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STRUCTURAL PATTERNS OF HUMAN RESOURCE DEVELOPMENT PRACTICES IN SLOVAK ORGANIZATIONS*

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Abstract. This study examines the key factors shaping employee learning and development in Slovak organizations, focusing on the strategic and systemic orientation of Human Resource Development (HRD). A quantitative CAWI survey was conducted among 153 Slovak organizations. Exploratory factor analysis with Varimax rotation was used to identify core dimensions of employee development practices. Three main dimensions were identified: individual support through coaching and digital learning, formal talent management systems, and experiential career mobility. A dominant latent factor reflects an integrated, systematic, and flexible HRD approach. The choice of development tools is influenced by organizational size, sector, culture, and workforce demographics, including generational diversity and neurodiversity. Slovak organizations favor personalized and digitally supported development over isolated or short-term training. The study offers original empirical evidence from Slovakia and contributes to HRD research by linking integrated development systems with organizational change and global HRD trends. Managers are encouraged to implement long-term, integrated HRD frameworks that combine individualized learning, formal talent management, and experiential development while addressing workforce diversity and digitalization. The findings are limited by the sample size and national focus; future research should apply longitudinal and cross country approaches to assess HRD effectiveness and outcomes.

Keywords: employee development; neurodiversity; HRD; Slovak organizations; survey; talent management; digital learning; career mobility; workforce strategies; strategic HRM

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1. Introduction

Employee education and development are key instruments for maintaining organizational competitiveness in a dynamic labor market environment. The success of these processes depends not only on training quality but also on organizational characteristics such as culture, size, industry, and workforce structure, which influence how development strategies are implemented (Coculova & Svetozarovova, 2024; Havierníková et al., 2025; Burhan & Khan, 2025).

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Trends in Human Resource Development (hereafter HRD) emphasize the growing importance of individualized learning and digital methods, including coaching, mentoring, and e-learning, enabling flexible, personalized, and continuous development of employee competencies (Adams, 2025). At the same time, organizations increasingly utilize formal talent management systems, such as assessment centers, succession planning, and structured development programs, supporting the identification and targeted development of key talents (Seo et al., 2024). A complementary dimension is experiential career mobility, encompassing job enrichment, on-the-job training, job rotation, and international assignments, which facilitates competency development directly in the work environment and enhances adaptability (Lee & Han, 2024; Barhate, Winton & Funderburk, 2024).

Effective employee development also requires consideration of age and neurodiversity composition of work teams, as these factors influence preferred learning approaches and motivation to participate in training activities. Organizations integrating these aspects into development strategies can achieve higher employee engagement, adaptability, and performance (Sniderman et al., 2024; Urbancová et al., 2024; Gottardello et al., 2025).

Although international HRD research exists, systematic evidence on implementation of development practices in small and medium-sized organizations in Central Europe, particularly Slovakia, remains limited, especially regarding how organizational culture, industry, and workforce demographics influence the selection and combination of development tools (Coculova & Svetozarovova, 2024; Havierníková et al., 2025; Kucharčíková & Tokarčíková, 2020).

The aim of this article is to address this knowledge gap by identifying the key factors influencing employee education and development in Slovak organizations, with particular emphasis on the integration of individual support, formal talent management systems, and experiential career mobility. The article provides an empirical basis for comparison with practices in the Czech Republic and the broader Central European context, thereby contributing to the expansion of both the theoretical foundation and practical understanding of HRD.

2. Theoretical Background

In this research, the structural dimensions of human resource development are understood as relatively stable organizational and institutional characteristics shaping approaches to employee education and development (Berg et al., 2023; Pathomphatthaphan et al., 2024). These dimensions include organizational size and sector, the degree of HR process institutionalization, cultural and value orientations, and the strategic management of development activities (Lorincova et al., 2022; Vrabcová & Urbancová, 2022; Begum & Swamy, 2025; Fu & Tan, 2025). Together, they form a framework guiding the selection of training methods and responses to workforce diversity and individual needs (Gonçalves et al., 2025; Talwar et al., 2025).

