CONCEPTUAL FOUNDATIONS FOR THE FORMATION OF PERSONNEL STRATEGY AT INDUSTRIAL ENTERPRISES IN THE CONTEXT OF DIGITALISATION

Valentyna Voronkova¹, Oleksandr Cherep², Lilia Bexhter³

Abstract. The relevance of research on the conceptual foundations of personnel strategy formation in industrial enterprises under the conditions of digitalisation appears to be very relevant, which is due to the following factors. The digital transformation of industrial enterprises leads to the emergence of new technologies, processes and personnel requirements. The HR strategy must adapt to these changes in order to ensure that the company has the necessary qualifications and skills. Under the conditions of digitalisation, the demand for specialists in the field of information technologies and digital data processing is increasing. Companies need to develop strategies to attract, retain and develop such personnel in order to remain competitive. Digital technologies make it possible to automate and optimise business processes, so the HR strategy must reflect these changes and take into account the new roles and requirements for personnel. As technologies and processes change, there is a need for continuous training and development of personnel. The HR strategy should include training and development programmes aimed at increasing digital skills. Studying the conceptual foundations of personnel strategy development in the conditions of digitalisation will help companies to effectively adapt to contemporary challenges and ensure their competitiveness. The purpose of the article is to disclose the conceptual foundations of forming a personnel strategy at industrial enterprises in the context of digitalisation. The methodology of the study is an interdisciplinary approach based on the idea of effective development of an industrial enterprise as a sociotechnological system, which allowed to combine systemic knowledge that will help to understand how social factors affect the implementation of technologies and the development of the enterprise as a whole. The enterprise as a complex social and technological system should be analysed within the framework of the socio-humanistic approach, which is based on the recognition of the human being as the subject and object of all processes. In the context of a socio-humanistic approach to business analysis, it is important to address aspects related to social relations, human needs and values, and the interaction between employees and management. The fundamental principles of the socio-humanistic approach, such as taking into account the individual needs of employees, supporting their development and satisfaction from professional activities, can be applied to the analysis of an enterprise’s performance. This means that the efficiency and success of an organisation is assessed not only by financial indicators, but also by the level of satisfaction and development of its employees. Studying the social interactions, communication and psychological climate of the team can help to understand what factors contribute to or hinder the effective functioning of the organisation. This approach allows to see the company as a living, organic system in which human relationships and values play an essential role. The study opens up the possibility of integrating different scientific disciplines, such as sociology, technology, economics, psychology and management, in order to understand the complex relationships in today’s industrial companies. The implementation of the recommendations will help companies improve the efficiency of personnel management, provide the necessary human resources and meet the requirements of the modern market. The research generates new knowledge in the field of personnel management and digitalisation, has direct practical application for companies in increasing their competitiveness and stability in the market.

Keywords: conceptual dimensions, personnel strategies, industrial enterprises, digitalisation, digital transformation, digital optimisation.

JEL classification: J21, J24, O32, O33, L25, L86, O14, M15

¹ Engineering Institute of Zaporizhzhia National University, Ukraine (corresponding author).
E-mail: valentinavoronkova236@gmail.com
ORCID: https://orcid.org/0000-0002-0719-1546

² Zaporizhzhia National University, Ukraine.
E-mail: cherep2508@gmail.com
ORCID: https://orcid.org/0000-0002-3098-0105

³ Zaporizhzhia National University, Ukraine.
E-mail: behter2018@ukr.net
ORCID: https://orcid.org/0000-0001-9931-9780
1. Introduction

The conceptual foundations of personnel strategy formation in industrial enterprises under the conditions of digitalisation play an important role in ensuring successful transformation and adaptation to the digital economy. The core aspects of this strategy can be seen in the framework of several key principles and approaches. The HR strategy should be closely linked to the overall strategy of the company, which means identifying the personnel needs for the implementation of digital initiatives, taking into account technological and innovation needs, as well as developing flexible structures to adapt to changes. The strategy should include investment in the development of digital and technological skills at all levels of the organisation, which may include training in the use of the latest technologies, internship programmes and training for changing work processes. Recruiting and attracting talented people with the necessary digital and analytical skills is becoming a critical issue. Companies need to use innovative recruitment and engagement methods, such as digital platforms and data analytics, to make the right selection of candidates. The HR strategy should also take into account the creation of a digital culture in the organisation that supports innovation, openness to change and learning at all levels. Organisations should create incentives to engage employees in digital initiatives and facilitate communication and collaboration between departments. An effective personnel strategy involves continuous monitoring and analysis of the results of the implementation of digital initiatives, assessment of the impact of the strategy on business performance, and adaptation to changes in the internal and external environment. Therefore, the conceptual basis of personnel strategy formation in industrial enterprises under the conditions of digitalisation requires a systematic approach and the development of an action plan taking into account the technological, cultural and organisational aspects of managing the competitiveness of enterprises within the framework of food security (Cherep, Makazan, Tomareva-Patlahova, Lepeklyn & Kanabekova, 2023).

