SCIENTIFIC HORIZONS

Journal homepage: https://sciencehorizon.com.ua
Scientific Horizons, 28(6), 180-192

UDC 347.77:631.1
DOI: 10.48077/scihor6.2025.180

Global approaches to evaluation of intellectual assets in agriculture: Experience of leading countries in context of the Republic of Azerbaijan

Damet Bagirov
Professor
Baku Engineering University
AZ0101, 120 Hasan Aliyev Str., Baku, Azerbaijan
https://orcid.org/0000-0002-7213-2972
Gabil Manafov
Doctor of Economic Sciences, Professor
Azerbaijan State University of Economics
AZ1001, 6 Istiqlaliyyat Str., Baku, Azerbaijan
https://orcid.org/0000-0003-1152-6211
Mubariz Bagirov
Professor
Azerbaijan State University of Economics
AZ1001, 6 Istiqlaliyyat Str., Baku, Azerbaijan
https://orcid.org/0000-0001-8898-8065
Nusret Babayev*
Senior Lecturer
Azerbaijan State University of Economics
AZ1001, 6 Istiqlaliyyat Str., Baku, Azerbaijan
https://orcid.org/0000-0001-8827-3617
Gultakin Mammadova
PhD in Economic Sciences, Associate Professor
Azerbaijan State University of Economics
AZ1001, 6 Istiqlaliyyat Str., Baku, Azerbaijan
https://orcid.org/0000-0001-8473-3460

Article's History:
Received: 14.11.2024
Revised: 04.05.2025
Accepted: 28.05.2025

Abstract. The study aimed to analyse global approaches to the valuation of intellectual property assets in agricultural production and the adaptation to the conditions of the Republic of Azerbaijan. The methodology included a comparative analysis of the practices of the United States of America, Germany, Switzerland and the People's Republic of China, as well as a detailed study of the activities of agricultural companies John Deere, Bayer CropScience, Syngenta, COFCO Group and Azersun Holding. Data

Suggested Citation:
Bagirov, D., Manafov, G., Bagirov, M., Babayev, N., & Mammadova, G. (2025). Global approaches to evaluation of intellectual assets in agriculture: Experience of leading countries in context of the Republic of Azerbaijan. *Scientific Horizons*, 28(6), 180-192. doi: 10.48077/scihor6.2025.180.

*Corresponding author

from financial reports, analytics from the World Intellectual Property Organisation, the Organisation for Economic Cooperation and Development, and calculations performed in IBM SPSS Statistics version 27 were used. The results demonstrated that the United States of America uses an income approach with a focus on patents and biotechnology, Germany uses a cost approach to value licences and trademarks, the People's Republic of China uses a comparative approach to value digital platforms and artificial intelligence, and Switzerland uses a hybrid approach. The correlation analysis revealed a high correlation between investment in research and development (R&D) and the number of patents (r = 0.82), which confirmed the impact of investment on the accumulation of intellectual assets. Brand value showed the highest correlation with revenue (r = 0.96) and net profit (r = 0.94). The highest value of intellectual assets in 2024 was found in COFCO Group (USD 15.6 billion), which generated revenue of 130 billion USD. In Azerbaijan, Azersun Holding uses cost and comparative methods due to limited international patent protection and an underdeveloped licensing market. The findings confirmed the key role of intellectual assets and brand value in ensuring the financial sustainability of the agricultural sector

Keywords: patent portfolio; economic priorities; income method; cost method; comparative method; agricultural sector

INTRODUCTION

Intellectual assets in agriculture are becoming increasingly important in the context of global competition and rapid technological progress. These include patents, technologies, breeding achievements, trademarks and other intellectual property objects that ensure innovative development and economic sustainability of the agricultural sector. Effective management of intellectual assets is particularly relevant for countries with economies in transition, such as the Republic of Azerbaijan, undergoing active economic restructuring and seeking to diversify sources of income. In addition, in the context of an underdeveloped intellectual property market and limited law enforcement practices, it is necessary to introduce modern valuation methods to stimulate investment in innovation and enhance the competitiveness of national companies in the international arena. Given the diversity of intellectual asset valuation methods and differences in institutional and economic conditions, it is necessary to adapt the international experience to achieve maximum returns from innovation.

Profitable methods for assessing the intellectual assets of US farmers were studied by J. Xu and Y. Zhang (2021), and Y. Liu *et al.* (2021). J. Xu and Y. Zhang emphasised that these methods are widely used to evaluate precision farming technologies, such as automated irrigation control systems and crop monitoring drones. Their use has increased farm incomes by 15-20% due to the effective commercialisation of intellectual property. However, the study noted that the successful application of revenue-generating methods requires a developed institutional infrastructure and a high degree of commercialisation, which limits their applicability in countries with limited investment opportunities, such as Azerbaijan. Y. Liu *et al.* showed that income-based valuation methods also contributed to a 20% increase in farmland productivity, a 25% reduction in fertiliser and irrigation costs, and a 15% reduction in carbon dioxide emissions. However, their study did not address the specifics of countries with seasonal agriculture, where seasonality and limited funding could reduce the efficiency of intellectual asset management.

S. Pishgar-Komleh *et al.* (2021) analysed the use of market-based methods of valuation of intellectual assets to assess breeding achievements in the EU and demonstrated improved determination of the market value of intellectual assets, facilitating their integration into international projects. One example of successful use was the introduction of breeding achievements into projects to increase grain yields by 18%. However, the study did not address the issues of adapting these methods to the conditions of developing countries, where intellectual property protection is still in its infancy. L. Zeynalli *et al.* (2022) noted that market-based methods have actively contributed to the development of breeding achievements, ensuring a balance between local characteristics and the international potential of intellectual assets. For instance, programmes to introduce drought-tolerant plant varieties have led to a 12% increase in yields in Southern Europe. However, the study did not address the standardisation of market-based methods, which could limit their adaptation in emerging economies.

Cost-based methods of valuation of intellectual assets have often been used in China due to simplicity and affordability for small and medium-sized businesses. K. Pawlak *et al.* (2021) noted that such methods provide minimal data collection and analytical processing costs, therefore convenient for small agricultural enterprises. The study demonstrated that cost-based approaches can be used for the valuation of intellectual assets with an accuracy of up to 12%, which is sufficient for use in local economic calculations. However, such methods did not incorporate the market potential of the assets, which limited their application in the long term. The effectiveness of cost-based methods has been confirmed in the example of agricultural engineering in China. A. Valiyev *et al.* (2022) analysed the use of cost-based methods for valuing intellectual assets in small

and medium-sized enterprises and showed that such approaches reduced costs by 30%, therefore more affordable for local businesses. However, the limitations include the value of intellectual assets only on costs incurred, without future market returns, such as possible revenues from technology commercialisation or licensing agreements. This causes an underestimation of the real value of the assets, especially in a dynamic market where intellectual property can significantly increase a company's capitalisation.

