

Complete Results of the Empirical Survey

**Digitalization of HR Processes and the
Implementation of HR 4.0 and HR 5.0 in CEE
Countries**

Research Sample: 698 Organizations



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This document summarizes all available quantitative and qualitative data obtained from the provided results dataset and the distributed questionnaire. All percentage values are presented according to the source data; in questions allowing multiple answers, the total percentage intentionally exceeds 100%.

1. METHODOLOGICAL FRAMEWORK OF THE SURVEY

The empirical survey focused on the state of digitalization of HR and payroll processes, the spread of HR 4.0 tools, and the emergence of HR 5.0 principles in organizations operating within the Central and Eastern European region. The questionnaire was designed as an anonymous research instrument and included closed-ended questions, multiple-choice questions, and open-ended respondent comments.

Thematically, the questionnaire covered eight areas: organizational identification data, digitalization of HR processes, the legislative and institutional environment, challenges and risks, strategic HR management, HR function outsourcing, implementation of HR 4.0 and HR 5.0, and experiences from recent crises.

2. CHARACTERISTICS OF THE RESEARCH SAMPLE

2.1. Distribution by Country

A total of 698 organizations were included in the survey. The largest share of the sample consisted of organizations from the Czech Republic, corresponding to the strongest market position of the Czech branch of the Elanor network. However, the sample also included organizations from other V4 countries and the Balkan region, enabling a broader regional interpretation of HR digitalization trends.

Country	Number of Organizations	Share of Total (%)
Czech Republic	471	67,5
Poland	23	3,3
Slovakia	32	4,6
Hungary	76	10,9
Serbia	25	3,6
Bulgaria	14	2,0
Romania	29	4,2
Chorvatsko	11	1,6
Albánie	17	2,4
Total	698	100

2.2. Type of Organization

The sample consisted primarily of multinational companies, which represented nearly half of all respondents. This finding is significant because multinational organizations typically face higher demands related to standardization, compliance, cross-border coordination, and secure data transfer.

Type of Organization	Approximate Number of Organizations	Share (%)
Multinational Company	328	47
Local Company	202	29
Public Sector Organization	126	18
Other	42	6
Total	698	100

2.3 Industry Structure

The industry composition was relatively broad. The largest shares were represented by logistics and transportation, universities, IT companies, and manufacturing. This structure is appropriate for the analysis of digital transformation because it includes both operationally intensive sectors and knowledge- and data-based sectors.

Industry / Sector	Approximate Number of Organizations	Share (%)
Logistics and Transportation	161	23
Universities	126	18
IT Companies	126	18
Manufacturing and Production	119	17
Construction	42	6
Other	126	18
Total	698	100

2.4 Respondent Positions and Professional Experience

The source dataset identified the main respondent categories as CFOs, HR directors, HR specialists, payroll specialists, and administrators. Since the delivered dataset did not include percentage distributions for these roles, no proportions were calculated.

The reported professional experience included 30, 25, 18, 15, 10, 6, 4, and 3 years, indicating the participation of experienced professionals from HR, payroll, finance, and administration.

Observed Variable	Available Data
Respondent Roles / Positions	CFO; HR Director; HR Specialist; Payroll Specialist; Administrator
Years of Professional Experience	30, 25, 18, 15, 10, 6, 4, 3 years

2.5 Organizational Size

The research sample consisted primarily of medium-sized and large organizations. This increases the relevance of the findings for the analysis of more complex HR and payroll systems, where issues of standardization, digitalization, legal responsibility, and operational continuity become more significant.

Organizational Size	Approximate Number of Organizations	Share (%)
Fewer than 50 Employees	42	6
51–250 Employees	328	47
251–1000 Employees	202	29
1001–5000 Employees	126	18
Total	698	100

3. LEGISLATIVE AND INSTITUTIONAL ENVIRONMENT

3.1 Legal Recognition of Electronic Signatures

Electronic signatures represent one of the most widespread tools for HR document digitalization. Nevertheless, the results show that their legal and procedural anchoring remains ambiguous. Only 35% of organizations stated that electronic signatures are fully recognized and enforceable; another 35% evaluated them as partially recognized, while 30% of respondents were uncertain.

