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Global Trends in Measuring the Innovative Potential of an Enterprise

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ABSTRACT

The purpose of the study: qualitative and quantitative comparison of tools for assessing the effectiveness of the use of the innovative potential of the enterprise. To achieve the research goal, the following tasks are set: to study the structure of the components of innovation potential in the context of achieving business efficiency; evaluate the tools used in practice to study the innovative potential of the enterprise; compare the tools for assessing the innovative potential of enterprises in terms of profitability and efficiency of the enterprise. The results of this study will allow us to substantiate the modern concept of innovative activity of the enterprise, based on the structure of innovative potential, consisting of four components: research, personnel, material and technical base, and corporate entrepreneurship. Secondly, the study aims to assess the enterprise's innovative potential, which differs in the quality and quantity of indicators used. The measurement tools used in practice include a balanced scorecard; multilevel assessment using a tree of cluster factors; assessment based on world indices and/or monitoring; mixed and statistical approach. Thirdly, it was found that on the basis of practical and value criteria, a system of balanced indicators of the innovative potential of an enterprise and an economic justification for the development of developed economic structures, as well as for enterprises focused on innovative capitalization and corporate entrepreneurship, is effective. Tools with probabilistic, analytical and statistical measurement methods are also useful for developed sectors of the economy and for enterprises focused on sustainable business.

KEYWORDS: Economy, Strategy, Practice, Innovation, Business Strategy, Enterprise

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Кәсіпорынның инновациялық әлеуетін өлшеудегі жаңандық үрдістер

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ТҮЙІН

Зерттеу мақсаты: кәсіпорынның инновациялық әлеуетін пайдалану тиімділігін бағалау құралдарын сапалы және сандық салыстыру. Зерттеу мақсатына жету үшін келесі міндеттер қойылады: бизнестің тиімділігіне қол жеткізу контекстінде инновациялық әлеует компоненттерінің құрылымын зерттеу; кәсіпорынның инновациялық әлеуетін зерттеу үшін практикада қолданылатын құралдарды бағалау; кәсіпорынның рентабельділігі мен тиімділігі тұрғысынан кәсіпорындардың инновациялық әлеуетін бағалау құралдарын салыстыру. Осы зерттеудің нәтижелері бізге төрт компоненттен тұратын инновациялық әлеуеттің құрылымына негізделген кәсіпорынның инновациялық қызметінің заманауи тұжырымдамасын негіздеуге мүмкіндік береді: зерттеулер, қызметкерлер, материалдық-техникалық база, корпоративтік кәсіпкерлік. Екіншіден, зерттеу сапасы мен пайдаланылатын көрсеткіштер санымен ерекшеленетін кәсіпорынның инновациялық әлеуетін бағалауды зерттеуге бағытталған. Тәжірибеде қолданылатын өлшеу құралдарына мыналар кіреді: теңдестірілген көрсеткіштер жүйесі; кластерлік факторлар ағашын қолдана отырып, көп деңгейлі бағалау; әлемдік индекстер және/немесе мониторинг негізінде бағалау; аралас және статистикалық тәсіл. Үшіншіден, практикалық және құндылық өлшемдерінің негізінде дамыған экономикалық құрылымдарды дамыту үшін, сондай-ақ инновациялық капиталдандыруға және корпоративтік кәсіпкерлікке бағытталған кәсіпорындар үшін кәсіпорынның инновациялық әлеуеті мен экономикалық негіздеменің теңдестірілген көрсеткіштерінің жүйесі тиімді екендігі анықталды. Ықтималды, аналитикалық және статистикалық өлшеу әдістері бар құралдар экономиканың дамыған секторлары мен тұрақты бизнеске бағытталған кәсіпорындар үшін де пайдалы.

ТҮЙІН СӨЗДЕР: экономика, стратегия, тәжірибе, инновация, бизнес стратегиясы, кәсіпорын

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Мировые тренды измерения инновационного потенциала предприятия

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АБСТРАКТ

Цель исследования: качественное и количественное сравнение инструментов для оценки эффективности использования инновационного потенциала предприятия. Для достижения цели исследования, поставлены следующие задачи: изучить структуру компоненты инновационного потенциала в контексте достижения эффективности бизнеса; оценить инструменты, используемые на практике для исследования инновационного потенциала предприятия; сравнить инструменты для оценки инновационного потенциала предприятий с точки зрения рентабельности и эффективности предприятия.Результаты данного исследования позволят обосновать современную концепцию инновационной деятельности предприятия, основанную на структуре инновационного потенциала, состоящей из четырех составляющих: научно-исследовательской, кадровой, материальной и технической базы, корпоративного предпринимательства. Во-вторых, исследование направлено на изучение оценки инновационного потенциала предприятия, которая отличается качеством и количеством используемых показателей. К инструментам измерения, используемым на практике, относятся: сбалансированная система показателей; многоуровневая оценка с использованием дерева кластерных факторов; оценка на основе мировых индексов и/или мониторинга; смешанный и статистический подход. В-третьих, было установлено, что на основе практических и ценностных критериев эффективна система сбалансированных показателей инновационного потенциала предприятия и экономического обоснования развития развитых структур экономики, а также для предприятий, ориентированных на инновационную капитализацию и корпоративное предпринимательство. Инструменты с вероятностными, аналитическими и статистическими методами измерения также полезны для развитых секторов экономики и для предприятий, ориентированных на устойчивый бизнес.