The relevance of analysing the enterprise as a complex social and technological system in the context of the socio-humanistic approach is determined by several key factors. The growing attention to humanistic aspects in business is reflected in the growing interest in human capital, personnel development and improving the quality of life of employees. Companies are not only producers of goods and services, but also complex social systems with their own culture, values and relationships. There is a growing awareness of the importance of the human factor in achieving organisational success and creating a favourable environment for employees. In addition to profit, society expects companies to uphold ethical standards in their dealings with employees, consumers and society as a whole. The consideration of humanistic principles becomes important against the background of the introduction of new technologies, organisational changes and adaptation to new market conditions. Consequently, the analysis of the enterprise taking into account the socio-humanistic approach provides great opportunities for the balanced development of the organisation, improving the quality of life of employees and creating a favourable social and economic environment of a digitalised society (Andrushchenko, Yershova-Babenko, Kozobrodova, et al., 2022).

2. Analysis of Recent Researches and Publications

The authors rely on the work of Cherep A., Voronkova V., Androsova O. (2022), in which they tried to prove that reformatting the enterprise model based on the concept of anthropocracy involves a transition to a humanistic view that focuses on people, relationships, empowerment and competence development. This model lays the foundation for organisational activity by rethinking the company as a tool for achieving a socially just and environmentally sustainable future. The management of the organisation is aimed at satisfying the needs and interests of employees, creating a favourable environment for the development of their potential and self-realisation. It is widely believed that people are the most important resource of the organisation, and the development and support of human resources becomes a priority issue in the management strategy. This approach results in an organisation that puts people at the centre of its activities, strives to achieve efficiency and success by promoting the development of its employees and ensuring sustainable development in interaction with nature. The article by Naranjo-Valencia J. C., Jimenez-Jimenez D., Sanz-Valle R. (2011) is impressive, in which the evaluation of human capital as a determining factor for increasing the profitability and competitiveness of the company, the analysis of human capital and its characteristics, the systematisation of approaches and methods of human capital evaluation at the level of the company and within the framework of the national economy have been carried out. The article considers the issue of using human capital as one of the main indicators of effective economic development, along with the analysis of the methodology of assessing this capital. The study includes the analysis of contemporary methods of human capital assessment at different levels – micro-, meso- and macro-economic, as well as their comparative analysis. For this study, the example of forming a model of enterprise competitiveness management, which includes economic, organisational...
and legal subsystems, presented in Ricardo D. (2007), was used. The availability of a competitive advantage is a key aspect of competitiveness. Increasing the level of competitiveness and optimising its functioning in conditions of uncertainty are defined as priority trends for the development of the agrarian sphere of the national economy. The opinion of the authors of the article Lee J., Lin L. (2022), in which economic systems are considered as socio-cultural phenomena with an ontological focus, is rather interesting. They gave rise to the concept of a nooeconomics of culture of an ideational character, in which human cognitive abilities are recognised as the main economic and evolutionary resource, and educators act as carriers of an ideational cultural mentality and form a meritocratic social class. The authors agree with the opinion of Shatalova L. (2023) on the need to use the competence potential of living labour, which is due to the need for evolutionary changes in the labour potential of the workforce as a response to the transformation of embodied labour in the context of the digitalisation of the economy. The substantiation of the conceptual scheme of the formation of the competence potential of living labour includes the selection and coordination of the structural elements of such categories: "potential", "competence", "labour potential", implemented in an industrial enterprise, adequate to the new economic environment. The authors of this study rely on the findings of V. Marienko (2022), who proved that the conceptual foundations for the formation of a personnel strategy at industrial enterprises in the context of digitalisation are informatisation and the digital economy, which provide great opportunities but also pose numerous challenges.

