# INNOVATIVE TECHNOLOGIES FOR SELECTING CANDIDATES IN ORGANIZATIONS

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The article explores the field of innovative technologies in the selection of candidates for organisations, emphasising their role in increasing efficiency, reducing recruitment costs and improving the quality of staff. With a focus on behavioural analysis systems and artificial intelligence, the authors show how these technologies analyse candidate behaviour in real time, assess emotional intelligence, and automate processes such as CV review and online testing. The article outlines methods of optimising the selection process, with a particular focus on artificial intelligence and machine learning for objective decision-making: automated CV screening, interactive online tools and video interviews. The authors present a model of a digital recruitment system with a list of key elements, such as automated pre-screening using artificial intelligence, data analytics, virtual interviews, mobile applications, augmented virtual reality for skills testing, and reliable data protection mechanisms. The model of a digital recruitment system emphasises the importance of using innovative technologies as tools rather than replacing human experience, and also highlights ethical considerations and data security. The potential benefits of innovative technologies are grouped.

# ІННОВАЦІЙНІ ТЕХНОЛОГІЇ ВІДБОРУ КАНДИДАТІВ В ОРГАНІЗАЦІЯХ

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**Ключові слова:**
штучний інтелект, рекрутинговий процес, досвід кандидатів, інструмент роботодавця, рекрутингова індустрія

У статті досліджено сферу інноваційних технологій у відборі кандидатів для організацій, підкреслено їх роль у підвищенні ефективності, зниженні витрат на рекрутинг і підвищенні якості персоналу. Авторами розкрито, акцентуючи увагу на системах поведінкового аналізу та штучному інтелекті, як ці технології аналізують поведінку кандидатів у режимі реального часу, оцінюють емоційний інтелект та автоматизують такі процеси, як рецензування резюме та онлайн-тестування. У статті окреслено методи оптимізації відбору, з особливим акцентом на штучному інтелекті та машинному навчанні для об'єктивного прийняття рішень: автоматизований відбір резюме, інтерактивні онлайн-інструменти та відеоінтерв'ю. Авторами представлено модель цифрової системи підбору персоналу з переліком ключових елементів, таких як автоматизований попередній відбір за допомогою штучного інтлекту, аналітика даних, віртуальні співбесіди, мобільні додатки, доповнена віртуальна реальність для тестування навичок і надійні механізми захисту даних. У моделі цифрової системи підбору підкреслено важливість використання інноваційних технологій як інструментів, а не заміни людського досвіду, а також наголошено на етичних міркуваннях і безпеці даних. Згруповано потенційні переваги інноваційних технологій.

### Statement of the problem

In the evolving landscape of information technology and human resource management, it has been noted over the decades that these two realms have become intricately intertwined, giving rise to new terms such as human resource information systems, digital human resource management, automated human resource processes, enterprise resource planning with the integration of the Internet of Things (IoT), data mining, and the recent incorporation of artificial intelligence. This infusion of new technologies can be likened to adding fresh ingredients to an old recipe.

Once again, the dynamism of information technology is evident in its continual innovation within the business sector. The latest technological solutions devised to address the intricate challenges across various organizational functions are capturing the attention of managers across different departments, domains, and areas, including the human resource department. This ongoing evolution underscores the significant impact of technology on reshaping traditional approaches to human resource management.

Today, there are numerous attempts to develop software aimed at automating recruitment processes. However, most of these developments are limited in their applicability to innovative enterprises. They are either focused on analyzing texts with a limited range of topics or rely solely on formal indicators of applicants' education or professional qualifications.

### Analysis of the latest research and publications

The analysis of recent research and publications encompasses key works that delve into European human resource management policies, knowledge management practices, and challenges in the recruitment and selection process.

