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Digital Transformation of Human Resource Management: Implementation of HR Information Systems in Private and State- Owned Enterprises

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ABSTRACT

The article analyzes the impact of digital transformation on the effectiveness of human resource management through the implementation of personnel accounting information systems. The purpose of the study is to identify specific indicators of improvement in the work of human resource departments after the automation of payroll calculation, working time accounting, and reporting processes. The practical angle of this article is shaped by Verbytska's engineering mindset: HR automation is treated as process design – with inputs, rules, integrations, and measurable outputs – rather than as "HR paperwork digitization." The study uses methods of comparative analysis, systematization, and generalization of practical experience of enterprises based on publicly available reports of state bodies, analytical reviews of consulting companies, and materials from industry conferences. The functional capabilities of the systems "MASTER: Salary and Personnel", BambooHR and other platforms are considered. Analysis of case studies indicates that automation can reduce payroll processing time from five days to one and a half days, decrease error rates by 65–75%, and accelerate tax report preparation by 70–80%. The study demonstrates that government agencies typically experience longer implementation times due to procurement procedures and regulatory coordination requirements. The critical importance of integrating HR systems with accounting software and electronic services of the State Tax Service and the Pension Fund has been demonstrated. The practical value of the study lies in the formulation of recommendations on the selection of the optimal system architecture and implementation stages for Ukrainian enterprises of various forms of ownership.



KEYWORDS

digital transformation, human resources information systems, payroll automation, time tracking, electronic reporting, human resources management.



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Цифрова трансформація управління людськими ресурсами: впровадження інформаційних систем HR у приватних і державних підприємствах

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СТАТТЯ

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У статті аналізується вплив цифрової трансформації на ефективність управління людськими ресурсами через впровадження інформаційних систем обліку персоналу. Метою дослідження є визначення конкретних показників покращення роботи відділів кадрів після автоматизації розрахунку заробітної плати, обліку робочого часу та процесів звітності. Практичний аспект цієї статті формується інженерним мисленням Вербицької: автоматизація HR розглядається як проектування процесів – з вхідними даними, правилами, інтеграціями та вимірюваними результатами – а не як «оцифрування документів HR». Дослідження використовує методи порівняльного аналізу, систематизації та узагальнення практичного досвіду підприємств на основі публічно доступних звітів державних органів, аналітичних оглядів консалтингових компаній та матеріалів галузевих конференцій. Розглядаються функціональні можливості системи «MASTER: Зарплата та персонал», BambooHR та інших платформ. Аналіз кейсів показує, що автоматизація може скоротити час обробки зарплати з п'яти до півтора дня, знизити рівень помилок на 65–75 % і прискорити підготовку податкових звітів на 70–80 %. Дослідження показує, що державні установи зазвичай стикаються з довгими термінами впровадження через процедури закупівель і вимоги до регуляторної координації. Критично важливо інтегрувати HR-системи з бухгалтерським програмним забезпеченням та електронними послугами Державної податкової служби та Пенсійного фонду. Практична цінність дослідження полягає у формулюванні рекомендацій щодо вибору оптимальної архітектури системи та етапів впровадження для українських підприємств різних форм власності.

КЛЮЧОВІ СЛОВА

цифрова трансформація, інформаційні системи управління персоналом, автоматизація зарплати, відстеження часу, електронна звітність, управління людськими ресурсами.

1. Introduction

In regulated environments, HR errors are operational risks. An engineering approach reframes personnel accounting as a chain of workflows (time capture → approvals → payroll rules → reporting), where each manual handoff increases error probability and cycle time.

The traditional HR accounting system in Ukraine is based on maintaining paper employment records, employee personal files, timesheets, and payroll records. HR specialists spend a significant portion of their working time filling out standard forms, transferring information between different documents, and preparing reports for regulatory authorities.

Ukrainian labor legislation establishes mandatory requirements for maintaining personnel records. The Labor Code of Ukraine, the Law of Ukraine “On Labour Remuneration,” and the Law of Ukraine “On the Collection and Accounting of the Single Contribution for Mandatory State Social Insurance” define the list of mandatory documents and the deadlines for their submission. Failure to comply with these requirements entails financial liability in the form of fines under Article 265 of the Labor Code of Ukraine (LCU) [18].

Since 2021, Ukraine has had a system of electronic employment record books, regulated by the Law of Ukraine No. 1217-IX of February 5, 2021, “On Amendments to Certain Legislative Acts of Ukraine Regarding the Electronic Recording of Employee Work Activity.” Employers are required to submit information about the employment of employees to the State Register of Compulsory State Social Insurance. This requires prompt and accurate personnel record keeping.

