production of science-intensive products, that is, without the implementation of innovative reproduction of fixed production assets (FPA).

In this connection, it is necessary to clarify the conceptual apparatus; in particular, it is necessary to define the category "innovative reproduction of FPA", which is currently used and its relation to the notion of "intensive reproduction of FPA", which was used in Soviet times. (Boyko, 2012, 2013)

2. Problem Statement

First of all, consider the concept of "reproduction" (table 01). (Ye, 2013; Boyko, Kukartsev, Lobkov & Stupina, 2018)

Table 01. Definitions of the concept of "reproduction"

Source	Definition Content
New Economic Encyclopaedia	Constantly renewed, having a cyclical nature of the production process. Includes the reproduction of all factors of production.
Modern Economic Dictionary	The reconstruction of the expended factors of production (natural resources, labor, means of production) through their subsequent production. Reproduction of capital is a constant renewal of capital. Reproduction is simple reproduction in unchanged sizes, expanded is in ever increasing dimensions.
Financial Dictionary	the reconstruction of the expended factors of production through their subsequent production. In the economic theory, the reproduction of capital, simple reproduction and expanded reproduction are distinguished.
The Big Economic Dictionary	Social production, considered as a continuously repeating process in an indissoluble relationship with distribution, exchange and consumption. Production is decisive in relation to other aspects and phases: distribution, exchange and consumption, both in social form and in material maintenance. It includes the reproduction of the means of production and labor, which constitute the productive forces of society and production relations. In modern conditions. should be innovative in nature, that is, based on the achievements of scientific and technological revolution. It is important to reproduce the modern worker - creative, capable of mastering the achievements of the scientific and technological revolution, the owner, the organizer of production, economically interested in increasing the efficiency of production, as the product of production relations, includes property relations on a qualitatively new basis: the multifaceted nature of its forms, creating equal conditions for their development, democratization, the formation and development of civilized, regulated market relations, the renewal of the entire economic mechanism.
Political Economy Dictionary	Constant repetition, continuous renewal of the production process. All reproduction is primarily the reproduction of material goods, or the aggregate social product. It also includes the reproduction of the labor force and those production relations within which it is carried out. There are two types of reproduction: simple and extended. With simple reproduction, the production process resumes at a constant rate. With expanded reproduction, production resumes on ever-increasing scales.

Based on the information presented in the table, we can conclude that any production is a process of creating material goods. Reproduction is nothing else than the same constantly renewed process of production. In a real economy, both these processes merge. The difference between them lies in the fact that the product is produced, and the elements of the production process that were spent on the production of the product are reproduced. The process of producing a product is also a process of consuming elements of the production process. Continuity of production requires compensation, reproduction of the consumed elements. Reproduction includes reproduction of means of production, labour and production relations. In modern conditions, reproduction must be innovative, that is, based on the achievements of scientific and technological revolution (Stolyarova, Shulgaty, Dzagoeva, Bestaeva, & Kaitmazov, 2017; Stupina, Shigina, Shigin, Karaseva, & Ezhemanskaja., 2014).

3. Research Questions

Means of production are collection of means and objects of labour, forming a material factor of production, used in the process of creating material goods. The means of labour include machinery and equipment, tools and adaptations, production buildings and structures, means of transporting goods, means of communication and information. Means of labour, expressed in value form, are the main funds of the enterprise. Depending on the purpose of fixed assets are divided into production and non-production.

The basic production assets, a part of the production assets of enterprises, associations that directly participate in the production of the product, serves a number of production cycles and, preserving the natural form, transfers (transfers) its value to a new product of labour gradually, in parts, to the extent of wear and tear. Thus, the reproduction of fixed production assets is a continuous process of providing the enterprise with the means of labour in the necessary quantitative and qualitative composition, effectively using them in the production process of the product, and also maintaining them in working order.

There are two types of reproduction: simple and extended. With a simple type of reproduction, the dimensions of the production product, as well as its quality, remain unchanged in each subsequent cycle. With extended reproduction, the size of the product produced in each subsequent cycle increases due to the quantity and (or) quality of the product. Similarly, the consumed elements of the production process are renewed. (Oliylyk, 2015)

In accordance with the classical tradition and taking into account at the same time the approach of neo-classical synthesis in economic theory, the reproduction process must be considered at two structural levels of the economy: the reproduction of individual (corporate, partner and individual) capital the microeconomic aspect; as the reproduction of the entire social (national, cumulative) capital the macroeconomic aspect. This is necessary because, at these levels, the problem of managing innovative reproduction, creation and introduction (use) of new technology and technology in the production of goods and services is decided in different ways, in different forms, by different methods. In this study, the management of innovative re-production is considered at the microeconomic level, at the enterprise level. (Gissel, 2016; Vertakova, Klevtsov, & Klevtsova, 2015)

Differences in the quality and quantity of reproduced elements of the production process determine additional characteristics of reproduction types: the extensive or intensive nature of expansion of production.