C. Brewster and A. Hegewisch [1] provided a comprehensive survey of human resource management practices in Europe. By utilizing the Price Waterhouse Cranfield survey, Brewster and Hegewisch explore the alignment and divergence between HR policies and actual practices. The research sheds light on the dynamics of HRM in different European contexts, offering valuable insights into the challenges and successes of HR policies in the region. Inkinen's review [2] focuses on the empirical research surrounding knowledge management practices and their impact on firm performance. By analyzing a range of studies, the author synthesizes findings to provide a holistic understanding of the relationship between knowledge management and organizational success. The work contributes valuable insights for organizations seeking to leverage knowledge effectively for enhanced performance. Rozario and Venkatraman's empirical study [3] delves into the challenges faced in the recruitment and selection process. By employing empirical methods, the authors identify and analyze the obstacles organizations encounter during candidate selection. The research is instrumental in providing practical implications for improving recruitment processes, addressing the identified challenges, and optimizing talent acquisition

strategies. In summary, these works contribute significantly to the understanding of European HRM practices, the impact of knowledge management on firm performance, and the empirical challenges associated with recruitment and selection processes. The collective insights from these publications offer a well-rounded perspective for researchers, practitioners, and organizations aiming to enhance their human resource and knowledge management practices.

### Objectives of the article

The purpose of this study is to provide an analytical overview of digital methods capable of recognizing the competencies of specialists, followed by an analysis of the applicability of such solutions for specific recruitment procedures.

### The main research material of the research

Innovative technologies for selecting candidates in organizations are the latest tools that help to efficiently select candidates for vacant positions, reducing recruitment costs and improving the quality of personnel. However, such technologies require significant investments and are often used in large organizations.

One of the innovative technologies used in organizations for candidate selection is behavioral analysis systems. These systems are used to analyze the behavior of candidates in real time while communicating with recruiters or during online interviews. Behavioral analysis systems are used to determine the level of emotional intelligence of candidates, their level of confidence, and other aspects of their behavior. This allows recruiters to understand more about candidates and their suitability for a particular position.

Another innovative technology that is currently very popular in recruiting is the use of artificial intelligence. Artificial intelligence is used to automate many candidate selection processes. For example, artificial intelligence can be used to automate the process of reviewing resumes, identifying keywords that indicate a certain level of experience or skills of a candidate, and selecting candidates based on the analysis of their profile on social media and other sources. Online tests have also become popular to determine the level of knowledge and skills of candidates. These tests can be specifically designed for a particular position or use well-known tests already on the market.

One of the innovative technologies is the automated selection of resumes. To do this, analyzer programs are used that read information from resumes and weed out candidates who do not meet the requirements for the position. This approach reduces the time spent on reviewing resumes and increases the accuracy of candidate selection.

Interactive selection tools that allow candidates to complete tasks online are also increasingly used. These can be video interviews or tests using interactive elements. Such tools can increase the efficiency of candidate selection and reduce the cost of organizing the interview process.

Innovative candidate selection technologies also include the use of artificial intelligence and machine learning. This allows you to analyze large amounts of

data about candidates, which allows you to make a more objective selection and predict the candidates' ability to succeed in the organization. For example, you can use analytics tools to analyze candidates' social networks to get a more complete picture of their skills and interests. You can also use speech analysis to evaluate the quality of a candidate's communication and his or her ability to relate to other employees.

Innovative recruitment technologies also help to improve the quality of candidates selected for a position. For example, some organizations use video interviewing services to select candidates. Such interviews allow for a more detailed assessment of candidates and their skills.

Innovative technologies can also help improve the process of interacting with candidates. One example is the use of chatbots to communicate with candidates. Chatbots allow you to provide 24/7 support and answers to candidates' questions. This saves recruiters time and improves candidate engagement.

The process of electronic recruitment encompasses various stages, including the attraction, selection, and interview of candidates, as well as acquiring additional information, finalizing contracts, and onboarding new employees. Several contemporary factors contribute to the growing prevalence of e-recruitment, notably mobilization, socialization, globalization, recruitment automation, visualization, skills standardization, and the emergence of job aggregators. To facilitate these aspects, additional electronic resources such as social media, mobile recruitment platforms, and automated HR management systems become imperative. Currently, there exist approximately ten modern recruitment methods and tools designed to assist recruiters in their personnel management endeavors.

Upon examining the definitions outlined in Table 1, it becomes evident that contemporary HR practices encompass a diverse array of recruitment tools, among which recruitment technology software tools hold a prominent position. The advent of digital innovations has ushered in substantial consequences and transformations across various domains, with recruiting being no exception. Leading-edge recruitment firms consistently seek out the most effective online tools and software to streamline their processes. These tools systematically aid in every facet of the hiring process, while supplementary resources have the potential to revolutionize the approach to social media recruiting and the onboarding of new employees.