From the perspective of institutional transformation, the creation of national platforms for intellectual property management is an important step towards the efficient use of intellectual assets. M. Campi and A. Nuvolari (2020) and M. Zhang *et al.* (2023) noted that national platforms contribute to the standardisation of valuation methods, improved monitoring and interaction between market participants. An example of the successful implementation of such initiatives is the German national programme "SIGNO Die Neue Initiative des BMWi" (2025), which increased the number of licences, patents and technology transfer agreements by 25% in five years (Fraunhofer, 2014). In this context, the commercialisation rate reflects the share of intellectual assets (patents, know-how, licences) that have been successfully implemented in production processes or transferred to third parties for economic benefit. However, the recommendations do not sufficiently address the specifics of transition economies, where more attention is required to financing and regulatory frameworks.

The study aimed to conduct a comparative analysis of the methods of intellectual assets valuation used in the agricultural sector of the USA, EU, China and other countries, as well as to develop adapted recommendations for their application in the Republic of Azerbaijan. Research tasks included studying the methods of intellectual assets valuation in different countries, identifying strengths and weaknesses, and analysing the impact on the economic sustainability of agricultural companies (incorporating market share, speed of innovation and profitability).

MATERIALS AND METHODS

The study was conducted in 2024 and included an analysis of global approaches to the valuation of intellectual assets in agriculture based on the experience of leading countries and their adaptation to the conditions of the Republic of Azerbaijan. The empirical basis was the Comprehensive Report on the work done by the Intellectual Property Agency of the Republic of Azerbaijan in 2024 (2024), data from the World Intellectual Property Organisation (2024), Organisation for Economic Co-operation and Development (2024; 2025), World Bank (n.d.), as well as data from leading agricultural companies. The study object was intellectual assets in the agricultural sector, including patents, copyrights, trademarks, know-how, databases and other intangible assets that affect the innovative potential of agriculture. Global practices of intellectual property valuation in countries with developed agricultural sectors, including the USA, Germany, Switzerland and China, were analysed.

Companies with different intangible asset management strategies were selected to analyse the methods of intellectual asset valuation. In John Deere (2024) (USA), the company's brand, innovation potential, patent portfolio and precision farming software were evaluated. The brand was assessed based on data from Brand Finance (n.d.) and the company's annual financial statements, which included information on the value of trademarks and reputational capital. John Deere's intellectual capital was also assessed based on the value of internal development and software licensing. Bayer (2022; 2024; 2025) (Germany) analysed the processes of commercialisation of biotechnological solutions, valuation of intangible assets in the form of genetically modified crops, licensing of technologies and trademarks. The sources of data were the company's annual reports and the Organisation for Economic Co-operation and Development (2024) iLibrary database containing analytical materials on the commercialisation of intellectual property.

Syngenta (n.d.; 2025) (Switzerland) was studied in the context of a comprehensive valuation of intellectual assets, including rights to chemical compounds, technology protection, biotechnology licensing and trademark valuation. The data was obtained from the company's financial statements. COFCO INTL (2024) (China) was analysed in terms of digital intellectual assets, including agribusiness software, platform solutions and databases. The assessment was based on the reports of the China National Intellectual Property Administration (n.d.) and the company's financial statements. The methods of valuation of intellectual assets in Azerbaijan were analysed on the example of Azersun Holding (2023), one of the largest agro-industrial holdings in the country. The valuation of the company's intellectual property included trademarks, technological know-how, copyrights for production processes and innovative solutions in the food industry. The information was collected from the company's official reports and the Comprehensive Report on the work done by the Intellectual Property Agency of the Republic of Azerbaijan in 2024 (2024).

The methods used to value intellectual assets included three main approaches:

- the income approach, based on an analysis of future cash flows from the use of intangible assets;
- the cost approach, which estimates the cost of creating and maintaining intellectual property;
- the comparative approach, which enables determination of asset value based on similar transactions and companies in the industry.

The calculations were based on the financial statements of the companies studied, information on the market value of patents and technologies from the Organisation for Economic Co-operation and Development iLibrary, and analytical reports by the World Bank. Statistical data processing was conducted using IBM SPSS Statistics (n.d.) (version 27). The correlation analysis was based on the Pearson coefficient calculated between the following pairs of indicators: number of patents, brand value (USD billion), number of licences, research and development (R&D) investments (USD billion), revenue (USD billion), EBITDA (USD billion) and net profit (USD billion). All indicators were obtained from the reports of the World Intellectual Property Organisation, the Organisation for Economic Co-operation and Development and financial data of the companies. The significance level was set at $p < 0.05$.

RESULTS

The valuation of intellectual assets in the agricultural sector varies significantly between countries, due to their economic priorities, level of technological development and legal systems (Table 1). In the United States, the predominant valuation method is the income approach, which is based on projected future income from the use of intellectual assets, such as patents for agricultural technologies and biotechnology developments. This is due to the high level of commercialisation of innovations and the country's developed intellectual property protection system. In Germany, the cost method is preferred, focusing on the analysis of investments required to create and maintain intellectual assets. This approach is driven by an emphasis on accurate estimation of R&D costs and a desire for transparency in investment in innovation. In China, the comparative method is widely used, where the value of intellectual assets is determined by analysing market transactions with similar technologies. This reflects the dynamic development of the market and the active borrowing of advanced technologies. Switzerland uses a hybrid approach that combines elements of all three methods to incorporate the diversity of intellectual assets, especially in the areas of digital technologies and precision agriculture.

***Table 1**. Approaches to intellectual asset valuation in developed countries*

Country	Evaluation method used	The main object of evaluation
USA	Profitable	Patents, biotechnology
Germany	Costly	Licences, know-how, trademarks
China	Comparative	Platform solutions, databases
Switzerland	Hybrid	Digital technologies, precision farming systems

***Source:** compiled by the authors based on World Bank (n.d.), World Intellectual Property Organisation (2024), Organisation for Economic Co-operation and Development (2025)*

The main objects of valuation of intellectual assets in these countries vary depending on national priorities and the level of technological development. In the US, the emphasis is on patents and biotechnology, reflecting the country's leadership in agricultural innovation (John Deere, 2024). In Germany, significant attention is paid to licences, know-how and trademarks, due to its developed industrial base and emphasis on product quality. In China, with its rapidly growing digital economy, platform solutions and databases are key objects of assessment (COFCO INTL, 2024). Switzerland, known for its advanced agricultural technologies, focuses on the evaluation of digital technologies and precision farming systems. These approaches and objects of assessment reflect the strategic priorities of each country in the field of agriculture and innovation, as well as their desire to effectively manage and capitalise on their intellectual resources. Large-cap agricultural companies, such as John Deere (USA), Bayer CropScience (Germany), Syngenta (Switzerland) and COFCO Group (China), apply different strategies for managing intellectual assets, which depend on their market positions, industry specialisation and available valuation methods (Table 2). Their approaches shape not only the internal economics of companies but also influence global trends in the management of intangible assets in agriculture.

