UDC: 631.15
DOI: 10.56407/bs.agrarian/1.2025.84

Ukrainian Black Sea Region Agrarian Science
Vol. 29, No. 1

Modern agricultural enterprise management methods

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Abstract. The study aimed to identify innovative approaches in the field of personnel management of agricultural enterprises in the context of active implementation of digital technologies. The study highlighted key aspects of implementing modern methods of managing agricultural enterprises using digital technologies. Optimisation of HR management processes through automated systems that significantly simplify recruitment, onboarding and HR records management was prioritised. As demonstrated, automation of routine tasks allows managers to focus on strategic aspects of management. The study described modern digital technologies for monitoring fields and analysing data on weather conditions, yields and market trends to improve the management of agricultural processes. The use of analytical platforms to monitor management processes was used to assess the effectiveness of the changes implemented and identify possible weaknesses. Automated financial transaction accounting systems and digital platforms for managing remote teams were integrated, which increased efficiency and reduced resource costs. In addition, the importance of using e-learning and distance learning programmes to ensure the continuous professional development of employees was emphasised. Results obtained can become the basis for the development of new management strategies that will help increase the competitiveness of agricultural enterprises in the digital economy. The practical significance of the study is determined by the possibility of applying the obtained results to improve the efficiency of management processes at agricultural enterprises through the introduction of modern digital technologies. Automated systems, analytical platforms and e-learning tools can improve employee productivity, optimise work processes, increase staff motivation and adapt to the digital transformation of the market

Keywords: innovation; leadership; motivation; adaptation; efficiency

INTRODUCTION

Human resources (HR) management in the digital age has undergone significant changes due to the rapid development of innovation and automation. Modern agricultural businesses are increasingly integrating digital solutions such as artificial intelligence, data management systems and big data analytics to optimise recruitment processes, assess productivity and improve staff performance. This not only improves internal processes but also improves response to changing market conditions and agribusiness needs. However, along with the positive aspects of digitalisation, new challenges arise, including ethics, data security and employee adaptation to new technologies.

The research relevance is determined by the rapid digitalisation of business processes in agriculture, which requires new approaches to the organisation of HR. Agricultural companies face the need to quickly adapt to changes, including the automation of

Article's History:
Received: 07.11.2024
Revised: 11.02.2025
Accepted: 27.03.2025

Suggested Citation:
Shahini, E. (2025). Modern agricultural enterprise management methods. *Ukrainian Black Sea Region Agrarian Science*, 29(1), 84-94. doi: 10.56407/bs.agrarian/1.2025.84.

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routine tasks, the use of big data for decision-making, and the introduction of artificial intelligence to improve the efficiency of HR management. Given the global trends in technology, the integration of digital solutions into HR practices in the agricultural sector is becoming critical to increasing the productivity, engagement and competitiveness of these businesses.

Many contemporary scholars addressed this issue and provided many perspectives. For instance, O. Hryvkivska *et al*. (2024) considered innovative production risk management in agricultural enterprises, offering new methods of risk assessment and management. The study highlighted the importance of using technology to identify risks on time and implement measures to mitigate them, which in turn increases the resilience of enterprises to external shocks. In the context of global trends in the use of information technology in management, the study by M. Kryshtanovych *et al*. (2019), which analysed strategic HR management in companies, is noteworthy. They explored how modern digital tools can be used to assess and improve the effectiveness of HR management, in strategic planning and staff development.

In modern agriculture, the management of agricultural enterprises is becoming an important aspect in the context of globalisation and the introduction of the latest technologies. V. Hmyria *et al*. (2023) highlighted the current state of agricultural management, noting that enterprises must adapt their strategies to meet the challenges of the globalised economy. The authors emphasise the need to develop innovative approaches to improve the efficiency and competitiveness of agricultural enterprises, accounting for the specifics of local markets and resources. G. Chen (2021) also studied how information technology can optimise the HR management processes of agricultural enterprises, increasing the efficiency of companies by automating key functions and improving communication. H. Liu & G. Hu (2020) and C. Li (2022) highlighted the integration of artificial intelligence into automated personnel management systems. Their research demonstrated how intelligent systems can help with the financial management of HR by simplifying routine processes and providing more accurate planning.