Also he authors propose a Model of a digital recruitment system (integration of innovations in the HR process). In today's business environment, companies are increasingly using digital recruitment systems to improve the efficiency and accuracy of candidate selection. Below are the key elements of such a system.

1. Automated pre-selection using artificial intelligence (AI): The system uses AI to analyze and categorize candidates' resumes. Machine learning algorithms identify key skills, education, and work experience, helping recruiters to pre-screen candidates faster and more efficiently.

2. Data analytics to predict success: the system uses data analytics to create predictive models of candidate success. Based on historical data and interview results, the system develops models that help predict the likelihood of a candidate's success in a particular position.

3. Virtual interviews and assessment of communication skills: the system includes virtual interviews and tests that allow candidates to demonstrate their communication skills and analytical abilities. This can be done through specialized platforms or using virtual technologies.

4. Mobile application for convenient candidate interaction: the system provides a mobile application that allows candidates to quickly view vacancies, send their resumes and receive notifications about the status of their applications. This makes the process of interaction with candidates more convenient and mobile.

5. Use of augmented virtual reality (VR) for skills testing: the system can implement VR to create simulations of real work scenarios where candidates are offered tasks that allow recruiters to assess their skills and reactions in real-world conditions.

6. Effective data protection and ethics mechanisms: the digital selection system respects the privacy of candidates and uses effective data protection mechanisms. When using AI and data analytics, the system adheres to ethical standards and defined rules for the use of information.

Table 1 – Software products used in the recruitment system

| Software product | Brief characteristics |
|---|---|
| Github | It serves as a platform for individuals or teams working on projects, offering employers a comprehensive understanding of those who can contribute value to their business. |
| Meetup | This system facilitates connections between employers and industry professionals. Even if one lacks the time to attend an event, an innovative recruitment approach involves identifying individuals interested in a specific event and reaching out to them if they prove to be promising prospects. |
| 1 – Page | The platform efficiently identifies the most relevant candidates by providing up-to-date information and contact details. |
| Jobs2Careers | Employing a pay-per-candidate model for posting job openings, this software simplifies the process. |
| Zao | This system is designed for seamless management of rewards and incentives for referrals, incorporating social recruiting strategies. |
| SparkHire | Specializing in video interviews, it streamlines the interviewing process for remote or busy candidates, allowing the creation of question templates. |
| HireVue | Emphasis is placed on the quality of video and audio. The interviews undergo evaluation using predictive analytics and come with valuable reporting features. |

This digital recruitment system integrates innovative technologies to provide more accurate and faster candidate selection, ensuring that the company is able to attract and retain highly professional employees.

Thus, innovative candidate selection technologies in organizations can greatly facilitate the process of recruiting qualified employees and ensure higher quality selection. They allow you to automate many processes and reduce the time and resources spent on finding and selecting candidates.

It is important to note that the use of innovative candidate selection technologies should not replace the work of recruiters and people involved in candidate selection. Technology should be used as a tool to improve the selection process, not as a substitute for human expertise. In addition, it is important to ensure the confidentiality and security of candidate data collected during the selection process. Companies must comply with all rules and regulations to prevent possible problems with candidate data. Finally, it is important to remember that while innovative candidate selection technologies can make the selection process easier, they do not guarantee job success. It is important to remember that the success of an organization depends on the team of employees and their collective experience and knowledge.

Innovative candidate selection technologies in organizations can be a great supportive tool to ensure higher quality selection and recruitment of qualified employees.

## References

1. Brewster C., Hegewisch A. Policy and practice in european human resource management: *The Price Waterhouse Cranfield survey*. 2017. 225 p.
2. Inkinen H. Review of empirical research on knowledge management practices and firm performance. *Journal of Knowledge Management*. 2016. Vol. 20 (2). P. 230–257.
3. Rozario S.D., Venkatraman S. Challenges in recruitment and selection process: An empirical study. *Challenges*. 2019. Vol. 10 (2), 35. P. 126–131.
4. Milon M., Alam M. and Pias M. Exploring the Key Practices of E-HRM in Place of Traditional HRM: A Study on Private Industry of Bangladesh. *Journal of Human Resource and Sustainability Studies*. 2022. Vol. 10. P. 403–417.
5. Harrison L.E. Culture Matters: How Values Shape Human Progress. New York: Basic Books. 2021. 394 p.