The legislation of Ukraine, in particular the Law of Ukraine “On Electronic Documents and Electronic Document Management” dated May 22, 2003, No. 851-IV [19], has established a legal framework for the integration of corporate systems with the electronic services of government authorities.

The order of the Ministry of Finance of Ukraine No. 4 from January 13, 2015, “On the approval of the form of the Tax Calculation of amounts of income accrued (paid) in favor of taxpayers – individuals, and the amounts of tax withheld from them” established the form of the Tax Calculation in the form 1DF, which must be submitted quarterly in XML format [10].

2. Literature Review

The issue of HR management automation has been explored in the works of European and American scholars. In 2007, Professor Stefan Strohmeier from Saarland University (Germany) published a fundamental work in the journal *Human Resource Management Review*, where he systematized research on electronic personnel management and proposed a classification of systems according to their functional purpose [16].

Researchers Janet H. Marler from the State University of New York and Sandra L. Fisher from Claremont Graduate University published a systematic review in *Human Resource Management Review* in 2013 [9]. An analysis of 40 empirical studies showed that the introduction of automated systems reduces the time spent on administrative operations by an average of 58% and reduces the number of errors by 65%.

Professors Tanya Bondarouk from the University of Twente (Netherlands) and Chris Brewster from the University of Reading (UK) published a study in *The International Journal of Human Resource Management* in 2016, where they analyzed the future of human resource management in the context of technological development [1]. The authors applied a human resource management model to analyze the impact of information technology on various stakeholders in an organization.

Emma Parry from Cranfield School of Management (UK) and Shaun Tyson published a study in 2011 entitled “Managing people in a contemporary context,” in which they analyzed the specifics of implementing human resource management technologies in the public sector [11].

The authors found that government organizations face additional constraints due to government procurement procedures and data security requirements.

Among Ukrainian studies, it is worth noting the work of Marina Lukashuk from Lviv Polytechnic National University [7]. In her 2024 article, the author emphasizes the importance of adhering to accessibility standards when designing corporate information systems.

In 2023, the Kyiv School of Economics published a study entitled “Digital Transformation of Ukrainian Business,” which presents the results of a survey of 340 enterprises [6]. Based on the data, only 18% of large companies and 7% of medium-sized companies use specialized personnel management systems. The main obstacles are the high cost of licenses, the lack of qualified IT specialists, and the complexity of integration.

In 2023, the consulting company PwC Ukraine published a report entitled “Digital Transformation in Ukraine,” which analyzed the practices of 120 companies [12]. It was found that the implementation of specialized systems reduces the time required for reporting by an average of 68% and reduces the cost of paper document flow by 45%.

In April 2024, the State Agency for Electronic Governance of Ukraine published a report entitled “Results of the Pilot Project for the Implementation of Electronic Personnel Records in State-Owned Enterprises” [14]. 87 state-owned enterprises participated in the project. Based on the report, the average reduction in the time spent processing personnel documents was 54%, and the reduction in the number of errors in reports to the Pension Fund was 78%.

In December 2023, the analytical company IDC Ukraine published a review entitled “The Market for Corporate Management Systems in Ukraine” [5]. According to the report, the market for human resources management software grew by 34% compared to 2022. Market structure: domestic solutions – 67% (of which “1C” – 42%, “MASTER” – 15%, others – 10%), international platforms – 33%.

3. Problem Statement

The purpose of this article is to systematize the experience of implementing human resource management information systems in Ukrainian enterprises, with the identification of specific indicators of efficiency improvement.

Research objectives:

1. To examine the impact of digitalization on the accuracy of personnel accounting by analyzing changes in the number of errors and the speed of document processing.
2. To analyze the role of systems in complying with Ukrainian legislation on reporting to the State Tax Service and the Pension Fund.
3. To describe the architecture of platforms that combine personnel accounting, payroll calculation, and document management.
4. To demonstrate the effectiveness of implementation in different types of organizations and identify differences between the private and public sectors.
5. To provide empirical data on the improvement of personnel department productivity after automation.

4. Methods and Materials

The study is based on a systematic review and secondary analysis of publicly available information on the implementation of human resource management information systems in Ukraine.

