

Analysis of Enterprise Personnel Innovative Potential in the System of Management

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ABSTRACT

The article presents the authors' views on the essence of analysis of personnel innovative potential of an enterprise. Using a system approach, the analysis of personnel innovative potential is considered as one of the functions of the management system. The authors' method of analysis of enterprise personnel's innovative potential is suggested, within which the goals, tasks, an object and subjects of analysis, as well as stages of analysis of personnel innovative potential are determined. The sequence and essence of these stages reflect the authors' view of the analytical procedures concerning the object of analysis and allow selecting relevant analytical tools considering the time domain, the structure of personnel innovative potential and other components. The choice of methods of analysis of personnel innovative potential is substantiated, their characteristic is given within the limits of this research.

Keywords: Analysis, Personnel innovative potential, System

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Análisis del Potencial Innovador del Personal de la Empresa en el Sistema de Gestión

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RESUMEN

El artículo presenta la opinión de los autores sobre la esencia del análisis del potencial innovador del personal de una empresa. Utilizando un enfoque sistémico, el análisis del potencial innovador del personal se considera una de las funciones del sistema de gestión. Los autores proponen un método de análisis del potencial innovador del personal de la empresa, en el que se determinan los objetivos, las tareas, el objeto y los sujetos del análisis, así como las etapas del análisis del potencial innovador del personal. La secuencia y la esencia de estas etapas reflejan el punto de vista de los autores sobre los procedimientos analíticos relativos al objeto de análisis y permiten seleccionar las herramientas analíticas pertinentes teniendo en cuenta el ámbito temporal, la estructura del potencial innovador del personal y otros componentes. Se fundamenta la elección de los métodos de análisis del potencial innovador del personal y se dan sus características dentro de los límites de esta investigación.

Palabras claves: Análisis, Potencial innovador del personal, Sistema

Clasificación JEL: M59, O12, O15

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1. Introduction

The current situation and significance of innovative development of Ukraine's economy demand efficient establishment of innovative potential of personnel at industrial enterprises which is the basis for intensifying innovative activities under competent management. In their development, modern enterprises focus on innovations, introduction and application of which require competent highly qualified personnel not only capable of fast and efficient decision making but also having skills, means and wish to carry out innovative activities. So, it can be asserted that management of innovative potential of personnel is becoming a must for a modern enterprise under present conditions.

Management processes are impossible without preliminary analysis. Within the system of managing innovative potential of personnel, analysis is one of the most important functions, it is the basis for managerial decision-making on the further increase of innovative activities of personnel. This all actualizes development of the theory of management of innovative potential of personnel, establishment of conceptual principles and scientific and methodological basis for its analysis.

Based on actuality, current investigation results in the field of management of innovative potential and within the framework of the authors' research, the article aims at development of methods for analyzing innovative potential of enterprise personnel which can describe its goals, tasks, coherence, analytical procedures and methodological approaches and be in conformity with the system of managing innovative potential of enterprise personnel.

2. Literature review

In spite of significant achievements of innovative management and increased interest in issues of management of innovative potential of enterprise personnel, theoretical and methodological principles are not covered sufficiently (saeed et al 2018). Literature review proves that, in spite of current investigations, approaches to analysis of innovative potential of enterprise personnel are considered restrictively and fragmentarily, though all scholars stress the defining role of personnel in innovative activities of an enterprise. Thus, individual aspects of analysis of innovative activity and potential of enterprise personnel are covered in works by (Dziallas M. and Blind K., 2019), (Abesinova O., 2013), (Yefimova S. and Hrynko T., 2015), (Perehudova T. and Bystrov A., 2014), (Savytskyi E., 2019), (Potudanskay V., Bobrovskykh N. and Kypervar O., 2017) etc. However, this direction is relatively new for both the present day Ukrainian economic science and the management practice and, therefore, requires complex investigation.