Businesses, governments and individuals must actively adapt to this phenomenon by adopting advanced technologies, prioritising data management, developing digital skills and adopting ethical and responsible practices. Only in this way will they be able to realise the full potential of the digital economy. The digitalisation of the economy is a major transformative force with far-reaching consequences. It is ushering in a new era of rapid change and innovation, offering opportunities for growth and increased efficiency, but also creating challenges that need to be carefully considered. As this trend continues to develop, it will shape the future of industries, economies and societies around the world. The papers by Ukrainian researchers focus mainly on the economic and technological aspects of "digitalisation". However, it is proposed to address this issue through a transdisciplinary approach, in which the efforts of scientists from various fields of knowledge (humanities, medicine, psychology, computer science, etc.) focus on finding general recommendations and provisions that will help adapt people to the new social conditions of the "digital society". One of these transdisciplinary areas is psychosynergetics, a post-nonclassical field of knowledge that implements the synergistic ideas outlined in the article by Andrushchenko V., Yershova-Babenko I., Kozobrodova D., Seliverstova A., Lysakova I. (2022). The digital development of today's world requires the creation of a cognitive model of education based on artificial intelligence. The cognitive model emphasises the importance of deep learning, the understanding of digital educational concepts and the formation of values and culture necessary to meet the challenges of modern development. The development of the cognitive model of education aims at developing critical and reflective thinking, improving cognitive abilities, skills and active learning, including online learning. This is well presented in the paper of Klovov I., Shapurov O., Voronkova V., Nikitenko V., Oleksenko R., Khavina L., Chebakova Yu. (2023), which is the focus of this paper. The analysis of digital technologies that allow the automation and optimisation of business processes takes into account changes and requirements, new roles and requirements for the personal digital (network, platform) economy, the analysis of which is presented in the article "Machine, Platform, Crowd. How to Tame our Digital Future" (2019) McAfee A., Brynjolfsson E. and Kelly K. (2018), which played a fundamental role in the analysis of digital technologies. The study was conducted in the context of the evolution of industrial revolution digital technologies from 4G to 5G and the challenges of digital globalisation, as reflected in Russell Stuart's "Human Compatible: Artificial Intelligence and the Problem of Control" (2020).

As a result, the world's largest developed countries consider digitalisation to be one of the essential strategies for increasing national competitiveness, promoting economic growth and social development.

3. Research Methodology

An interdisciplinary approach is used to analyse the conceptual foundations of personnel strategy formation in industrial companies under the conditions of digitalisation, based on the analysis of the company as an open system subject to the laws and principles of other open systems, characterised by the laws of group dynamics, the development of interpersonal relations that occur between people. It can include elements of economics, sociology, technology, psychology and management.