Data sources:

- Official reports of the State Agency for Electronic Governance of Ukraine [14], published on the website nais.gov.ua
- Statistical data from the State Statistics Service of Ukraine on the number of employees and the structure of working time expenditure
- Materials from industry conferences: presentations by software vendors at the conferences “HR Tech Ukraine 2023” (November 2023, Kyiv) and “Forum of HR Managers of Ukraine 2023” (September 2023, Kyiv)
- Analytical reports from consulting companies PwC Ukraine [12], EY Ukraine, and Deloitte Ukraine
- Official reports from the State Tax Service of Ukraine, published on the website tax.gov.ua
- Analytical reviews from IDC Ukraine [5] and the Kyiv School of Economics [6]
- Systems analyzed:
 - “1C: Salary and Personnel Management 8.3” – a system developed by 1C-Rarus Ukraine, the most widespread solution on the Ukrainian market. According to IDC Ukraine [5], its market share is

42%. The system is adapted to all requirements of Ukrainian legislation and is integrated with the taxpayer's electronic office and the Pension Fund.

- “MASTER: Salary and Personnel” – a product of Master-International (Kyiv). Market share – 15% [5]. The system is designed with the specifics of Ukrainian labor and tax legislation in mind.

- “BukhSoft: Enterprise” is a cloud-based system from the Kyiv-based company BukhSoft. It has modules for personnel accounting and payroll calculation with automatic generation of XML reporting files.

- BambooHR – an American platform used by Ukrainian IT companies and offices of international corporations. Requires additional adaptation for Ukrainian reporting requirements.

- SAP SuccessFactors – a corporate system from the German company SAP. Implemented in large state-owned enterprises in Ukraine, particularly in the energy sector.

The methods used were content analysis of official reports and analytical reviews, comparative analysis of performance indicators before and after automation, systematization of the functional capabilities of various systems and generalization of practical implementation experience. The limitation of the study is reliance on secondary data and the lack of own empirical measurements, which is compensated by the use of official reports of state bodies and independent analytical companies.

5. Results and Discussion

1. Impact of digitization on accounting accuracy and calculation speed

1.1. Reduction in processing time for accruals

According to a report by the State Agency for Electronic Governance [14], published in April 2024, 87-state-owned enterprises participating in the pilot project demonstrated specific improvements after the introduction of electronic personnel accounting.

Based on a study by the consulting company PwC Ukraine [12], before automation, the monthly payroll cycle in organizations with 300 to 500 employees took an average of four and a half working days. After the introduction of specialized information systems, this figure was reduced to one and a half working days, which is a decrease of sixty-two percent.

At the annual HR Tech Ukraine 2023 conference, held in November in Kyiv, 1C-Rarus Ukraine presented a practical case study of a municipal electric transport company in a regional center with 430 employees. After the implementation of the 1C: Salary and Personnel Management 8.3 system, the processing time for monthly accruals was reduced from five working days to one and a half days. At the same time, the number of specialists in the payroll department was reduced from three to two, which made it possible to reallocate human resources to other tasks.

1.2. Reducing the number of errors in calculations

A study conducted by consulting firm EY Ukraine in 2022 among 150 companies in various industries showed that the error rate in payroll calculations using Excel spreadsheets ranges from 8% to 12%. The most common errors are incorrect calculation of sick leave (34% of all identified discrepancies), errors in calculating vacation pay for complex work schedules (28%), and incorrect application of tax benefits (19%).

Based on the report by the State Agency for Electronic Governance [14], case studies from pilot implementations showed the error rate decreased to approximately two to three percent. This is because modern systems have built-in algorithms that check calculations for compliance with current legislation.

Master International presented the technical characteristics of the MASTER: Salary and Personnel system at the Ukrainian HR Forum held in September 2023. Data from company representatives, the system contains more than 200 built-in compliance checks that automatically verify the accuracy of calculations and prevent typical errors at the data entry stage.

1.3. Improving the quality of personnel data

Research by data from the analytical company IDC Ukraine [5], before the introduction of specialized personnel management systems, the completeness of mandatory fields in electronic employee cards averaged 73%. After switching to automated systems, this figure rose to 91%.

