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**VECTOR FORMATION OF THE STRATEGY OF INNOVATIVE DEVELOPMENT OF AGRARIAN ENTERPRISES IN THE CONDITIONS OF EUROPEAN INTEGRATION OF UKRAINE**

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**Introduction.** The main problem of domestic agrarian enterprises lies in the misunderstanding or unwillingness to understand the mandatory compatibility of the general business strategy with the innovative strategy of further development. It should be remembered that strategy is a commitment to a set of coherent, complementary policies or behaviors aimed at achieving a specific competitive goal. Companies regularly devote considerable attention to defining their overall business strategy (scope and positioning) and analyzing how various functions such as marketing, operations management, finance, research and development will support it. However, firms rarely formulate strategies to align their innovation efforts with their business strategies.

Without a real innovation strategy adapted to the potential (production, personnel, resource, financial, other potentials of the firm), efforts to improve innovation can easily turn into a list of widely publicized best practices: dividing research and development into decentralized autonomous teams, creating internal entrepreneurial structures, formation of corporate units of venture capital, introduction of open innovations and crowdsourcing, etc.

A company without an innovation strategy will not be able to make adequate compromise decisions and pay attention to all elements of the innovation system. Copying and implementing someone else's innovative system is not a way out of the situation. There is no one system that works equally well for all companies or works in all circumstances.

**The hypothesis of the scientific research consists** in substantiating methodological recommendations

regarding the vector directions of innovative development of agrarian enterprises in modern conditions of European integration.

**The purpose of the study is** to substantiate the peculiarities of the formation of vector directions of innovative development of agrarian enterprises.

**The methodology of scientific research** is general scientific research methods: comparison, expert analysis, grouping method, systematic approach (regarding the study of approaches and evaluation of the effectiveness of strategic management of an agricultural enterprise); methods of SWOT analysis and construction of matrices (to assess factors affecting the external and internal environment of the company), methods of financial and economic indicators (to assess the effectiveness of strategic management and direct activity of the enterprise under study), method of system analysis, method of logical analysis, economic and statistical methods (to justify the results of the study of the functioning of the agricultural enterprise).

**Conclusions and prospects for further research.**

The theoretical and methodological provisions for managing the innovative development of an agrarian enterprise were formed, taking into account the specifics of innovations in the agrarian sector, understanding the company's opportunities for development and assessing the current state of the application of innovations in the company's activities, as well as an analysis of the general state of the scientific and innovative capacity of the economy and agriculture of Ukraine in particular.

**Keywords:** agrarian enterprises; European integration; innovative development; innovative strategies; development of agrarian enterprises.

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## ФОРМУВАННЯ ВЕКТОРА СТРАТЕГІЇ ІННОВАЦІЙНОГО РОЗВИТКУ АГРАРНИХ ПІДПРИЄМСТВ В УМОВАХ ЄВРОПЕЙСЬКОЇ ІНТЕГРАЦІЇ УКРАЇНИ

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**Вступ.** Основна проблематика вітчизняних аграрних підприємств полягає у нерозумінні або небажанні розуміти обов'язкову взаємоузгодженість загальної бізнес-стратегії із інноваційною стратегією подальшого розвитку. Слід пам'ятати, що стратегія – це зобов'язання щодо набору узгоджених, взаємодоповнювальних політик або поведінки, спрямованих на досягнення конкретної конкурентної мети. Компанії регулярно приділяють значну увагу визначенню власної загальної бізнес-стратегії (сфери діяльності та позиціонування) та аналізу того, як різні функції, такі як маркетинг, операційний менеджмент, фінанси, дослідження і розробки, будуть підтримувати її. Проте фірми рідко формулюють стратегії так, щоб узгодити свої інноваційні зусилля зі своїми бізнес-стратегіями.

Без реальної інноваційної стратегії, адаптованої до потенціалу (виробничого, кадрового, ресурсного, фінансового, інших потенціалів фірми), зусилля з удосконалення інновацій можуть легко перетворитися на список широко розрекламованих найкращих практик: поділ науково-дослідних робіт на децентралізовані автономні команди, створення внутрішніх підприємницьких структур, формування корпоративних підрозділів венчурного капіталу, впровадження відкритих інновацій і краудсорсингу та ін.

