



A Comprehensive Definition of the Concept of Innovation in Russian and International Science

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ABSTRACT

Theoretical and methodological studies of innovation content and essence show that methodological assessment approaches fail to represent an explicit conceptual and categorical framework for the category under consideration, which carries ambiguous connotations both in Russian and foreign theory of innovation. This paper explores the essential theoretical conceptual properties of innovation, which is considered a system enabling to argue that a system-wide definition of the innovation concept is the most preferable in terms of comprehensiveness. From a theoretical perspective, we have provided insight into the innovative process by stages within the innovation system, and presented a set of innovation functions, including intensive development and reputation functions; we have traced the logical interrelation between such concepts as “idea,” “novelty,” “invention,” “innovation,” “innovative product,” “innovative service,” “innovative product line.” It is assumed that a methodological innovation assessment should be based on a comprehensive synergy-oriented approach. The methodological principles for the innovation system construction have been formed.

Keywords: Innovations, Innovative Process, Innovation Functions

JEL Classifications: B4, D2, L1

1. INTRODUCTION

Although the problems of innovations as a source of competitive business advantages in a changeable environment need a long time to emerge, there is no consistent definition of innovation both in Russian and foreign theory and practice. Innovation is defined as a change (Valenta, 1985; Voldachekand Vodachkova, 1989), a process in different modifications (Gvishiani, 1986; 2007; Twiss, 1998; Myers and Marquis, 1969; Santo, 1990; 2004; Bezdudnyi et al., 1998; Gokhberg, 2011; Ilyenkova, 2007; Yagudin et al., 2009); a result Souder et al. (1990), Vertakova and Simonenko, (2008), an innovative product (Kotler, 2008; Utkin et al., 1996); an innovative service (Pinningo; Valdaytsev), and others. Most academic economists equate such concepts as “novelty,” “invention,” “innovative product,” “innovative service,” “invention,” “discovery,” etc. Thus, currently, innovation is a complicated phenomenon,

having a versatile essence, which should be examined from a system perspective. A theoretical uncertainty of innovation essence ultimately impairs its objective assessment, as it is commonly believed that the respective methodological measurement methods should reflect the conceptual framework. Therefore, the definition of economic content of innovations is an essential element of methodological basis for their assessment. In this respect, it is appropriate to construct the innovation concept in the modern development context that proves the relevance of research.

The purpose of research is to justify the key trends in the formation of modern methodological tools for innovation assessment based on the respective innovation conceptual framework. Research objectives include analyzing the economic concept content of innovations, their functions, and expressing the author’s opinion on this issue; proving the necessity for a comprehensive innovation

assessment from a standpoint of formation and development of the innovation assessment methodology. The theoretical and methodological framework of research is the works of domestic and foreign academic economists, the Oslo Manual on the essence and content of innovations and similar concepts (innovative process, innovative product, innovative service, etc.). The methodological framework of research consists of logical, scientific approaches to study the innovation concept essence and content. Using such methods as analysis, synthesis, detailed elaboration, generalization, clustering, formalization, abstract-logical method, the innovation concept essence was identified in theoretical and methodological terms.

A working hypothesis of research relies on a conceptual thesis that the modern innovation assessment methodology shall be based on an appropriate conceptual framework, consistent with business development conditions. It suggests the following: Clarifying the innovation essence and content definition; predetermining the development of innovation assessment methods.

The theoretical relevance of research is in the logical interrelation between such concepts as “idea,” “novelty,” “invention,” “innovation,” “innovative product line” revealed by the authors; in the presented set of functions of innovation, including the intensive development and reputation functions; in the updated and presented innovation properties, such as novelty, innovativeness, industrial applicability, marketing, economic and/or other effects; in the introduced comprehensive definition of innovation, covering all aspects of innovative process, where an idea is turned into reality, which constantly interacts with the internal and external business environment, the specifics of innovative process itself, favoring the successful service or product launch on the market; in the presented stage wise innovative process content; and in the justified comprehensive innovation assessment approach from the methodological perspectives.