K. Hushvakhtzoda (2023) discussed the role of management accounting in the information systems of agricultural enterprises. The author emphasised that modern information technologies increased the efficiency of management decisions through data analysis, which improved the accuracy of the assessment of the financial condition of the enterprise and developed strategies for its development. Lastly, J. Hu & X. Li (2022) analysed the management of the green supply chain of agricultural enterprises in the digital economy. The authors proposed optimisation of the supply chain as a key factor in ensuring the sustainable development of agricultural enterprises, emphasising the importance of introducing environmental practices and technologies. For instance, H. Nazarova *et al*. (2022) analysed digital technologies are changing approaches to the management strategy of agricultural enterprises and their development. Y.W. Park *et al*. (2019) studied how companies use digital transformation technologies to improve management processes and increase competitiveness. They studied the impact of digital solutions on firms' adaptation to market changes. K. Pryshliak & Yu. Semenenko (2024) analysed the role of artificial intelligence in the process of selecting personnel for an agricultural enterprise.

Even though the above studies cover many important aspects of HR management of agricultural enterprises in the digital age, some issues require further research. In particular, the impact of digital technologies on the ethical aspects of HR management in the agricultural sector remains insufficiently studied. It is also necessary to address the effectiveness of digital solutions for HR management in small and medium-sized agricultural enterprises, where resources for innovation are limited. In addition, the issue of the impact of digital transformation on the psycho-emotional state of agricultural workers and their ability to adapt to new technologies remains open. Intercultural aspects of digitalisation in agricultural HR management, which is important in light of globalisation and the growing diversity of the workforce, are also understudied. The study aims to develop recommendations for optimising management processes in agricultural enterprises using digital technologies.

MATERIALS AND METHODS

The study was conducted on a comprehensive approach. Each stage of the research provided a detailed overview of various aspects of digitalisation in HR. The first step was to analyse a sample of organisations and technologies. A comprehensive analysis of enterprises of various sizes was carried out, including Agro Iliria Group, Agrocon Albania and Alba Green. To analyse the management of agricultural enterprises, technologies such as artificial intelligence, cloud technologies and analytical platforms were selected based on the following criteria: enterprise-scale; need to increase efficiency; flexibility and mobility; analysis and transparency; and readiness to implement technology.

A SWOT analysis was conducted in the second stage to identify the strengths and weaknesses, as well as potential opportunities and threats arising from the

introduction of modern technologies in the management and development of agricultural enterprises. After that, recommendations were made to optimise the management processes of agricultural enterprises using digital technologies. These recommendations were used to introduce automation of routine HR tasks, such as recruitment and HR records management, which significantly increased the efficiency of HR departments at agricultural enterprises.

Equally important, the study addressed the use of digital technologies, not only in terms of HR management but also in collecting and analysing large amounts of data on weather conditions, yields, market prices and logistics capabilities of agricultural enterprises. Technologies for monitoring the condition of fields using modern tools, such as drones, satellite images and sensors, were described, which allows to assess the condition of crops and detect diseases or pests.

RESULTS

HR management in agricultural enterprises is undergoing significant transformations under the influence of digital technologies, which are radically changing traditional approaches to HR. From automating routine processes to implementing artificial intelligence, new solutions are changing not only recruitment methods but also approaches to employee training and development, which is especially relevant for the agricultural sector, which requires employees with new digital skills to operate modern equipment and technologies. Automation of routine tasks such as *curriculum vitae* processing, HR management and record keeping allows HR professionals in agricultural enterprises to focus on more strategic aspects of HR management, such as upskilling employees in innovative agricultural technologies. Thanks to talent management systems, agricultural companies can effectively track the progress of employees, identify their strengths and work on areas for improvement, which contributes to the development of new competencies required to work with modern agricultural machinery and innovative approaches to land cultivation. This helps create individualised development plans that meet not only the company's overall goals but also the specific requirements of agricultural production. The introduction of artificial intelligence into HR processes in the agricultural sector opens new opportunities for forecasting staffing needs, analysing productivity data, and optimising workflows. With the help of machine learning algorithms, agricultural enterprises can analyse large amounts of employee data and identify patterns that indicate the possibility of staff turnover or the need for additional agricultural knowledge, especially in the context of the introduction of the latest technologies to increase yields and efficient use of resources.

