

Formation of a personnel management system as a factor of increasing competitiveness and the enterprise security level in the context of digital transformation and new legal challenges

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Abstract. The relevance of the subject of forming a personnel management system in the context of the problem of increasing the competitiveness and level of security of enterprises lies in the need to adapt to the challenges of digital transformation and growing internal and external threats. The purpose of the study is to present a modern approach to the formation of an effective personnel management system, considering the emphasis on countering internal threats and ensuring the rights of workers. The research methodology involves the use of the expert analysis method for identifying key threats (the Delphi method as an auxiliary one), the hierarchical analysis method for organising threats and paired comparison for comparing threats. As a result, a list of the most substantial threats to the formation of the personnel management system is presented. Calculations determined that in the second half of the 2020s, the impact of internal threats on the personnel management system and the competitiveness of enterprises is expected to increase, which may negatively affect the provision of labour rights. It is established that the formation of a personnel management system is a complex process that is influenced by various factors and threats. Analysing threats through the prism of this theoretical and methodological framework, it is identified that not only the identified threats are critical, but also the dynamics of

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their development and interaction are crucial for the development of personnel management strategies. It was established that the complex impact of these threats requires not only a one-time response but also continuous adaptation of the personnel management system. The study highlights the importance of countering internal threats, which is crucial for ensuring enterprise security. The practical application of the research results can help businesses create a stronger and safer work environment that will help ensure workers' rights

Keywords: economic security; competitiveness of enterprises; forecasting; negative impact of threats; innovative approach; enterprise potential

Introduction

The relevance of forming a human resources management system in the context of digital transformation and responding to new legal challenges reflects a key trend in the modern business environment. In light of the constant evolution of technology and changes in the legal framework, businesses are faced with the need to adapt their human resource management strategies to ensure not only efficiency and competitiveness but also compliance with new regulatory requirements. This is especially important in the context of data protection, remote work, and digital employee rights, where legal aspects are becoming increasingly complex and require companies to have a high level of legal awareness and flexibility in management processes. Thus, the introduction of best HR practices that consider problems and current threats becomes critical for maintaining the stability and growth of enterprises in the face of rapid changes.

Due to modern socio-political and socio-economic trends, the practice of ensuring security and increasing the competitiveness of the enterprise has changed substantially due to the dynamism of the external environment. It is becoming increasingly important to use adaptive approaches and mechanisms to improve competitiveness and functioning and adhere to an effective overall development strategy. The emphasis shifts to how to solve the current problems that arise dramatically as a result of military operations. A balanced HR management system helps attract and retain talented employees, who are the basis of the company's innovation and competitive advantages. This includes developing effective strategies for motivation, career development, and staff training. Only the right direction in personnel management will allow maintaining the socio-economic balance of chemical industry enterprises constantly.

In the context of the formation of a personnel management system to increase the competitiveness and security of an enterprise in the context of digital transformation, the legal aspect plays a vital role. Current legal and regulatory requirements for digital security and data protection oblige businesses to adapt their HR management systems to new realities. In the context of these trends, it is worth mentioning study by V. Panchenko *et al.* (2022), focused on modelling risk assessment systems for investing in machine-building enterprises. Their work contributes to an understanding of the risk management aspect in HR management, especially in the context of the development of the knowledge economy. Risk management will help businesses adapt beyond simply implementing technological innovations to ensure the protection of employees' personal data. It also includes the development of a legal framework for regulating labour relations in the digital age, ensuring that these frameworks meet international standards and best practices. C.F.H. Villa *et al.* (2022) analysed sustainable competitiveness using data modelling. The study identifies predictive factors by countries, offering a mac-

ro-level perspective that is crucial to understanding global trends that affect HR strategies. Such legal considerations are critical to maintaining a balance between the use of digital technologies for operational efficiency and compliance with legal obligations related to privacy, data protection, and labour rights. Moreover, the legal framework surrounding digital transformation in HR management also highlights the need for transparency, responsibility, and ethical use of digital tools and data analytics in HR practices. Companies need to navigate laws related to employee monitoring, the use of artificial intelligence in recruiting and evaluating employee productivity, and the ethical implications of digital decision-making processes. Compliance with these laws not only reduces the risk of legal liability but also contributes to the creation of a culture of trust and security among employees, which is essential for improving the overall competitiveness of the enterprise. A.J. Saleh *et al.* (2020) delved into the legal aspects of managing cryptocurrency assets in national security systems. This study is particularly relevant given the growing digitalisation of financial assets and its implications for HR management in businesses concerned with both competitiveness and security. The study highlights the importance of incorporating legal expertise into the strategic planning of HR systems, ensuring that digital transformation initiatives are effective in achieving business objectives and conforming to evolving legal standards.