Компанія без інноваційної стратегії не зможе приймати адекватні компромісні рішення та звертати увагу на всі елементи інноваційної системи. Копіювати та втілювати чужу інноваційну систему не є виходом із ситуації. Немає жодної системи, яка однаково добре підходить для всіх компаній або працює за будь-яких обставин.

**Гіпотеза** наукового дослідження полягає у обґрунтуванні методичних рекомендацій щодо векторних напрямів інноваційного розвитку аграрних підприємств в сучасних умовах євроінтеграції.

**Метою дослідження** є обґрунтування особливостей формування векторних напрямів інноваційного розвитку аграрних підприємств. **Методологією наукового дослідження** є загальнонаукові методи дослідження: порівняння, експертного аналізу, метод групування, системний підхід (щодо вивчення підходів та оцінки ефективності стратегічного управління сільськогосподарським підприємством); методи SWOT-аналізу та побудови матриць (для оцінки чинників впливу зовнішнього і внутрішнього середовища компанії), методи фінансово-економічних показників (для оцінки ефективності стратегічного управління та безпосередньої діяльності досліджуваного підприємства), метод системного аналізу, метод логічного аналізу, економіко-статистичні методи (для обґрунтування результатів дослідження функціонування аграрного підприємства).

**Висновки та перспективи подальших досліджень.** Сформовано теоретико-методологічні положення управління інноваційним розвитком аграрного підприємства з врахуванням специфіки інновацій в аграрному секторі, розуміння можливостей компанії щодо розвитку та оцінки поточного стану застосування інновацій у діяльності компанії, а також аналіз загального стану науково-інноваційної спроможності економіки та сільського господарства України зокрема.

**Ключові слова:** аграрні підприємства; євроінтеграція; інноваційний розвиток; інноваційні стратегії; розвиток аграрних підприємств.

**Problem statement.** Despite significant investments of time and money in trying to adopt the latest technologies, innovation often remains a frustrating endeavor for many companies. Innovation initiatives often fail, and successful innovators find it difficult to sustain their effectiveness due to a lack or inability to maintain a decent level of innovation capacity. And the reason for this is not always banal: poor performance of assigned tasks. The problem with efforts to introduce or improve innovations is the lack of an innovation strategy (creately.com, 2022).

**Analysis of recent research on the problem** Dynamics of ratings of Ukraine according to the Global Innovation Index (GII), Bloomberg Innovation Index (BII), Global Talent Competitiveness Index (GTCI), European Innovation Scoreboard (EIS)), which show the ability to innovate for 2014–2020, is disappointing and is characterized by the lack of an active policy and significant breakthroughs in the support of innovative activities by both the state and business in general. Currently, labor capital, the indicator of higher education, knowledge and the results of scientific research are the backbone of domestic innovative competitiveness. However, a weak state institutional environment, unfavorable conditions for conducting innovative activities, a complex and burdensome financial and tax system restrain the disclosure of entrepreneurial opportunities, create obstacles for the commercialization of innovations and their impact on GDP growth. Over the past 10 years, Ukraine has remained in the group of countries with below-average income (according to the World Bank grouping of countries) (Pysarenko, et al., 2021).

A negative impact on the reduction in the efficiency of innovative activity was caused by a decrease in costs for development and research, and as a result of this deterioration of the attractiveness of the research system for young scientists, a low level of concentration of researchers, a weak state of development of the innovation infrastructure, a lack of effective ways of state financial support for innovators, problems with the protection of rights on intellectual property, hence low patenting activity, low ability to export goods with high added value and other factors.

According to the Global Innovation Index 2020, Ukraine ranks 45th out of 131 economies in the world in terms of their innovation performance (80 indicators in 7 areas). Such countries as Switzerland, Sweden and the USA topped the ranking of innovative countries. According to the Bloomberg Innovation Index of 2020, Ukraine fell by 10 positions and took 56th place among the 60 analyzed countries. In this rating, the winners were Germany, South Korea and Singapore (www.bloomberg.com, 2020).

There are noticeable problems with the technology of the economy of Ukraine. The technological capability of the economy is understood as the ability to produce products with high added value and further export them as a

result of the use of new technologies, product, marketing, and organizational innovations. If structural changes are successful, then there is a transition from low-tech, labor-intensive types of activities to high-tech ones, which is accompanied by an increase in personnel qualifications. Therefore, it is precisely the high indicator of the specific weight of the medium- and high-tech product in the added value that shows the intensity of the economy's technology with a high level of labor productivity, innovation, and scientific and technical progress.