The literature emphasizes that HRD structures are dynamic and evolve in response to technological change, new forms of work, and turbulent environments. Strategic HRM agility enables flexible adaptation of development processes across the employee life cycle while maintaining strategic coherence (Pathomphatthaphan et al., 2024). HRD effectiveness is further shaped by the alignment of leadership with institutionally embedded HR structures supporting learning, innovation, and employee adaptability (Begum and Swamy, 2025; Fu & Tan, 2025). Technological infrastructure and HR digitalization, including AI-supported systems, increasingly enable personalized learning and targeted competency development, while raising demands for institutional readiness, ethical frameworks, and balancing technological and human aspects of HRD (Talwar et al., 2025; Khushk et al., 2026). Research on KSAO variables and organizational learning confirms that sustainable development requires systematic integration of training, talent management, and continuous learning across organizational and sectoral contexts (Berg et al., 2023; Gonçalves et al., 2025). This conceptualization provides a basis for examining specific organizational factors, addressed in the following section.

Employee education and development constitute core pillars of strategic human resource management (Urbancová et al., 2024; Štaffenová & Kucharčíková, 2024). Organizations face increasingly complex demands for workforce flexibility, innovation, and adaptability, which places emphasis on effective, targeted, and at the

same time integrated development activities (Lee and Han, 2024). Contemporary research increasingly points out that the effectiveness of training and development processes is not determined solely by their content or formal structure, but is fundamentally influenced by the broader organizational context, particularly organizational culture and leadership style (Arias & Morales, 2023; Kareem et al., 2025). Organizational culture creates a framework of values, norms, and beliefs that shape organizational approaches to learning, innovation, and knowledge sharing, thereby directly influencing employees' willingness to engage in development activities (Arias & Morales, 2023; Ahmad et al., 2023). Empirical studies in the field of educational organizations show that a culture supporting innovation, openness, and collaboration strengthens the characteristics of a learning organization and creates conditions for the systematic development of human capital (Ahmad et al., 2023; Kicir & Altunoglu, 2024). At the same time, organizational culture has been shown to play a significant mediating role between leadership and the development of learning within organizations, with transformational and participative leadership styles contributing to the creation of environments that support personal engagement, professional growth, and continuous improvement (Fenech et al., 2024; Kareem et al., 2025). In this sense, employee development can be understood not only as an individual process but also as the outcome of a dynamic interaction between managerial culture and individual development strategies. Although a wide range of studies focus on the importance of human capital development, many concentrate more on its outcomes than on a deeper understanding of the factors that shape organizational approaches to development (Gross-Gołacka et al., 2022; Coculova & Svetozarovova, 2024, Gross-Gołacka, 2024). Moreover, existing empirical studies predominantly focus on specific institutional and geographical contexts outside the Central European region (Arias & Morales, 2023; Ahmad et al., 2023; Fenech et al., 2024; Kicir & Altunoglu, 2024). From this perspective, there remains a lack of detailed analyses of what actually influences organizational decision-making regarding training and development practices, particularly in less explored Central European contexts such as Slovakia (Havierníková et al., 2025).

Findings from previous research indicate that organizational approaches to workforce development are fundamentally determined by structural and contextual factors. Organizational size influences available resources, organizational maturity, and the capacity to establish specialized HR departments (Hughes, 2019). The sector of operation also shapes preferred training methods; for example, industrial organizations often rely on experiential and practice-oriented forms, whereas the service sector may favor digital and blended learning approaches (Piwowar Sulej et al., 2024). In addition to these "hard" factors, organizational culture plays a significant role in determining whether training is perceived as an investment, whether employees are motivated to take initiative, and how innovative development forms are implemented (Leuhery et al., 2024; Tadesse Bogale & Debela, 2024; Barach, 2025). In this context, Kareem et al. (2025) empirically demonstrate that organizational culture mediates the relationship between leadership style, employee commitment, and the development of a learning organization. Their findings indicate that without a supportive culture based on shared values, trust, and openness to learning, formal training initiatives remain largely ineffective. Similarly, Arias and Morales (2023) emphasize that cultural characteristics in higher education environments determine the degree of willingness to adopt innovations in professional development. Even in the presence of formal structures and development tools, rigid or conservative cultural patterns can significantly constrain an organization's innovative potential. Conversely, an open and participative culture supports experimentation, knowledge sharing, and active employee engagement in development activities. The importance of organizational culture is further supported by the findings of Ahmad et al. (2023), who point to the consequences of underdeveloped learning cultures in higher education institutions. Their study shows that in environments where training is not firmly embedded in organizational values, professional development is perceived more as a formal obligation than as a long-term investment, which negatively affects employee motivation and the organization's ability to adapt to change. Taken together, these insights suggest that organizational approaches to training are not solely the result of structural and sectoral conditions, but are fundamentally shaped by organizational culture, raising the question of which specific factors influence organizations' approaches to employee education and development (RQ1).