3. Data and methodology

In the course of the investigation, the following general scientific and specific methods conditioned by the set objective are applied:

- the method of scientific generalization – to systemize approaches to studying the essence of analysis of innovative potential of enterprise personnel, the authors' interpretation of it and for drawing conclusions;
- the didactic method – to provide scientific substantiation of individual elements interconnections when analyzing innovative potential of enterprise personnel, terms, analytical procedures;
- the system approach method – to consider analysis: as functions and subsystems of management of personnel innovative potential; as the system of analytical methods, tools, indicators for assessing the level of enterprise personnel innovative potential;
- the logical method and that of decomposition – to build the structural-logical diagram of the analysis of innovative potential of enterprise personnel, to determine its elements;
- the graphical method – to visualize interpretations of the investigation results.

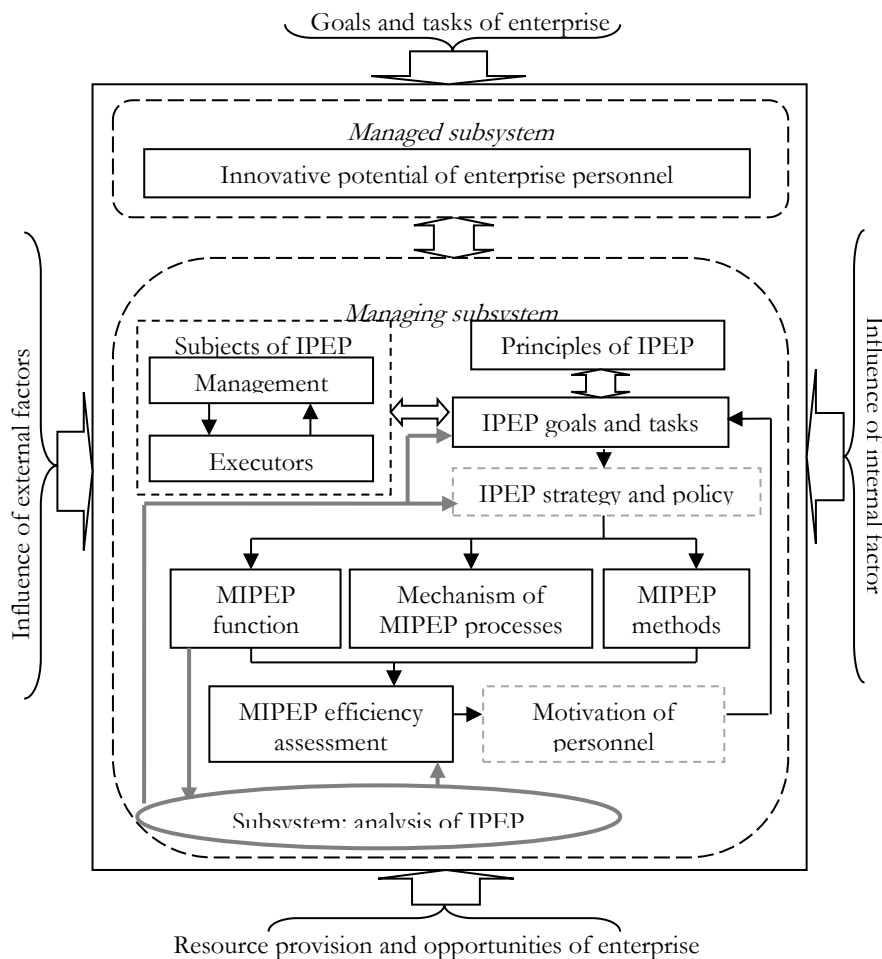
4. Results

Analysis is known to be a process, a complex deep study of an investigation object through reducing it to individual components in order to gain a better understanding of properties, features, interrelations, etc. Analysis is one of the functions of management designed to provide making scientifically grounded managerial decisions concerning the object under investigation on the basis of quantitative assessments of a system of indicators, studies of trends and regularities of changes, determination of factors and reserves of enhancing (improving) the investigated object.

The article analyzes innovative potential of enterprise personnel as the ability of employees to use the totality of their own aptitudes and opportunities to actively produce, perceive, implement and use innovations in their work activities and economic activity of their enterprise in order to gain benefits, achieve goals of their enterprise performance and ensure its market value increase (Tromp et al., 2020).

It is determined that consideration of the analysis function apart from the management process will result in shifts in interconnections of the elements of the personnel innovative potential management system (Bhatti et al 2018). Therefore, methods of analyzing innovative potential of enterprise personnel should be developed considering goals, tasks, the strategy and the policy of its management as well as in the context of continuous development of personnel innovative potential in the long term. The position of analysis of innovative potential of an enterprise in the system of its management is given in Figure 1.