2. LITERATURE REVIEW

2.1. The Historical Aspect of the Innovation Concept Origination and Establishment

Peter Ferdinand Drucker, American economist, argued that the introduction of innovations is a science subject to development (Drucker, 2012). Making a retrospective journey into the history, it should be noted that, according to Kondratyev, innovations are one of the important reasons of the large cycles of market conditions (large cycles, “long waves”) and their duration, and exploring the dynamics of inventions in the context of large cycle phases, he distinguished them from inventions and discoveries (Kondratyev, 2002). As a result, it became necessary to study innovations in the dynamic (static) aspects (the ultimate result of research and production cycle).

Joseph Alois Schumpeter, Austrian economist, the pioneer of innovations and Kondratyev’s successor, regards the renewal of innovation capital in Kondratyev’s wave theory as an opportunity to overcome crisis and decline in industrial production. Study of the key tenets of the innovative process theory, presentation of a invention as a change in technology and management, new combinations of resource use are reflected in “The Economic

Cycles” (1939). In this regard, an entrepreneur, a businessman is considered a significant link between the invention and innovation in the innovative process (Kondratyev, 2002; Schumpeter, 2007). As a result of the investigations carried by Kondratyev and Schumpeter, the cyclic regularities of technological progress were revealed; the idea of interaction between technological and institutional changes was justified.

In a market economy, the concept of innovation has an independent nature, but it is also used to characterize similar terms, such as “innovative process,” “innovative activities,” etc. A significant contribution to the innovation theory is the development of technological wave concepts by domestic economists.

2.2. Interrelation of Innovation to Similar Concepts (Idea, Novelty, Invention, Innovative Product, Innovative Service, Innovative Product Line)

Innovation is an act of introducing something new, a new idea, more effective device or process (*Lat.* - update, improvement, *Eng.* – (*synonym*) invention). It turns out that the terms “innovation” and “invention” are equated, being defined as a developing complex process of innovation creation, distribution, use, focused on efficiency growth and development of innovative activities. The innovation and invention are also equated by the following academic economists: Anshin (2005), Beshelev and Gurvich (1990), Lapin (2008), Medynskiy (2008), Mensch (1979); novelty and invention - Balabanov (2001); innovation and novelty by Gvishiani (2007), Karpenko (2013), Mukhamedyarov (2010), Ogoleva (2004), Sokolov (1997), Rumyantseva (2007), believes that innovation is a novelty that has gained a new quality since acceptance for the distribution.

There is also a fundamentally opposite opinion, according to which the invention is a progressive novelty, used in dynamics and being new for the organizational system, which accepts and applies it. As a rule, novelties create the novelty market, and innovations create the competitive innovation market, and the investments create the capital market, forming together the field of innovative activities.

According to Korobeynikov et al. (2000) and Trifilova (2005) a novelty is a new idea, realized in the process of developing a new product, method, new technology, etc.; innovation is a new (retrofitable, upgradable) product or technology, created using novelty and being marketable, or introduced into production, management and other activities (Korobeynikov et al., 2000). In other words, the technological novelty is a source of technological innovation that gains such a quality since the initiation of distribution as a new product.

Tsvetkov (2011) also distinguishes the economic categories of “novelty” and “invention” and defines the innovation through a process based on the practical implementation of novelty, resulting in the meaningful basis of invention as a process. Innovation is an object, introduced into production upon the completed scientific research or discovery made, differing from the previous analogue by qualitative parameters. Certain academic economists add that innovation is a specifically material object that is successfully introduced into production and brings profit.

The Center for Economic and Social Studies of the Republic of Tatarstan defines the novelty as a new phenomenon, discovery, idea, method, etc. designed as a result of research, developments or experimental works on the efficiency improvement in specific areas, and the innovation as the implementation of novelty, including a complex process of creation, distribution and use of novelty as a new practical tool to meet the human needs that change with the development of social and cultural systems and subjects. Thus, this is the result of investing in new equipment, technology, management system, labor organization and others. Anshin states that novelty is a potential innovation, a new solution prior to its commercialization, i.e., practical use of novelty, accompanied by its market penetration.