***Table 2**. Intellectual assets of agricultural companies, 2024*

Company	Evaluation method used	The main object of evaluation	Estimated value of intellectual assets (USD billion)	Share of intellectual assets in total capital (%)
John Deere	Profitable	Software, patents, licences	9.1	35%
Bayer CropScience	Costly	Biotechnology, GMO crops, trademarks	7.5	30%
Syngenta	Hybrid	Chemicals, licences, biotechnology	4.8	25%

Table 2. Continued

Company	Evaluation method used	The main object of evaluation	Estimated value of intellectual assets (USD billion)	Share of intellectual assets in total capital (%)
COFCO Group	Comparative	Digital platforms, databases, artificial intelligence	15.6	40%

Source: *compiled by the authors based on Brand Finance (n.d.), World Intellectual Property Organisation (2024), Organisation for Economic Co-operation and Development (2025), financial reports of John Deere (2024), Bayer (2024), Syngenta (2025), COFCO INTL (2024)*

John Deere (2024) is a global leader in the development of agricultural equipment and digital solutions for precision farming. The company's key intellectual assets include patents, software, licensed technologies and brands. John Deere uses the income approach to valuation, which takes into account future cash flows from intellectual property. In 2023, the value of the John Deere brand was USD 9.1 billion, and the capitalisation of the company's intangible assets was estimated at 35% of total capital (Table 3). More than 70% of all the company's innovations are protected by patents, which provides income for John Deere by licensing technologies for agriculture automation.

Table 3*. Financial and intellectual indicators of the companies under study, 2024*

Company	Patents (pcs.)	Brand value (billion USD)	Licences (pcs.)	Investments in R&D (USD billion)	Profit (billion USD)	EBITDA (billion USD)	Net profit (billion USD)
John Deere	250	9.1	80	5	44	6.2	2.9
Bayer CropScience	180	7.5	120	5.3	50.5	8.1	3.6
Syngenta	150	4.8	95	1.7	26.2	4.5	1.9
COFCO Group	90	15.6	60	3.2	130	38.4	10.5
Azersun Holding	30	0.25	10	0.012	2.4	0.35	0.18

Source: *compiled by the authors based on Brand Finance (n.d.), Azersun Holding (2023), World Intellectual Property Organisation (2024), financial reports of John Deere (2024), COFCO INTL (2024), Bayer (2024), Organisation for Economic Co-operation and Development (2025), Syngenta (2025)*

Bayer CropScience prioritises the development of biotechnology, genetically modified crops and crop protection products. Unlike John Deere, the company uses a cost-based approach, as its key assets are tied to long-term investments in research and development of new products. This maintained the leadership role of Bayer CropScience in the industry and provided innovative solutions for agriculture. In 2022, Bayer (2024) spent 5.3 billion EUR on R&D, 12.7% of the company's total turnover. These investments are aimed at developing new crop varieties with high yields, resistant to adverse climatic conditions and pests. In addition, the company is actively developing digital crop monitoring technologies and integrated agronomic process management systems. The patent portfolio of Bayer CropScience includes more than 7,500 active patents, which demonstrates the company's high innovation activity. The estimated value of Bayer CropScience's intellectual assets exceeds USD 7.5 billion, which confirms the strategic importance of R&D in its business model. In addition to patents, the company actively cooperates with leading research institutes, universities and start-ups, which helps to speed up the process of introducing new developments and expand their scope.

Syngenta (2025) employed a hybrid approach, combining income and cost methods. The company's main intellectual assets are chemical compounds, biotechnology licences and trademarks. This diversification of assets not only developed new products but also generate revenue from licensing technologies. In 2023, the value of Syngenta's patent portfolio was USD 4.8 billion and R&D expenditures were USD 1.7 billion. Licensing of chemical crop protection technologies brings Syngenta a significant royalty stream, which explains the use of the combined valuation method. It reduces financial risks associated with long-term investments in the development of new chemical compounds. In addition, Syngenta is actively developing precision farming technologies by offering digital platforms for managing agricultural processes. These platforms provide farmers with analytics based on artificial intelligence and satellite monitoring data, optimising the use of fertilisers, pesticides and other resources.

As a technology giant, COFCO INTL (2024) is actively investing in digital platforms, databases and artificial intelligence for agriculture. Unlike other companies, COFCO Group uses the comparative method to value its intangible assets based on market analogues. This ensures quick adaptation to changes in the market and effectively capitalises on its developments. In 2023, the capitalisation of the company's intellectual property totalled 15.6 billion USD, equivalent to 40% of the total

market value of COFCO Group. One of COFCO Group's key activities in the agricultural sector is the development of intelligent supply chain management systems that use machine learning to forecast demand and optimise logistics. The company is also investing in e-commerce platforms that provides direct interaction with consumers, reducing intermediary costs. In addition, COFCO Group is actively developing big data solutions to help farmers analyse climate conditions, predict yields and improve agricultural production efficiency.

Thus, companies apply the methods of valuation of intellectual assets that best suit the strategy for commercialising intangible assets. John Deere prioritises generation of revenue from patents and software, Bayer (2022) evaluated assets according to costs as it develops long-term R&D investments, Syngenta uses a balance of cost and income approaches, and COFCO Group bases its valuation on the market value of digital assets. These models reflect not only business specifics but also global trends in intellectual property management in the agricultural sector. Azersun Holding (2023), being one of the largest agro-industrial companies in Azerbaijan, owns a significant amount of intellectual assets, which form an important component of the overall value of the business. The holding's intellectual property is represented in several key categories: trademarks, technological know-how, copyrights to production processes, licences and patents. The largest share in the structure of intellectual assets is occupied by trademarks, which provide competitive advantages in the domestic and foreign markets. According to the State Agency for Intellectual Property of Azerbaijan, the company has registered more than 150 trademarks (Comprehensive Report on..., 2024). The market value of Azersun Holding's brands is estimated at USD 250 million, which is equivalent to approximately 15% of the company's total capitalisation (Organisation for Economic Co-operation and Development, 2025).