Employee engagement is also a significant aspect of agricultural enterprises. Modern agricultural companies must provide an environment that encourages the active participation of employees in decision-making and the development of corporate culture. This is especially important in the agricultural sector, where the effective use of modern technologies and innovative solutions requires close cooperation between employees from different departments. Creating platforms for feedback and open communication allows employees to feel valued by the company, which increases their motivation and loyalty, particularly during periods of seasonal work or the introduction of new agricultural technologies. In this context, HR management at agricultural enterprises is becoming not just an administrative function, but a strategic partner in shaping the business development strategy. HR managers play an important role in developing initiatives that increase productivity, improve the working climate and ensure the long-term success of the enterprise, especially when considering the impact of external factors such as weather conditions or changes in agricultural policy. They should work closely with management to introduce innovations that foster human capital development, including training staff to work with modern agricultural technologies. The digitalisation of HR management is also significantly changing the traditional way HR departments of agricultural enterprises work, offering effective solutions with the help of modern technologies. Automation of routine operations, such as recruitment, performance monitoring and leave management, allows for optimised administrative processes. For instance, attendance and time management systems automatically record employee work schedules during the harvest season, which frees HR professionals from routine work and allows them to focus on strategic tasks.

One of the most commonly used technologies in agricultural enterprises is Applicant Tracking Systems, which simplify the hiring process by automatically filtering resumes, scheduling interviews and tracking the status of candidates. This is especially useful for the agricultural sector, where there is often a need for seasonal workers or specialists with narrow technical qualifications. By implementing such systems, HR departments of agricultural enterprises can focus on strategic tasks, such as talent development and assessment of the HR required to work with innovative agricultural technologies. Another important component of the digitalisation of agricultural enterprises is HR information system, which combines all employee data into a single database (Chygryn *et al.*, 2019;

Makhmetova *et al.*, 2023). This facilitates the analysis and access to information, allowing management to make quicker decisions on promotions, transfers, or dismissals, especially in the face of changing seasonal labour demand. In addition, such systems can include tools for tracking employee performance at different stages of the agricultural production process, which allows for more effective management of staff development and planning of training activities to improve skills.

The digitalisation of management processes at agricultural enterprises improves the efficiency of HR departments by reducing the amount of routine work and increasing the transparency and accessibility of employee information. Thus, agricultural companies can adapt to changes more quickly, increase competitiveness and attract the best staff with the necessary agricultural and technical skills to implement the latest agricultural technologies. Digitalisation not only automates routine operations but also changes the structure and functions of HR departments at agricultural enterprises. Due to new technologies, HR professionals are becoming strategic partners responsible for the development of human capital in the agricultural sector. Using analytical tools, companies can analyse employee productivity data, plan their career trajectories, anticipate training needs for new agricultural technologies, and proactively manage the risks associated with staff turnover in seasonal operations.

With the changing role of HR professionals in agricultural enterprises and the development of analytical functions, the use of big data in HR management is becoming an important step. Agricultural companies can use digital technologies not only to automate processes but also to analyse employees' activities and potential, in particular in the context of seasonal work and the use of the latest agricultural technologies (Xue, 2022; Makovoz & Lysenko, 2024). Big data analytics in HR is becoming significant in making informed decisions based on evidence. For instance, agricultural enterprises can analyse historical data on employee turnover during peak seasons, employee productivity at different stages of the agricultural cycle, or even external factors such as weather conditions and market trends to predict future staffing needs. This can be used to effectively plan HR and prevent employee shortages at critical points in the production cycle. The use of big data also helps to manage staff turnover in agricultural enterprises, especially due to seasonal employment. Analytical tools can be used to predict when employees are likely to leave the company and take preventive measures to retain them, including offering additional training programmes or better working conditions. This reduces the cost of recruiting new employees and increases the stability of the team, which is highly relevant during critical harvest periods.