Vertakova and Simonenko (2008) suggest that innovations are based on novelties, inventions, i.e., novations. The practical application of invention and discovery in any field of human activity leads to creation of a new product (technology) and eventually it determines the transformation of idea, underlying the invention, to the innovation, which in its turn stimulates the emergence of new ideas. Consequently, there arises an innovation spiral, presented as “scientific and technological progress - idea - invention - technological progress - idea - invention” (Vertakova and Simonenko, 2008).

Bezdudnyi et al. (1998) determine the semantic differences between the concepts of novelty, invention, and innovation (Lapin, 2008). Fatkhutdinov believes that novelty is a completed result of applied and fundamental studies, developments and experimental works in a certain area to improve its effectiveness: Discoveries, inventions, patents, trademarks, innovation proposals, know-how, scientific principles and others. The invention is a novelty that is used since its market launch, gaining a new quality, and eventually turning into innovation (Fatkhudinov, 2011). Thus, the innovation is a broader concept than the invention.

Novikov holds a similar position that novelty and novation are the actually completed result of research, developments and experimental works to improve the effectiveness in a certain area (discoveries, inventions, patents, know-how, documents for a new (retrofittable, upgradable) product, technology (production process) and other recommendations, methods, instructions, standards, results of market research, innovative proposals). The novelty in the form of new knowledge, approaches, methods gains a new quality, turning into innovation (invention) since the period of its introduction and initiation of distribution, and the innovation is a final result of novelty implementation to achieve the economic, social, environmental, scientific and technical or other effect, accepted by the society. However, such representations of innovation implementation, in our opinion, are incomplete, as the interrelation chain lacks such concepts as “idea,” “innovative service,” “innovative product,” “innovative product line.”

At the same time, certain academic economists equate the terms “invention” and “discovery.” Kantorovich assumes that innovations are scientific discoveries (inventions) with the practical use that correspond to the social, economic, political demands and bring results in certain activities (Kantarovich, 1986); the potential risk

related to innovation implementation is not considered in the definition. Santo and Twiss use the term “invention” to characterize innovations (Santo, 2004; Twiss, 1998).

At the same time, we should bear in mind that the concepts of “invention” and “discovery” are closely related to the innovation concept, but differ from it:

- The discovery is made by a lone inventor, and the innovation is produced by groups and takes the shape of an innovation project;
- The discovery occurs by chance, and the innovation is a result of scientific inquiry;
- The target of innovation, as opposed to the discovery, is the tangible benefit.

The authoring team under the direction of Ilyenkova believes that research and technology developments, inventions are the subtotal of research and production cycle, taking into account the practical application and turning into scientific and technical innovations, i.e., the final cycle result as a special commodity that is a scientific and technical product. Scientific and technological developments and inventions, i.e., application of new knowledge for their practical use, research and technical innovations are the materialization of new ideas, knowledge, discoveries, inventions and technological developments in production for their commercial sales to meet the individual customer needs (Ilyenkova, 2007).

In Anshin’s opinion, the invention is a new technical solution that develops into the innovation only after its commercialization.

Vertakova and Simonenko claim that the invention is the highest level of innovation (Vertakova and Simonenko, 2008), distinguishing the following key features of innovations: Relevance and rationality of changes in the previous state, specified by a person; acquiring practical application of change used in the given area for the first time; products, technologies, social, economic, environmental and management processes as the subject of changes; means of objective achievement and company development, enhancing its performance growth.

Drucker distinguishes the following sources of innovative ideas: (1) An unexpected event (unexpected success, failure, an external event); (2) incongruence (a discrepancy between the reality and its perception), (3) the inventions for the process needs (imperfection and failures to be eliminated); (4) instant changes in the composition of economic activity type or market; (5) demographic changes; (6) changes in understanding, location and important adjustments; (7) new knowledge (scientific, unscientific) (Drucker, 2012). So, the distinguishing features of innovations are novelty, innovativeness, industrial applicability, marketing, obtaining economic and/or other effects.

In the context of market economy, the methodology for describing innovations is based on the international standards (the Frascati Manual that does not consider innovations in the field of organization and management since 1963, and the Oslo Manual since 1992).