Technological know-how includes developments in the field of multi-stage processing of agricultural raw materials, eco-friendly packaging methods and automated product quality control lines. The value of these assets, according to the company's internal sources and open data, is at least 40 million USD. However, the limited international patent protection reduces the possibility of their capitalisation in foreign markets. Azersun Holding's copyrights for production processes and internal innovations (2023) are estimated at approximately 15 million USD and cover technological operation algorithms, recipes and quality standards used at the holding's production facilities. Azersun Holding's portfolio of licences and patents includes approximately 10 licences and 30 patents, registered mainly in Azerbaijan. Their total value is estimated at USD 10 million, reflecting limited commercial application outside the domestic market. Overall, the total value of Azersun Holding's intellectual assets is approximately USD 315 million. This accounts for about 20% of the company's total asset value, according to analytical reports and market data from the World Bank (n.d.), which is a significant indicator of Azerbaijan's agro-industrial sector. The high share of intangible assets is explained by the diversified business structure of the holding and its focus on creating added value through branded products and proprietary technologies. The company also owns valuable technological know-how related to innovative methods of processing agricultural products, such as optimising heat treatment to preserve nutritional properties, a multi-stage cleaning and filtration system for food raw materials, and automated packaging lines using environmentally friendly materials. These technologies enable significant improvements in product quality and safety, reduce production costs and extend the shelf life of finished products.

All these technological solutions are protected by copyrights and registered patents at the national level. However, according to the World Intellectual Property Organisation (2024), Azersun Holding's patent portfolio is significantly inferior in terms of volume and coverage to similar indicators of international corporations. The reason for this is that most of the company's patents are registered exclusively in Azerbaijan and do not have international legal force, as there is no filing under international systems such as the Patent Cooperation Treaty or with patent offices of other countries. This restriction significantly reduces the possibilities of commercial use of these technologies outside Azerbaijan. Patents valid only at the national level do not provide legal protection in other jurisdictions, making international licensing or sale of technologies legally and economically difficult. This has a direct impact on the valuation methods of a company's intellectual assets: the use of the income approach becomes impossible, as the calculation of future flows from international licensing or sale of patents is not realistic. As a result, the value of these assets in the valuation is significantly lower compared to their internationally protected counterparts, as their market potential is limited to the domestic market.

In the assessment of intellectual property, Azersun Holding applies the cost method, which determined the value of assets based on investments in their development, maintenance and adaptation to market conditions. According to the World Bank (n.d.), the company's annual investment in the development of new technologies is about USD 12 million, which is equivalent to 8% of total production costs. This approach incorporates the actual costs of creating intellectual assets but does not reflect their future market value. In addition, Azersun Holding uses the comparative method to determine the market value of trademarks and brands based on the analysis of similar transactions in the region. This method is most effective when the company's intellectual assets are not related to patents but

rather to brand recognition and reputation. In contrast to the leading international corporations, Azersun Holding does not use the income method, as its intellectual property is practically not licensed internationally, and the company's main income is generated through direct sales of products rather than through the capitalisation of intellectual assets. There are several reasons for this situation. Firstly, Azerbaijan lacks a developed intellectual property licensing market, especially in the agricultural sector, which limits the possibilities of commercialising technologies outside the country (Comprehensive Report on..., 2024). Second, the predominance of trademarks and production know-how in the company's asset structure, which is used exclusively within the holding, makes it economically unreasonable to calculate future income from their external transfer. Thirdly, Azersun Holding operates primarily in the domestic and regional markets, where the demand for licensed technologies is limited and government support for the commercialisation of intellectual assets is at an early stage of development. As a result, the use of the income method of valuation, which involves the calculation of future cash flows from the sale of rights to intellectual assets, is inefficient for the company in the current environment and does not reflect the real structure of its income.

The valuation of intellectual assets in the agricultural sector of Azerbaijan differs significantly from the practices used in the world's leading economies. In the United States and the European Union, intellectual property is viewed as a strategic resource that actively contributes to revenue generation through licensing and commercialisation of innovations. In Azerbaijan, however, the valuation of intellectual assets is primarily of an accounting nature, aimed at fixing the value rather than extracting profit from patents and licences. One of the key differences is the limited number of tools for commercialising intellectual assets. In the European Union and the United States, patent and know-how licensing mechanisms are widespread, generating income from developments without the need to production implementation (Mamasydykov *et al.*, 2019). In Azerbaijan, the practice of licensing intellectual property is underdeveloped; most developments are used exclusively within companies, which limits the application of the income approach to valuation. Institutional support also plays an important role in managing intellectual assets. Developed countries have government programmes aimed at funding research, protecting patents and creating innovation ecosystems (Hajiyev *et al.*, 2025). For instance, in Germany, there are specialised funds that support the commercialisation of intellectual assets, which stimulates investment in this sector. In Azerbaijan, despite the existence of the State Agency for Intellectual Property, systemic support for the commercialisation of patents and technological innovations is at an early stage, which reduces business interest in building a significant portfolio of intangible assets.

The digitalisation of intellectual property valuation and turnover is another distinguishing factor (Radchenko *et al.*, 2023). In countries such as China and the United States, online platforms for the sale and licensing of intellectual assets are actively developing, objectively assessing the market value of patents, software and know-how. In Azerbaijan, such digital platforms are practically non-existent, which makes it difficult to apply a comparative valuation method and limits the ability of companies to commercialise their developments. Comparison of national experience with international practices shows that traditional cost-based approaches to the valuation of intellectual assets prevail in Azerbaijan, while in developed economies (the USA, Germany, Switzerland) the emphasis is on intellectual property capitalisation tools. This creates certain barriers to the growth of intangible assets in the agricultural sector and limits their integration into the market turnover. The results of the correlation analysis revealed that intellectual assets have a significant impact on the financial performance of agricultural companies, but the degree of this impact depends on the specific type of asset (Table 4). One of the most significant factors was the amount of investment in R&D, which demonstrates a high correlation with the number of patents (r = 0.82) and licences (r = 0.75). This confirms that companies that systematically invest heavily in innovation have larger patent portfolios and actively use licensing to commercialise their technologies. For example, Bayer CropScience, which annually invests 5.3 billion EUR in R&D, has registered 180 patents and 120 licences, making it one of the leading companies in terms of intellectual assets in the agricultural sector.