Figure 1. The system of managing innovative potential of enterprise personnel and position of the analysis subsystem in it (Note: IPEP is innovative potential of enterprise personnel; MIPEP is management of innovative potential of enterprise personnel)



Source: developed by the authors

Let us consider the subsystem of analysis of enterprise personnel innovative potential in detail. So, studying the current scientific thought and economic analysis principles allows asserting that the system approach should be applied to development of methods of analyzing innovative potential of enterprise personnel. The approach enables presenting analysis of innovative potential of enterprise personnel as:

- a component of the system of its management based on information and methodological support;
- the system of specialist knowledge, analytical techniques and methods, tools, and indicators, complex application and interaction of which lead to determining factors of influence on the level of innovative potential of enterprise personnel, measuring it and substantiating managerial decisions in compliance with the set goal.

Enterprise owners and managers, innovators, investors and other people dealing with the innovative process are subjects of personnel innovative potential analysis.

Logic of studying personnel innovative potential at Ukrainian enterprises enables determining that the goal of personnel innovative potential analysis consist in assessing its current level (condition) and searching for directions of innovative activity increase through determining and developing reserves of raising the level of comprehension, active production, implementation and application of innovations by enterprise personnel.

Thus, analyzing innovative potential of enterprise personnel starts from goal statement and determination of tasks corresponding to it.

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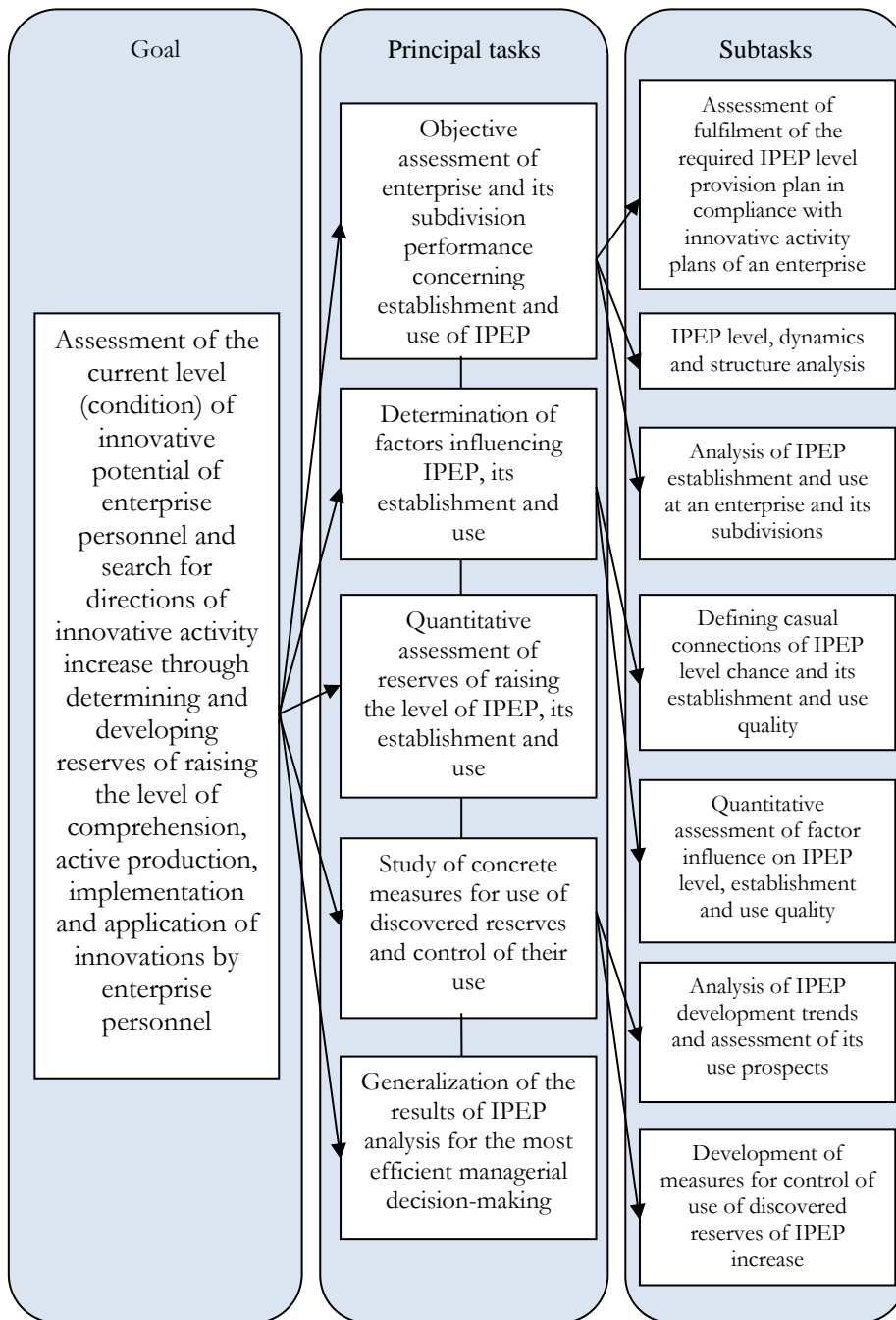
Analysis of innovative potential of enterprise personnel like any other type of analysis may be performed in an integrated way and selectively, in its entirety and by separate directions, to assess retrospectively and to plan for future, etc.