Modern HR management systems require critical fields to be filled in before employee data can be saved. These fields include: passport details or other identity documents (required for the correct completion of Form 1DF reports to the State Tax Service); taxpayer registration number (without which it is impossible to submit reports to the Pension Fund of Ukraine); information about the employee's education and qualifications (for the correct reflection of information in the State Register of Compulsory State Social Insurance); information on the establishment of disability (Research by Article 169 of the Tax Code of Ukraine, persons with disabilities are entitled to tax social benefits)

2. Ensuring compliance with regulatory requirements

2.1. Automation of tax reporting

According to paragraph 49.2 of Article 49 of the Tax Code of Ukraine and the order of the Ministry of Finance of Ukraine No. 4 from January 13, 2015, this report must be submitted quarterly no later than forty calendar days following the last calendar day of the reporting quarter. According to the BukhSoft presentation at the 2023 HR Managers Forum in Ukraine, before the implementation of automation, the preparation of the quarterly tax calculation in form 1DF for a company with 350 employees took between 36 and 40 hours of working time.

The BukhSoft: Enterprise system automatically generates an XML file based on payroll data, reducing the time required to prepare reports to six to eight hours, which is spent exclusively on verifying the accuracy of automatically generated data. This represents a time reduction of 80–83%.

2.2. Integration with the Pension Fund's electronic services

The Law of Ukraine No. 1217-IX dated February 5, 2021, "On Amendments to Certain Legislative Acts of Ukraine Regarding the Electronic Recording of Employee Work History," introduced a system of electronic workbooks. According to this law, employers are required to submit information about the employment of employees to the State Register of Compulsory State Social Insurance through the Insurer's Electronic Office on the official web portal of the Pension Fund of Ukraine.

The MASTER: Salary and Personnel system is directly integrated with the software interface of the Pension Fund of Ukraine. Data on hiring, transfers, dismissals, and changes in official salaries are automatically exported in the format specified by the Procedure for the formation and submission by insurers of reports on the amounts of accrued wages, approved by Resolution No. 9-1 of the Board of the Pension Fund of Ukraine dated June 8, 2015. This eliminates the need for manual data entry via the web interface of the personal account and minimizes the risk of errors in the transfer of information.

According to a report by the State Agency for Electronic Governance [14], the implementation of automated integration with the Pension Fund has reduced the number of errors in reporting by 78%.

2.3. Automatic monitoring of compliance with minimum guarantees

Article 95 of the Labor Code of Ukraine stipulates that the minimum wage is determined by the law on the State Budget of Ukraine. As of 2025, the minimum wage is 8,000 UAH/month (set on April 1, 2024). According to forecasts by the National Bank of Ukraine, it is expected to increase to 8,950 UAH by 2027. The average salary in Ukraine in 2025 is UAH 26,499/month according to Payroll, which is 22% more than in December 2024 according to Work.ua.

At the conference "Digital Transformation of the Public Sector 2024," representatives of SAP presented a practical case study of the implementation of the SAP SuccessFactors corporate system at a large state-owned energy company. The system automatically monitors that the calculated wage amounts are not lower than the minimum established by law. During the first quarter of operation, the system automatically detected twelve cases of potential violations of minimum guarantees. A detailed analysis revealed that all cases were related to technical errors in entering data on hours worked and were corrected before the actual payment of wages to employees.

2.4. Current trends in HR system automation (2024-2025)

The key trend for 2024–2025 is the dominance of cloud solutions. This is due to the advantages of cloud platforms: no need for server infrastructure, automatic updates, accessibility from any location, and scalability of solutions.

Global trends indicate growing adoption of cloud-based HR solutions due to their scalability and accessibility. In Ukraine, according to IDC Ukraine [5], the share of cloud solutions grew from 15% in 2020 to 28% in 2023, reflecting similar patterns observed internationally.

In the Ukrainian context, even more dynamic growth is observed. According to updated data from Statista Market Forecast [15], the enterprise software market, which includes HR systems, reached \$1.29 billion in 2024, with a projected annual growth rate of 30.71% (CAGR 2024–2029), leading to an anticipated market size of \$10.53 billion by 2029. This significantly exceeds global indicators and testifies to the active digital transformation of Ukrainian business even in conditions of martial law.

3. Architecture of integrated personnel management platforms

3.1. Functional structure of modern systems

In today's environment of digitalization of personnel management and increasing requirements for transparency in settlements with employees, integrated HRM/Payroll information systems are increasingly being implemented. Such solutions provide centralized management of personnel data, automation of payroll calculations, accounting of working hours, and generation of regulated reports. Their use reduces the risk of errors, reduces the labor intensity of operations, and increases the controllability of processes, which is critical for compliance with the requirements of labor and tax legislation in Ukraine.

According to an analytical review by IDC Ukraine [5], effective HR management systems have a modular structure, where each module is responsible for a separate functional area, but all modules work with a single database.