Status of Electronic Signature Recognition	Approximate Number of Organizations	Share (%)
Fully Recognized and Legally Enforceable	244	35
Partially Recognized and Legally Enforceable	244	35
Uncertain / Do Not Know	209	30
Total	698	100

Open-ended comments indicated that electronic signatures are often used only in selected cases or in relation to specific institutions, such as social security administrations, health insurance companies, and tax authorities. Respondents also explicitly mentioned legislative limitations.

- Only in certain cases.
- We use signatures for social security, health insurance, and tax authorities.
- Legislative restrictions.

3.2 Impact of Recent Legislative Changes

The impact of recent legislative changes was confirmed by 71% of organizations. This represents a particularly strong signal that HR and payroll activities in the CEE region are not merely technological domains, but also areas characterized by high regulatory sensitivity.

Have Recent Legislative Changes Affected Your Organization?	Approximate Number of Organizations	Share (%)
Yes	496	71
No	202	29
Total	698	100

Respondents most frequently mentioned changes in labor legislation, amendments introduced between 2023–2025, the “Flexi Amendment 6/2025,” modifications related to temporary work agreements, leave records, employee benefits, remote work, minimum wage regulations, bonuses, and digital communication with public institutions.

- Changes in the Labor Code; Labor Code amendments 2023/24/25; Flexi Amendment 6/2025.
- Changes in temporary employment agreements and reporting obligations.
- Social security administration, labor offices, ministries, and court procedures transitioning toward digitalization.
- Home-office compensation, minimum wage, and bonus regulations.
- Changes in leave entitlement calculations.
- Employee benefits affected by statutory tax limits.
- Frequent amendments to labor legislation resulting in uncertainty and increased administrative burden.

3.3 Complexity of Cross-Border HR Operations

Cross-border HR and payroll operations were predominantly evaluated as moderately complex. High complexity was reported by 18% of respondents. This is particularly important for multinational companies, which must reconcile different national labor and payroll regimes.

Level of Complexity	Approximate Number of Organizations	Share (%)
Moderate	447	64
High	126	18
Low	126	18
Total	698	100

Qualitative responses indicated that the most problematic issues include differences between EU and non-EU regulations, international assignments, employment of foreign workers, and risks associated with penalties for delayed payments in other countries.

- Employment of foreign workers with multiple contracts in several countries.
- Labor legislation, payroll regulations, and employment of foreigners.
- EU versus non-EU regulations.
- Extremely time-consuming and administratively demanding processes with risks of penalties for delayed cross-border payments.
- Internal directives used as tools for partial complexity management.

4. DIGITAL MATURITY AND TECHNOLOGICAL ADOPTION

4.1. Level of Digital Maturity

Most organizations remain at an intermediate stage of digital maturity. Only 12% of respondents reported an advanced level. This means that the CEE region is currently in a transitional phase: basic digitalization is already widespread, but full integration of HR 4.0 and HR 5.0 has not yet become a common standard.

Digital Maturity Level	Approximate Number of Organizations	Share (%)
Intermediate	489	70
Low	126	18
Advanced	84	12
Total	698	100

4.2. Technology Adoption

The adoption of digital technologies remains uneven. Basic tools such as electronic signatures are relatively widespread. Cloud HR systems and secure data transfer protocols each reached 47%. In contrast, AI-based payroll and workforce analytics are still used only to a limited extent.

Technology	Approximate Number of Organizations	Description	Share (%)
Electronic Signatures	496	Basic document digitalization	71
Cloud HR Systems	328	Digitalization of HR processes and data access	47
Secure Data Transfer Protocols	328	Security infrastructure	47
Secure data transfer protocols	126	Reported separately in the source dataset; likely a duplicated language variant	18
AI-Based Payroll and Workforce Analytics	84	Advanced HR and payroll analytics	12

The key finding is uncomfortably straightforward: organizations are capable of digitalizing administration, but only a small proportion are actually transitioning toward algorithmic analytics and predictive management. Consequently, HR 4.0 is progressing faster than HR 5.0.