***Table 4**. Correlation matrix of intellectual assets and financial indicators (averages for all countries surveyed), 2024*

Metric	Patents (pcs.)	Brand value (billion USD)	Licences (pcs.)	Investments in R&D (USD billion)	Profit (billion USD)	EBITDA (billion USD)	Net profit (billion USD)
Patents	1.000	0.28	0.74	0.82	0.02	-0.17	-0.04
Brand value	0.28	1.000	0.32	0.59	0.96	0.89	0.94
Licences	0.74	0.32	1.000	0.75	0.17	0	0.12
R&D investments	0.82	0.59	0.75	1.000	0.41	0.21	0.35
Profit	0.02	0.96	0.17	0.41	1.000	0.97	0.99

***Source:** compiled by the authors based on calculations made in IBM SPSS Statistics (n.d.)*

An equally important factor was brand value, which has a strong positive relationship with revenue (r=0.96) and net profit (r = 0.94). This suggests that a company's recognition and reputation in the market are directly related to its financial performance. The most illustrative example is COFCO INTL (2024), whose brand is valued at 15.6 billion USD, which provides the company with a stable position in the global market and revenue of 130 billion USD. This dependence is explained by the fact that well-known companies attract more customers, can set higher prices for their products and provide more favourable conditions for cooperation with partners. However, despite the high level of patent activity in some companies, the presence of many patents does not always lead to an immediate increase in profits. The correlation of the patent portfolio with EBITDA was negative (r = -0.17), and with net profit was almost zero (r = -0.04). This indicates that the process of introducing patented technologies requires significant time and financial costs. For example, Syngenta, which holds 150 patents, demonstrates a relatively low net profit of USD 1.9 billion, due to the long cycle of bringing new products to market and the need to conduct extensive testing before commercialisation.

The number of licences also demonstrated a strong relationship with R&D investment (r = 0.75), but a weak relationship with revenue (r = 0.17). This suggests that although licensing is an important tool for commercialising intellectual assets, not all companies effectively use this mechanism to increase their revenues. Azersun Holding, which has 10 licences, does not receive significant revenues from their monetisation, as the licensing market in Azerbaijan remains underdeveloped and companies are primarily focused on protecting their technologies rather than selling them. Additionally, the analysis demonstrated that companies' revenues are almost fully correlated with EBITDA (r = 0.97) and net profit (r = 0.99). This suggests that the financial strength of companies is determined not only by their intellectual assets but also by the overall efficiency of their business model, levels of automation, production scale and cost management strategies. For instance, John Deere, with a relatively small patent portfolio compared to its competitors, shows revenues of USD 44 billion and a consistently high level of operating profit due to a well-thought-out business strategy and the widespread use of digital solutions in agriculture.

Thus, the analysis confirmed that brand value is the most significant intellectual asset that has a direct impact on the financial performance of companies. R&D investments contribute to the accumulation of patent portfolios, but their commercialisation requires considerable time and additional investment. Technology licensing remains an underutilised tool in some companies, which limits the ability to increase revenues. These patterns broadened the definition of the role of intellectual property in the agricultural sector and identified ways to improve the efficiency of its use.

DISCUSSION

The study confirmed the significant impact of intellectual assets on the financial performance of agricultural companies, but it reveals differences in the effectiveness of different methods of valuation and commercialisation of intangible assets. In the United States, the income method dominates, which can be used to analyse future cash flows from intellectual property, which correlates with the findings of J. Beckman and A. Countryman (2021) and M. Grimaldi *et al.* (2021) in a study on the impact of patenting on the commercial sustainability of agricultural corporations. This is confirmed by a significant share of licence income and active commercialisation of innovations in the agricultural sector. At the same time, P. Sánchez-Bravo *et al.* (2021) and T. Sun *et al.* (2021) demonstrated that the valuation of intellectual assets based on projected revenues is subject to high uncertainty due to unstable market conditions, which is consistent with the identified limitations of this approach. However, the development of predictive analytical tools and more accurate revenue forecasting models can partially offset this disadvantage.

In Europe, the cost method of valuation, focused on investments in technology development, is widely used. This is confirmed by studies by S.H. Uzma (2016), D. Pastor *et al.* (2017), which demonstrated that R&D expenditures are the main factor in the formation of the value of intellectual assets in the agricultural sector. This method provides an accurate reflection of the funds invested, which makes it preferable for the valuation of scientific and innovative developments. It also promotes transparency in financial reporting and enables tracking of the effectiveness of investments in research and development, which is especially important for large agricultural holdings and multinational corporations. However, H. Wirtz (2024) and T.K. Amentae *et al.* (2024) noted that this method underestimates the market value of assets, especially in the context of rapidly growing digital technologies and the transformation of the agricultural sector, where the value of innovation is often determined not only by costs but also by the potential commercial benefits of their use. In addition, this method does not incorporate the rate of technology obsolescence and the impact of market conditions on asset values. To mitigate these risks, European companies are gradually beginning to combine the cost approach with income and comparative methods, which ensure a more comprehensive consideration of both internal costs and external market factors in the valuation of intellectual property (de-Almeida-e-Pais *et al.*, 2023).

In Azerbaijan, a combined approach to the valuation of intellectual assets using cost and comparative methods prevails. This choice is determined by the

specifics of the national market, limited commercialisation and poor development of intellectual property protection institutions. Azerbaijan demonstrates a weak integration of the income method into the practice of valuation of intellectual assets, which limits the possibilities of capitalising assets. The use of the cost method recorded the investments made in development but does not reflect their market potential. This is confirmed by C. Antons *et al.* (2020) and A. Barragán-Ocaña *et al.* (2023), emphasising the need to introduce digital platforms and adapt international standards, which will increase the transparency and accuracy of intellectual asset valuation. It is also recommended to intensify licensing mechanisms and expand regional markets for intellectual assets, which will provide new sources of income and reduce dependence on internal factors.

Chinese companies mainly use the comparative method of valuation of intellectual assets, which reflects the dynamic development of the country's technology market. This conclusion is confirmed by Z. Aliyev (2018), H. Chuma-Okoro and I.A. Oluwasemilore (2022), highlighting the high efficiency of this method for valuing digital platforms and databases. The high liquidity of intellectual assets in the Chinese market facilitates the application of the comparative approach, especially in the context of the active development of e-commerce and digital technologies. However, B. De Jonge *et al.* (2022) and J. de Mévius (2022) criticise the comparative method for its dependence on market analogues, which can overestimate or underestimate the value of assets depending on the market situation. In this regard, several Chinese companies are beginning to introduce elements of hybrid valuation methods, including future income analysis and the cost approach, which improves the objectivity of consideration of the specifics of the national innovation market.

Swiss agricultural companies apply a hybrid approach that combines elements of different methods, which can be used to consider the diversity of intellectual assets and the specifics of the national innovation environment. This conclusion is consistent with the studies of M. Fredriksson (2021), and K. Goyal and S. Kumar (2021), which confirmed the high efficiency of the hybrid method in the context of the digitalisation of agriculture and the active development of biotechnology. The flexibility of this approach emables Swiss companies to consider both the costs of creating assets and the market value and potential income from their use, which is especially important in the context of high development costs and long investment cycles in agricultural science. In addition, this method provides a more accurate integration of risks and opportunities for commercialising intellectual assets in international markets. However, M.S. Hossain *et al.* (2021) and K. Gupta *et al.* (2023) note the difficulty of implementing such a method without developing unified standards and regulatory frameworks, which remains an urgent task for the international community, especially in the context of ensuring transparency and comparability of intellectual asset valuations between countries.