Unfortunately, Ukraine still remains at the level of medium-low technology activities of enterprises (mainly the domestic economy exports raw materials and goods of a low degree of processing, including agricultural products). The high-tech sector of Ukraine is currently represented by only one Ministry of Foreign Affairs – "Scientific research and development" (Pysarenko, et al., 2021).

**The purpose of the study there is** a study of the formation of a strategy for the innovative development of agricultural enterprises in the conditions of the European integration of Ukraine on the example of AGROINVEST-UA LLC.

**Presentation of the main material** Formation of strategic directions of innovative development of AGROINVEST-UA LLC is preceded by:

- taking into account the specifics of innovations in the agricultural sector;
- understanding of the company's opportunities for development and assessment of the current state of application of innovations in the company's activities;
- analysis of the general state of the scientific and innovative capacity of the economy and agriculture of Ukraine in particular.

Finally, only taking these aspects into account, it is possible to proceed to the formation of the very directions of the innovative development strategy for the enterprise under study.

Thus, the peculiarities of innovations in agriculture are determined by its specificity. First of all, this is explained by the involvement of natural resources in the production process, the need for vectorial direction of innovative activity to support and preserve environmental safety, rational use of natural potential. Also, the innovative process in the agricultural sector is differentiated into economic, organizational, technological, technical, etc., which in one way or another are most often united by a single element - the creation of new, higher-yielding varieties of agricultural crops or biological species. Secondly, based on the fact that agricultural products are the backbone of food security and an element that significantly influences human life expectancy and health, innovative activity in agriculture should ensure the priority of improving the quality and safety of such products by maximally preserving their natural properties (Hanushchak-Iefimenko and Humenna, 2015).

Regarding the possibilities and readiness of AGROINVEST-UA LLC to implement innovative activities and the innovations themselves, there are every reason for this. This is evidenced by the company's financial and economic condition, leading positions on the agricultural production market, and already existing positive examples of the application of innovative technologies.

Thus, the analyzed enterprise is one of the leaders in precision agriculture in Ukraine, which significantly increases the profitability of production. Thanks to the use of satellite images of the field according to the vegetation index of the biomass, homogeneous areas in terms of biomass are quickly and accurately determined, the doses of mineral fertilizers are adjusted in order to reduce the costs of agrochemicals and the burden on the environment. This innovative technology provides:

- accurate selection of zones by biomass, conducting soil and plant nutrition diagnostics and establishing precise doses of nitrogen fertilizers for feeding agricultural crops and carrying out differentiated fertilizer application;
- scientifically based and ecologically safe distribution of nitrogen in the field and increasing the efficiency of fertilizer application up to 25%;
- reduction to a minimum of non-productive losses of nitrogen as a result of leaching into surface water and leaching into groundwater and into the air as a result of denitrification processes.

In addition, equipment is constantly monitored remotely during field work and crop transportation, and special software has been introduced to optimize logistics.

Despite COVID-19 and the war, it was possible to maintain and even slightly increase the amount of spending on research, innovation and development, which in 2021 amounted to UAH 32,140.5 thousand (101.73% compared to the base year of 2020).

As you can see, this company spends a lot of money on innovative activities. The cost structure indicates the general product focus of investments on innovative soil fertility improvements and yield increases, as well as maximum monitoring of fields (in 2021, the share of expenditures for video monitoring of fields with the use of drones increased significantly – the share increased by 10.36% in the total specific weight innovative costs or 3.7 times). That is, most of the innovations relate to the technologies of the company's production activities. Regarding innovative changes in the conduct of internal business processes and the company's management system, no changes have been observed so far (expenses are not foreseen during the analyzed period).

So, it can be concluded that, in general, AGROINVEST-UA LLC has a favorable innovative microclimate and is engaged in innovative activities. Understanding the current state of the scientific and innovative capacity of the domestic economy is important for the formation of the directions of the

innovative strategy of the analyzed enterprise. It is very difficult to be ahead of competitors and try to create new ideas for products or technologies when the level of development of science and technology in the territory of economic activity is extremely low. And unfortunately, compared to other countries, Ukraine occupies an unsatisfactory position.