Table 1 summarizes the key modules of modern personnel and payroll management systems and reflects their main functions, taking into account the regulatory requirements that govern the formalization of personnel procedures, the calculation of payments, and the submission of reports.

Table 1. Functional modules, key functions, and compliance references (Ukraine)

Module	Key functions (system capabilities)	Regulatory / compliance references (Ukraine)
HR Records Management (Personnel Administration)	• Maintains digital employee master records with a comprehensive set of personal and employment data. • Generates HR orders for hiring, internal transfers, and termination using approved standard forms. • Prepares and structures datasets for submission to the State Register of Digital Employment Records (e-Labour Books). • Administers leave, sick leave, and business trips; automatically produces annual leave schedules.	• Order of the State Committee of Statistics of Ukraine No. 489 (05 Dec 2008) – standard forms. • State Register of Digital Employment Records (e-Labour Books) (in operation since 2021). • Code of Labour Laws of Ukraine (KZpP), Article 79.
Payroll Calculation and Benefits Administration	• Calculates remuneration under multiple schemes (time-based, piece-rate, salary-based), including allowances and supplements. • Automates sick-pay calculation based on statutory rules and the average earnings methodology. • Calculates vacation pay in line with legal requirements. • Automatically withholds Personal Income Tax (18%) and the Military Levy (1.5%). • Computes the Single Social Contribution (SSC, 22%).	• Law of Ukraine “On Mandatory State Social Insurance”. • Cabinet of Ministers of Ukraine Resolution No. 1266 (26 Sep 2001) – procedure for calculating average earnings. • Law of Ukraine “On Leave”, Article 21. • Tax Code of Ukraine – rules for PIT and the Military Levy.
Time and Attendance (Working Time Accounting)	• Integrates with physical access-control and identity systems (turnstiles, biometric terminals). • Automatically generates timesheets using the Form P-5. • Records overtime hours and supports compliance monitoring. • Tracks night work and work on weekends/holidays and applies enhanced pay coefficients where required.	• Order of the State Committee of Statistics of Ukraine No. 489 – P-5 timesheet Form. • Code of Labour Laws of Ukraine (KZpP), Article 65 (overtime regulation).

Source: Compiled by the author.

3.2. Integration with accounting systems

Effective HR management is impossible without close integration with accounting software. According to a study by PwC Ukraine [12], the lack of automatic integration between HR and accounting systems leads to duplication of data entry and increases the risk of discrepancies between HR records and accounting records of labor costs.

The "1C: Salary and Personnel Management 8.3" system has built-in integration with the "1C: Accounting 8.3" system, which allows you to automatically transfer data on accrued wages, personal income tax withheld, military tax, and unified social contribution to the accounting program. This integration eliminates the need for manual entry of transactions and ensures data consistency across different accounting systems.

The MASTER: Salary and Personnel system also has modules for data exchange with popular accounting programs. The system supports data export in formats compatible with various accounting platforms used in Ukraine.

The cloud-based system "BukhSoft: Enterprise" combines HR and accounting in a single platform, eliminating the need for integration between separate systems. According to the company's presentation at an industry conference, this approach is particularly convenient for small and medium-sized enterprises, as it does not require the configuration of complex integration mechanisms.

3.3. Connection to electronic services of state authorities

A critically important feature of modern HR management systems is the ability to connect directly to the electronic offices of the State Tax Service of Ukraine and the Pension Fund of Ukraine. This allows reports to be submitted automatically without the need to upload files via a web interface.

The 1C: Salary and Personnel Management 8.3 system supports electronic document management with regulatory authorities through specialized modules. The system automatically generates XML reporting files, signs them with a qualified electronic signature of the responsible person of the enterprise, and sends them through secure communication channels to the taxpayer's electronic office on the tax.gov.ua web portal. After processing the reports, the system automatically receives receipts of acceptance or notifications of detected errors.

The MASTER: Salary and Personnel system has similar functionality. According to the technical documentation, the system supports data exchange protocols with the Pension Fund of Ukraine through the insurer's electronic office. Data on the employment history of employees is automatically transferred in the format specified by the technical specifications of the Pension Fund.

3.4. Features of cloud solutions

Cloud-based HR management systems, which do not require installation on company servers and are accessible via a web interface, constitute a separate category. According to the analytical company IDC Ukraine [5], the share of cloud solutions in the Ukrainian HR management systems market has grown from 15% in 2020 to 28% in 2023.