The analysis of agricultural corporations also demonstrated the dependence of the choice of valuation method on the industry specialisation and the structure of intellectual assets of companies. For example, John Deere focuses on the income method, which is confirmed by the studies of D.J. Jefferson and K. Adhikari (2019), and H. Johnson (2021), which revealed the effectiveness of this approach for companies that actively use licensing and software. This method can address future cash flows from the introduction of technologies in the field of precision agriculture, as well as revenues from the sale of software solutions and services for the agricultural sector. This model promotes active monetisation of intellectual assets and encourages companies to expand their patent portfolio and develop digital solutions. At the same time, Bayer CropScience applies a cost-based method that ensure accuracy of accounting of R&D investments, which is critical for biotechnology developments. This is due to the high cost of developing new crop varieties and plant protection products, which require extensive research and large-scale trials. At the same time, this approach ensures transparency in asset valuation but reflects their future commercial potential to a lesser extent, especially in the face of rapidly changing market conditions and the growing importance of digital technologies in agricultural biotechnology (Zakharchuk *et al.*, 2025).

The results of the correlation analysis, which revealed a high correlation between R&D investment and the number of patents and licences, are also significant. This confirms the findings of R.K. Joseph (2021), and L. Kant and F. Shahid (2022) on the strategic role of innovation activity in the formation of intellectual assets of agricultural companies. It is noteworthy that brand value shows a strong correlation with revenue and net profit, which indicates the direct impact of reputational capital on the financial stability of companies. However, the weak correlation between patent activity and final financial results demonstrates that having patents without a full-fledged commercialisation strategy does not automatically lead to profit growth (Svitlychnyi, 2024). This underscores the need for a comprehensive approach to managing intellectual assets, including not only their creation but also their active use and monetisation.

Thus, the analysis concluded that it is critical to choose methods of intellectual assets valuation incorporating industry specifics, national characteristics and the level of innovation development. The introduction of international standards, development of commercialisation infrastructure and digitalisation of intellectual asset valuation processes seem to be promising areas for further research and practical steps in the agricultural sector.

CONCLUSIONS

The valuation of intellectual assets in the agricultural sector varies significantly between countries and companies, due to national economic priorities, the level of technological development and specific legal regulations. In developed economies, different valuation methods are used: income approach (USA), cost approach (Germany), comparative approach (China) and hybrid approach (Switzerland). In agricultural companies such as John Deere, Bayer CropScience, Syngenta and COFCO Group, the choice of valuation methodology depends on the structure of intellectual assets and commercialisation strategy. In Azerbaijan, cost and comparative methods prevail, which limits the potential for capitalisation of intangible assets. Further development of the country's intellectual property accounting system requires the introduction of mechanisms to stimulate innovation, including tax incentives and R&D subsidies.

The study determined that brand value has the greatest impact on the financial performance of companies, providing a high correlation with revenue (r = 0.96) and net profit (r = 0.94). Investments in R&D contribute to the growth of the patent portfolio (r = 0.82) and licences (r = 0.75), but commercialisation of patents requires a long time and additional investments. Technology licensing remains an underutilised tool in some companies, which limits the opportunities to profit from intellectual property. The development of digital platforms for registering and managing licences could help to improve the efficiency of their use and expand international cooperation. Future research could focus on the impact of digitalisation and artificial intelligence on intellectual property management in the agricultural sector, as well as on the development of integrated valuation methods that combine elements of income, cost and comparative approaches.

ACKNOWLEDGEMENTS

None.

FUNDING

None.

CONFLICT OF INTEREST

None.

REFERENCES

[1] Aliyev, Z. (2018). Agriculture in Azerbaijan and its development prospects. *International Journal of Environmental Sciences & Natural Resources*, 13(3), article number 555866. doi: 10.32553/ijmbs.v2i4.37.

[2] Amentae, T.K., Song, W., & Wang, J. (2024). Intellectual property rights in the agri-food chains: A systematic review and bibliometric analysis. *World Patent Information*, 77, article number 102279. doi: 10.1016/j.wpi.2024.102279.

[3] Antons, C., Winarto, Y.T., & Prihandiani, A.F. (2020). Farmer-plant-breeders and the law on Java, Indonesia. *Critical Asian Studies*, 52(4), 589-609. doi: 10.1080/14672715.2020.1822750.

[4] Azersun Holding. (2023). *Financial report*. Retrieved from https://api.azersun.com/files/page/fi15yjlw.iie.pdf.

[5] Barragán-Ocaña, A., Olvera-Treviño, M. de los Á., & Silva-Borjas, P. (2023). Technological innovation for sustainable development: Is agricultural and food nanotechnology a viable alternative? *World Patent Information*, 75, article number 102235. doi: 10.1016/j.wpi.2023.102235.

[6] Bayer. (2022). *CropScience financial report*. Retrieved from https://www.bayer.com/sites/default/files/2023-02/ba yer-sustainability-highlight-report-2022_8.pdf.

[7] Bayer. (2024). *Annual report*. Retrieved from https://surl.li/jfuzqo.

[8] Bayer. (2025). *Our principles and positions on political engagement*. Retrieved from https://www.bayer.com/en/sustainability/political-principles-and-positions.

[9] Beckman, J., & Countryman, A. (2021). The importance of agriculture in the economy: Impacts from COVID-19. *American Journal of Agricultural Economics*, 103(5), 1595-1611. doi: 10.1111/ajae.12212.

[10] Brand Finance. (n.d.). *Global rankings*. Retrieved from https://brandirectory.com/reports.

[11] Campi, M., & Nuvolari, A. (2020). Intellectual property rights and agricultural development: Evidence from a worldwide index of IPRs in agriculture (1961-2018). *The Journal of Development Studies*, 57(4), 650-668. doi: 10.1080/00220388.2020.1817395.

[12] China National Intellectual Property Administration. (n.d.). *Statistics*. Retrieved from https://english.cnipa.gov.cn/col/col3050/index.html.

[13] Chuma-Okoro, H., & Oluwasemilore, I.A. (2022). Intellectual property rights, agricultural biotechnology and food sufficiency: Strengthening the Nigerian intellectual property legal framework for food self-sufficiency in the aftermath of a global pandemic. *International Review of Law, Computers & Technology*, 36(1), 48-67. doi: 10.1080/13600869.2021.1997082.