O. Sylkin *et al.* (2018) and V. Bazyliuk *et al.* (2019) assessed financial security and institutional dynamics in the machine-building sector. These studies provide insight into the financial and institutional challenges that HR systems must address to improve enterprise competitiveness and security. L.M. Gitelman, *et al.* (2017) compared the competitiveness of network companies with the own generating units of industrial companies. This comparison is crucial for understanding the different industrial contexts in which HR systems operate. Finally, N. Najah *et al.* (2022) emphasise the importance of HR management in ensuring security in machine-building enterprises and developing information models for e-commerce platforms. These studies highlight the crucial role of HR management in adapting to Industry 4.0 and the digital economy.

For modern science, an urgent scientific task is to present a methodological approach to assessing changes in the impact of modern threats in order to form predictive models that will increase efficiency. Notably, the effectiveness of personnel management in the context of improving competitiveness and safe functioning depends on determining the dynamics of changes in the impact of modern threats. That is why the purpose of the study is to form a modern approach to building an effective personnel management system in the context of increasing its competitiveness and safety.

Materials and methods

The study methodology is based on the method of expert analysis, which helped to establish a list of key threats that enterprises face in the context of digital transformation. This method, based on the knowledge and experience of industry professionals, researchers, and consultants with deep knowledge in the field of personnel management and digital technologies, was used to systematise and summarise the collective experience of experts, provided a solid foundation for identifying threats to the security and competitiveness of the enterprise. In the course of applying the method, 30 people from the industrial sector and ensuring the security of enterprises operating in Ukraine were involved. The expert group was formed by reviewing the respondents' resumes left in open resources. Experts were offered a list of potential threats to the modern chemical industry of Ukraine, using which experts had to assess the importance of certain threats on a scale from 1 to 9. The survey of experts was conducted online in January-February 2024. External threats are presented through Group T: low digital literacy (T1); cyber attacks and information leaks (T2); worsening changes in the labour market (T3); political and military instability (T4). Internal threats are presented through Group Y: internal socio-economic tension between management and personnel (Y1); low level of digital culture in enterprises (Y2); reduced human resources (Y3); inefficient team planning (Y4). Then, a paired comparison of threats was conducted in stages. All the experts involved were aware of the purpose of the survey and were familiarised with how their anonymity was ensured. Thus, the study was conducted in accordance with the principles of the Helsinki Declaration (1975).

Therewith, the Delphi method is used as an auxiliary tool for expert analysis. This method of structured communication is designed to achieve a common opinion on specific issues among a group of experts. Through repeated rounds of questionnaires, the experts provided feedback and adjusted their views based on the group's aggregate responses, re-

sulting in a refined and consensus-based understanding of the importance of threats and problems. The Delphi method is particularly useful because of its ability to leverage collective intelligence and reduce the impact of any individual expert's bias.

The hierarchical analysis method is used to systematise the identified threats in terms of their significance and potential impact. This approach allowed structuring complex problems into a hierarchy of subtasks, each of which was analysed independently. By breaking down the broader problem of HR threats into more manageable components, the relative importance of various threats was assessed, and their priorities were set accordingly. Complementing the hierarchical analysis, pairwise comparison was used to directly compare threats with each other in terms of their impact on the personnel management system. This method involved simultaneously evaluating a pair of threats and determining which of the two is more substantial and to what extent. This systematic comparison quantified the relative importance of each threat.

Given the dynamic nature of digital transformation and its impact on enterprise security and competitiveness, predictive analysis is crucial for predicting future trends. This aspect of the methodology involved predicting the future impact of identified threats based on current data, trends, and expert opinions. Through the graphical method, a modern model of personnel management is presented in the context of improving its competitiveness and safety.

Results

The chemical industry plays a key role in the global economy, as its products and technologies find applications in many sectors, including medicine, agriculture, construction, textiles, etc. It produces a huge range of products, from simple chemicals such as acids and alkalis to complex polymers and specialised pharmaceuticals. However, today it has a number of problems, which leads to a decrease in its overall profit (Fig. 1).