КЛЮЧЕВЫЕ СЛОВА: экономика, стратегия, практика, инновация, бизнес стратегия, предприятие

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Introduction

The pandemic caused by Covid-19 has stopped the global economy. The governments controlling the world's largest economies have begun to create ambulance packages to mitigate the effects of the impending recession. This package of measures is mainly aimed at preventing short- and medium-term economic losses. Direct attention is paid to business support, for example, credit guarantees and tax benefits. However, these measures are not aimed at financing innovations and initiatives. At the same time, governments worldwide have yet to give priority to innovation and R&D. Countries have spent a significant amount of money searching for vaccines against coronavirus and then launched vaccination programs on their territory. Thus, the impact of the Covid-19 crisis on innovation will depend on business recovery scenarios and the introduction of innovative methods and policies. In this case, it will be difficult for private and public sector enterprises to find investments in innovation. According to the Global Innovation Index 2020 (GII), which evaluates the effectiveness of invention in a country in terms of decomposition: venture capital, R&D, entrepreneurship and/or high-tech manufacturing, Switzerland, Sweden and the United States occupy leading positions among 130 economies. Russia is the leader among the CIS countries (47th place). Kazakhstan (72) is in the middle place and Azerbaijan (82), Uzbekistan and Kyrgyzstan (respectively 93 and 94) (Cornell University, INSEAD, World Intellectual Organization, 2020). The above-mentioned global problems and trends in the field of innovation and business indicate the need for a systematic review of the literature, taking into account the active, innovative behaviour and efficiency of the enterprise.

The global challenges and trends in innovation and business discussed above unveil a need for a more systematic review of literature taking into account innovations and enterprise performance. The innovation research revolves around management and economics (Tagues et al., 2021). Ludeke-Freund discussed innovation as part of sustainable entrepreneurship (Ludeke-Freund, 2020). The author states that efficiency in business does not make innovation itself but depends on business models used for commercialization. Therefore, commercializing an innovation involves a variety of challenges from defining customer segmentation to production scale-up. Such mechanisms benefit suppliers, co-operators, and competitors, not innovators. The researcher argues that the enterprise's innovation capacity allows it to modify or create new value propositions in the business model. Some scholars described innovation as an entrepreneurial tool that is essential for effective performance and profitability in a highly competitive environment (Ferreira et al., 2017). The researchers argue that innovation helps enterprises respond effectively to diversified and ever-changing demands. As a result, it leads to profit efficiency. Innovation can be described as a driving force of competitiveness. Companies with innovations show better financial performance and economic growth than non-innovation organisations.

In modern enterprises, the common barriers to innovation are the lack of financial resources, technical skills, information updates, and 'know-how'. Kuratko (2017) argues that entrepreneurial thinking is an enterprise's main strategic objective to achieve sustainable competitive advantage and improve profitability. Sustainable competitive advantage inspires innovation as part of corporate entrepreneurship. In this case, corporate entrepreneurship can be defined as innovative behaviour within established medium-sized and large enterprises. There is no universally accepted definition of enterprise innovation capacity in the academic environment today. Terebova claimed that the concept of innovation capacity is too complex to be explained by a single, unified definition and offers three approaches (Terebova, 2021):

- *Resource approach*. The company's innovation capacity is the combination of resources that participants in the innovation possess, namely, human resources, funds, materials, equipment, and information.

- *Result-based approach*. The innovation capacity is a result of innovative activities. It could be either knowledge or its application.

- *Mixed approach*. The innovation capacity evaluates the scale of scientific-technological resources and the results of their application.

Terebova suggests that the mixed approach is the most effective among the three because it describes resources available to the enterprise and the rate of their effective follow-up. Based on the information mentioned above, the enterprise innovation capacity can be defined as the combination of resources and results of the enterprise's innovative activities that interact with the external environment under certain organisational conditions to improve enterprise competitiveness and ensure sustained economic

growth. According to Valitov and Khakimov (2015), innovative products and commercialisation are to be a base for innovation capacity. Knubley proposed to evaluate innovation ecosystems according to ten innovation indicators that show how well they create social and economic value both in qualitative and quantitative aspects (Knubley, 2021). Here are these indicators:

- Technology benefits: the existence of distinctive projects;
- Network effects: development of unified ecosystems and business networks;
- Demand- and business-led attributes: how well does a business manage investment in different ecosystems;
- High business investment in R&D: evidence that company invested more in R&D;
- Multi-sectoral fundamentals: new approaches in cooperation;
- Intangible assets: adoption of digital technologies and intellectual property methods, including some open technology partnerships;
- Commercial benefits: commercialization of innovations;
- Supply chain resilience: the emergence of new, resilient supply chain relationships;
-Training and talent benefits: retaining technology talents and building an inclusive workforce capable of adapting to new technologies and business models.
- Global partnership: new international partnerships with the enterprise.