The Oslo Manual notes that innovation interpretation is complicated by the fact that a substantial part of products and processes forming them are complex systems. A minimal sign of innovation is novelty or significant improvement of a product, process, marketing or organization method in the practice of business entity that suggests rating to innovative products, processes and methods, created by organizations for the first time and/or products, processes and methods, taken from other organizations, and the common feature is their introduction. A new (retrofitable, upgradable) product is introduced in use after its market launch, and new production processes, marketing or organizational methods are introduced after their real application in the organization's activity. National lawmakers distinguish two types of innovative goods, works and services from the perspective of novelty, these are: Newly implemented ones, including the substantially new ones or significantly modified ones, and those subjected to improvement.

Comparison of national and international legislation shows that the current Russian laws bring the definition of innovation into proximity with the international standards, considering it as a result of activities, a process of change, product, service, commodity, and new method.

2.2.1. Functions of innovations

The essence of innovation as an economic category consists in its functions, showing its purpose within the state economy system and business activities (Table 1), although some academic economists denote them without specific identification.

Notably, in 1911 Schumpeter defined five common changes, predetermining innovations, such as: Application of a new technique, new process procedures or new market collateral for production (purchase – sale); launching products with new properties; using new raw materials; changes in production organization and its material and technical support; creation of new sales markets. A considerable shortcoming of Schumpeter's definition is that innovation is limited to only one economic activity, excluding the possibility to introduce new sorts of raw materials, to change the qualitative and quantitative staff composition, and the necessity to achieve the efficiency is omitted.

The definitions (given in the national and international laws, by Buymov and Vaisman (2010); Vinokurov (2005); Ovodenko (2003); Utkin et al., (1996); Gokhberg, (2011); Souder, et al., (1990); note that innovation is implemented as a new service, product, and, therefore, the concepts of “innovative service” and “product” are equated (Twiss, 1989; Utkin et al., 1996; Souder et al., 1990).

Along with this, the Oslo Manual suggests an expression “product innovations in service sector,” which covers the essential improvements of service rendering means (by effectiveness, quickness), supplement of the available services with new functions or properties, or introduction of brand-new services. In addition, the concept of “innovative product” contains changes in design and packaging used to increase the product appeal or present it on a new market or market segment (Oslo Manual, 2010). In compliance with the current Russian laws, the innovative goods,

works and services are collectively referred to as the new ones or those subjected to various process modifications during the last 3 years, which is incorrect, in our opinion.

Borlakova (2014) believes that competitive advantages of an innovative product at the innovation stage are conditioned by its temporary novelty and unique nature.

Kleinknecht and Coombs make a clear distinction between process innovations and product innovations, distinguishing: Unambiguous product innovations for ultimate consumption; new investment goods – production of consumer goods and services; new technological devices and new technological materials – production of investment and consumer goods; scientific instruments for laboratory tests and use for laboratory purposes; and unambiguous process innovations of production facilitation (Coombs and Kleinknecht, 1983).

In our opinion, it is required to differentiate clearly the concepts of “innovative service” and “innovative product.” An innovative product is a result of innovative activities carried out by the companies, expressed either in a tangible, informational form, or as work performed and services rendered, and intended to meet the consumer needs. Its basic distinguishing features include a physical form of the fundamentally new (improved) finished product, integrity, marketability, product conformity to the key development priorities of the country, region. An innovative service is a type of innovative activities, which does not result in a new tangible innovative product, but changes the quality of the existing product to satisfy the specific consumer needs for the purpose of its sale. Therefore, a service, being intangible, may often act as an elementary constituent of some innovative product, further turning into a product.

The reasonable product “saturation” with related services facilitates the commercialization of respective innovations as far as a product does not need any additional efforts, but works with a click of a button or a single turn of key. It is important to bear in mind that creation of new products requires substantial investments due to research and development (R and D), and introduction of process innovations.