Organizational culture is identified as a key driver of development processes. It determines whether employees are actively encouraged to learn, whether the organization invests in development, and whether a long-term or short-term approach to competency building is preferred (Leuhery et al., 2024; Tadesse Bogale & Debela, 2024;

Barach, 2025). This factor appears to be crucial for understanding how culture influences concrete decisions related to training and development.

In addition to organizational characteristics, the selection of training methods itself represents a critical factor in employee development, significantly affecting not only learning processes but also subsequent job performance and employee engagement (Vu et al., 2025). While some organizations continue to prefer traditional formal training, others increasingly focus on development approaches based on internal coaching, mentoring, team learning, or digital and technology-supported forms of education (Adams, 2025; Smith, 2025), which allow for greater flexibility and individualization of development (Tanveer et al., 2024; Megawaty et al., 2025). The choice of specific training methods is not random but is closely related to organizational philosophy, strategic orientation, available technologies, and particularly the competency levels of HR professionals and managers responsible for employee development (Park et al., 2023; Vu et al., 2025). Research further shows that organizations that combine multiple development approaches and integrate formal training with informal workplace learning achieve higher levels of adaptability, engagement, and long-term employee performance (Ferreira & Ferreira, 2025). In particular, participative and development-oriented methods such as coaching and mentoring contribute to better understanding of change, reduced resistance to organizational interventions, and a stronger sense of work meaningfulness, which is especially important in public and institutionally rigid organizations (Melaletsa et al., 2023; Vu et al., 2025). At the same time, effective implementation of training methods requires systematic leadership support, clear communication, and long-term human capital development aligned with organizational culture and strategic objectives (Bhatti et al., 2023; Park et al., 2023). This aspect opens space for research analyzing the most frequently used approaches and their combinations in the context of Slovak organizations (RQ2).

The tension between universal and individualized approaches to development is reinforced by the increasing diversity of work teams. Age, level of education, length of work experience, and employees' cognitive preferences significantly influence which training methods are effective and acceptable. For example, older workers often prefer experiential learning and practical training, whereas younger generations expect digitalization, flexibility, and personalized development formats (Hughes, 2019; Bury et al., 2023; Cherrington, 2024; Gottardello et al., 2025). Empirical research also confirms that employees' demographic and professional characteristics, including job type and career stage, significantly influence not only preferences for training methods but also levels of engagement in development activities and their perceived usefulness (Jansen, 2025). Differences in learning approaches are not limited to age but are also related to educational attainment, quality of the work environment, and expectations associated with career growth. Employees across different organizational and sectoral contexts perceive training not only as a means of developing professional skills but also as a tool for enhancing adaptability, job satisfaction, and the long-term sustainability of work performance (Alumran et al., 2025). Current research further suggests that individual employee characteristics, such as self-regulated learning ability, learning autonomy, and emotional intelligence, amplify the need for differentiated and flexible development approaches. Employees with higher levels of these competencies make more effective use of individualized and digitally supported training forms, while other groups require more structured and intensive organizational support (Sirk, 2025; Parthasarathy et al., 2025). These differences are particularly evident in heterogeneous and aging organizations, where workforce age composition affects organizational learning, technological adaptation, and employee turnover (Black et al., 2025). This perspective raises the question of the influence of demographic and individual factors on the selection of training methods.

Based on the theoretical foundations outlined above, the following research questions are formulated and addressed in the present study:

- RQ1: Which organizational and structural factors (size, sector, organizational culture) influence the approach of Slovak organizations to employee education and development?
- RQ2: Which education and development methods (coaching, mentoring, e-learning, formal training, experiential mobility) are most frequently used in practice, and how are they combined?

This framework links theoretical insights with empirical investigation and enables the interpretation of research findings in relation to the three-factor structure of development methods identified in our results.