The results of such evaluation will correspond with the actual economic conditions and ecosystems. In turn, Bousmah claimed that entrepreneurship development strategies can be seen as a part of an organisation's expansion or renewal process and economic growth, which is often ignored by organisations (Bousmah, 2021). The researcher proposes evaluating an enterprise's innovation capacity as means of descriptive statistics. Kultyn and Tsybuliak offer a similar approach based on a set of global index indicators (Kultyn & Tsybuliak, 2018). The authors suggest taking the methodology used to measure the innovation ecosystem on a national/regional level and applying it to an enterprise. Kalu and Okafor underlined the importance of public policy that enables public and private sector enterprises to contribute to the economy, providing them with tools to mitigate business-related issues (Kalu & Okafor, 2021). These may include entrepreneurship education, additional business financing, development and delivery of business support services, and simplification of regulatory policies.

The findings show that the top management makes decisions based on different approaches to research and evaluating innovation capacity. However, running a business in an uncertain and post-industrial world requires business owners to search for valuation tools to consider the renewable resources of the enterprise striving for economic efficiency. The present study contributes to the current understanding of available business tools in the context of innovation capacity and their comparability regarding enterprise profitability and market performance.

Literature review

Innovation is a crucial driver of economic growth, and assessing an enterprise's innovation potential can help identify its strengths and weaknesses in this area. Considering the innovation potential of an enterprise involves identifying its ability to innovate and adapt to changes in the market. Innovative work concerns two areas: management and economics. Studying innovations in the context of sustainable entrepreneurship came to the conclusion that business efficiency is provided not by innovations themselves but by business models used for their commercialization (Lüdeke-Freund, 2018). In turn, the commercialization process of innovations should take into account some tasks: from the definition of customer segments to the scale of production. In most cases, the advantages of innovation are not innovators but suppliers, cooperatives, and competitors. The researcher claims that a business's innovative potential allows change or create new valuable offers for a business model. Innovation is a tool for entrepreneurs to compete in a highly competitive environment (Ferreira et al., 2017). Researchers believe that innovations help enterprises meet diversified and constantly changing demands and ensure profitability in economic sectors by increasing business efficiency (Sherifi et al., 2020). Thus, innovations are the driving force for improving the competitiveness and economic development of businesses with the best financial performance compared to non-innovative enterprises. Obstacles to innovation in business are identified: lack of financial capital; lack of technical management skills, difficulties in obtaining technical knowledge and know-how necessary for innovation. The main strategic goal of a company striving to provide a sustainable competitive advantage as the basis for successful growth is entrepreneurial thinking that promotes innovations characteristic of

corporate entrepreneurship (Kuratko, 2017). In this regard, the scientist identifies the innovative behaviour of medium and large enterprises as institutional entrepreneurship. There is no generally accepted definition of innovation potential in the academic environment. The concept of innovative potential differentiates between three approaches (Tugues et al., 2021):

- Potential of participants in innovation activities: personnel, financial, logistics and information base;
- The potential that is formed based on the results of innovative activity: new knowledge and its practical application;
- Potential, including a comprehensive assessment of scientific and technical resources and practical application results.

The researcher believes that the unified approach is the most effective since it determines the state of the available resources of the enterprise and the effectiveness of their implementation. Innovation potential is the result of some resource-intensive and innovative measures interacting with the external environment in certain organizational and managerial conditions to increase the enterprise's competitiveness and ensure sustainable economic growth (Knubley, 2021). The measurement of innovation gaps is based on crucial innovation parameters that give an idea of how well they create socio-economic value both qualitatively and quantitatively suggested (Knubley, 2021). The following innovation factors determine the assessment:

- technological advantages: the presence of typical projects;
- network effects: development of connected ecosystems and business networks;
- qualifications that determine demand and business: when a business manages investments in different ecosystems;
- Increase in commercial investment in R&D: the number of operational investments ;
- interdisciplinary and interdisciplinary elements: the presence of new forms of cooperation;
- the emergence of intangible assets: the introduction of digital technologies and methods of intellectual property, including some partnerships in the field of open technologies;
- commercial benefits: commercialization of new developments in practice;
- supply chain stability: demonstrating new stable relationships in the supply chain and network connections.
- Advantages of education and talent: retaining leading technological capabilities and encouraging an exclusive workforce to adapt to work with new technologies and business models;
- Global Partnership: a new international partnership with the company.

The results of such a tool for assessing the innovative potential of an enterprise will correspond to the real economy and existing ecosystems. Valitov and Khakimov identified the innovative potential in terms of the creation and commercialization of new developments (Valitov and Khakimov, 2015). In turn, Bousmah stated that when assessing the creative potential of an enterprise, attention should be paid to the development of entrepreneurship as an essential element of decriminalization or modernization of venture processes, as well as economic growth, which is often ignored (Bousmah, 2021). The researcher suggests assessing the innovative potential of the enterprise based on descriptive monitoring statistics. Kultin and Cibulyak proposed a similar approach to measuring innovation potential based on a group of global indices measuring a country/region's innovation component, then moving to the business level by developing structures for assessing the country/region—innovative development of the area (Kultin & Cibulyak, 2018). In addition, Kalu and Okafor emphasize the importance of public policy that will enable public and private sector enterprises, including entrepreneurial education, co-financing, simplification of business regulation, and business and service development, which can play an important role in the economy (Kalu & Okafor, 2021).