The effective commercialization due to the larger innovation potential and stable market position in a certain professional sphere (available client base) allows developing and introducing the related products in line with the new market expectations, opportunities, potential (including a virtual component, i.e., services as well). Developing the related innovative products in the subsequent innovation cycles, i.e., brand-new products as they are associated with a virtual (service) base, represented by independently developing services with regard to a growing number of developed products, we may see the cyclic innovation reproducibility. So, initially and subsequently created and developed innovative products represent an innovative product line, reflecting the development level, consistency and stability of the company's innovative activities. The innovative product line shows its creditworthiness as with its expansion it may consider the market expectations, thus affecting them. It is fair to note that

Table 1: Functions of innovation as an economic category

Name of academic economist	Functions	Description
Most domestic and international academic economists, the authoring team under the direction of Ilyenkova (2007) and Twiss (1998) Shumpeter (2007)	Changes	Changes are the specific innovation content
	An obvious factor of changes in products, processes, marketing and organization Production	Innovation is a fundamental change of creation, consisting in a new combination of production means
Lapin (2008)	Cultural development	Studying the innovative business essence, innovation describes a quantitative product changes, taking into account all variations in affecting factors. If we change the function form for a combination of factors, we will obtain an innovation, characterized by a new scientific and organizational combination of operating factors, motivated by entrepreneurial spirit; or a new moment of economy dynamization
Vertakova and Simonenko (2008)	Reproductive Investment	Human life and activities as a whole; in a wider philosophical context An important source of finance for extended reproduction Investing the profit from innovations
Zasimenko (2007)	Stimulating Economic	Stimulating the business activity by innovation profit Involvement in the commercial (non-commercial) exchange with research and technology achievements, fostering the distribution of industrial experience at the national (international) level
Krasnikova and Evgrafova (2011), Novikov (2010)	Attraction of new production forces, fostering better performance and production efficiency, different cost reduction The rise in living standards of each person and society in general due to the variety and quality of produced products, services, satisfaction of human needs Bringing the production structure in line with the structure of the changed needs, promoting maintenance of the demand-supply and production-consumption balance The application of creative abilities and knowledge of a certain person, human intellect, boosting further creative activity growth	
Authors' opinion	Intensive development	Its implementation suggests the better competitiveness of the product and entire business entity in future; in this case the innovations are regarded as a development source, provided that they are intensively and effectively used, and under favorable conditions for their initiation
	Reputational	It determines the image of the company, which uses innovations

an innovative (potential) by-product is defined as an increased innovation potential, which raises the possibility to generate new ideas, methods of their transformation into novelties, inventions and advanced innovations up to a totally new level.

3. RESULTS

3.1. We have Established the Logic Interrelation of the Concepts

We have established the logic interrelation of the concepts of “idea,” “novelty,” “invention,” “innovation,” “innovative product,” “innovative service” and “innovative service line” (Figure 1).

Summarizing the above, we should distinguish the following theoretical approaches to innovation definition depending on the research object and subject (Figure 2).

3.2. We have formed a Comprehensive Definition of Innovation Concept

We have formed a comprehensive definition of innovation concept, describing it as a system, which includes all aspects

of innovative process, where an idea is first turned into reality, constantly interacting with an internal or external environment of the business entity, the specifics of the innovative process itself, thus contributing to successful product/service launch. Its main purpose is to ensure the effectiveness (economic, scientific and technical, industrial, social, environmental or other beneficial effect). Thus, we acknowledge that innovation evolves in time with an explicit staging. Therefore, innovation is an integral, complex, contradictory and dynamic system, being ultimate practical result-oriented, where a certain effect is achieved through interaction of its elements and complex processes. In the context of theoretical construction of the innovation definition, the interpretation above lays a methodological basis for creation of innovation assessment system for each stage of implementation; it ensures the appropriate concept flexibility and scientific rigor, relying on the multi-purpose nature description.

3.3. We have Revealed the Content of Innovative Process as a Complex Process

We have revealed the content of innovative process as a complex process, which forms and implements a new quality

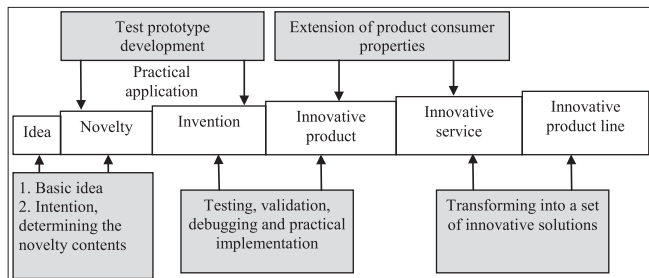
of innovation system, represented as the subsequent stages of innovation development and introduction, interrelation between the components thereof, aimed at enhancing its efficiency.