The BukhSoft: Enterprise system is a fully cloud-based solution. Data is stored on the provider's servers in data centers located in Ukraine, which ensures compliance with the requirements of the Law of Ukraine "On the Protection of Personal Data." Users access the system through a web browser from any device connected to the Internet. According to the company, this model is particularly attractive for small businesses, as it does not require investment in server equipment and IT staff to support the system.

The international platform BambooHR is also a cloud-based solution. Ukrainian IT companies and offices of international corporations use this system for personnel management. However, BambooHR was developed with US legislation in mind and requires additional adaptation to Ukrainian reporting requirements. In particular, companies using BambooHR are often forced to additionally use Ukrainian systems to generate mandatory reports for government agencies.

3.5. Integration of Artificial Intelligence into HR Systems (2024-2025)

The last two years have been marked by revolutionary changes in the functionality of HR systems due to the integration of artificial intelligence and machine learning technologies. According to Technavio's HR Software Market Analysis, investments in HR technologies with artificial intelligence

components increased by 25% in 2024 compared to the previous period, indicating a transformation of AI from an innovation to an industry standard.

In 2024, leading providers (including Workday and Oracle) integrated AI-powered recruitment and talent management tools into their platforms, demonstrating the mainstreaming of artificial intelligence in HR systems.

According to Market Growth Reports [8], over 65% of new HR products launched in 2024 include artificial intelligence features, primarily for recruitment automation, employee turnover prediction, and personalized career development recommendations. Integration with communication platforms has become particularly relevant for Ukrainian businesses operating under hybrid work models.

In addition, over 40% of products launched in 2024 included integrated communication tools to support hybrid and remote work models [8]. In the Ukrainian context, this functionality has become critically important amid the ongoing state of war, as many businesses have shifted to remote work or a hybrid model.

An important trend of 2024–2025 has been the integration of HR systems with video conferencing platforms, project management systems, and corporate messengers, allowing for the continuity of HR processes regardless of employees' physical locations.

4. Comparison of the private and public sectors

4.1. System implementation times

According to a report by the State Agency for Electronic Governance [14], the average time required to implement a human resources management system in state-owned enterprises is fifteen months from the decision to be made to full implementation. In contrast, a study by PwC Ukraine [12] shows that private companies implement similar systems in an average of eight months.

This difference is explained by the specifics of procurement procedures in the public sector. According to the Law of Ukraine "On Public Procurement," state-owned enterprises are required to conduct open tenders through the Prozorro electronic procurement system. The procedure includes preparing technical specifications, publishing the tender, accepting bids from participants, reviewing bids, appealing the results, and signing the contract. The entire procurement cycle usually takes three to five months.

An additional factor is the need to coordinate implementation with various regulatory authorities. State-owned enterprises must obtain conclusions on the system's compliance with information security requirements from the State Service for Special Communications and Information Protection of Ukraine. Coordination with industry ministries and agencies is also required to ensure the protection of employees' personal data in accordance with the Law of Ukraine "On the Protection of Personal Data."

Private companies have more flexibility in choosing a supplier and can make decisions faster. However, they also face challenges related to the need to train staff and adapt to a new work system.

4.2. Implementation and operating costs

Implementation costs vary significantly by system type and organization size. According to IDC Ukraine [5], license-based solutions (e.g., 1C) for mid-sized companies typically require initial investments of \$2,000-5,000 plus annual maintenance, while cloud-based subscriptions (e.g., BukhSoft) operate on monthly fees. Enterprise solutions like SAP SuccessFactors involve substantially higher costs (\$100,000-200,000) due to integration complexity [conference presentation, Digital Transformation 2024].

The cloud-based system "BukhSoft: Enterprise" operates on a monthly subscription model. According to the company's price list for 2024, the subscription cost for a company with 500 employees is approximately five thousand hryvnia per month, which includes all updates, technical support, and data storage on the provider's servers.

The SAP SuccessFactors corporate system has a significantly higher implementation cost. According to a presentation by SAP at the "Digital Transformation of the Public Sector 2024" conference, implementing the system at a large state-owned enterprise with a thousand employees can cost between one hundred and two hundred thousand US dollars, including licenses, configuration, and training. This high cost is due to the complexity of the system and the need for deep integration with other corporate platforms.

4.3. Features of staff adaptation

A study by the consulting company Deloitte Ukraine, published in 2023, showed that the success of implementing human resource management systems largely depends on the willingness of users to change. The survey showed that 42% of HR professionals over the age of 50 expressed concerns about the need to learn new technologies.