Depending on the chosen direction of analysis, the time parameter, the scope of elements and determination of interconnections, a certain set of goals and tasks of analysis of personnel innovative potential may be singled out. The goals and tasks may be modified and complemented. The hierarchy of goals and tasks of this analysis is given in Figure. 2.

Efficient analysis of innovative potential of enterprise personnel is made possible with the logically built, information and methodologically supported analytical process.

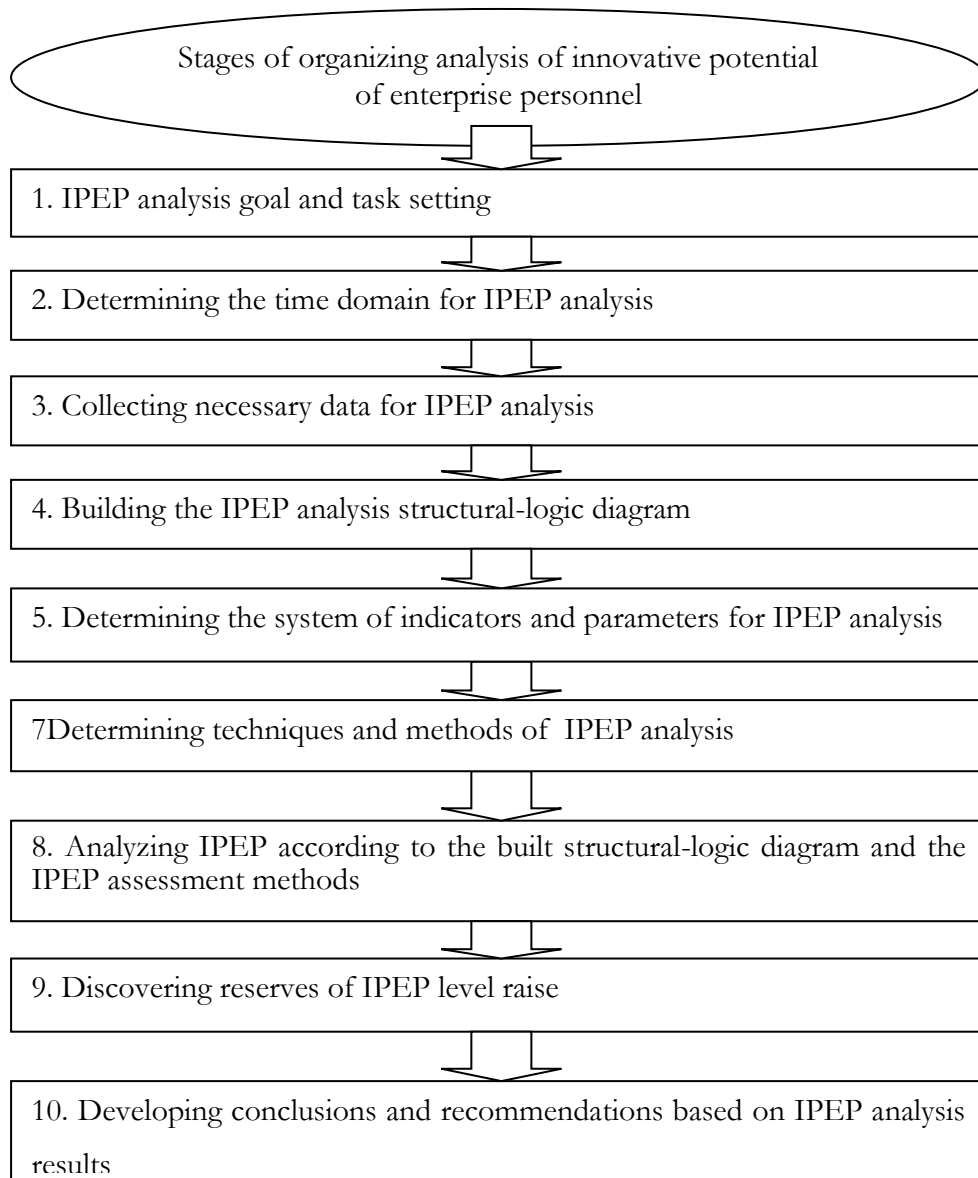
In our opinion, logic of the process of analyzing innovative potential of enterprise personnel should include the following stages (Fig. 3).