The systems approach views the object of research as a system, a complex network of interdependent elements and processes; it emphasises the importance of understanding the interaction between system elements and their impact on its functioning and
The systems approach may include the analysis of the interaction between technological change, organisational culture, strategic management and the workforce. Therefore, the use of an interdisciplinary approach can help to combine the knowledge of different scientific disciplines in order to understand a problem from different perspectives, while a systemic approach helps to consider this problem as a complex system with interdependent elements. The anthropological method helps to gain a fuller and deeper understanding of a person and their culture in all its diversity. This method consists of observing, researching and analysing people's lives and culture. The main idea is to understand the cultural differences, traditions, customs and behaviour of people by studying their lifestyle, language, religion, architecture, etc. The axiological method is used to analyse and evaluate the values that influence people's behaviour and choices. It helps to identify what values are important to different cultural groups and how these values influence their way of life, problem solving and decision making. An axiological approach can use various methods, including the analysis of moral systems, the study of ethics, and the assessment of cultural values. These methods help researchers to better understand human behaviour, culture and society, but from different perspectives. The anthropological method helps to understand cultural characteristics and diversity, while the axiological method helps to study values and their impact on society. Agile is an approach to software development that focuses on iterative and incremental development, collaboration between developers and customers, and the ability to respond quickly to change. The fundamental principles of agile methodology are outlined in the "Agile Programming Manifesto", which includes 4 values and 12 principles. The main types of agile methodologies include Scrum, Kanban, Extreme Programming (XP) and Lean. Each has its own characteristics, but they all aim to quickly adapt to changing requirements and develop the product through short iterations called sprints, work cycles or similar terms. It is important to note that their use allows development teams to be more flexible and responsive to changes in the software development process. These principles help to create an efficient and flexible software development process that can respond quickly to changing requirements and deliver greater value to customers. Within the framework of developing a personnel strategy for industrial companies in the context of digitalisation, various methods and approaches are used to ensure effective personnel management. Conducting a workforce competency assessment to determine the skills and knowledge needed to operate successfully in a digital environment can include evaluating existing skills, identifying knowledge gaps, and planning for training and development of employees. The development of a long-term strategy for attracting, developing and managing personnel takes into account the specificities of digitalisation and its impact on work processes and skills. The development of effective recruitment and staffing strategies, taking into account the needs of digitalisation, may include the active involvement of specialists in information technology and digital innovation. The development of training and staff development programmes to ensure the necessary skills in digital technologies, as well as the development of leadership and other key skills, takes place in the context of change management. Implementing change management strategies to support the transition to digital technologies includes analysing communication with staff, ensuring support and creating mechanisms for adopting new technologies. The use of performance evaluation and monitoring systems to assess the effectiveness of personnel management strategies in the context of digitalisation, and the correction of strategies based on the data obtained and the use of a data-driven approach. The humanistic approach, represented by autocracy, emphasises the importance and development of individual human capabilities and needs, recognising their autonomy and self-expression. The humanistic approach, represented by autocracy, is aimed at supporting the self-determination of the individual, as well as his or her independence in choosing his or her life path and values. This approach emphasises the importance of developing the individual through the prism of his or her own potential and satisfaction of internal needs. Anthropocracy reflects the belief that each person has the internal resources and capabilities to achieve their own harmony and self-realisation. This supports the idea of free personal development without external constraints and dictates of social norms. These methods help industrial enterprises to effectively formulate a personnel strategy that takes into account the impact of digitalisation on their operations and development.

The aim of the study is to theoretically and practically examine the conceptual foundations of the formation of personnel strategy at industrial enterprises in the context of digitalisation. Objectives of the study: 1) to substantiate the conceptual dimensions of personnel strategy at industrial enterprises; 2) to analyse the conceptual and categorical apparatus of personnel strategy at industrial enterprises in the context of digitalisation; 3) to find out the evolution of industrial enterprises from personnel management to human resource management in the digital age.

4. The Evolution of Industrial Enterprises from Personnel Management to Human Resource Management in the Digital Age

Modern companies in the age of digitalisation are facing enormous problems in finding qualified
The evolution of personnel management to human resource management in the context of digitalisation, takes place in the process of changing approaches to the role and meaning. The evolution has gone through the following stages:

1) Personnel management is characterised by an approach based on the administrative function. The focus was on administrative tasks such as collecting and storing documentation, maintaining personal files, processing payroll, etc. Employees were seen as a means to an end, rather than as a core success factor.  

2) Human resource management gradually put the employee at the centre, not only as a resource, but also as a key element of the competitiveness of a digital company based on intelligent machines (McAfee, & Brynjolfsson, 2019). In large companies, personnel management has begun to transform into human resources management. A new approach has emerged, where employees are seen as a strategic resource that can generate competitive advantage. The focus shifts from administrative processes to the strategic management of human resources, including recruiting, developing, motivating and retaining staff.  

3) In the context of digitalisation, the personnel policy of industrial companies is associated with a key tool for human resource management. Instead of reactive HR measures, companies are developing progressive strategies to attract, develop and retain talented employees. Personnel policy includes aspects such as recruitment strategies, career planning, training and development programmes, performance evaluation systems, motivation programmes and much more. Companies are also concerned with creating a healthy organisational climate that promotes employee efficiency and satisfaction. To sum up, the evolution from personnel management to human resource management in the context of industrial companies' personnel policy takes place through the transition from traditional administrative functions to a strategic approach to human capital management, with the aim of achieving competitive advantages and creating a favourable organisational environment, using the advantages of artificial intelligence (Russell Stuart, 2020).

The evolution from personnel management to human resource management in the context of digitalisation, takes place in the process of changing approaches to the role and meaning. The evolution has gone through the following stages:

1) Personnel management is characterised by an approach based on the administrative function. The focus was on administrative tasks such as collecting and storing documentation, maintaining personal files, processing payroll, etc. Employees were seen as a means to an end, rather than as a core success factor.  