Assessing the innovation potential of an enterprise is critical for identifying its strengths and weaknesses in innovation. Several scientists have investigated the methods used to assess the innovation potential of an enterprise, including the Technology Readiness Level (TRL), the Innovation Capability Assessment (ICA), and the Intellectual Capital Evaluation (ICE) method.The Technology Readiness Level (TRL) is a method developed by NASA to assess the maturity of a technology. The TRL method has been widely adopted in various industries, including the aerospace and defence industries. One of the leading scientists investigating the TRL method is the Innovation Capability Assessment (ICA) a method developed by the European Foundation for Quality Management (EFQM) to assess an enterprise's innovation ability. The ICA method has been widely adopted in Europe and has been used by several multinational corporations. One of the leading scientists investigating the

ICA method is Bourne, a Professor at Cranfield University in the UK. Bourne has published several articles on the ICA method, including a study on developing a comprehensive diagnosis of an organization's innovation potential (Bourne et al., 2018). The Intellectual Capital Evaluation (ICE) method is a method developed by Edvinsson and Malone (1997) to assess an enterprise's intellectual capital (Edvinsson & Malone, 1997). The ICE method has been widely adopted in Finland and has been used by several Finnish companies. Buenechea-Elberdin has published several articles regarding the way of approaching and conceptualising, including a study on the relationship between intellectual capital and innovation (Buenechea-Elberdin, 2017).

Thus, the research work of economic scientists contributes to the academic environment, simultaneously analyzing the business tools available in practice and comparing them with the profitability and efficiency of the business market. It also provides comparability with the concept of innovative activity of the enterprise. In this study, the most common tools for measuring innovation potential within an enterprise were studied, such as a balanced scorecard; a multi-level assessment using a cluster-factor tree; an evaluation based on a group of indicators of world indices/or monitoring; a combined approach; a statistical approach. Further, through the criteria of practicality and cost, the profitability of the tool for the enterprise and its effectiveness in the market were determined. It is established that currently, the most cost-effective tool for an enterprise is a balanced scorecard that is focused on the actual consumer demand and covers the measurement of the main components of innovation potential, that is, operational, tactical and strategic ranges.

Materials and methods

This paper uses a unified approach, including qualitative and quantitative assessment, to compare innovative tools for measuring potential in the context of enterprise efficiency. The qualitative assessment uses a systematic approach to studying the structure of innovation potential and a comparative approach to measuring the innovation potential of enterprises. The quantitative assessment uses qualitative assessment results to determine the profitability of measuring instruments for business and their market efficiency. Applicable methods: analysis and synthesis, comparison and systematization. Materials and data from international reports (Cornell University INSEAD, World Intellectual Property Organization, the official website of the Russian Statistical Service and scientific databases on corporate governance Elsevier and Google Scholar, business development (Karim Suhag et al., 2018).

The study consists of three stages.

The first stage is the determination of the structure of the component of the innovative potential of the enterprise, consideration of cases with subsequent identification and justification for each element of the system and their effectiveness for the business. Development of the concept of implementing innovative activity of the enterprise to achieve results and economic efficiency (Table 1).

Table 1 - Components of the structure of the innovative potential of the enterprise

Characteristics and components of the enterprise's inventive potential	The application of an inventive potential to improve an organization's efficiency
Research and development: the effectiveness of technology products and services in practice.	Commercialization of fresh ideas is necessary to stay competitive in some markets.
Staff training, availability of specialists with technology abilities, and researchers are all examples of human resource potential.	They plan innovative development and identify focus industries to optimize and utilise the enterprise's potential.
Material and technical foundation: the company demonstrates its ability to bring innovation to the market by developing and launching a steady stream of new goods that suit the needs of international markets.	The enterprise's inventive activity is able to meet market needs, supporting and growing the revenue stream for the local people, as well as improving the actual wages of its employees over time.
Corporate entrepreneurship is the process of modernizing business procedures with the help of entrepreneurs.	Promotes the formation of new operations in the corporate organization. A new position is being established for the economically active population and adds to the internalization of the firm and orientation to client needs.
Note – Compiled by the authors	

In the second stage, it is assumed that the parameters of the assessment of innovation potential reflect the enterprise's activity as a whole. To solve this problem, the methodological basis for assessing the innovative potential of an enterprise using a comparative approach was analyzed. Following the established parameters, the main directions of measuring the measuring device were determined: a balanced system of indicators; a multi-level assessment using a tree of cluster factors; an assessment based on world indices and/or a group of monitoring indicators; a unified approach; statistical approach. All these areas are used in business planning and investment design systems. The interpretation of the results includes a description of the methodological approach presented in tabular form and with indicators, as well as the author of the introduced method (Table 2).