4.3. Employee Access to Digital HR Tools

A high level of employee access to digital HR tools was reported by 76% of organizations, where more than 80% of employees have access to such systems. This finding indicates strong technical availability of digital HR solutions; however, it does not automatically imply a high level of digital competence among all employee groups.

Share of Employees with Access to Digital HR Tools	Approximate Number of Organizations	Share of Organizations (%)
More than 80% of Employees	530	76
60–80% of Employees	84	12
40–60% of Employees	42	6
Less than 40% of Employees	42	6
Total	698	100

The results suggest that technical access to digital HR tools is no longer a major barrier for most organizations. Future challenges are therefore likely to be associated less with access itself and more with the effective utilization of digital systems, the development of employee digital competencies, and the ability to derive meaningful value from available digital technologies.

4.4. Use of Personal Devices for HR Activities

The use of employees' personal devices for HR-related activities is supported by 59% of organizations, while 41% do not permit this practice. Consequently, Bring Your Own Device (BYOD) has become an important element of organizational flexibility, while simultaneously raising concerns regarding cybersecurity, data protection, and access management.

Use of Employees' Personal Devices for HR Activities	Approximate Number of Organizations	Share (%)
Yes	412	59
No	286	41
Total	698	100

Illustrative respondent comments:

- Electronic payslips, HR portals, training platforms, and attendance management.
- HR does not currently support this practice.
- We do not allow the use of personal mobile devices; access is only permitted through a secure VPN connection.

5. BARRIERS TO TRANSFORMATION AND DIGITAL EXCLUSION

5.1. Barriers to Digital Transformation

The most significant barrier to digital transformation is the cost of technology, cited by 53% of respondents. This is closely followed by a lack of digital skills, reported by 47% of organizations.

The findings confirm that HR digitalization is not merely a matter of acquiring new systems and technologies. Equally important is the organization's ability to transform work practices, develop employee competencies, and support organizational change.

Barrier	Approximate Number of Organizations	Share (%)
Technology Costs	370	53
Lack of Digital Skills	328	47
Resistance to Change	202	29
Legal Uncertainty	168	24
Infrastructure Limitations	168	24
Other	42	6

5.2. Digital Exclusion

Digital exclusion was reported by 53% of organizations. This represents one of the most significant findings of the entire survey. It suggests that technological availability alone is insufficient; without adequate training, support, and organizational change, digitalization may effectively exclude certain groups of employees from access to information and HR services.

Occurrence of Digital Exclusion	Approximate Number of Organizations	Share (%)
Yes	370	53
No	328	47
Total	698	100

The most frequently identified vulnerable groups and causes include:

- **Blue-collar workers** – limited support for skills development and, in some cases, resistance among managers to systematically invest in employee development.
- **Older employees** – barriers related to digital literacy and adaptation to new systems.
- **Service and support staff** – limited access to digital tools and lower levels of digital competence.
- **Digital illiteracy** explicitly identified as a standalone barrier.

The findings suggest that digital transformation may unintentionally create new forms of inequality within organizations. As a result, digital inclusion should be considered an integral component of digital transformation strategies rather than a secondary issue.

5.3. Inclusion Strategies

Inclusion strategies are primarily based on training programs, webinars, e-learning initiatives, onboarding processes, and IT support. However, some responses indicate that a comprehensive inclusion strategy is either absent or not clearly communicated within certain organizations.

Illustrative respondent comments:

- Training programs and regular educational activities.
- Access to HR portals, online onboarding, digitalization initiatives, and AI-related training.
- Training sessions, webinars, and educational programs delivered through schools and professional institutions.

- Internal training, e-learning programs, and IT support.
- Provision of PCs and basic technical equipment.
- “I do not know of any”; “None so far”; “Not much.”