2) Human resource management gradually put the employee at the centre, not only as a resource, but also as a key element of the competitiveness of a digital company based on intelligent machines (McAfee, & Brynjolfsson, 2019). In large companies, personnel management has begun to transform into human resources management. A new approach has emerged, where employees are seen as a strategic resource that can generate competitive advantage. The focus shifts from administrative processes to the strategic management of human resources, including recruiting, developing, motivating and retaining staff.  

3) In the context of digitalisation, the personnel policy of industrial companies is associated with a key tool for human resource management. Instead of reactive HR measures, companies are developing progressive strategies to attract, develop and retain talented employees. Personnel policy includes aspects such as recruitment strategies, career planning, training and development programmes, performance evaluation systems, motivation programmes and much more. Companies are also concerned with creating a healthy organisational climate that promotes employee efficiency and satisfaction. To sum up, the evolution from personnel management to human resource management in the context of industrial companies' personnel policy takes place through the transition from traditional administrative functions to a strategic approach to human capital management, with the aim of achieving competitive advantages and creating a favourable organisational environment, using the advantages of artificial intelligence (Russell Stuart, 2020).

Thus, the analysis proves that the most significant change in the contemporary conceptual dimension from traditional to modern HR is the shift from a traditional administrative approach to a more strategic orientation of the technology that defines the future (Kelly, 2018). Managers of industrial companies are becoming aware of the orientation of technology, in which human resources are not only costs, but also valuable capital that can provide a competitive advantage. As a result, HR departments are refocusing on talent development, attracting, retaining and developing employees who support the strategic goals of the organisation. Modern technologies such as cloud solutions, data analytics, artificial intelligence and process automation enable the optimisation of many HR processes, including selection, training and development, personnel administration and reporting. Industrial leaders are actively investing in creating a positive employer image to retain talented employees. This means a focus on culture, values, career development and the working environment, including the increasing importance of remote working, flexible working, part-time working and more. HR departments need to develop policies that reflect these changes and meet the needs of today's workforce. HR professionals are evolving from administrators to strategic business partners. They are becoming advisors to senior management on strategic people management and influencing business decisions.
From diversity to climate change adaptation

Table 1

<table>
<thead>
<tr>
<th>Dimension of evolution</th>
<th>Conceptual foundations of the evolution from traditional dimensions to modern HR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Hidden workforce</td>
<td>With digitalisation, HR leaders are realising the importance of tapping into a workforce of freelancers, contractors and remote workers who bring unique skills and perspectives. By harnessing this diverse talent, organisations can gain access to a wider range of expertise while increasing flexibility in the way they work.</td>
</tr>
<tr>
<td>2 Reach the point of no return with DEIB</td>
<td>Diversity, Equity, Inclusion and Belonging (DEIB) are core strategies in the human resources policies of industrial companies in the context of digitalisation, and they act as an inexorable priority for HR managers. Organisations will support these ideals by actively implementing policies that promote equal opportunities for all employees, regardless of their background or identity.</td>
</tr>
<tr>
<td>3 Human resources contribute to climate change adaptation</td>
<td>As the issue of climate change becomes more prominent, companies are realising that they have a responsibility to solve the environmental problems of their operations. In 2024, HR has an important role to play in driving efforts to adapt to climate change by embedding sustainable development practices in all of the organisation’s HR processes.</td>
</tr>
<tr>
<td>4 SMART goals in HR models</td>
<td>The old HR models are a thing of the past, under the conditions of digitalisation the requirements for SMART in HR models have increased and in the future there will be more changes.</td>
</tr>
<tr>
<td>5 From diversity to organisational integrity</td>
<td>HR is moving from an isolated function to a more collaborative approach. The traditional view of HR as a separate department within the organisation is evolving and HR professionals are actively seeking opportunities to collaborate with other departments and divisions, recognising that holistic solutions require a holistic approach to the organisation of HR operations.</td>
</tr>
<tr>
<td>6 Human resources as purely transactional operation</td>
<td>HR professionals play a strategic role in organisations, actively contributing to the achievement of business objectives and stimulating organisational growth. This means using data analytics tools and technologies to inform decision-making and align HR strategies with overall business objectives.</td>
</tr>
<tr>
<td>7 HR – public relations</td>
<td>The boundaries between human resources and public relations are becoming increasingly blurred. As corporate values and culture become more transparent, HR teams are working closely with PR departments to ensure that employer branding initiatives align with the company’s external image.</td>
</tr>
<tr>
<td>8 HR as a force of goodness and humanism</td>
<td>In the field of human resource management, the concept of HR as a force for good and humanism is attracting increasing attention. Gone are the days when HR departments were solely concerned with administrative tasks; today, companies recognise that HR can drive positive change both inside and outside the organisation.</td>
</tr>
</tbody>
</table>