[14] COFCO INTL. (2024). *2023 sustainability report*. Retrieved from https://www.cofcointernational.com/sustainability/.

[15] Comprehensive Report on the work done by the Intellectual Property Agency of the Republic of Azerbaijan in 2024. (2024). Retrieved from https://surl.li/kwlzqd.

[16] De Jonge, B., Salazar, R., & Visser, B. (2022). How regulatory issues surrounding new breeding technologies can impact smallholder farmer breeding: A case study from the Philippines. *Plants, People, Planet*, 4(1), 96-105. doi: 10.1002/ppp3.10219.
[17] de Mévius, J. (2022). Impact of the European union's seed legislation and intellectual property rights on crop diversity. *European Energy and Environmental Law Review*, 31(3), 149-162. doi: 10.54648/eelr2022010.
[18] de-Almeida-e-Pais, J.E., Raposo, H.D.N., Farinha, J.T., Cardoso, A.J.M., Lyubchyk, S., & Lyubchyk, S. (2023). Measuring the performance of a strategic asset management plan through a balanced scorecard. *Sustainability (Switzerland)*, 15(22), article number 15697. doi: 10.3390/su152215697.
[19] Fraunhofer. (2014). *Performance review of the programme "Protection of ideas for commercial use" (SIGNO) program of the Federal Ministry for Economic Affairs and Energy*. Retrieved from https://surl.li/ybaxbp.
[20] Fredriksson, M. (2021). Open source seeds and the revitalization of local knowledge. *Sustainability*, 13(21), article number 12270. doi: 10.3390/su132112270.
[21] Goyal, K., & Kumar, S. (2021). Financial literacy: A systematic review and bibliometric analysis. *International Journal of Consumer Studies*, 45(1), 80-105. doi: 10.1111/ijcs.12605.
[22] Grimaldi, M., Greco, M., & Cricelli, L. (2021). A framework of intellectual property protection strategies and open innovation. *Journal of Business Research*, 123, 156-164. doi: 10.1016/j.jbusres.2020.09.043.
[23] Gupta, K., Sankaran, K.V., & Kumar, P.S. (2023). Exchange of biological control genetic resources in India: Prospects and constraints for access and benefit sharing. *BioControl*, 68(3), 281-289. doi: 10.1007/s10526-023-10199-1.
[24] Hajiyev, N., Ismayilov, V., Fataliyeva, G., Mahmudova, L., & Asadova, S. (2025). The impact of digital transformation on the sustainable development of the Azerbaijani economy. *International Journal of Computational and Experimental Science and Engineering*, 11(2), 1901-1909. doi: 10.22399/ijcesen.1322.
[25] Hossain, M.S., Rahman, M.H., Rahman, M.S., Hosen, A., Seo, C., & Cho, G.H. (2021). Intellectual property theft protection in IoT based precision agriculture using SDN. *Electronics*, 10(16), article number 1987. doi: 10.3390/electronics10161987.
[26] IBM SPSS Statistics. (n.d.). Retrieved from https://www.ibm.com/products/spss-statistics.
[27] Jefferson, D.J., & Adhikari, K. (2019). Reimagining the relationship between food sovereignty and intellectual property for plants: Lessons from Ecuador and Nepal. *Journal of World Intellectual Property*, 22(5-6), 396-418. doi: 10.1111/jwip.12134.
[28] John Deere. (2024). *Deere reports net income of $1.245 billion for fourth quarter, $7.1 billion for fiscal year*. Retrieved from https://www.deere.com/assets/pdfs/common/news/deere-4q24-earnings-release.pdf.
[29] Johnson, H. (2021). Regulating cell-cultured animal material for food systems transformation: Current approaches and future directions. *Law, Innovation and Technology*, 13(1), 108-140. doi: 10.1080/17579961.2021.1898311.
[30] Joseph, R.K. (2021). Innovation, patents, and competition in modern agriculture: A case study of Bayer and Monsanto merger. *Antitrust Bulletin*, 66(2), 214-224. doi: 10.1177/0003603X21997022.
[31] Kant, L., & Shahid, F. (2022). Managing intellectual property and technology commercialization: Experiences, success stories and lessons learnt – a case study from Vivekananda Institute of Hill Agriculture, India. *Journal of World Intellectual Property*, 25(1), 143-156. doi: 10.1111/jwip.12212.
[32] Liu, Y., Ji, D., Zhang, L., An, J., & Sun, W. (2021). Rural financial development impacts on agricultural technology innovation: Evidence from China. *International Journal of Environmental Research and Public Health*, 18(3), article number 1110. doi: 10.3390/ijerph18031110.
[33] Mamasydykov, A.A., Abdiev, M.Z., Attokurova, G.M., & Abrakhmanov, O.E. (2019). Development of export potential of processing companies on the cluster basis with the help of quality management. *International Journal for Quality Research*, 13(4), 931-946. doi: 10.24874/IJQR13.04-13.
[34] May, J. (n.d.). *Leading with innovation*. Retrieved from https://surl.li/ennnwe.
[35] Organisation for Economic Co-operation and Development. (2024). *OECD economic outlook, volume 2024 issue 2*. Retrieved from https://surl.li/ggmgcx.
[36] Organisation for Economic Co-operation and Development. (2025). *G20 merchandise trade declines while services trade shows mixed performance in Q4 2024*. Retrieved from https://www.oecd.org/en/data/insights/statistical-releases/2025/02/international-trade-statistics-trends-in-fourth-quarter-2024.html.
[37] Pastor, D., Glova, J., Lipták, F., & Kováč, V. (2017). Intangibles and methods for their valuation in financial terms: Literature review. *Intangible Capital*, 13(2), 387-387. doi: 10.3926/ic.752.
[38] Pawlak, K., Smutka, L., & Kotyza, P. (2021). Agricultural potential of the EU countries: How far are they from the USA? *Agriculture*, 11(4), article number 282. doi: 10.3390/AGRICULTURE11040282.
[39] Pishgar-Komleh, S., Čechura, L., & Kuzmenko, E. (2021). Investigating the dynamic eco-efficiency in agriculture sector of the European Union countries. *Environmental Science and Pollution Research*, 28, 48942-48954. doi: 10.1007/s11356-021-13948-w.