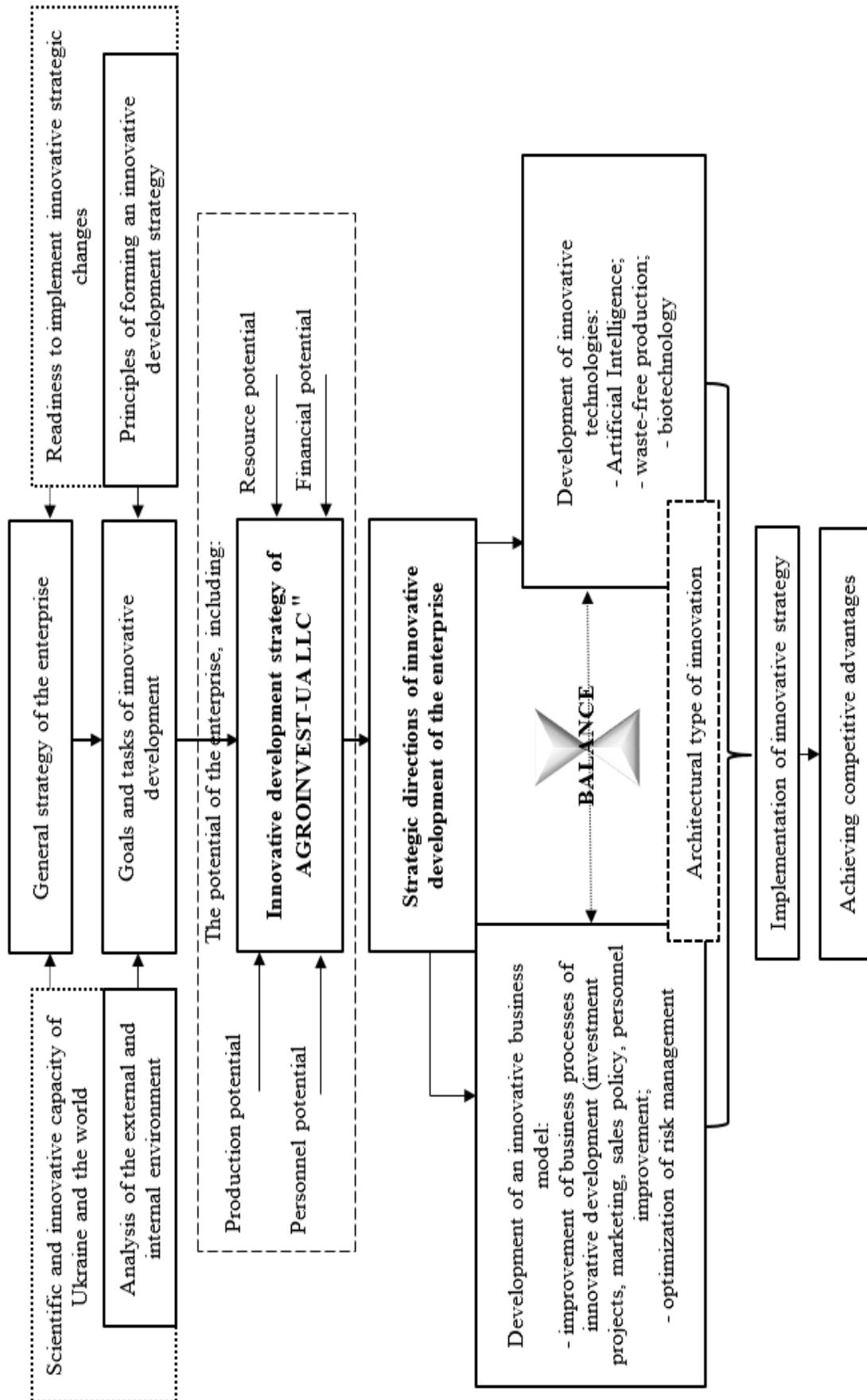
Therefore, when making a decision on the choice of optimal directions for the formation of an innovative development strategy, a contradiction arises: on the one hand, an enterprise without state support is ready to continue implementing innovation policy, on the other hand, the low level of scientific and innovative state of the domestic economy will inhibit this process.

In order to reduce the influence of negative factors of the external environment, AGROINVEST-UA LLC should approach the strategic management of the company more thoughtfully and, in particular, the formation of a clear, adequate to real conditions innovative development strategy. Therefore, the proposed conceptual principles of the formation of the innovative development strategy of AGROINVEST-UA LLC are shown in Fig. 1.