The results indicate that organizations increasingly recognize the importance of digital inclusion. Nevertheless, the level of institutionalization of inclusion strategies remains uneven, suggesting significant room for improvement in ensuring equal access to digital HR services and technologies.

6. OUTSOURCING OF HR AND PAYROLL FUNCTIONS

6.1. Extent of Outsourcing

HR and payroll outsourcing is widely adopted across the CEE region. Moderate use was reported by 47% of organizations, while a further 29% indicated very frequent use. In total, 76% of organizations reported at least a moderate to high level of outsourcing utilization. This provides strong evidence for interpreting outsourcing as a standard component of the digital and organizational architecture of HR management.

Extent of Outsourcing	Approximate Number of Organizations	Share (%)
Moderate Use	328	47
Very Frequent Use	202	29
Rarely Used	84	12
Not Used	84	12
Total	698	100

6.2. Reasons for Outsourcing

The primary reason for outsourcing is access to specialized compliance expertise. This finding confirms that outsourcing is perceived not only as a cost-saving mechanism but also as a means of managing legal, regulatory, and institutional risks.

Reason for Outsourcing	Approximate Number of Organizations	Share (%)
Access to Compliance Expertise	530	76
Cost Reduction	454	65
Access to Advanced HR and Payroll Technologies	328	47
Ability to Focus on Core Business Activities	286	41
Other	42	6

6.3. Capabilities of External Service Providers

The ability of external providers to meet organizational requirements was evaluated positively by 82% of respondents, while 18% considered provider capabilities to be only partially sufficient. The source dataset did not include a negative response category, suggesting a generally high level of confidence in professional HR and payroll service providers.

Ability of Providers to Meet Organizational Needs	Approximate Number of Organizations	Share (%)
Yes	572	82
Partially	126	18
Total	698	100

The results indicate a high degree of trust in external providers and support the view that outsourcing has evolved from a transactional service model into a strategic partnership model within modern HR and payroll management.

7. RISKS IN HR AND PAYROLL PROCESSES

Cyberattacks and personal data breaches represent the most significant risk category, identified by 53% of organizations. The second most important category is non-compliance with legal and regulatory requirements.

The findings confirm that digitalization increases demand on cybersecurity, compliance management, auditability, and the clear allocation of responsibilities. As HR and payroll processes become increasingly digitalized, organizations must simultaneously strengthen their governance mechanisms and risk management capabilities.

Risk Category	Approximate Number of Organizations	Share (%)
Cyberattacks / Data Privacy Breaches	370	53
Non-Compliance with Legal and Regulatory Requirements	286	41
Technological Failures or System Outages	202	29
Political or Economic Instability	126	18
Labor Shortages or Workforce Disruptions	126	18
Other	84	12

7.1. Risk Mitigation Through Digitalization

Open-ended responses indicate that digitalization is widely perceived as a tool for reducing operational, security, and administrative risks. Respondents most frequently referred to data centralization, the reduction of physical documentation, the automation of calculations, and improved security mechanisms.

- Elimination of physical mail and reduction of paper documents left unattended.
- Improved data availability and reduced risk of personal data leakage.
- Investments in information systems and regular software updates.
- Enhanced verification controls, regular training programs, and cooperation with payroll service providers.
- Reduction of resource shortages and capacity-related risks.
- Automated calculations, HR analytics, and reduced administrative burden and operating costs.
- Continuous improvements in security measures and employee awareness.
- Greater transparency, speed, geo-location capabilities, and centralized data management within a unified environment.

The responses suggest that organizations increasingly view digitalization not merely as a technological upgrade but also as an important mechanism for operational resilience and risk management.

7.2. Lessons Learned from Recent Crises

Only 29% of organizations reported that they had derived specific lessons from recent crises. Consequently, 71% either did not identify any concrete lessons learned or were unable to articulate them explicitly.

This finding represents a potential weakness. Although recent crises accelerated digitalization efforts, they did not always lead to systematic organizational learning and institutional adaptation.