[40] Radchenko, O., Tkach, L., & Dendebera, O. (2023). Financing innovations in the agricultural industry as a component of the digital development of Ukraine's economy. *Scientific Bulletin of Mukachevo State University. Series "Economics"*, 10(4), 54-65. doi: 10.52566/msu-econ4.2023.54.
[41] Sánchez-Bravo, P., Chambers, E., Noguera-Artiaga, L., Sendra, E., Chambers, E., & Carbonell-Barrachina, Á. (2021). Consumer understanding of sustainability concept in agricultural products. *Food Quality and Preference*, 89, article number 104136. doi: 10.1016/j.foodqual.2020.104136.
[42] SIGNO – Die Neue Initiative des BMWi. (2025). Retrieved from https://scbcaa26abcafdb04.jimcontent.com/download/version/1430988500/module/6694633184/name/SIGNOflyer.pdf.
[43] Sun, T., Su, C., Mirza, N., & Umar, M. (2021). How does trade policy uncertainty affect agriculture commodity prices? *Pacific-Basin Finance Journal*, 66, article number 101514. doi: 10.1016/J.PACFIN.2021.101514.
[44] Svitlychnyi, O. (2024). Law enforcement function of the state in the field of intellectual property protection. *Law. Human. Environment*, 15(1), 101-114. doi: 10.31548/law/1.2024.101.
[45] Syngenta. (2025). *Financial report 2024*. Retrieved from https://www.syngentagroup.com/sites/default/files/2025-03/EN_250326_Syngenta%20Group%20FY_Q4_0.pdf.
[46] Syngenta. (n.d.). *Innovation*. Retrieved from https://www.syngenta.com/innovation.
[47] Uzma, S.H. (2016). A paradigm analysis of valuation of intellectual property. *International Journal of Intellectual Property Management*, 9(1), 5-15. doi: 10.1504/ijipm.2016.079574.
[48] Valiyev, A., Rustamov, F., Huseynova, R., Orujova, M., & Musayeva, S. (2022). The digitalization effectiveness as an innovative factor development of the agriculture in Azerbaijan. *Journal of Eastern European and Central Asian Research*, 9(2), 194-205. doi: 10.15549/jeecar.v9i2.902.
[49] Wirtz, H. (2024). Valuation of intellectual property: A review of approaches and methods. *International Journal of Business and Management*, 7(9), 40-48. doi: 10.5539/ijbm.v7n9p40.
[50] World Bank. (n.d.). *Charges for the use of intellectual property, receipts (BoP, current US$)*. Retrieved from https://data.worldbank.org/indicator/BX.GSR.ROYL.CD?view=chart.
[51] World Intellectual Property Organization. (2024). *World intellectual property report 2024*. Retrieved from https://www.wipo.int/web-publications/world-intellectual-property-report-2024/en/index.html
[52] Xu, J., & Zhang, Y. (2021). Does intellectual capital measurement matter in financial performance? An investigation of Chinese agricultural listed companies. *Agronomy*, 11(9), article number 1872. doi: 10.3390/agronomy11091872.
[53] Zakharchuk, O., Vyshnevetska, O., Navrotskyi, Ya., & Kondratyuk, V. (2025). Investment and innovation development of seed production in Ukraine in the context of accession to the European Union. *Ekonomika APK*, 32(1), 20-32. doi: 10.32317/ekon.apk/1.2025.20.
[54] Zeynalli, L., Huseynli, G., & Huseynli, M. (2022). The impact of the innovation on the economy: An empirical analysis for Azerbaijan. *SocioEconomic Challenges*, 6(4), 21-33. doi: 10.21272/sec.6(4).21-33.2022.
[55] Zhang, M., Fang, K., Zhang, D., & Zeng, D. (2023). Relationship between the evaluation of agricultural scientific and technological innovation capacity and the influencing factors of green agriculture. *PLoS ONE*, 18(11), article number e0295281. doi: 10.1371/journal.pone.0295281.

Глобальні підходи до оцінки інтелектуальних активів у сільському господарстві: досвід провідних країн у контексті Республіки Азербайджан

Дамет Багіров
Професор
Бакинський інженерний університет
AZ0101, вул. Гасана Алієва, 120, м. Баку, Азербайджан
https://orcid.org/0000-0002-7213-2972
Габіль Манафов
Доктор економічних наук, професор
Азербайджанський державний економічний університет
AZ1001, вул. Істіклаліят, 6, м. Баку, Азербайджан
https://orcid.org/0000-0003-1152-6211
Мубаріз Багіров
Професор
Азербайджанський державний економічний університет
AZ1001, вул. Істіклаліят, 6, м. Баку, Азербайджан
https://orcid.org/0000-0001-8898-8065
Нусрет Бабаєв
Старший викладач
Азербайджанський державний економічний університет
AZ1001, вул. Істіклаліят, 6, м. Баку, Азербайджан
https://orcid.org/0000-0001-8827-3617
Гультакін Мамедова
Кандидат економічних наук, доцент
Азербайджанський державний економічний університет
AZ1001, вул. Істіклаліят, 6, м. Баку, Азербайджан
https://orcid.org/0000-0001-8473-3460

Анотація. Метою дослідження був аналіз глобальних підходів до оцінки активів інтелектуальної власності в аграрному виробництві та їх адаптації до умов Республіки Азербайджан. Методологія включала порівняльний аналіз практик Сполучених Штатів Америки, Німеччини, Швейцарії та Китайської Народної Республіки, а також детальне дослідження діяльності аграрних компаній John Deere, Bayer CropScience, Syngenta, COFCO Group і Azersun Holding. Використано дані фінансових звітів, аналітику Всесвітньої організації інтелектуальної власності, Організації економічного співробітництва та розвитку і розрахунки, виконані в IBM SPSS Statistics версії 27. Результати показали, що Сполучені Штати Америки застосовують дохідний метод оцінювання з акцентом на патенти та біотехнології, Німеччина оцінює ліцензії та товарні знаки витратним методом, Китайська Народна Республіка застосовує порівняльний метод для оцінювання цифрових платформ та об'єктів зі штучним інтелектом, Швейцарія використовує гібридний підхід. Кореляційний аналіз виявив високий зв'язок між інвестиціями в наукові дослідження та дослідно-конструкторські роботи (НДДКР) і кількістю патентів ($r = 0,82$), що підтвердило вплив інвестицій на накопичення інтелектуальних активів. Вартість брендів продемонструвала найбільшу залежність із виручкою ($r = 0,96$) та чистим прибутком ($r = 0,94$). Найбільшу вартість інтелектуальних активів у 2024 році виявлено у COFCO Group (15,6 мільярдів доларів США), які забезпечили виручку в 130 мільярдів доларів США. В Азербайджані компанія Azersun Holding використовує витратний і порівняльний методи, що зумовлено обмеженим міжнародним патентним захистом і слабким розвитком ринку ліцензування. Висновки підтвердили ключову роль інтелектуальних активів і вартості брендів у забезпеченні фінансової стійкості аграрного сектора

Ключові слова: патентний портфель; економічні пріоритети; дохідний метод; витратний метод; порівняльний метод; аграрний сектор