3. Materials and Methods

The research was conducted using a quantitative approach through a CAWI (Computer-Assisted Web Interviewing) questionnaire targeting Slovak organizations of various types and sizes. Respondents were selected from among representatives of middle and senior management, or owners in smaller organizations, who have direct oversight of education and development strategies within their organizations. In total, $n = 153$ respondents participated in the study, which corresponds to the recommended minimum sample size according to Krejcie and Morgan (1970). Organizations were included in the research using the snowball sampling method, whereby contacted entities were asked to recommend other relevant organizations. This approach was chosen due to the limited accessibility of the target population and the intention to capture a broader spectrum of organizations with diverse characteristics. Of the total number of organizations included, 103 (67%) were part of a broader organizational group (e.g., holdings or corporate groups), and 63 organizations (59%) had a standalone human resources (HR) department. These structural characteristics were taken into account in the analyses. This information made it possible to control for structural and contextual factors that could influence organizations' approaches to employee development.

The questionnaire consisted of a combination of items assessing organizational characteristics and specific education and development practices. Key variables included systematic assessments of training needs (TNE), the proportion of payroll costs allocated to training (TCR), experiential and formal development methods (e.g., JEN, OJT, EXT, DEV, FNP, FCP, ADC, SCP, RLM, HPP, INT), and methods of individual support and digital learning (COA, MEN, ELE, CCW) (Table 1).

Table 1. Coding of Variables Used in the Study

Variable	Cod
Do you systematically estimate the training needs of employees in your organization?	TNE
Approximately what share of annual wage costs is currently spent on training?	TCR
Job enrichment	JEN
External training (off-site)	EXT
On-the-job training	OJT
Developmental assignments/projects	DEV
Formal networking programs	FNP
Formal career plans	FCP
Assessment and development centers	ADC
Succession plans	SCP
Planned rotations and lateral moves	RLM
High-potential programs	HPP
International assignments	INT
Coaching	COA
Mentoring	MEN
E-learning and digital learning	ELE
Career counseling and/or workshops	CCW

Source: own elaboration

A combination of descriptive and multivariate statistical methods was used for data processing and analysis. Descriptive statistics were employed to analyze the basic characteristics of the dataset, particularly the distribution of values, means, and variability of individual variables. Subsequently, correlation analysis was conducted to identify the strength and direction of relationships among the observed variables and to assess their suitability for further multivariate analysis.

The aim of the factor analysis was to identify the latent structure of employee education and development practices in Slovak organizations and to reduce the set of observed variables to a smaller number of interpretable dimensions. The analysis was conducted as an exploratory factor analysis (EFA), as the structure of relationships among the variables had not been specified a priori. A total of $p = 15$ variables representing individual employee development tools were included in the factor analysis. The variables were measured on

an ordinal scale expressing the extent of their use within the organization. Prior to the analysis, the variables were standardized to have a zero mean and unit variance:

$$z_{ij} = \frac{x_{ij} - \bar{x}_j}{s_j}$$

where: x_{ij} denotes the value of variable j for organization i , $\bar{x}_j$ is the mean of the variable, and s_j is its standard deviation. The suitability of the dataset for factor analysis was assessed using the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy and Bartlett’s test of sphericity. To enhance interpretability, an orthogonal Varimax rotation with Kaiser normalization was applied. Varimax maximizes the variance of the squared factor loadings within factors and minimizes their overlap:

$$V = \sum_{k=1}^m \left[\frac{1}{p} \sum_{j=1}^p (\lambda_{jk}^2 - \bar{\lambda}_k^2)^2 \right]$$

where:

λ_{jk} is the factor loading of variable j on factor k , and

$\bar{\lambda}_k^2$ denotes the mean of the squared loadings of factor k .

The rotation resulted in a clear assignment of variables to individual factors and minimized cross-loadings (Anderson, 2013). The KMO value (0.879) and the statistically significant Bartlett’s test of sphericity confirm an adequate correlation structure of the data and their suitability for exploratory factor analysis. The KMO value substantially exceeds the recommended threshold of 0.6, indicating a sufficient level of shared variance among the variables. All statistical analyses and computations were performed using IBM SPSS Statistics software, version 28.