Figure 3 shows the pattern of innovative process as a transformation of idea, which is relevant (according to the marketing study) and feasible (according to the innovation potential assessment), into an innovative service or product, admitted to the market (commercialization and diffusion), underlying further innovations (innovative product line).

For innovative process staging, having a cyclic nature, but forming an integral, complex entity – (Figure 4).

Therefore, the results are as follows: We have developed and extended the theoretical interpretations of economic essence of innovations, assuming the following: (1) Presentation of a set of innovation functions, including intensive development and reputation functions; (2) establishment of a logical interrelation between the concepts of “idea,” “novelty,” “invention,” “innovative product,” “innovative service,” and “innovative product line;” (3) introduction of a comprehensive definition of innovations; (4) insight into the stagewise innovative process within the innovation system.

Figure 1: The logical interrelation pattern for the concepts of “idea,” “novelty,” “invention,” “innovation,” “innovative product,” “innovative service” and “innovative product line”



Ultimately, the innovation essence is specifically expressed in a system, hence, for the purpose of innovation assessment, it is necessary to proceed from the following fundamental provision: Innovation is a system, constantly interacting with the internal and external environment (Manuylenko, 2012), which is created by the subjects of innovative activities. To ensure the assessment efficiency, the innovation assessment methodology (scoring system) requires specifying the principles, i.e., initial rules to build the assessment process correctly, in our opinion (Table 2).

4. CONCLUSION

This research may be further developed to form the methodological innovation assessment tools, which should be based on the comprehensive approach. The innovation assessment system should be built through a sequence of interrelated elements, where each element with a certain purpose is a link in chain of other elements. Building up the assessment system begins with the goal setting, and is followed by identification of the indicators which will ensure its achievement. The ultimate goal of the innovation assessment system is to raise the economic business effectiveness. The objectives of innovation assessment should be represented as the indicators being the reference points for innovation assessment and innovative process optimization. The primary goal may be divided into subgoals, attributable to certain assessment elements, or products, markets, performance, quality or opportunities for study and modification to create and introduce new products, process, methods of product promotion and launch and/or changes in organizational practice or structure. The data on goals may be a source of secondary information on the properties of different innovations. So the key innovation assessment criteria within the innovation assessment system are the innovative activities: Innovation culture, business, potential, environment, product, project, risks, etc.