Lessons Learned from Recent Crises	Approximate Number of Organizations	Share (%)
Yes	202	29
No	496	71
Total	698	100

Illustrative respondent comments:

- Improved focus on security.
- Acceleration of HR process digitalization, remote work capabilities, and organizational flexibility.
- Digitalization of selected processes enabling remote operation; however, effective transfer of complex information among involved employees remains a challenge.

The findings indicate that while crises have served as catalysts for digital transformation, many organizations have yet to institutionalize the lessons learned into formal governance, risk management, and organizational learning frameworks.

8. STRATEGIC PERCEPTION OF HR AND ITS IMPACT ON ORGANIZATIONAL AGILITY

8.1. Strategic Perception of HR

According to the survey results, HR is perceived as a strategic function in the majority of organizations. However, the source dataset contains two alternative coding schemes. The first reports 82% Yes and 18% No, while the second reports 82% Yes and 18% Partially. Without access to the original microdata, it is not possible to determine whether the 18% represents a rejection of HR's strategic role or only partial recognition of its strategic importance.

For the final publication, it is therefore recommended that the coding of this variable be verified and standardized.

Coding of Strategic HR Perception	Interpretation	Share (%)
Yes	HR is perceived as a strategic organizational function	82
No / Partially	Reported inconsistently in the source dataset; verification required	18
Total		100

Open-ended responses suggest that in organizations where HR is not perceived strategically, it is often reduced to a legislative or administrative necessity.

Illustrative respondent comments:

- “The agenda is not considered important by the organization’s leadership.”
- “HR and payroll activities are perceived primarily as a legislative requirement.”

8.2. Contribution of Digitalization to Organizational Agility

Qualitative responses confirm that digitalization enhances the speed, flexibility, and controllability of HR processes. The most frequently mentioned benefits include remote service delivery, faster execution of tasks, rapid implementation of organizational changes, improved control mechanisms, and increased resilience during crises.

Illustrative respondent comments:

- “Many activities can be completed remotely and more quickly.”
- “Faster processes, rapid implementation of changes, increased speed, and fewer errors.”
- “Acceleration of processes and reduction of risks associated with HR resource shortages.”
- “Greater control.”
- “HR analytics, digital tools, and improved resilience to crises.”
- Some respondents answered: “I do not know,” “Not applicable,” or “Unable to assess.”

The findings suggest that digitalization contributes not only to operational efficiency but also to organizational agility. By enabling faster information flows, more flexible work arrangements, and improved decision-making capabilities, digital technologies strengthen the ability of organizations to respond to changing business and regulatory environments.

9. HR 4.0 AND HR 5.0: INTERPRETATIVE FINDINGS

The source dataset contains references to variables X and Y that were not replaced with actual values. Consequently, it would be methodologically inappropriate to supplement these figures without access to the original response database. However, a cautious interpretative framework can be developed based on the available indicators.

9.1. HR 4.0

The minimum empirical indicators of HR 4.0 may be considered the adoption of electronic signatures, cloud-based HR systems, secure data transfer technologies, and, to a limited extent, HR and payroll analytics.

Electronic signatures represent the most widely adopted technology (71%), while cloud HR systems and secure data transfer protocols each reach 47%. AI-based analytics are used by only 12% of organizations. These findings suggest that HR 4.0 is present throughout the CEE region, although its depth and maturity remain uneven.

It would not be methodologically correct to claim that more than 60% of organizations have fully implemented HR 4.0 if such a figure is not explicitly contained in the dataset. A more defensible interpretation would be:

“HR 4.0 elements are widely represented in the sample, particularly in the areas of electronic signatures and basic document digitalization. More advanced integration of cloud-based systems, secure data transfer technologies, and AI-driven analytics is considerably less uniform across organizations.”

The results therefore indicate that the technological foundations of HR 4.0 have largely been established, while more sophisticated forms of digital integration remain at different stages of adoption.