Figure.2. The goal and tasks of enterprise personnel innovative potential analysis



Source: Developed by the authors

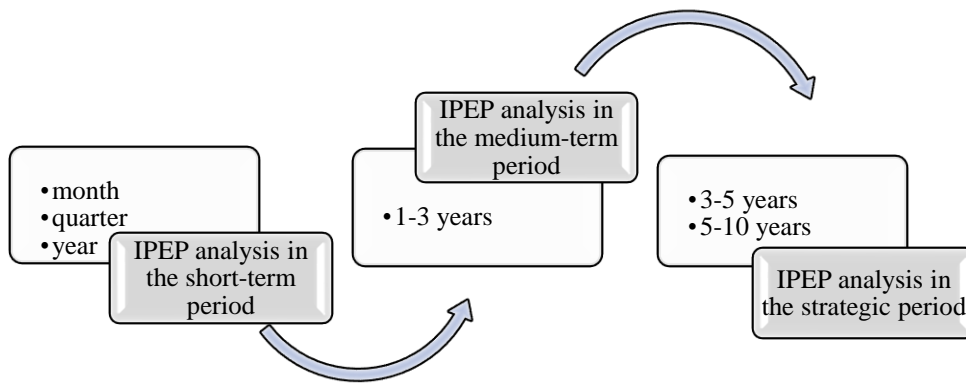
Figure.3. Stages of enterprise personnel innovative potential analysis