Table 2 - Methodological basis of IP assessment

A tool for measuring the innovative potential of an enterprise	The author of the approach
1	2
A balanced scorecard describes a company's strategy in terms of four interconnected components: - finance (the ratio of the financial result of innovation to the cost of invention; the proportion of profit from innovation in overall profit over the past N years); - internal business processes (the share of innovative ideas implemented at the enterprise in the total number of proposals put forward; the average time spent on submitting a new innovation to launch or rejection over the past N years); - personnel training (the innovation index is the relative share of innovative products implemented over the past N years in the total production of the enterprise; the number of innovative ideas born by the enterprise's employees over the past N years); - customer perspective (the proportion of customers who use the company's innovations to the total number of customers; the proportion of complaints concerning innovative items received by the company to the overall number of complaints).	(Guseinova, Rusnak & Lomonosov, 2021)
Using a cluster - factor tree for multilevel evaluation: Level 1: a list of factor clusters is created based on the properties of innovation potential, and a factor cluster tree is constructed. The tree's trunk represents the overall level and quality of development of the innovation potential, while the branches at the appropriate levels represent its attributes. Level 2: possible assessment indicators are determined using the established list of cluster factors. Level 3: a weighting factor is determined for each indicator based on the structure and hierarchy of evaluation indicators; Level 4: the scheme for comparing the level of innovation potential can be used for the previous year or a competitor's innovation potential. Level 5: a weighted average value is used to perform a comparative study, and the growth rates of innovation potential are calculated. Level 6: a conclusion is drawn on the level of innovation potential based on these data.	(Valitov & Khakimov, 2015)
Evaluation based on a set of indicators: a) World indexes; b) Global Monitoring: a) GII (institutional environment; regulatory framework; human capital, training, and integration; research and development; adoption and use of ICT); - Bloomberg Innovation Index (research and development; socio-economic conditions; innovation activity); - Innovation Capacity Index (ICI) (scientific potential; human resources; technical potential; information and communication component; financial and economic potential). c) Monitoring indicator descriptive statistics (GM).	(Kultin &Tsibulyak, 2018); (Bousmah , 2021)
A combined approach based on the evaluation of three blocks and four components of the enterprise's creative potential: - Human resources (the share of highly qualified employees; the share of employees with a specialist / master's degree; the share of employees involved in research); financial component (the amount of the company's funds that can be invested in R & D; the attractiveness of the enterprise to external investors); intellectual component (the number of registered intellectual property owned by the enterprise; the number of unregistered developments of the enterprise); intellectual component (the number of registered intellectual property owned by the enterprise; the number of unregistered developments;	(Knubley, 2021); (Terebova, 2021)

1	2
- financial and intellectual results (the share of the revenue from the sale of innovative products in total profitability; the share of innovative product exports in total exports; the coefficient of intellectual property object commercialization; the share of completed research projects that have progressed to the stage of commercialization); - Management unit: organizational component (presence of an enterprise development strategy, including the development of innovative potential; the presence of a design unit; the presence of a system of motivation and stimulation of innovation; the presence of business plans for innovative projects; the presence of an intellectual property management system); marketing component (presence of a marketing department / or marketing specialist in the organizational structure; the presence of a marketing department / or marketing specialist in the organizational str; the presence of a marketing department / or marketing specialist in the organizational structure.	
The statistical strategy is based on the utilization of national statistical services' essential indicators: - information and communication technologies (ICT) in organizations (ICT use in organizations; electronic document management in organizations by type of economic activity; special software in organizations; use of the Internet to communicate with suppliers and consumers of goods and services in organizations; ICT costs in organizations); - science and innovation (number of businesses that have conducted R&D, number of researchers, and R&D costs); - personnel (number of personnel engaged in research and development); - funding (internal running costs for research and development by type of work and fields of science); - research effectiveness (a receipt of patent applications and issuance of patents in the country; use of protected results of intellectual activity in the country; developed advanced production technologies according to a degree of novelty; used advanced production technologies.	Rosstat, 2020, Cornell University, INSEAD, WIPO, 2021
Note – Compiled by the authors	

The third stage is based on the results of the two previous steps. As a result of the qualitative assessment, five main tools for assessing innovation potential were identified. In order to determine what is most beneficial for business, taking into account the developed innovative business concept, a comparison of these measurement tools was carried out based on practical and value criteria. Applicable indicators include the device's reliability (the possibility of errors in data storage and calculations); expert support of consultants; the need to connect external data sources. Cost: availability of the developer (one-time payment amount / or monthly payment). Points are awarded for each indicator: 2 - high, 1 - low. For the cost indicator, the opposite is true: 1 - the presence of costs for a specialist, 2 - the absence of the expenses for a specialist. The tool with the highest rating will be used to solve the problem of increasing the enterprise's competitiveness on world Sundays and ensuring sustainable economic development.