Table 2. Staff adaptation to HRM systems (public vs private sector)

Sector	Training format	Duration	Assessment/control	Barriers/risk factors
Public sector	Pilot-based seminars (in-person) + webinars	20–40 hours per enterprise (as stated in the text)	Post-training knowledge test	Higher resistance to change; additional compliance steps and approvals
Private sector	Vendor-led training: 3 days in-person for key users + online courses for other staff	3 days + online modules	Internal access/skills validation (varies by company)	Main challenge is fast user onboarding and process re-design

Source: Compiled by the author.

According to a report by the State Agency for Electronic Governance [14], as part of a pilot project, training seminars lasting from twenty to forty hours were organized for each participating state-owned enterprise. The training was conducted both in person and via webinars. After completing the training, specialists took a test on their knowledge of the system's functionality.

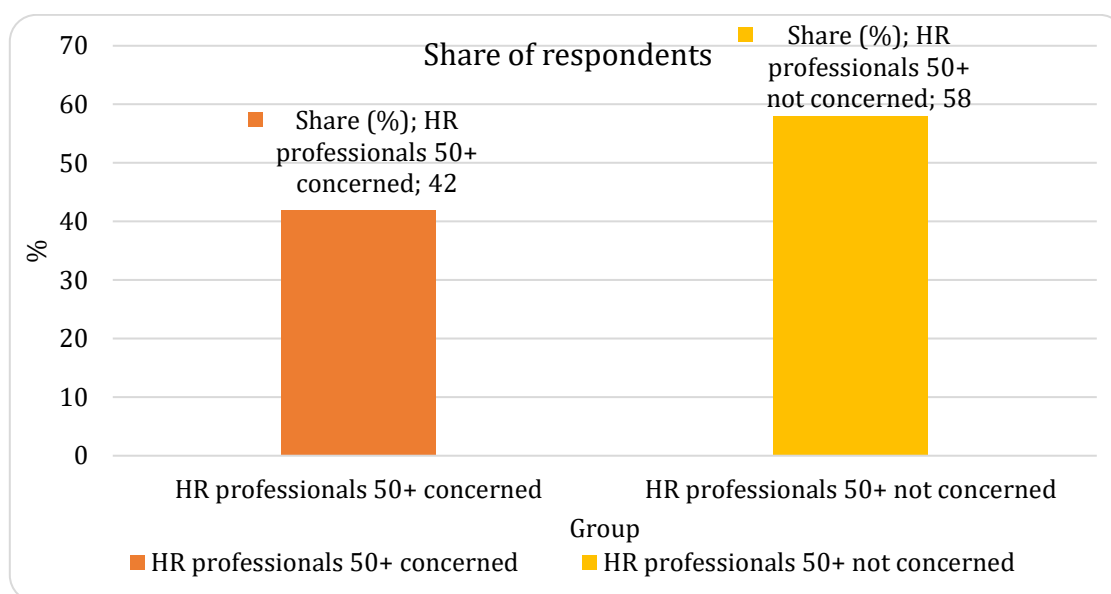


Figure 1. Share of HR professionals aged 50+ who expressed concerns about learning new technologies (%)

Source: Compiled by the author.

Private companies usually organize training through their software provider. 1C-Rarus Ukraine offers a standard training package that includes three days of face-to-face classes for key users and online courses for other HR staff.

5. Empirical data on productivity improvements

5.1. Redistribution of HR specialists' working time

According to a study by PwC Ukraine [12], prior to the introduction of automation, HR specialists spent an average of fifty-eight percent of their working time on routine administrative tasks, such as data entry, filling out standard forms, and preparing reports. Only twelve percent of their time was devoted to strategic tasks such as workforce planning and the development of employee training and development programs.

After the introduction of automated systems, the structure of working time utilization changed. The proportion of time spent on administrative tasks fell to twenty-two percent. In contrast, the time

allocated to strategic tasks increased to thirty-six percent. This allows HR departments to focus more on human resource development, employee training, and improving organizational culture.

5.2. Reduction in the number of employee requests

According to a report by the State Agency for Electronic Governance [14], the introduction of self-service functionality for employees via personal accounts has reduced the number of requests to the HR department. Before automation, employees contacted the HR department an average of eighteen times a year with questions about obtaining salary certificates, copies of employment orders, information about remaining vacation days, and other routine issues.

After the introduction of systems with a self-service module, the number of requests decreased to five times a year per employee. Employees were allowed to independently download income certificates, view their pay slips, submit vacation requests in electronic form, and receive information about their work schedule through their personal account in the system.