The development of an innovative strategy is preceded by the generation and clear understanding of the general strategy of enterprise management. Next, the external and internal environment of the organization and the real readiness of the company for innovative implementations are analyzed. At the same time, the principles of forming an innovative development strategy are taken into account, including: systematicity, complexity, dynamism, adaptability, flexibility of response, purposefulness, information support, orientation to the innovative path of development (Palmer and Kaplan, 2017).

The development of an innovative strategy must begin with an understanding of the primary reason for its development or the goals that the company wants to achieve through its implementation. Taking into account the specifics of AGROINVEST-UA LLC's activities, these may be the following goals:

- increasing the level of labor productivity by adjusting working conditions and improving business processes of personnel policy;
- rationalization of the structure of cultivated areas (in the next three years, the company will focus its activities on the cultivation of corn and sunflower (including high-oleic crops), as the most popular and profitable);
- achievement of record high productivity indicators, and above all of sunflower;
- preservation of leading positions on the market;
- obtaining the most stable profit in the short- and long-term periods;
- creating a positive image and increasing business reputation in the regions of presence;
- support for environmental sustainability and environmental initiatives.



Source: author's development.

Fig. 1. Conceptual principles of the formation of the innovative development strategy of "AGROINVEST-UA" LLC

The main problem of domestic agrarian enterprises lies in the misunderstanding or unwillingness to understand the mandatory compatibility of the general business strategy with the innovative strategy of further development.

Of course, there is nothing wrong with learning from others, but it is a mistake to believe that what works for, say, MHP (a large Ukrainian agricultural holding) will work just as well for AGROINVEST-UA LLC. Precisely a clear innovation strategy helps to develop such a unique system in accordance with the specific competitive needs of the company.

Without an innovation strategy, different parts of the organization can easily pursue conflicting priorities, even if there is a clear business strategy (Hanushchak-Iefimenko and Humenna, 2015).

Analysis of the direction of investments in innovative activity showed that AGROINVEST-UA LLC mainly invests in the development of innovative technologies, neglecting the innovative business model. This led to a loss of normal financial stability in the analyzed period, which is currently improving, but has not yet reached the recommended level.

Therefore, when developing strategic directions of innovative of the company under study, two should be highlighted:

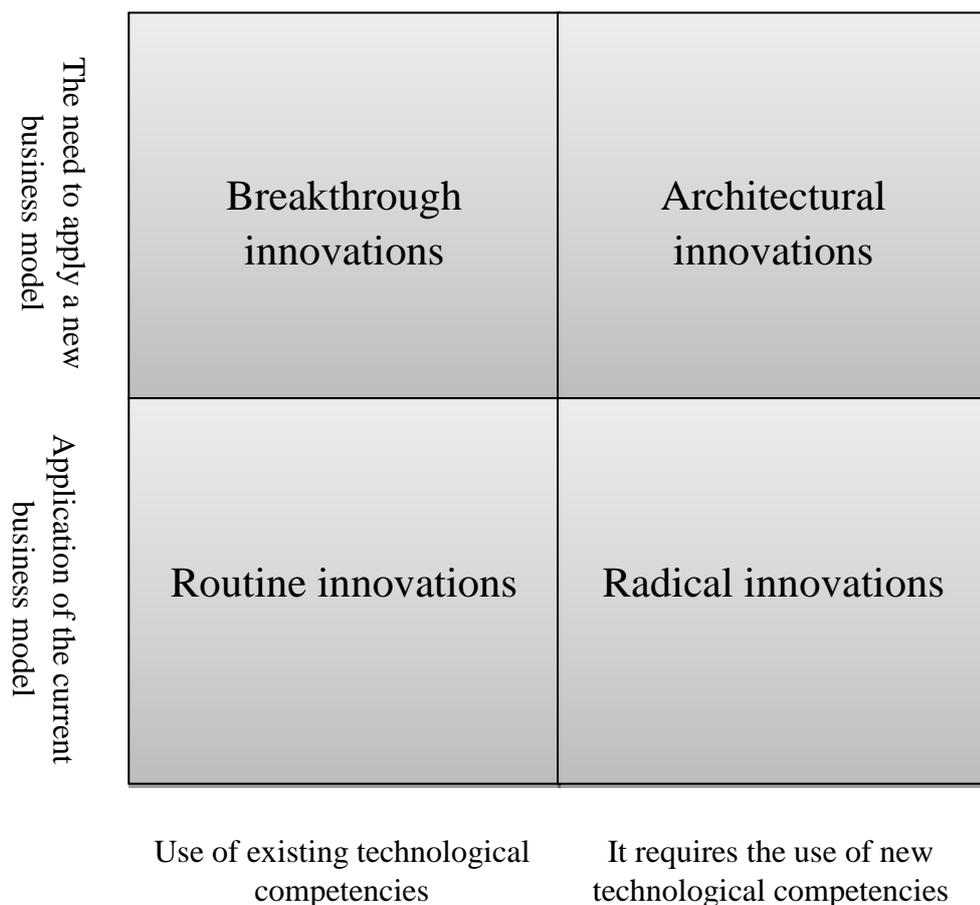
- on the one hand, this is the improvement of internal business processes and, ultimately, the development of an innovative business model;