Results

The innovative potential of enterprises is necessary at the macro level and is based on fundamental research, human resources, logistics and corporate entrepreneurship. The result of this interaction is new products and technologies, an increase in the enterprise's competitive advantage, the creation of new jobs for the country's economically active population, and the growth of financial capital. The economic assessment under consideration is related to the component structure of the innovative potential of the enterprise. Table 1 presents the main components of the structure of innovation potential: research, human resources, logistics, corporate entrepreneurship, innovative activity of the enterprise in terms of efficiency in four areas: competitiveness, capacity building, attraction and sale of financial capital. It is noted that the innovative potential of an enterprise is understood as innovative development in a globalized world that increases business efficiency and the well-being of the population through the production of goods and services that meet the needs of society. Taking into account the general concept of the component of the innovative potential of the enterprise, it is necessary to monitor the tools of economic assessment to determine the data of the strategic direction of business development at certain stages.

Table 2 shows the tools of innovation potential and its use to assess the effectiveness of the following tools: business strategies of operational activities, which allows linking a balanced system of indicators; multi-level

assessment aggregates; world indices of several indicators and/or countries, depending on the context, based on the National Identifier of Tracking Statistics; a unified approach linking resources, results and corporate governance; a statistical approach involving the collection of general business indicators and other data. indicators adapted to a specific area.

Table 3 provides an analysis of the management of five tools for assessing the innovative potential of the enterprise. All tools are aimed at measuring the innovative potential of the enterprise with the aim of the ability to innovate, the quality of research, human resources and the development of internal business. It is necessary to substantiate the results of how effective each tool for ensuring effective resource management will be for the enterprise, as well as to determine the effectiveness of the evaluation tool in other markets. The useful indicators of demand include the reliability of the tool, the implementation of the tool, the test support of consultants, and the ability to connect external data sources. Evaluation of the cost of indicators according to the terms of reference, which the developer should implement. During the analysis, control is noted for each instrument.

The system of balanced indicators that determines the business strategy has high reliability since it corresponds to the structure of the components of the innovative potential of the enterprise presented in Table 3.

Table 3 - Results of comparison of assessment tools

A tool for assessing the innovative potential of an enterprise	Reliability	Implementation period	Expert support	External data source	Availability of a developer
Balanced scorecard	High	rapidly	no	no	No
Total points: (∑=10)	2	2	2	2	2
Multilevel evaluation using a cluster - factor tree	Low	slow	Yes	Yes	Yes
Total points: (∑=5)	1	1	1	1	1
Assessment based on indicators of world indices / or monitoring	High	rapidly	no	yes	No
Total points: (∑=9)	2	2	2	1	2
Combined approach	low	slow	no	yes	no
Total points: (∑=7)	1	1	2	1	2
Statistical approach	High	rapidly	no	yes	No
Total points: (∑=9)	2	2	2	1	2
Note – Compiled by the authors					

Due to the transparent and clear architecture of the measured components, the application time for the enterprise ensures a short use of this tool (about 3-5 days). An analytical block is a type of report that a specialist with analytical thinking skills can create. In addition, this tool does not require expert support, external data sources and a developer, which makes it available in an era of limited material resources, exacerbated by the Covid-19 pandemic. The total number of points is ten.

- A multi-level assessment using a tree of cluster factors is unreliable since this tool may have errors in setting up many functions and determining generalized factors. Multilevel evaluation using the cluster factor tree requires more implementation time due to the workload deadlines. In this case, it is necessary to create a technical task to support specialists, and external data sources (accounting systems, Google documents, etc.) with the participation of a software developer. The total number of points is 5.

- Assessment based on world indices and/or monitoring indicators ensures a high level of reliability of data stored in databases of international organizations. The reports are available to multiple users via the Internet. Due to the transparent and clear architecture of the assessment received, the implementation period for companies is short-term. The analysis block is a report that can be compiled by any analyst working in the company. This approach requires

something other than expert support and the presence of a developer. We will need data from the company's accounting system at this stage. The total number of points is 9.

- The unified approach based on the assessment of three blocks and four components of the innovative potential of the enterprise has acquired an average level of reliability due to numerous formulas and work with local files of the company, which raises doubts about the reliability. This process takes a lot of time, as it requires a lot of work and requires mathematical knowledge and business specifics. Therefore, the implementation time will be slow. Expert support is not required in this case - the user can become an expert. But this also requires external data sources to connect via the company's web service, but for this need to be an expert in using standard computer programs: Microsoft Word, Excel, etc, developer is optional. The total number of points is 7.

- The statistical approach using the leading indicators of national statistical services is similar to that based on world indices and/or monitoring indicators. The difference is deconstructed in the fact that the obtained indicators can be transferred to something other than the business level since the assessment is initially carried out in the mesoregion characteristic of the studied stage. The total number of points is 9.

The comparison results shown in table 3 illustrate the fact that the measuring instrument scored the highest score based on a balanced scorecard. The final scores of measuring instruments are equal based on world indices and/or indicators of monitoring and statistical approach. The minimum overall score was achieved using a cluster factor tree, a mixed approach, and a multi-level score. Therefore, the practical application of a balanced scorecard is the most effective tool for monitoring the effectiveness of indicators for the components of the innovative potential of the enterprise and allows make objective use decisions through its effective prism. For example, a balanced scorecard for US enterprises, which is considered a key measure of innovation capitalization and corporate entrepreneurship, will need to be more efficient and practical for the single market of the European Union (EU) because it is business-oriented. In the EU, a multi-level assessment using a tree of cluster factors, assessment and/or monitoring of global indices and a statistical approach will be more effective. Developing models of corporate governance, in particular, at this stage of development in the CIS countries, on the basis of a unified approach has become an effective tool for assessing the innovative potential of an enterprise. This tool has advantages over the above measurement methods (probabilistic, analytical and statistical), as it allows avoid complex mathematical calculations and thereby reduce the error of the forecasts obtained, as well as improve the set of indicators for developing the enterprise.