At the 2023 Ukrainian HR Forum, BukhSoft presented data from one of its clients, a private retail company with 380 employees. Before the system was implemented, the HR department received an average of 45 requests per week. After the launch of the self-service module, the number of requests decreased to twelve per week, which resulted in savings of about 130 working hours per year.

5.3. Financial impact of implementation

A study conducted by consulting firm EY Ukraine in 2022 included an analysis of the economic efficiency of implementing automation systems. For a company with 500 employees, the total cost of implementing the 1C: Salary and Personnel Management 8.3 system, including licenses, configuration services, and staff training, was approximately US\$8,000.

The economic effect consists of several components:

- Savings on salaries: Reducing the time spent on processing payroll allows you to reduce the size of the payroll team or reallocate freed-up resources to other tasks. The cost savings amount to approximately three thousand dollars per year.
- Reduction in penalties: Fewer errors reduce the risk of penalties from regulatory authorities and the cost of correcting errors. The estimated savings are approximately two thousand dollars per year.
- Document flow savings: Faster report preparation and reduced paper document flow costs result in additional savings of approximately one thousand dollars per year.
- Thus, the payback period is approximately one and a half years. After this period, the company saves approximately \$6,000 annually thanks to the increased efficiency of the HR department.

6. Conclusions

The study allows us to draw the following conclusions regarding the impact of digital transformation on the effectiveness of human resource management in Ukrainian enterprises.

First, based on analyzed case studies and reports [12; 14], the introduction of specialized information systems is associated with significant reductions in HR processing time. According to the generalized data of PwC Ukraine [12] and the State Agency for Electronic Governance [14], the processing time for the monthly payroll cycle is reduced by an average of sixty-two percent, from four and a half working days to one and a half days. This allows HR departments to respond more quickly to changes and focus more on strategic tasks.

Analysis of global trends for 2024-2025 shows that the HR technology market is in a phase of active growth. The global market demonstrates steady growth with an annual average rate of 9.2%, while the Ukrainian segment of corporate software is growing significantly faster at 30.71% per year. This indicates a high potential for the implementation of automated HR systems in Ukrainian enterprises.

The integration of artificial intelligence technologies has transformed from an innovation into an industry standard, with the majority of new products in 2024 containing AI features [8]. Primary applications include recruitment automation, employee turnover prediction, and personalized career development. Cloud solutions continue to dominate the market, with their share in Ukraine growing

from 15% to 28% between 2020 and 2023 [5], reflecting global trends toward scalable, accessible HR platforms.

Second, reviewed implementations demonstrated improvements in calculation accuracy and data quality. Organizations in the pilot project [14] reported error rate reductions from 8–12% to 2–3%, attributed to built-in legislative compliance checks. The completeness of mandatory fields in electronic employee cards increases from 73% to 91% [5], which is critical for the correct preparation of reports.

The systems ensure effective compliance with Ukrainian legislation on tax reporting and social insurance. Automatic generation of XML files for submission to the State Tax Service and integration with the Pension Fund's electronic services reduces the time required to prepare quarterly reports by 70–80% and virtually eliminates technical errors in reporting [14].

Significant differences between the private and public sectors in implementation processes have been identified. State-owned enterprises face longer implementation times due to the need to comply with public procurement procedures and obtain numerous approvals from regulatory authorities. The average implementation time in the public sector is fifteen months, compared to eight months in private companies [12; 14].

Analysis of case studies [12; 14] suggests that implementation effectiveness is influenced by organizational factors such as staff training quality and management support. Companies that invested in comprehensive user training programs achieved higher system acceptance rates and realized its potential more quickly [14].

The economic effect of implementation is positive for enterprises of various sizes. The payback period ranges from one and a half to three years, depending on the size of the organization and the solution chosen. The main sources of savings include reduced labor costs through increased productivity, reduced risk of penalties, and savings on paper document flow.

The practical significance of the study lies in the formulation of recommendations for Ukrainian enterprises planning to implement HR management automation systems. It is recommended to choose systems that take into account the specifics of Ukrainian legislation and the possibility of integration with the electronic services of state bodies. It is critically important to invest in staff training and ensure management support at all stages of implementation.

Prospects for further research include analyzing the impact of artificial intelligence and machine learning on the effectiveness of human resource management, studying the experience of implementing mobile applications for employees, and researching practices for using data analytics to make strategic human resource decisions.

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