Modern digital technologies have a significant impact on other aspects of agricultural enterprises. For instance, the use of big data and artificial intelligence can optimise supply chain management processes. By collecting and analysing data on weather conditions, yields, market prices and logistics capabilities, agricultural companies can more accurately forecast demand, and plan harvesting and transport, reducing losses and increasing efficiency. Technology is being introduced into land management and field monitoring. The use of drones, satellite imagery and sensors in the fields can monitor soil moisture levels, and crop conditions, and detect diseases or pests at early stages, which significantly improves crop management. Hence, agricultural enterprises not only increase production efficiency but also reduce the cost of resources such as water or fertilisers. An important aspect is the integration of automated systems for accounting and controlling financial transactions. Cloud-based digital platforms allow for transparent accounting of expenses, income, and investments and provide access to real-time analytics.

Artificial intelligence in agricultural enterprises is used to conduct preliminary interviews through chatbots or virtual assistants, which becomes especially relevant during peak hiring seasons. These systems can interact with candidates, ask standard questions about their agricultural experience, analyse the answers and offer recommendations for further steps. This facilitates the efforts of agricultural HR specialists, quickly identifying unsuitable candidates and focusing on those who best meet the company's requirements. Artificial intelligence can also analyse the behavioural aspects of candidates during online interviews or tests, predicting their future performance in the field or with animals. For instance, machine learning algorithms can identify hidden characteristics that are not apparent during a regular interview but are relevant for efficiency in the agricultural sector, such as endurance or the ability to quickly adapt to changing working conditions. Automating the hiring process also increases the objectivity of the selection process. Artificial intelligence algorithms work with large amounts of data to evaluate candidates based on clearly defined criteria, such as experience in specific agricultural processes or special skills, reducing the risk of subjective errors. This allows agricultural companies to improve the quality of their hiring by focusing on candidates with the greatest potential to work in the challenging agricultural environment.

Automation and artificial intelligence contribute to the formation of corporate culture at agricultural

enterprises, especially in the context of active digitalisation of the industry. Using technology for recruitment, agricultural companies are adapting their management strategies to keep employees motivated and engaged. At agricultural enterprises, workshops can cover a wide range of topics aimed at improving labour efficiency and increasing profitability. One important area is the use of digital platforms to manage remote and seasonal teams. These seminars will discuss the implementation of collaboration software such as Slack or Microsoft Teams, which can be used to organise communication, distribute tasks and monitor their progress in real-time. The use of digital platforms not only simplifies the management process but also helps to maintain team spirit, which is especially important for seasonal workers who often work separately from the main office. This reduces the cost of organising and coordinating work while increasing staff productivity and motivation. Another important area is precision farming seminars, which will cover technologies for using drones, sensors and satellite systems to monitor fields. The practical aspects of implementing these technologies to control soil moisture, detect diseases or pests at an early stage and optimise fertiliser use will be discussed (Veeraiah *et al.*, 2022). This will allow farmers to minimise input costs and improve yields, which will directly affect the profitability of the enterprise. At the supply chain management seminars, participants will learn how to optimise the supply, transportation and storage of agricultural products using market data and logistics capabilities. This will help reduce product losses, respond more quickly to changes in demand and improve inventory management, which will have a positive impact on the company's economic performance. Agricultural enterprises can benefit from seminars on financial planning and risk management. This could include tools for analysing and forecasting prices on the agricultural market, as well as strategies for minimising risks associated with adverse weather conditions or changes in market conditions. By improving financial planning, businesses can better allocate their resources, avoid losses and increase profits. Such workshops will not only help to develop the professional skills of staff but will also help to increase the overall efficiency of the agricultural enterprise, allowing for more efficient use of available resources, minimising risks and improving process management.