9.2.HR 5.0

The concept of HR 5.0 cannot be expressed through a single percentage value because the dataset does not provide percentage distributions for survey questions 23–25. Nevertheless, the available data make it possible to assess several indirect indicators associated with HR 5.0, including digital inclusion, employee access to digital tools, the strategic perception of HR, the development of digital competencies, and the ability to combine technological efficiency with a human-centric approach.

From the perspective of HR 5.0, the most important finding is the apparent ambivalence of the results. While 82% of organizations perceive HR as a strategic function, 53% simultaneously report the existence of digital exclusion.

This suggests that the strategic discourse surrounding HR 5.0 is more advanced than its practical implementation. In other words, many organizations increasingly adopt the language of HR 5.0 at the strategic level, yet employees belonging to vulnerable groups do not always have the practical conditions necessary to participate fully in digital transformation initiatives.

The findings therefore support the conclusion that the transition from HR 4.0 to HR 5.0 is not determined solely by technological adoption. Rather, it depends on the ability of organizations to combine digital innovation with inclusion, competency development, equal access to digital resources, and human-centered governance principles.

10.OVERALL INTERPRETATION OF THE FINDINGS

The empirical study indicates that the CEE region is currently in a transitional phase between the administrative digitalization of HR functions and the deeper transformational logic associated with HR 4.0 and HR 5.0. Basic digital tools have already become a common component of HR and payroll operations; however, advanced analytics, artificial intelligence, and human-centric management approaches remain unevenly implemented across organizations.

The principal paradox identified by the research is the coexistence of relatively high technological availability and a high level of digital exclusion. In other words, organizations frequently possess digital systems, employee portals, electronic signatures, and cloud-based solutions, yet not all employees have the competencies, support, or motivation required to utilize these technologies effectively. This is precisely the area in which HR 5.0 gains practical relevance.

Another important finding concerns the evolving role of outsourcing. Outsourcing is no longer merely a mechanism for reducing costs. The data indicates that it increasingly functions as a means of accessing specialized expertise, ensuring regulatory compliance, acquiring advanced technologies, and maintaining process stability. This is particularly important in an environment characterized by frequent legislative changes and growing cross-border complexity.

The risk architecture of HR and payroll processes is shifting from traditional administrative errors toward cybersecurity, legal, regulatory, and institutional risks. Consequently, digitalization must be accompanied by a clearly defined governance model, well-established accountability structures, effective control mechanisms, and the continuous development of digital competencies.

11. MAIN EMPIRICAL FINDINGS

- The research sample comprises 698 organizations from the CEE region, with a dominant representation of organizations from the Czech Republic.
- The sample consists primarily of multinational, medium-sized, and large organizations, increasing the relevance of the findings for the analysis of complex HR and payroll systems.
- Digital maturity is predominantly intermediate: 70% of organizations are at an intermediate level, while only 12% have reached an advanced level.
- Electronic signatures are the most widely adopted technology (71%), although their legal recognition and enforceability remain ambiguous.
- Cloud-based HR systems and secure data transfer protocols are utilized by 47% of organizations, while AI-driven analytics are currently used by only 12%.
- The most significant barriers to digital transformation are technology costs (53%) and a lack of digital skills (47%).
- Digital exclusion is reported by 53% of organizations, particularly affecting blue-collar workers, older employees, service personnel, and support staff.
- Outsourcing is widely adopted, with 76% of organizations using outsourced HR and payroll services on a moderate or frequent basis.
- The primary motivation for outsourcing is access to compliance-related expertise (76%).
- The most significant risk affecting HR and payroll processes is cyberattacks and personal data breaches (53%).

- Only 29% of organizations explicitly report having derived concrete lessons from recent crises.
- HR is perceived as a strategic organizational function in the majority of organizations, although some organizations still regard it primarily as a legislative or administrative necessity.
- HR 4.0 is relatively widespread across the CEE region, particularly in the areas of document and process digitalization, whereas HR 5.0 should currently be viewed as an emerging rather than a fully established organizational model.

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