Discussion. This study presents the concept of an innovation initiative, for example, research and development, human resources, logistics, corporate entrepreneurship and other components of innovative potential for business, in particular, competitiveness support, capacity building, and increase in financial capital and sales. Foreign authors proposed a research approach and developed the structure of an enterprise's innovation ecosystem to determine value based on systematization and qualitative and quantitative assessment (Huseynova et al., 2021). In this regard, the following structure of the enterprise's innovation ecosystem has been determined:

1) enterprises, governments, universities, research institutes and scientific and technical institutes;

2) innovation factors (knowledge and skills of human capital);

3) income from commercialization of innovations;

4) innovation environment (combines market and bureaucratic management);

5) models of behaviour of technological innovations (business development).

In this regard, it has been established that the innovation factor has a positive impact on the work of the enterprise, serves as the basis for determining values and contributes to sustainable socio-economic growth. Karim Suhag confirms that the innovative potential of an enterprise has a positive impact on productivity, thereby providing competitive advantages and is closely related to the economic component (Karim Suhag, 2017). Therefore, the availability of tools for assessing innovation potential should be considered the most important prerogative of a developing business, especially emphasising innovation and rapid development (Piperopoulos et al., 2018). In turn, the position focuses on the methodology for assessing the innovative efficiency of business and focuses on adapting it to the digital economy, automation and robotics. In particular, a tool aimed at transforming the innovative potential of an enterprise should

take into account new forms of cooperation between business and government, including corporate entrepreneurship, human resources and partnerships, as well as information exchange. When studying the most common tools for assessing the potential of innovation in an organization, the following were identified: a balanced scorecard; a multi-level assessment using a tree of cluster factors, an assessment based on a group of world indices and/or benchmarks; a unified approach; statistical approach. At the same time, the profitability of the business and its effectiveness were determined by the criteria of its practicality and value.

Currently, the most effective tool for the company is a balanced scorecard that focuses on the consumer's real needs and includes the main components of innovation potential, particularly operational, tactical and strategic measurement. Waal and others proposed to measure the innovations of multinational enterprises by the patent application method and found that most inventions are not related to sustainable development (Waal et al., 2021). Researchers consider it neces-sary to assess the structure of innovation potential in the system of indicators under conditions of uncertainty. In order to adequately assess the results of innovations, it is necessary to consider both the activities of research sectors and the specific scientific needs of the relevant industries and give preference to the control tool. This approach covers a narrow part of the predefined sector and all business sectors. Frolova and others noted that the model of assessing the possibilities of innovative activity of enterprises is multidimensional and is associated with macroeconomic regulators of the national economy, such as the competitiveness of the country, favourable conditions for doing business in the country and innovative activity of enterprises (Frolova et al., 2021). Considering the assessment based on the global GII index, it is noted that the higher the country's innovation potential, the higher the level of innovation activity that contributes to the positive image of enterprises in the world and the attraction of foreign investors. Le has created a mechanism that includes innovative efforts following the activities or characteristics of the business and encourages the company to participate in innovation (Le, 2020). Thus, it can be argued that the innovative actions of startups in developing countries may differ from the creative efforts of Western enterprises, respectively, when assessing the innovative potential, the level of economic development should be taken into account. In addition, it is noted that the measurement of innovation potential for enterprises in developing countries is effective in a mixed approach based on the following structures (a simultaneous combination of indicators related to corporate resources and end-product sales processes): company size, the share of the economy, diversification, requirements of conditions and technological capabilities. Thus, an accurate and comprehensive measurement of innovation potential helps to determine the strategic direction, including the evaluation of new ideas and the allocation of resources and is a source of competitive advantages for enterprises.

Conclusions

The analysis showed that the identified components of the potential innovation structure our research, human resources, material and technical foundations and identifying potential innovative forces characteristic of business development through corporate entrepreneurship. It is proved that the concept of advanced innovative activity of the enterprise has a positive effect on achieving efficiency in the field of economics and management. It is established that many tools are used to assess the innovative potential of an enterprise. Therefore, the company needs to determine innovative approaches' profitability and effectiveness in the market. Most approaches relate to probabilistic and statistical methods that require large data sets, including a generalized and statistical approach, as well as a tree of factors.

An approach based on the rating evaluation method and a balanced scorecard is shown as a variant of evaluation in a group of world indices and monitoring indicators. It is established that the most effective means of measurement, providing a comparison with the components of the innovative potential of the enterprise, is a balanced system of indicators. This tool contains operational, tactical and strategic indicators following the company's innovative concept. In addition, the approach based on global indexes and monitoring is practical and inexpensive for business since it provides the calculation of data verified by international experts and does not require user specialization. Entrepreneurs can use the practical application of the results to develop the innovative potential of the business, provided that the management is ready to increase the innovative potential of their business in the face of fierce competition in a

globalizing world, especially in countries with well-developed corporate governance models and a limited state budget.