Cybersecurity at an agricultural enterprise goes beyond HR management and is critical to protecting all aspects of operations. Agricultural enterprises are increasingly using modern digital technologies, such as automated farm management systems, drones for crop monitoring, and the Internet of Things to track the condition of soils, crops, and machinery. All these technologies generate huge amounts of data that need to be protected from cyber threats. Agricultural companies collect and analyse information about crops, fertiliser use, yield forecasts and other data that is the basis of their competitiveness. The loss or theft of this information can lead to serious financial losses or even bankruptcy, as strategic data can be used by competitors or criminals to manipulate the company's market position. Agricultural businesses often use automated systems to control equipment, such as tractors or other machines, that are connected to a network. Failure to properly protect these systems can lead to equipment malfunctions or, in the worst-case scenario, hacking and complete paralysis of production processes. Such attacks can cause damage to both equipment and the crop itself, resulting in significant economic losses. Another important aspect is the protection of financial transactions. Agricultural enterprises carry out many transactions, from the purchase of equipment to the sale of products. Lack of proper protection can lead to fraud, theft of funds, or manipulation of bank data, which can jeopardise the financial stability of the enterprise. Cybersecurity helps agricultural businesses ensure compliance with international standards and legal requirements governing the protection of personal and commercial data. Failure to comply with these requirements can lead to fines or market restrictions, especially if the company operates internationally. Cybersecurity is an important tool for protecting data, technology and financial operations of agricultural enterprises. Its implementation helps to increase business resilience to cyber threats, protect production processes and maintain market reputation, which contributes to the overall efficiency and profitability of the enterprise.

HR management in agricultural enterprises in the digital age also requires the active development of employees' skills and their adaptation to an ever-changing environment. As the agricultural sector increasingly integrates modern technologies, continuous learning is becoming an important condition for maintaining productivity and competitiveness. Agricultural companies should create opportunities to develop the digital skills of their employees, which not only improves their efficiency but also increases job satisfaction. The introduction of specialised training programmes focused on the use of new technologies in agriculture is becoming an important component of HR management. These can include courses on the use of drones for field monitoring, precision farming systems, or digital farm management platforms. Training programmes should consider the level of training of individual employees and provide an individual approach to their development.

This allows each employee to feel their importance in the process, increasing motivation and promoting career growth. Creating conditions for continuous staff development helps maintain high performance and team engagement (Ye, 2020; Zhang, 2022). In addition to digital skills, it is also important to develop critical thinking and problem-solving skills, which are becoming key in the context of the rapid evolution of agricultural technology. Participation in project teams, where employees can learn new techniques and interact with colleagues, fosters a culture of continuous learning and collaborative problem-solving. Effective HR management in agriculture should focus not only on the introduction of digital technologies but also on the development of human capital. Preparing employees for future challenges, actively integrating training programmes and creating conditions for their personal development help businesses maintain their competitiveness and build an adaptive, innovative team.

Social media can significantly contribute to the development of agricultural enterprises beyond HR management. They can open opportunities to promote products, increase brand awareness and establish communication with customers and partners. Social media is a powerful tool for promoting the brand of an agricultural enterprise. Publishing visual content about production processes, plant and animal care, or technological innovations allows businesses to build a positive image and raise awareness of their products. Platforms such as Instagram and YouTube help to create engaging visual content that can attract the attention of consumers and partners, increasing demand for products and potential investment. In addition, social media can highlight a company's environmental initiatives, which helps build trust among customers who increasingly prefer sustainable and environmentally responsible products. Social media can also be used to engage with customers. Platforms such as Facebook and Twitter enable businesses to maintain direct communication with their audience, answer questions, and receive feedback and suggestions, which helps to improve product quality. Such openness in communications helps farmers respond to market demands more quickly, which leads to a better understanding of consumer needs and optimisation of production processes. It also helps to strengthen the loyalty of customers who value transparency and accessibility of information. Social media can be an effective tool for finding new markets and partners. Agricultural enterprises can use the platforms to establish contacts with potential distributors or retailers, expanding their sales geography. In addition, participation in thematic groups or forums can help businesses share experiences with peers and learn about new business opportunities.