Figure 2: Theoretical approaches to the definition of innovation

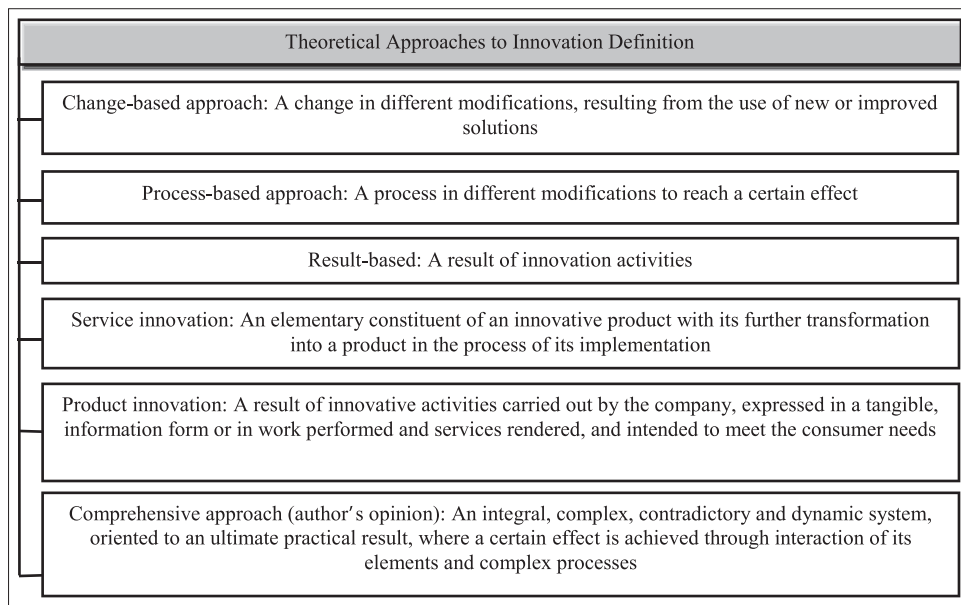


Figure 3: Summarized pattern of innovative process

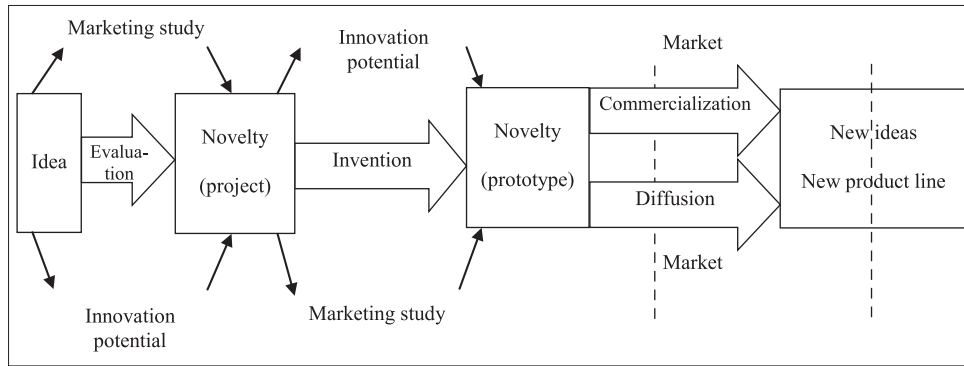


Figure 4: Innovation process stages

Innovation process stages	
Stage 1: Initiation of perspective ideas	Setting the goal, objectives, selection of innovative idea (intention, idea transformation into the action plan, its implementation), its feasibility study, idea materialization, i.e. forming a conceptual prototypes of the innovative product with indication of its basic properties
Stage 2: Novelty formation	Specifying the basic purpose and functions of idea to be transformed into novelty, underlying the innovative product
Stage 3: Primary marketing study	Reviewing the relevance and demand for the innovative product for the target audience and potential consumers
Stage 4: Primary assessment of the company's innovation potential	Considering the company's possibilities to transform the idea into the ultimate innovative product; in case of insufficient innovation potential it is relevant to find the ways to achieve its maximum required level due to attraction of additional resources at the stage of project development
Stage 5: Project development	Forming a set of coordinated and controlled activities and input resources with indication of the initial and expiration date, aimed at creating a new product according to the selected idea and primary marketing study
Stage 6: Corrective assessment of innovation potential	Based on the developed project and borrowed resources (if necessary); in case of scarcity of the required resources the project shall be re-worked according to the available resources
Stage 7: Corrective marketing study	Within the framework of the developed and approved project taking into account the prototype preparation stage, further mass production, commercialization and diffusion of a newly developed product
Stage 8: Innovative product prototype	Invention based on the project novelties; an innovative part of the project shall be performed upon the receipt of the prototypes with the specification
Stage 9: Trials, testing, prototype modification to a standard model, preparation of the innovation product to release and commercialization	All new ideas as to product modification, hidden reserves revealed, disregarded at the stage of initial description, are collected and analyzed in terms of their market relevance with subsequent corrective marketing study at the stage of commercialization
Stage 10: Commercialization	Innovative product mass production and offering to consumers, showing all its consumer properties; at the commercialization stage the innovative product shall be upgraded consulting the information and technical support and other virtual services, facilitating its promotion, launch and use. based on commercialization feedback, an adaptive algorithm to boost innovative product sales is formed, and the information flow is created to select the most important ideas for an innovative product line based on the corrective marketing study and the related current sales data for the innovative product - This is an initial stage of the developer's innovation potential transformation into innovation potential
Stage 11: Diffusion	Changing the innovation parameters and promotion conditions, new market penetration; distribution of the known information in the new application environments, markets and economic situation; growing competitiveness, intensifies market feedback (from the consumers and competitors) and innovative product sale reduction that requires urgent commercialization of new innovative products and innovative product line to replace the innovative product
Stage 12: Formation of new ideas	Based on the available innovation potential