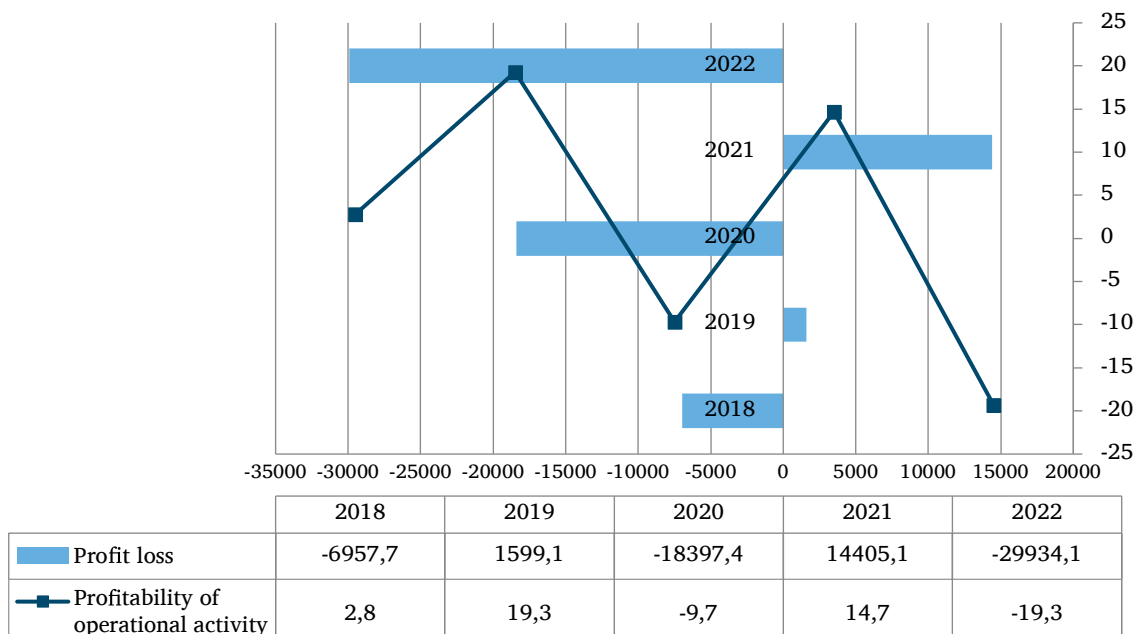


Figure 1. Dynamics of the volume of expenses and profitability of chemical industry enterprises of Ukraine, million. UAH
Source: State Statistics Service of Ukraine (2023)

The decline in the main performance indicators of chemical industry enterprises is influenced by a substantial number of factors, including various threats to both the external and internal environment. It is necessary to determine their impact and predict changes in it for subsequent years. The HR management system, as a factor in increasing the competitiveness and security of the enterprise, is a comprehensive and strategically important approach to the structuring and management of human resources in the organisation. This system covers a number of processes and

practices that are aimed at making optimal use of employees' potential to achieve the organisation's goals and increase its efficiency and competitiveness in the market. The goal is to form an effective personnel management system, the highest level of the hierarchy of the presented model, while the second level will be presented in the form of certain threats, T and Y. The last level is designed to position various situations of development of the negative impact of modern threats: increasing the impact; no changes; reducing the impact (Fig. 2).

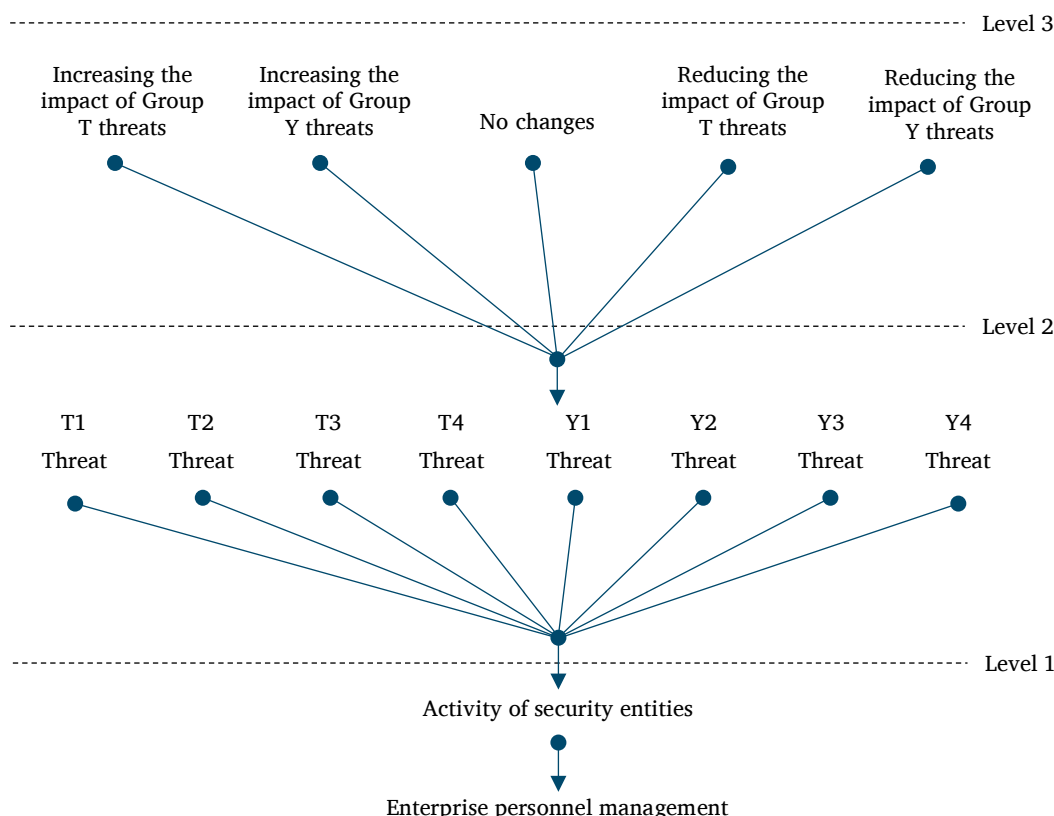


Figure 2. Modelling the task of establishing changes in the impact of modern threats