Social media also provides an opportunity for direct sales of products. Many platforms offer integrated e-commerce tools, allowing farmers to sell their products directly through social media, shortening the supply chain and increasing profits. This is especially useful for small farms that can offer their products to end consumers through platforms such as Facebook Marketplace or Instagram Shop. Social media can be a platform for education and outreach. Agricultural enterprises can share their experience, and conduct online trainings or seminars for farmers, which will contribute to the development of the industry. Publishing materials about new technologies, farm management methods or market research can be a useful tool for attracting specialists, which will increase the efficiency of enterprises and the overall level of knowledge in the industry. The use of social media can enhance the capabilities of agricultural enterprises, helping not only with internal communication and talent acquisition, but also with brand building, establishing relationships with customers and partners, and increasing sales.

Real success in the development of agricultural enterprises is possible only if modern technologies are properly implemented in their business processes. This applies not only to increasing the efficiency of operations but also to optimising the use of resources, improving planning and enhancing the management of the entire production cycle. Agromino, IMK and Nibulon have integrated the technologies shown in Table 1.

Table 1. *The impact of the introduction of modern technologies on personnel management in agricultural companies*

The company and the implemented technology	Before implementation	After implementation
Agro Iliria Group, artificial intelligence	Decision-making on crops and yields was based on traditional methods of analysis, which increased the risk of inefficient use of resources and crop losses	The introduction of artificial intelligence improved field data analysis accuracy, increasing yields and reducing the cost of agrochemicals through accurate forecasting and planning
Agrocon Albania, cloud technologies	Information on land cultivation and field conditions was stored on local servers, which complicated management at various levels of the company and delayed decision-making	Cloud technologies have provided access to real-time data from anywhere, which has improved land management and reduced administrative costs

Table 1, Continued

The company and the implemented technology	Before implementation	After implementation
Alba Green, analytical platforms	Assessment of global markets and supply chains was carried out manually, which increased risks and delayed decision-making, increasing the cost of transporting products	Analytical platforms automated the collection and analysis of market data, which optimised logistics routes and reduce transport costs, as well as increase export efficiency

Source: *compiled by the author*

The introduction of digital technologies in the field of HR management in agricultural enterprises brings significant benefits but also comes with certain challenges. To analyse these technologies in detail, a SWOT analysis was conducted to help identify strengths and weaknesses, as well as potential opportunities and threats. Table 2 summarises the key findings of the analysis.

Table 2. *SWOT analysis of modern technologies in the field of management and development of agricultural enterprises*

Technology	Advantages	Disadvantages	Possibilities	Threats
Artificial intelligence	Optimisation of production processes yields forecasting and automation of routine tasks	High implementation costs need for qualified personnel for setup	Expanding the use of artificial intelligence to improve production efficiency	Competition from other businesses that are rapidly adopting new technologies
Cloud technologies	Real-time data storage, accessibility from anywhere, collaboration	Dependence on internet connection, data security risks	Growing popularity of cloud solutions among small and medium-sized enterprises	Changes in legislation that may restrict the use of certain technologies
Analytics platforms	Analyse large amounts of data, improve decision-making and get quick access to analytics	High need for staff training, difficulty in implementing new analytical tools	Integration of new analytical platforms to improve agronomic decisions	Cyber threats that may affect data security