- on the other hand, it is the definition and implementation of information technology solutions (which are currently actively produced by the company) in the direction of artificial intelligence, the Internet of Things, biotechnologies of growing the best varieties and creating hybrids of these varieties of plants, the use of UAVs in economic activities, etc.).

And if everything is fine with the second direction, then more attention should be paid to the first, otherwise the company may find itself in a situation where it has technologies, but competitors also have them, but it may happen that the competitor's management of strategic business processes turns out to be more perfect and therefore, the analyzed company's competitive advantages will be lost. Therefore, the balance in the development of the two directions in the extreme case for the long-term perspective is obvious.

Of course, technological innovation creates enormous economic value and drives competitive advantage. But some important innovations may have little to do with new technologies. Over the past few decades, there are a number of agricultural companies (eg, Cargill, Archer-Daniels-Midland Company, Bayer) that have mastered the art of business model innovation. Thus, when thinking about innovation opportunities, AGROINVEST-UA LLC has a choice about how much of its efforts to focus on technological innovation.

Another important point in forming the vectors of innovative development of AGROINVEST-UA LLC is understanding which types of innovations to give priority to. A convenient way to visualize for further selection of the desired type of innovation is the "Innovation Landscape Map". A map proposed by Harvard Business School professor Harry Pisano that characterizes innovation along two dimensions: the extent to which it involves changes in technology and the extent to which it involves a change in the business model. Although each dimension exists on a continuum, together they offer four quadrants or categories of innovation (Figure 2).



Source: built by the author on the basis of (Palmer and Kaplan, 2017; Pisano, 2015).

**Fig. 2. Innovation landscape map for AGROINVEST-UA LLC**

Everyday or routine innovations are based on the company's existing technological capabilities and fit with its existing business model and therefore its customer base. An example is the use of GIS systems on cultivated fields by the researched company, the practice of deep fertilization.

Disruptive innovation requires a new business model, but not necessarily a technological breakthrough. For this reason, such innovations are able to

challenge or destroy the business models of competitors. For example, improving the business process of growing corn and sunflowers due to the NO-Till method (tillage technology), which involves farming where there is no soil cultivation at all, and plant residues (wheat, corn, barley stalks) are left chopped on it.

Radical innovation is the polar opposite of breakthrough innovation. The problem here is purely technological. An example of this is the emergence of genetic engineering and biotechnology back in the 1970s and 1980s as an approach to drug discovery. And now biotechnologies perfectly fit into the business model of improving the quality of food products, finding new hybrids of crop varieties, etc. These innovations involve a complete redesign of the company's business model (reengineering of business processes) and the technologies used by it.

Architectural innovation combines technological and business models. An example of the application of this type of innovation is the creation and entry of "AGROINVEST-UA" LLC into the "DigitalAgriBusiness" project (intelligent management system and process optimization technology), which was developed by the Kernel agricultural holding. These are the most difficult to implement, but the most interesting from the point of view of the long-term profitability of the innovation. Therefore, in the system of building innovative directions of development of the enterprise under study, we advise you to use them.

**Research Findings and Prospects.** Therefore, for "AGROINVEST-UA" LLC, based on its real potential and readiness to implement innovations, as well as taking into account the situation of the Ukrainian agricultural market, it is appropriate to use the following directions of forming an innovative development strategy as an optimal combination (balance) of an innovative business model aimed at on the improvement of business processes of innovative development, first of all, and innovative technological developments and competencies.

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