Note: the second level is represented as defined threats, which, for ease of visualisation, are designated: [T1; T2; T3; T4] and [Y1; Y2; Y3; Y4]

Source: compiled by the authors

Therefore, it is necessary to assess possible options for changing the negative impact of modern threats, considering the opinion of experts:

$$\frac{n(n-1)}{2}, \tag{1}$$

where *n* – the number of previously identified modern threats to the HR management system. This allows systematising and organising *g* threats according to the degree of

their impact on the HR management system, considering the opinions of experts. The table is designed in such a way that all its diagonal positions have a value of 1 (expressing the idea that the threat cannot be compared with itself), and at the bottom of the table, there are inverse values relative to the top. This is done to ensure consistency and objectivity of the assessment, making it easy to identify the relationships between different threats and their impact on the system (Table 1).

Table 1. Results of paired comparisons of possible options and scenarios

Current threats	T1 Threat	T2 Threat	T3 Threat	T4 Threat	Y1 Threat	Y2 Threat	Y3 Threat	Y4 Threat
T1 Threat	Value: 1	Value: 1	Value: 3	Value: 4	Value: 2	Value: 6	Value: 5	Value: 7
T2 Threat	Value: 1	Value: 1	Value: 2	Value: 3	Value: 5	Value: 1	Value: 4	Value: 6
T3 Threat	Value: 1/3	Value: 1/2	Value: 1	Value: 1	Value: 3	Value: 1	Value: 2	Value: 4
T4 Threat	Value: 1/3	Value: 1/5	Value: 1/3	Value: 1/2	Value: 1	Value: 1/4	Value: 1	Value: 1

Table 1, Continued

Current threats	T1 Threat	T2 Threat	T3 Threat	T4 Threat	Y1 Threat	Y2 Threat	Y3 Threat	Y4 Threat
Y1 Threat	Value: 1/4	Value: 1/3	Value: 1	Value: 1	Value: 2	Value: 1/2	Value: 1	Value: 3
Y2 Threat	Value: 1/6	Value: 1	Value: 1	Value: 2	Value: 4	Value: 1	Value: 3	Value: 5
Y3 Threat	Value: 1/5	Value: 1/4	Value: 1/2	Value: 1	Value: 1	Value: 1/3	Value: 1	Value: 2
Y4 Threat	Value: 1/7	Value: 1/6	Value: 1/4	Value: 1/3	Value: 1	Value: 1/5	Value: 1/2	Value: 1
Sum of elements	Value: 0.3	Value: 0.2	Value: 0.1	Value: 0.09	Value: 0.05	Value: 0.1	Value: 0.06	Value: 0.03

Source: compiled by the authors

The next step is to calculate the eigenvalue, consistency coefficient, and mismatch level, and according to Figure 3, all indicators are within acceptable thresholds. The level of inconsistency is a measure used to determine how strongly the estimates provided by experts deviate from the full sequence. A high level of inconsistency may indicate errors in estimates or an unpredictable complexity of the situation. Compliance with the normalised limits is a positive result,

and opens up an opportunity to move on to the next stage of modelling. Therefore, this means that the analysis was consistent and reliable. The eigenvalue value reflects the effective distribution of weight between different threats, the consistency coefficient is within acceptable limits, and this indicates the high quality of expert assessments and their suitability for further analysis.

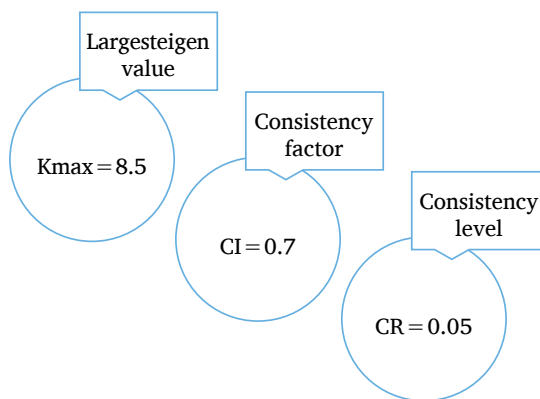


Figure 3. Results of determining the level of inconsistency

Source: compiled by the author

Therefore, next it is necessary to make the paired comparisons for certain three variants of the development of the negative impact of modern threats, according to the formula:

$$\frac{n(m-1)}{2}, \tag{2}$$

where m – number of options. Based on the obtained data, the main result of a paired comparison of changes in impact

by the presence of the first of the identified threats can be presented: internal socio-economic tension between management and personnel. Notably, the threat in the form of internal socio-economic tension between management and personnel has a direct impact on the legal security of the enterprise since this tension can lead to violations of labour legislation, complaints from employees about discrimination, unsatisfactory working conditions, and conflicts that require judicial settlement (Table 2).