Table 2: Methodological principles of innovation assessment (author's opinion)

First group: General principles - To define the nature of innovation assessment system	Second group: Special principles - To ensure better innovation assessment system functioning
<p>Comprehensiveness is manifested in the aspect of systematization law: Implementation within the system of approaches, methods, means, techniques, tools, procedures, technologies, which comprehensively characterize the state of innovations; ensuring the plenitude of indicator system being formed, considering the key information sources; building up a complete assessment system</p> <p>Decomposition - The innovation assessment system breakdown into subsystems of different levels (innovative activities of the country, region, innovation company, innovative activities of the company, innovation project, etc.)</p> <p>Goal orientation - Assessment orientation towards the achievement of the goal and objective set for this purpose</p>	<p>Regulation - The development of the internal system of rules, procedures, which regulate the assessment process</p>
<p>Agility - Considering the time factor in relation to the state of the assessed object and subject, and to the assessment process itself</p> <p>Adaptability - Self-orientation to the personal safety, a drive for balance condition; it reflects the changes in internal and external environment, having negative impact on innovations, and providing for development adjustment, adoption of managerial decisions within the framework of the approved innovation policy</p> <p>Adequacy - Key principles of the innovation assessment system are based on a deep comprehension of economic law mechanisms in the innovation sphere, the experience, accumulated by the innovation science in the course of theoretical and practical studies of the innovation assessment issues</p> <p>Multiple assessment approaches are considered in the context of the law of requisite variety, providing for the use of maximum possible number of methodologies, methods, means, techniques, tools for innovation assessment</p> <p>A logic nature and reasonability of the applicable assessment approaches, methodologies, methods, means, techniques, and tools</p>	<p>Regularity - A regular assessment to detect the existing negative trends in innovative activities; it is necessary to specify an optimal assessment interval (regularity)</p> <p>Materiality - Structuring the system indicators in line with the most relevant innovation parameters; excluding redundant indicators within the system; creation of time series for the system being formed, suitable for the short- and long-term forecasting methods used</p> <p>Objectivity - An innovation assessment extension with the methods, other than non-formalized (logical) methods</p> <p>Validity - Presentation of a real state of affairs in the assessment process with the further use; provision of full and accurate information on the company's innovation infrastructure</p>
<p>Effectiveness - An ultimate result, manifested in the aspect of the law of economic expediency</p>	<p>Accuracy - The creation of a high-quality database under conditions of uncertainty, taking into account the growing data volume; the federal statistical data narrow down the assessment potential</p> <p>Equilibrium - A complete consistency, comparability, interdependence of all the components of the innovation assessment system</p> <p>Transparency - The open innovation model implementation, complete and timely provision of information about the applicable approaches, methodologies, methods, means, techniques, tools, procedures, technologies within the innovation assessment system</p> <p>Flexibility - A rapid consideration of the current economic development conditions</p> <p>Continuity of external and corporate innovation assessment, the unity of synthesis and analysis</p> <p>Alternativeness - The use of new alternative approaches, methodologies, methods, means, techniques, tools within the innovation assessment system that is critical under uncertainty conditions</p> <p>The conformity of assessment approaches to the international standards means the adoption of the best foreign assessment practices</p> <p>Using the advanced information technologies based on application of up-to-date mathematic model methods, and dedicated software</p> <p>Priority and severalty of innovative activities means distinguishing the specific assessment indicators of innovation, being a part of basic economic activity</p> <p>The professional competence of evaluation authorities prevents errors</p> <p>Innovation safety is the conformity of the assessment process to the internal and external regulatory base; exclusion of error and abuse risk; availability of the information security system</p>

To conclude, the introduction of a comprehensive description of the innovation concept contributes to the development of methodological tools, based on a comprehensive innovation assessment approach, thus having a positive effect on the ultimate

result of innovative activities. The practical implications of the research are the development of innovation assessment system, providing improvement of the assessment objectivity and effectiveness.

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