Source: *compiled by the author*

Optimising the management processes of agricultural enterprises with the use of digital technologies is an important step towards increasing efficiency and competitiveness. The introduction of automated HR management systems can significantly facilitate the processes of recruiting, onboarding new employees and maintaining HR records. Automating these routine tasks reduces the time required to complete them and allows HR professionals to focus on more strategic issues. Developing and implementing programmes to increase employee motivation through the introduction of flexible working arrangements is another important aspect. The agricultural sector often faces challenges due to the seasonality of its operations, so the ability to customise working hours to meet the individual needs of employees can significantly increase their engagement and productivity. Flexibility in workflows will also contribute to a better work-life balance, which in turn will increase employee satisfaction. The use of analytical platforms to monitor the efficiency of management processes is another important area. Collecting and analysing data will allow agricultural enterprises to assess the results of implemented changes and identify weaknesses in management. Active implementation of e-learning and distance learning programmes for employees is also worthy of attention. The use of modern technologies in training will allow agricultural enterprises to ensure the continuous professional development of their employees, improving their skills and adaptability to new market conditions. These steps will contribute to the creation of an innovative and adaptive management environment in the agricultural sector. Overall, these recommendations can significantly improve the management processes in agricultural organisations and contribute to their successful functioning in the digital age.

DISCUSSION

The study demonstrates the significant impact of information technology on HR management in agricultural enterprises, indicating the need to integrate modern technologies. This issue has become especially relevant in the context of rapid digitalisation, which is observed in many sectors of the economy. The study emphasised the importance of introducing new management strategies, such as digitalisation, risk management and sustainable development. The study determined that agricultural enterprises that integrate new technologies demonstrate greater efficiency in the use of resources. This correlates with the findings of W. Chen (2023),

who studied cost management methods in agricultural supply chains and emphasised the use of heuristic algorithms to optimise costs, which can be extremely important in a competitive market. The results are also consistent with the study by N. Dalisova *et al*. (2020), who emphasised the importance of strategic management for the development of agricultural enterprises. The researchers argued that a systematic approach to strategic management can have a positive impact on the financial performance of enterprises. This is consistent with observations on the importance of integrating new management practices. The study by N. Davydenko *et al*. (2024), which examined the mechanisms of risk neutralisation in the financial management of agricultural enterprises, is also noteworthy. The results of the study show that enterprises often underestimate the risks associated with financial security, which is also noted in the authors' work. These results emphasise the need to create effective risk management mechanisms to improve the financial stability of agricultural enterprises. In particular, the results of the study confirm the findings of V. Hmyria *et al*. (2023) on the management of production risks in the agricultural sector. The researchers pointed out the need to apply innovative risk management methods, which is critical for enterprises to adapt to a changing environment. According to a study by J. Hu & X. Li (2022), the introduction of green management models in the digital economy is important for the agricultural sector. This emphasises the need for environmental innovation in the management strategies of enterprises, which coincides with the results of the study, which indicate the importance of sustainable development.

S.S. Gadzali *et al*. (2023) emphasised the importance of HR management in the context of digitalisation. The results show that agricultural enterprises should invest in human capital development to ensure competitiveness. Important aspects are not only hiring but also training and retraining of employees, which confirms the importance of HR management strategies in the context of change. A study by O. Hryvkivska *et al*. (2024) on innovative risk management in the agricultural sector highlighted the need for flexibility in the application of management strategies. The study confirms this idea, as enterprises that quickly adapt to new conditions are more likely to succeed. The study by D. Makhmetova *et al*. (2023) emphasised the importance of waste management for improving the efficiency of rural development. This indicates that agricultural enterprises should consider environmental aspects in their management, which is important for increasing their competitiveness. Y. Luo & L. Xiong (2023) investigated the optimisation of financial management of wastewater treatment enterprises. The study shows that agricultural enterprises should also consider financial aspects in terms of environmental requirements, which is important for their sustainable development. A study by S. Yekimov *et al*. (2021) on improving the corporate governance of agricultural enterprises highlighted the need to introduce new management practices that contribute to efficiency. The results support this view, as they show that new management practices can have a significant impact on the productivity and financial stability of enterprises.