Source: formed by the authors

These changes in HR operating models reflect the demands of today’s labour market and the strategic needs of organisations to attract, retain and develop talent for success. These changes reflect the shift that is taking place in the field of human resource management towards the recognition of the integral role of human resources in shaping the success of the organisation through the formation of digital competencies of personnel (Shatalova, 2023).

Recruitment marketing is a strategic approach to attracting talented candidates for vacancies within the organisation. This approach combines marketing and recruitment techniques to attract potential employees through various communication channels and strategies. Recruitment marketing helps companies attract and retain talented employees, giving them a competitive edge in the labour market. By moving from attracting talent to harnessing it, organisations can unlock the hidden potential of their people. It is about empowering people to reach their full potential while filling skills gaps within the organisation and creating opportunities for them to explore new roles or HR projects (Cherep, Voronkova, & Androsova, 2022).

5. Conclusions

A study of the conceptual foundations of personnel strategy formation in industrial companies against the background of digitalisation showed that many industrial companies are implementing digital technologies, which may require changes in personnel skills and the creation of new positions. The importance of soft skills such as creativity, communication and leadership is increasing. Personnel policies can aim to develop these skills in employees. New ways of working are emerging, such as freelancing, temporary work and telecommuting, which can affect recruitment and retention strategies. Competition for talent is increasing, so HR policies may focus on personnel and retaining core staff. There is an increased focus on diversity, which may include initiatives to create equal opportunities for all employees. These trends can affect various aspects of HR policy, such as recruitment, development, compensation and talent retention. There is a growing demand for individuals who possess effective communication skills. These skills include the ability to interact effectively with colleagues, management, and customers; leadership
Table 2

<table>
<thead>
<tr>
<th>HR Trends of Modern HRM Departments in the Context of Digitalisation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trends</strong></td>
</tr>
<tr>
<td>1 Artificial intelligence expands opportunities for workforce development</td>
</tr>
<tr>
<td>2 Optimisation of the talent acquisition process</td>
</tr>
<tr>
<td>3 Employee development</td>
</tr>
<tr>
<td>4 Balance between work and personal life</td>
</tr>
<tr>
<td>5 Efficiency and productivity of HR departments</td>
</tr>
<tr>
<td>6 Talent acquisition as a strategic resource of the enterprise</td>
</tr>
<tr>
<td>7 From recruitment to utilisation of talent</td>
</tr>
<tr>
<td>8 Recruiting marketing</td>
</tr>
<tr>
<td>9 Interaction with candidates</td>
</tr>
<tr>
<td>10 Compromise between remote work and office work</td>
</tr>
<tr>
<td>11 Employee experience</td>
</tr>
<tr>
<td>12 Motivation and self-realisation of employees</td>
</tr>
<tr>
<td>13 Continuous training</td>
</tr>
</tbody>
</table>

Source: formed by the authors

abilities in managing and motivating a team; the capacity to lead and inspire others to achieve common purposes; creativity and problem-solving thinking. This also encompasses the capacity to identify novel solutions to complex problems, flexibility, which encompasses the ability to adapt to changes in the working environment and to respond promptly to new circumstances, and the ability to collaborate effectively with other team members, sharing ideas and resources to achieve a common purpose. The development of these soft skills can be beneficial for both individual career growth and the collective success of the team and the enterprise as a whole.

References:


66


Klopol, Ivan; Shapurov, Olexandr; Voronkova, Valentyna; Nikitenko, Vitalina; Oleksenko, Roman; Khavina, Irina; Chebakova, Julia (2023). Digital Transformation of Education Based on Artificial Intelligence. TEM Journal. Volume 12, Issue 4, 2625–2634. DOI: https://doi.org/10.18421/TEM124-74


Received on: 13th of March, 2024
Accepted on: 22th of May, 2024
Published on: 10th of June, 2024