Source: Developed by the authors

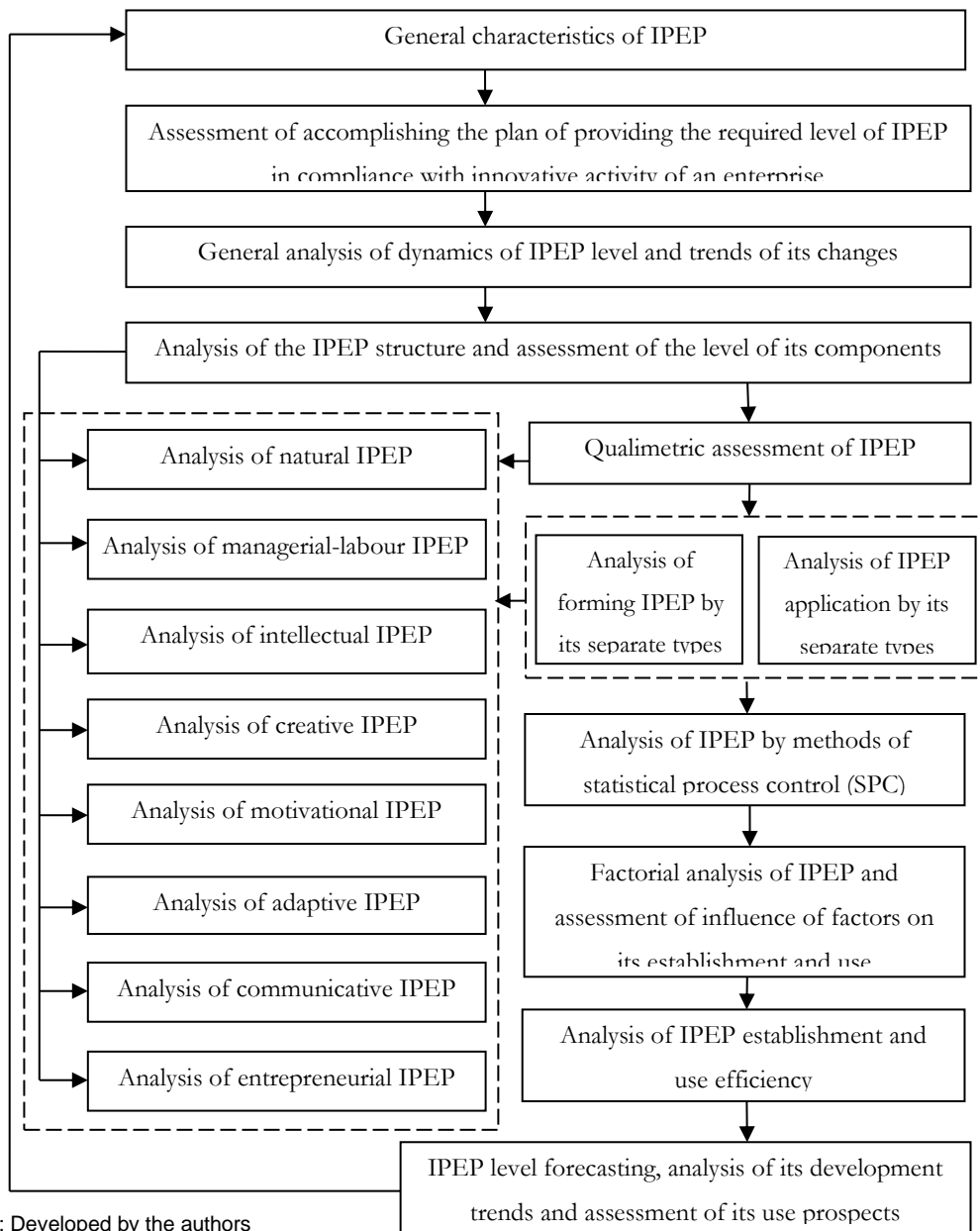
When determining relevant time periods in which innovative potential of enterprise personnel should be analyzed, it is determined that considering certain aspects of managing enterprise personnel, it is reasonable to single out short-term, medium-term and strategic time domains for analyzing. At that, it should be noted that search for, selection and training of innovatively active employees (especially when considering specifics of enterprises) are not fast processes and require some time for execution. That is why, strategic parameters of analysis of innovative potential of enterprise personnel should be defined for the period of three and more years (Fig. 4).

Figure.4. The time domain of enterprise personnel innovative potential analysis



Source: Determined by the authors

Figure.5. The structural-logic diagram of analyzing innovative potential of enterprise personnel



Source: Developed by the authors

It is established that analysis of personnel innovative potential will be full only if the data required for its conduction is complete. Alignment of various data types should be considered: accounting and reporting (accounting documents from personnel departments, heads of structural subdivisions, official statements, etc.); statistical (statistics, surveys); management (decrees, orders, reports on advanced training, etc.) and analytical (analytical notes, calculation results, etc.).

Unfortunately, there are no specific reports analyzing personnel innovative potential at industrial enterprises. It is requisite to process a considerable amount of information and in some cases, specific observations are required to collect necessary data and calculate required indicators.

After processing all necessary information, one can start building a general structural and logical scheme of analyzing personnel innovative potential. The authors suggest its general interpretation (Fig.5) that can be altered depending on analysis tasks, selected time domains and the bulk of analytical information.