The obtained results open new opportunities for further research in the field of management of agricultural enterprises. In the context of digitalisation, it is important to study the impact of the latest technologies on various aspects of management, including decision-making and optimisation of production processes. The study by J. Zhang (2022) on strategies for the digital development of agricultural enterprises using smart sensors may become a key area for improving management practices in the future. It is worth exploring the social aspects of introducing new technologies, in particular, how digital solutions affect the motivation and adaptation of employees to change. This will help to create more effective HR management strategies, which in turn will help to increase the productivity of enterprises. It is also worth addressing the environmental aspects of management in the agricultural sector, as noted by D. Makhmetova *et al*. (2023), focusing on waste management to improve the efficiency of rural development. The study of such strategies can help agricultural enterprises to adapt to the new requirements of society. Thus, the results of the study confirm the importance of introducing modern management methods in agricultural enterprises to ensure their competitiveness. The analysis of the results shows that they are consistent with many studies, but also reveal certain discrepancies that require further study.

CONCLUSIONS

The study of modern HR management technologies in the agricultural sector determined that their implementation is critical for increasing the efficiency of management processes, improving employee interaction and adapting to a dynamic labour market. The integration of automated HR management systems allows agricultural companies to significantly reduce recruitment costs, simplify the onboarding of new employees and improve the accuracy of their performance assessment. Automation of such processes not only saves time but also reduces the risk of errors that can occur when manually maintaining documentation. This is especially true in a seasonal and rapidly changing production environment,

where responsiveness to change is a key success factor. The introduction of digital platforms for monitoring labour efficiency in the agricultural sector helps to identify weaknesses in management processes, which allows them to be addressed promptly. This underlines the importance of investing in digital solutions that can significantly improve management practices and ensure the competitiveness of agricultural companies.

The results highlight the significant potential of new technologies in the agricultural sector, but more empirical research is needed to better understand their impact. The success of technology adoption in agricultural companies depends not only on the technical equipment but also on the organisational culture and the readiness of employees to change. Notably, technologies should be implemented with due regard to the specifics of the agricultural business, as this can have a significant impact on their efficiency. To optimise the results in the future, it is important to pay more attention to practical aspects, expand the range of cases studied and consider regional peculiarities. This will allow agrarian enterprises to more accurately assess the effectiveness of the implemented measures and develop recommendations for their further optimisation, ensuring sustainability and development in the face of current challenges.

ACKNOWLEDGEMENTS

None.

CONFLICT OF INTEREST

None.

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Сучасні методи управління сільськогосподарськими підприємствами

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Анотація. Метою дослідження було визначення інноваційних підходів у сфері управління персоналом сільськогосподарських підприємств в умовах активного впровадження цифрових технологій. У дослідженні висвітлено ключові аспекти впровадження сучасних методів управління сільськогосподарськими підприємствами з використанням цифрових технологій. Пріоритетним напрямком була визначена оптимізація процесів управління персоналом за допомогою автоматизованих систем, які значно спрощують підбір персоналу, його адаптацію та ведення кадрового діловодства. Як було продемонстровано, автоматизація рутинних завдань дозволяє керівникам зосередитися на стратегічних аспектах управління. У дослідженні описано сучасні цифрові технології для моніторингу полів та аналізу даних про погодні умови, врожайність і ринкові тенденції для покращення управління сільськогосподарськими процесами. Використання аналітичних платформ для моніторингу управлінських процесів дозволило оцінити ефективність впроваджених змін та виявити можливі слабкі місця. Були інтегровані автоматизовані системи обліку фінансових операцій та цифрові платформи для управління віддаленими командами, що дозволило підвищити ефективність та зменшити витрати ресурсів. Крім того, було підкреслено важливість використання електронного навчання та програм дистанційного навчання для забезпечення безперервного професійного розвитку співробітників. Отримані результати можуть стати основою для розробки нових стратегій управління, які сприятимуть підвищенню конкурентоспроможності сільськогосподарських підприємств в умовах цифрової економіки. Практичне значення дослідження визначається можливістю застосування отриманих результатів для підвищення ефективності управлінських процесів на сільськогосподарських підприємствах за рахунок впровадження сучасних цифрових технологій. Автоматизовані системи, аналітичні платформи та інструменти електронного навчання дозволяють підвищити продуктивність праці працівників, оптимізувати робочі процеси, підвищити мотивацію персоналу та адаптуватися до цифрової трансформації ринку

Ключові слова: інновації; лідерство; мотивація; адаптація; ефективність