Table 2. The result of comparisons of changes in the impact of threats in the context of the presence of internal socio-economic tension between management and personnel

T1 Threat	Increasing the impact of Group T threats	Increasing the impact of Group Y threats	No changes	Reducing the impact of Group T threats	Reducing the impact of Group Y threats
Increasing the impact of Group T threats	Value: 1	Value: 1/5	Value: 1/5	Value: 3	Value: 1/3
Increasing the impact of Group Y threats	Value: 5	Value: 1	Value: 4	Value: 9	Value: 2
No changes	Value: 5	Value: 1/4	Value: 1/7	Value: 7	Value: 4
Reducing the impact of Group T threats	Value: 1/3	Value: 1/9	Value: 1/4	Value: 1	Value: 1/5

Table 2, Continued

T1 Threat	Increasing the impact of Group T threats	Increasing the impact of Group Y threats	No changes	Reducing the impact of Group T threats	Reducing the impact of Group Y threats
Reducing the impact of Group Y threats	Value: 3	Value: 1/2	Value: 1/4	Value: 5	Value: 1
Sum of elements	Value: 0.08	Value: 0.4	Value: 0.3	Value: 0.03	Value: 0.16

Source: compiled by the authors

The results of determining the level of inconsistency are shown in Figure 4. Notably, the indicators shown in this figure fully correspond to a certain level of the norm, which indicates high accuracy and compliance of the analysis with the established standards. This confirms that the detected levels of inconsistency are within acceptable parameters,

which allows concluding on the effectiveness of the methodology used and the reliability of the data obtained. Such compliance is critical for further analysis and development of management strategies, as it provides an accurate understanding of the current situation and allows an adequate response to identified problems.

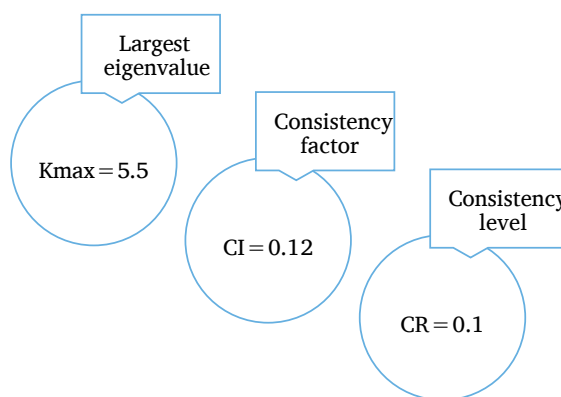


Figure 4. Results of determining the level of inconsistency for T1

Source: compiled by the authors

Then it is calculated in the same way for all other threats of Group T and Group Y. The next stage is the synthesis of priorities in the context of ensuring a high level of competitiveness and ensuring security under the influence of modern threats presented above in the text of the work (T and Y). Substituting the values from the tables described above, considering the essence of the equation, the results that are placed in Table 3 are obtained. There-with, the strengthening of any threats in the personnel management system directly affects the legal security of the enterprise since shortcomings in management can lead

to violation of labour legislation, illegal dismissal, discrimination, and violation of employees' rights to privacy and security. These aspects increase the risk of lawsuits, fines, and negative impact on the company's reputation. The lack of effective measures to prevent intra-organisational conflicts and communication deficiencies can lead to legal problems that require substantial resources to resolve them. Therefore, a stable and effective HR management system is critical for ensuring the legal security of a modern enterprise, reducing the risks of legal violations, and preserving its well-being.

Table 3. Priority matrix for possible changes in the impact of modern threats

U_i	$w_{1i} \cdot w_{1i} + w_{2i} \cdot w_{2i} + w_{3i} \cdot w_{3i} + \dots + w_{8i} \cdot w_{8i}$	
U_1 , Increasing the impact of Group T threats	$0.3 \cdot 0.08 + 0.2 \cdot 0.08 + 0.1 \cdot 0.12 + 0.09 \cdot 0.17 + 0.05 \cdot 0.3 + 0.1 \cdot 0.4 + 0.06 \cdot 0.4 + 0.03 \cdot 0.3$	0.15
U_2 , Increasing the impact of Group Y threats	$0.3 \cdot 0.4 + 0.2 \cdot 0.4 + 0.1 \cdot 0.4 + 0.09 \cdot 0.4 + 0.05 \cdot 0.2 + 0.1 \cdot 0.1 + 0.06 \cdot 0.1 + 0.03 \cdot 0.02$	0.303
U_3 , No changes	$0.3 \cdot 0.3 + 0.2 \cdot 0.3 + 0.1 \cdot 0.3 + 0.09 \cdot 0.2 + 0.05 \cdot 0.2 + 0.1 \cdot 0.16 + 0.06 \cdot 0.18 + 0.03 \cdot 0.02$	0.235
U_4 , Reducing the impact of Group T threats	$0.3 \cdot 0.03 + 0.2 \cdot 0.05 + 0.1 \cdot 0.07 + 0.09 \cdot 0.15 + 0.05 \cdot 0.2 + 0.1 \cdot 0.27 + 0.06 \cdot 0.26 + 0.03 \cdot 0.22$	0.101
U_5 , Increasing the impact of Group Y threats	$0.3 \cdot 0.16 + 0.2 \cdot 0.2 + 0.1 \cdot 0.2 + 0.09 \cdot 0.18 + 0.05 \cdot 0.1 + 0.1 \cdot 0.05 + 0.06 \cdot 0.07 + 0.03 \cdot 0.12$	0.141