5. Discussion

Analysis of enterprise personnel innovative potential as any other economic analysis is conducted by means of a relevant system of indicators and criteria. One can apply well known indicators of assessing employees' innovative activity (Bondarenko V., Martynova L., Chorna N., Sukhorebra T., and Seheda S., 2019), (Pizhuk O., and Bahniuk V., 2017), (Gonchar V., 2017), (Stoianovskyi A., and Ivanova O., 2009) and methods of their calculation. It is also possible to apply a developed system of indicators to analyzing the level of enterprise personnel's abilities and opportunities (Adamenko M., 2014). Considering a wide range of indicators, their division by content into qualitative and quantitative, availability of indicators-characteristics of employees' innovative abilities, it is expedient to conduct an integrated analysis of enterprise personnel innovative potential to enable assessment of various trends of its formation and application. It is a separate direction of investigation our research paper deals with.

To assess the level of enterprise personnel innovative potential and individual characteristic indicators, it is reasonable to apply a system of criteria. We suggest using either a well-known system of criteria or a criteria matrix (Adamenko M., 2014) that enables assessment of the level of enterprise personnel innovative potential from the lowest (0) to the highest (1) according to the integral indicator.

Considering the chosen system of indicators and criteria of assessing enterprise personnel innovative potential it is necessary to determine techniques, methods, ways and procedures of its assessment.

Considering the experience of analyzing innovative potential of personnel of Ukrainian industrial enterprises, the authors suggest applying the following methods and procedures. Traditional methods of data processing (comparison, grouping, structuring, etc.) should be applied to analyzing employees' innovative activity by the well-known indicators, assessing accomplishment of the plan on enhancing enterprise personnel innovative potential and characterizing trends of its level changes.

To perform qualimetric assessment of employees' innovative abilities and opportunities to enable determining its level and formation quality, we suggest applying a binary approach. Indicators can either take on the value "1" if there is some ability or an opportunity, or "0" if there is no ability or opportunity. Next, we calculate weighted averages of innovative abilities and opportunities of each employee that correlate with a certain type of enterprise personnel innovative potential. Then, there are calculated total innovative abilities and opportunities of individual employees and personnel as a whole. The qualimetric assessment of enterprise personnel innovative potential is completed by calculating its integral level and interpreting it by the criteria matrix. (Adamenko M., 2014) provides more detailed data on this stage of analyzing enterprise personnel innovative potential.

After studying the results of the conducted qualimetric assessment, it is expedient to analyze formation (by employees' abilities and opportunities) and application (by innovative opportunities of an enterprise) of enterprise personnel innovative potential by its separate types. To perform this, it is

reasonable to use expert evaluation methods and ABC-analysis to assess priorities of developing employees' innovative abilities and opportunities.

Empiric investigations into levels of personnel innovative potential at Ukrainian enterprises reveal that their values vary. If we consider this variation depending on the levels of employees' innovative abilities, it appears basically stable. However, depending on the quantitative characteristics of personnel (i.e. the number of redundant and new workers) and levels of an enterprise's innovative opportunities, the data can vary significantly. Considering this, there arises a necessity to apply methods of statistical process control enabling investigation into dynamics of deviations of the levels of personnel innovative potential, innovative abilities, innovative opportunities and an enterprise from their average values by using control cards. This method allows detecting problems and making timely relevant managerial steps.

To determine causes and consequences of changing the level of enterprise personnel innovative potential, levels of personnel's innovative abilities and opportunities, it is expedient to use factorial analysis. The factorial analysis method (either determined or stochastic) is to be selected by taking account of the essence of cause-effect relationship between results i.e. between the level of personnel innovative potential and factors.

As for analyzing efficiency of establishment and use of enterprise personnel innovative potential, we believe that it is reasonable to apply expert evaluation and be guided by optimality criteria in accordance with goals and tasks of innovative activities.

In general, considering importance and the scale of investigation into methods and techniques of analysis of enterprise personnel innovative potential, this trend will be dealt with in another article.

6. Conclusion

Actualization of innovative development in Ukraine enables focusing on problems of organization of analysis of enterprise personnel innovative potential to manage it efficiently. Based on the results of the investigation, the authors suggest methodological approaches to organizing and enhancing analysis of innovative potential of enterprise personnel which, unlike the existing ones, are noted for the common goal and task, ensure analysis staging and structuring, consider indicators, assessment criteria and a relevant methodological toolkit for each stage and enable high quality accomplishment of the accounting-analytical function when managing innovative potential of enterprise personnel.

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