4. Purpose of the Study

Intensification of production is a process in the development of production through the use of more efficient means of production and its organization, in contrast to extensive economic growth through the expansion of production with a continuing level of technology and quality of resources. Intensification implies an increase in production costs, but these costs are paid off more efficiently and economically using all the resources used. Due to the intensification, the process of transforming the structure of the resources used, its shift in favour of fixed labour (fund-equiping) occurs, since the use of new machines and equipment leads to a saving of living labour and an increase in its productivity. There is also a saving of objects of labour and natural resources due to the replacement of natural materials with synthetic ones, the introduction of new technologies, including technologies leading to waste-free production. The decisive factor in the intensification of production and economic growth is scientific and technological progress, which involves the development of fundamental research, applied research and development, and the introduction of new technologies, the creation of fundamentally new equipment and equipment. This process is generally called innovative. (Mattei & Mattei, 2016; Klychova, Zakirova, Mukhamedzyanov, Sadrieva, & Klychova, 2017)

It can be seen from the presented definition that the qualitative change in production factors, the transition of production and reproduction to a new technological and technical basis, is the determining sign of intensive expansion of production, and accordingly of reproduction.

Depending on these or other ways of saving production resources, there are several types of intensification: labour-saving; capital-saving; integrated.

5. Research Methods

A labour-saving type of intensification of production assumes that the new technique replaces the labour force in production. In this case, the growth rate of out-put is faster than the rate of change in the number of personnel of the enterprise. This process on a large scale occurred as a result of the first industrial revolution, at the industrial stage of production development.

Capital-intensive type of intensification: thanks to the use of more efficient machines and equipment, raw materials and newest technologies of non-waste production, economical expenditure of means of production is achieved. Such changes began to be manifested most at the initial stage of the scientific and technical revolution, when high-performance automatic equipment was widely used, cheaper products, as well as chemical polymer chemistry and other highly effective material factors of production.

Finally, complex intensification is such a direction of economic progress, in which all these forms of resource conservation are used. With it both labour and material conditions of production are saved. This kind of intensification is practically implemented in the conditions of the current stage of scientific and technological revolution and high technologies (Nijam, 2018).

Thus, the complex type of intensive reproduction means expansion of production due to better, more complete use of various resources based on the achievements of science and technology, their qualitative change.

Next, consider the main types of innovation that are introduced today at the enterprise level.

6. Findings

In the third edition of the «Oslo Guidelines», which is the main methodological document of the Organization for Economic Cooperation and Development (OECD), innovations are divided into four types: product, process, marketing and organizational. (Kukartsev & Gorlevsiy, 2014; Gorlevsiy & Kukartsev, 2014)

In accordance with the purpose of this study to determine the content of the concept of "innovative reproduction of FPA" of the greatest interest is type - process innovation (table 02).

Table 02. Definitions of the concept of "reproduction"

Source	Definition Content
Oslo Guidelines	Process innovation is the introduction of a new or significantly improved way of producing or delivering a product. This includes significant changes in technology, manufacturing equipment and / or software. Process innovations can aim to reduce the cost or cost of delivering products, improving its quality, or the production or delivery of new or significantly improved products.
Instructions for completing the form № 4-innovation "Information on the innovation activity of the organization"	Process innovations include the development and implementation of technologically new or technologically advanced production methods, including methods of transferring products (production methods of logistics, supply of goods and services, as well as in auxiliary activities). Innovations of this kind can be based on the use of new production equipment, and / or software, new technologies, significant changes in the production process or a combination thereof. Such innovations are usually aimed at reducing production costs or transferring products, services per unit of output, improving the quality, efficiency of production or transfer of existing products in the organization, but can also be used for the production and transfer of technologically new or improved products, services that cannot be produced or delivered using conventional production methods.
Sokolov D.V., Yurkan E.I.	Process innovations - a new production technology, a higher level of automation, new methods of production organization.
Kazantseva A.K.	Process innovations - a new production technology, a higher level of automation, new methods of production organization (applied to new technologies).
Hotyasheva O.M.	Technological innovations involve the application of new technical and technological methods to improve the efficiency of the production process itself and, as a rule, consist in the automation of production, the use of a cell system of work, the computerization and robotization of production lines and the optimization of the material and production base.
Anshin V.M.	Innovation-process is a technical, production and management improvement that reduces the cost of producing an existing product. These innovations are less risky than product ones, and in some cases, are less capital intensive.
Methodological materials on the development of innovative development programs for joint stock companies with state participation, state corporations and federal state unitary enterprises	Under the development of new technologies used by the company (as well as designed and intended for use), it means: the acquisition, installation, introduction into production of new and energy efficient production equipment, technologies and technological solutions, techniques and methods of production organization, staff training in their use; reconstruction of production facilities with the purpose of updating them, reducing production costs, increasing the output of products (works performed, services provided), increasing labour productivity, environmental friendliness and energy efficiency; introduction of other new and innovative technologies in production; Any other activities designed to modernize production and introduce innovative technologies into the company's core and operational activities.

Process innovation is the introduction of a new or significantly improved way of producing or delivering a product. This includes significant changes in technology, manufacturing equipment and / or software. Process innovations can aim to reduce the cost or cost of delivering products, improving its quality, or the production or delivery of new or significantly improved products (Kukartsev, Gorlevsiy, & Ogurchenok, 2014; Gorlevsiy, Ogurchenok, & Kukartsev, 2014).

7. Conclusion

Thus, based on the analysis of literature and based on the objectives of this work, the innovative type of reproduction of the enterprise's fixed productive assets can be defined as a specific type of expanded intensive type of reproduction characterized by a qualitative change in productive forces and, in particular, labour instruments, based on the introduction of scientific and technological achievements, the purpose of increasing the efficiency of production at the expense of saving living and materialized labour per unit of use value of products.

The category "innovative reproduction of fixed productive assets" is based on the clarification of the terms "intensive reproduction" and "process innovation", is comprehensive and designed to theoretically identify and show the ways of practical overcoming the problems of enterprise development.

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