Source: compiled by the authors

Thus, the results of calculations demonstrated the need to focus on countering the negative impact of internal threats of Group Y since the results of U_2 demonstrate the growth of their influence in the future. In this context, the

author's vision of the modern HR management system in the context of increasing competitiveness and security is formed, considering the emphasis on countering internal threats (Fig. 5).

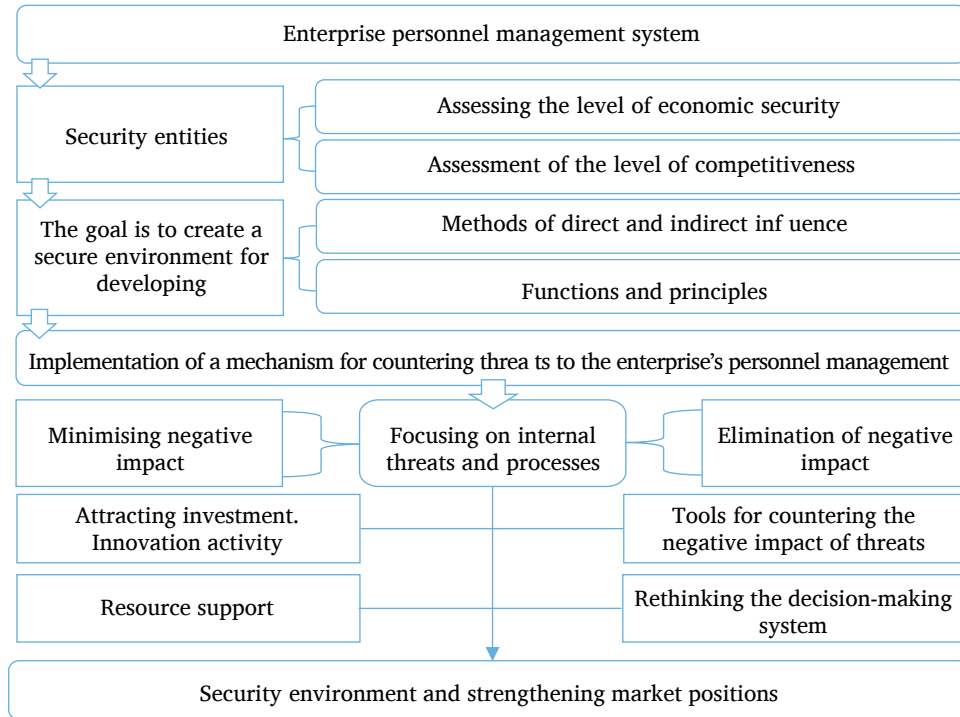


Figure 5. Model of a modern HR management system in the context of improving competitiveness and security

Source: compiled by the authors

The modern HR management system, focused on improving competitiveness and security and emphasising countering internal threats, plays a key role in ensuring the legal security of the enterprise. Integrating the principles of corporate ethics, creating transparent procedures for hiring, adapting, evaluating, and developing personnel contributes to creating a fair and inclusive work environment. Such an environment minimises the risks of discrimination, wrongful dismissal, or other actions that may lead to lawsuits. In addition, effective communication and the inclusion of employees in the decision-making process reduce internal socio-economic stress, which is also an important factor in legal security. Therewith, it should be understood that the use of advanced HR technologies for analysing personnel data allows identifying potential internal threats at an early stage and developing strategies to neutralise them. For example, training management systems can be used to conduct trainings on legal education and work ethics, raising employees' awareness of the legal aspects of their work. This approach not only promotes a culture of mutual respect and compliance with the law in the organisation but also ensures its resilience to possible legal challenges, thereby strengthening overall security and competitiveness in the market.

The formation of a human resources management system in the context of digital transformation is a key factor that substantially affects the ability of an enterprise to improve its competitiveness and security. Digital transformation not only changes traditional approaches to HR management but also opens up new opportunities for optimising

workflows and improving efficiency. It is important that companies actively invest in developing the digital skills and competencies of their employees while maintaining a culture of innovation and continuous learning. Digital transformation in the chemical industry contributes to improving its competitiveness and operational security by optimising work processes and introducing innovations. It plays a key role in developing staff digital skills, maintaining a culture of continuous learning, and managing resources effectively.