References

1. Bourne, M., Kennerley, M., & Franco-Santos, M. (2005). Managing through measures: a study of impact on performance. *Journal of manufacturing technology management*, *16*(4), 373-395. https://doi.org/10.1108/17410380510594480
2. Bousmah, I., (2021). Entrepreneurship in rural Canada: necessity or opportunity driven? Innovation, Science and Economic Development Canada, Ottawa, 1-21. https://ised-isde.canada.ca/site/sme-research-statistics/en/research-reports/entrepreneurship-rural-canada-necessity-or-opportunity-driven
3. Buenechea-Elberdin, M. (2017). Structured literature review about intellectual capital and innovation. *Journal of Intellectual Capital, 18*, 262-285. https://doi.org/10.1108/JIC-07-2016-0069
4. Edvinsson, L., & Malone, M. S. (1997). *Intellectual capital: Realizing your company's true value by finding its hidden brainpower*. Harper Business, New York.
5. Ferreira, J. J., Fernandes, C. I., & Ratten, V. (2017). Entrepreneurship, innovation and competitiveness: what is the connection? *International Journal of Business and Globalisation, 18*(1), 73-95. https://doi.org/10.1504/IJBG.2017.081030
6. Frolova, L., Zhadko, K., Ilyash, O., Yermak, S., & Nosova, T. (2021). Model for opportunities assessment to increase the enterprise innovation activity. *Business: Theory and Practice, 22*(1), 1-11. https://doi.org/10.3846/btp.2021.13273
7. Huseynova, A. D., Salifova, T. S., Alakbarov, E. E., & Abbasova, G. I. (2021). Calculation Method of Innovation Index of Azerbaijan. *Information and innovation*, *16*(2), 42-50. https://doi.org/10.31432/1994-2443-2021-16-2-42-50
8. Kalu, K., & Okafor, O. N. (2021). Programming for immigrant women in Canada: is entrepreneurship neglected?. *International Migration*, *59*(1), 105-125. https://doi.org/10.1111/imig.12724
9. Knubley, J. (2021). *Building Superclusters for Canada*. Brookfield Institute for Innovation+ Entrepreneurship. Toronto: Brookfield Institute.
10. Kultyn, N., & Tsybuliak, A. (2018). Innovation potential of the enterprise: valuation and value management. *Innovations, 3*(233), 106-112.
11. Kuratko, D. F. (2017). *Corporate entrepreneurship & innovation: Today's leadership challenge*. In The Wiley handbook of entrepreneurship: John Wiley & Sons.
12. Le, S. T. K. (2020). Measuring innovation efforts of developing countries: Empirical evidence from Vietnam. *Journal of Innovation Economics & Management*, *33*(3), 163-194. https://doi.org/10.3917/jie.033.0163
13. Ludeke-Freund, F. (2020). Sustainable entrepreneurship, innovation, and business models: Integrative framework and propositions for future research. *Business Strategy and the Environment, 29*(2), 665-681. https://doi.org/10.1002/bse.2396
14. Piperopoulos, P., Wu, J., & Wang, C. (2018). Outward FDI, location choices and innovation performance of emerging market enterprises. *Research Policy, 47*(1), 232-240. https://doi.org/10.1016/j.respol.2017.11.001
15. Valitov, S. M., & Khakimov, A. K. (2015). Innovative potential as a framework of innovative strategy for enterprise development Innovative potential as a framework of innovative strategy for enterprise development. *Procedia Economics and Finance, 24*, 716-721. https://doi.org/10.1016/S2212-5671(15)00682-6
16. Sherifi, I., Andrushchenko, H., Vankovych, D., Solokha, D., Malyshenko, I., & Yavorska, N. (2020). Strategic management of industrial enterprise innovation potential development. *Academy of Strategic Management Journal*, *19*(6), 1-8.
17. Karim Suhag, A., Solangi, S. R., Larik, R. S. A., Lakh, M. K., & Tagar, A. H. (2017). The relationship of innovation with organizational performance. *International Journal of Research-Granthaalayah*, *5*(2), 292-306. https://doi.org/10.5281/zenodo.345736
18. Taques, F. H., López, M. G., Basso, L. F., & Areal, N. (2021). Indicators used to measure service innovation and manufacturing innovation. *Journal of Innovation & Knowledge*, *6*(1), 11-26. https://doi.org/10.1016/j.jik.2019.12.001
19. Terebova, S. (2021). Enterprise innovation potential: structure and valuation. Scientific Works: Institute for Economic Forecasting RAS, 15, 336-354.
20. Waal, J., Thijssens, T., & Maas, K. (2021). The innovative contribution of multinational enterprises to the Sustainable Development Goals. *Journal of Cleaner Production, 285,* 125319 https://doi.org/10.1016/j.jclepro.2020.125319

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