The conditions of digital transformation require enterprises to adapt to new technologies and change their management strategy, particularly in terms of ensuring labour safety and the personal data of employees. Based on the legislation of Ukraine, the management of enterprises can improve the level of security and ensure compliance with the requirements for the protection of personal data. Implementation of the HR management system in accordance with the Labour Code of Ukraine (1996) and Law of Ukraine No. 2297-VI "On Personal Data Protection" (2010) should provide for the development and implementation of an effective policy for the storage and processing of employees' personal data. This may include protecting data from unauthorised access, implementing encryption mechanisms, and establishing rules for accessing information (Yakymenko, 2023). Management should ensure that all employees are familiar with the requirements for occupational safety and personal data protection, as well as regularly check compliance with the implemented procedures. This may include conducting trainings, risk assessments, and audits on security and data protection.

Legislation on personal data protection and labour protection (Law of Ukraine No. 2694..., 1992) can be complex and changeable. The company's management should be able to consult with lawyers to stay aware of the latest legislative changes and respond to them. Considering these aspects of legislation, the company's management can ensure a high level of security and protection of personal data in the context of digital transformation, which is a challenge for a modern state governed by the rule of law (Kopcha, 2021). This will not only contribute to compliance with the requirements of the law but also help maintain the trust of employees and customers, which is an important factor for the successful operation of the enterprise in modern conditions.

Discussion

A study by H.J.M. Shakhatareh *et al.* (2023) are dedicated to developing the legal framework in the field of national security, emphasising the growing importance of compliance with legislation and security in the digital age. O. Podra *et al.* (2020) in the study on innovation development and human capital as determining factors of the knowledge economy, obtained results that are consistent with the findings on the key role of human capital in improving the competitiveness and security of enterprises. O. Sylkin *et al.* (2023) examine the impact of international tourism on sustainable development and Ye. Rudnichenko *et al.* (2019) – qualitative impact of customs affairs on the system of economic security of the enterprise. Despite the fact that their study has a different vector, their use of the same methodological approach to improving efficiency allows researchers to come to similar conclusions to those made in this study – the need to use personnel to achieve a sustainable competitive advantage and a sustainable level of economic security of enterprises.

These findings are also supported by A. Poolkrajang (2023), focusing on developing competencies in the logistics sector. As in this study, the author emphasises the need to develop skills to adapt to digital challenges. Similarly, M.M. Ali *et al.* (2021) discuss the competence structure for effective HR management, which echoes the conclusions about the need for a comprehensive HR management strategy to counter internal and external threats. However, there are differences in the specific threats identified. This study focuses directly on the chemical industry and its unique challenges in the digital age, which may not be directly related to the education and logistics sectors discussed by A. Ningsih *et al.* (2022) and A. Poolkrajang (2023), respectively. In addition, this study focuses on internal threats compounded by digital transformation, but this aspect is not mentioned in the cited sources. The conclusions of these studies on the crucial role of human resource development in improving the competitiveness and security of enterprises are worth supporting.

Emphasis on competence development, made by A. Poolkrajang (2023) and M.M. Ali *et al.* (2021), was also made in this study due to the fact that digital transformation requires a high level of adaptability and skills from personnel. In the context of these findings, observations of A. Ningsih *et al.* (2022) on the importance of education in preparing the workforce for digital challenges, supporting our argument that comprehensive HR strategies are notable. Therewith, any disagreement with the conclusions or approaches of the cited papers primarily comes from the specificity of the object of this study, which led to a detailed consideration of internal threats associated with digital transformation.

While the importance of development and human resources management is a common theme, this study focuses on the unique challenges and threats faced by chemical industry enterprises in the digital transformation process. In this regard, they may not be fully covered by broader human resources management structures and competencies. Moreover, the emphasis on predictive analysis to predict the future impact of threats, both internal and external, identified a perspective that was not considered in the cited studies. This analytical approach is crucial for developing preventive strategies to reduce the risks associated with digital transformation.

K. Piwowar-Sulej (2021) highlights the importance of continuous learning and development for manufacturing engineers. This reflects an understanding of the importance of developing employees' skills and competencies as a response to technological change. D. Qutni *et al.*, (2021) and D.T. Tu & D.T.T. Huyen (2021) emphasise the importance of personnel management in education to achieve the highest quality of the educational process. These studies point to the general need for effective personnel management in various sectors to improve quality and efficiency, which is consistent with the comments made on the need to adapt management practices to modern conditions. A. Todoshchuk *et al.* (2023), examining the role of IT in shaping effective HR management systems, established that they allow businesses to better navigate economic security. This confirms our understanding of the importance of digitalisation in HR management processes. I. Semenets-Orlova *et al.* (2021) highlight the importance of emotional intelligence for leadership in educational institutions during a pandemic, expanding the context of this study by highlighting the importance of soft skills in effective HR management.

The parallels drawn between this and other studies on the subject highlight the multifaceted nature of HR management in a rapidly developing digital environment. This highlights the need for a holistic approach that not only anticipates future trends and challenges but also integrates them into a robust, adaptable and forward-thinking HR management system.

Conclusions

The modern HR management system faces a number of legal challenges that require organisations not only to understand the current legislation but also to be flexible to adapt to constant changes. One of the key challenges is compliance with labour laws and ensuring the rights of employees, which includes regulating working hours, vacations, working conditions, minimum wages, and workplace health and safety. In addition, with the development of digital technologies, the issue of protecting employees' personal data arises, which requires companies to implement effective mechanisms for storing and processing information in accordance with the General Data Protection Regulation (GDPR) and other local data protection laws. Adapting to international standards and requirements in labour relations, especially for multinational corporations operating in different jurisdictions, is a substantial challenge. This includes not only understanding and complying with local laws in each country of presence but also managing cultural and ethical differences in approaches to work and employment. Businesses must address challenges related to teleworking, including regulating remote work, ensuring equality and equity for all categories of employees, and developing policies that balance flexibility and control in order to maintain productivity and motivate staff.

In the course of the study of the formation of a personnel management system in the context of digital transformation, its important role in improving the competitiveness and security of enterprises was noted. The study showed that effective personnel management both optimises work processes and protects the enterprise from the range of modern threats that are relevant for the chemical industry. Key results show that in the future, it is internal threats to personnel management and the competitiveness of enterprises will increase. This forecast is crucial because it highlights the dynamic nature of threats in the digital transformation era and their impact on emerging HR management systems. The results of the study emphasise that threat mitigation is not static but requires constant adaptation and precautions.

Thus, the formation of a personnel management system appears as a multi-faceted process, which is influenced by various factors and threats. This complexity requires a strategic approach to HR management that is holistic and predictive in nature. Identifying serious threats through this study provides businesses with a framework for prioritising their response strategies, ensuring the reliability and resilience of HR management systems. Moreover, the expected shift towards the predominance of internal threats requires a reassessment of current HR strategies. Businesses should use forward-thinking methodologies to predict and mitigate

these risks while maintaining their competitive advantages and level of security. This requires commitment not only to the introduction of modern technologies but also to the development of a culture of continuous learning and adaptation among staff.

The formation of an effective HR management system in the era of digital transformation is a prerequisite for maintaining and improving the competitiveness and security of enterprises. One of the key aspects for further research is the impact of the latest technologies on personnel management. This may include analysing the effectiveness of implementing artificial intelligence and machine learning to optimise employee recruitment, training, and evaluation processes. It is also important to investigate the impact of digital culture and digital leadership on employee engagement and productivity. Special attention should be paid to the impact of digital transformation on corporate culture and changes in the organisational structure that accompany digital transformation.

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Conflict of interest

None.

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Формування системи управління персоналом як чинник підвищення конкурентоспроможності та рівня безпеки підприємств в умовах цифрової трансформації й нових правових викликів

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Анотація. Актуальність теми формування системи управління персоналом в контексті проблеми підвищення конкурентоспроможності та рівня безпеки підприємств полягає в необхідності адаптації до викликів цифрової трансформації та зростаючих внутрішніх і зовнішніх загроз. Метою статті є представлення сучасного підходу до формування ефективної системи управління персоналом з врахуванням акценту на протидії внутрішнім загрозам та забезпечення прав робітників. Методологія дослідження передбачає застосування методу експертного аналізу для визначення ключових загроз (метод Дельфі як допоміжний), метод ієрархічного аналізу для впорядкування загроз й парного порівняння для порівняння загроз. В результаті представлено перелік найбільш вагомих загроз формування системи управління персоналом. За результатами обчислень встановлено, що в другій половині 2020-х рр. очікується посилення впливу внутрішніх саме загроз на систему управління персоналом і конкурентоспроможність підприємств, що може негативно вплинути на забезпечення трудових прав. Встановлено, що формування системи управління персоналом є складним процесом на який впливають різні фактори й загрози. Аналізуючи загрози крізь призму вказаної теоретико-методологічної бази виявлено, що не тільки ідентифіковані загрози є критичними, але й динаміка їх розвитку та взаємодія мають вирішальне значення для розробки стратегій управління персоналом. Було встановлено, що комплексний вплив цих загроз вимагає не лише одноразової реакції, але й неперервної адаптації системи управління персоналом. Дослідження підкреслює важливість протидії внутрішнім загрозам, що є критичним для забезпечення безпеки підприємств. Практичне застосування результатів дослідження може допомогти підприємствам створити більш міцну та безпечне робоче середовище, що допоможе забезпечити права робітників

Ключові слова: економічна безпека; конкурентоспроможність підприємств; прогнозування; негативний вплив загроз; інноваційний підхід; потенціал підприємства