5. Results

Descriptive analysis of the mean values reveals differences in the extent to which development tools are utilized across the surveyed organizations. The highest average scores are reported for methods such as formal career plans (FCP, 1.1963), job enrichment (JEN, 1.4766), and planned rotations and lateral moves (RLM, 1.1682), suggesting that these instruments are either most frequently used across organizations or perceived by respondents as relatively effective forms of development. In contrast, relatively lower values are observed for formal networking programs (FNP, 0.9065) and international assignments (INT, 0.9533), indicating weaker institutionalization, higher organizational demands, or more limited accessibility. An important finding is the relatively high dispersion of results (skewness and kurtosis) for most items, which points to substantial heterogeneity in approaches to employee development among organizations of different sizes and levels of HR system maturity.

From a managerial practice perspective, it is particularly noteworthy that individual development methods such as mentoring (MEN, 1.3925) and coaching (COA, 1.3832) rank among effective tools, as they exhibit not only relatively high mean values but also strong linkages to other development practices (see Figure 1). Investments in these methods may lead to higher employee motivation and more effective competence development, especially when they are embedded within a broader organizational development strategy. Furthermore, it is important to monitor and systematically evaluate training needs (TNE) and the share of training costs (TCR), which at this stage of the analysis serve as contextual variables. Although these factors are not directly examined, their monitoring is essential for strategic planning of learning and development activities. Managers should also consider increasing support for less widely adopted yet potentially valuable tools, such as formal networking programs or international experience, whose benefits may become particularly evident in long-term talent development and the enhancement of organizational adaptability.

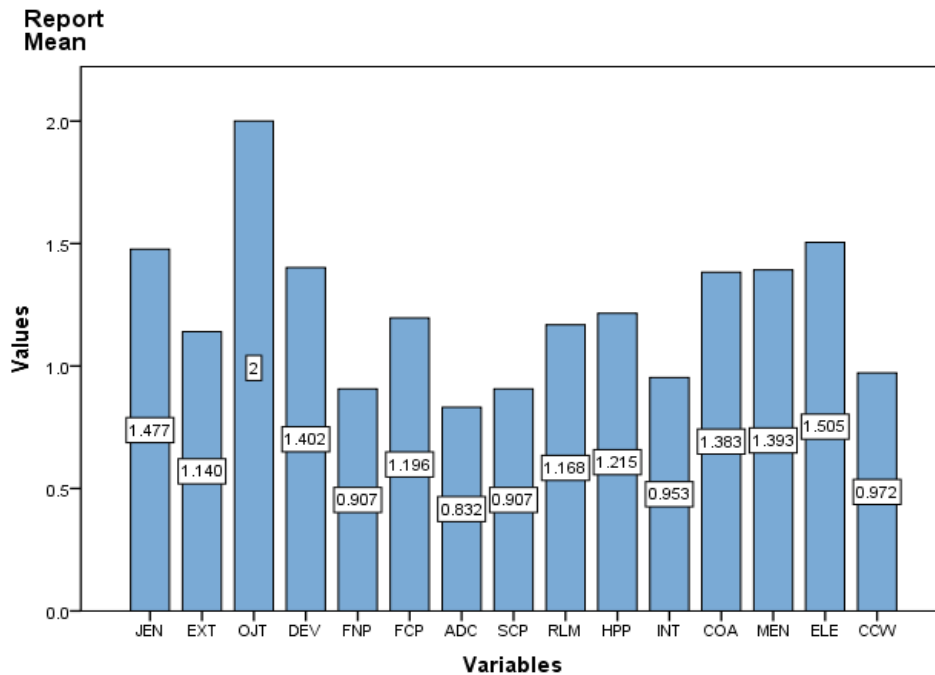


Figure 1. Report Mean of the variables

Source: own elaboration

Figure 1 illustrates the mean values of individual employee learning and development tools and methods across the surveyed organizations. The most salient feature is the high average score for on-the-job training (OJT), which reaches a value of 2.0, confirming its role as the most frequently used and preferred approach to employee development.

High values are also reported for job enrichment (JEN, 1.477) and e-learning and digital training (ELE, 1.505), which were identified as among the most widely used and effective methods. This convergence between tabular and graphical outputs enhances the consistency and robustness of the descriptive results.

In contrast, the low mean values for formal networking programs (FNP, 0.907) and international assignments (INT, 0.953) suggest that these tools are less widespread or are applied only within a limited number of organizations. This finding is important to consider when planning development activities.

The results of the correlation analysis (Figure 2) indicate that employee development and human resource management tools are not used in isolation within organizations but rather form a relatively coherent system of interrelated practices.

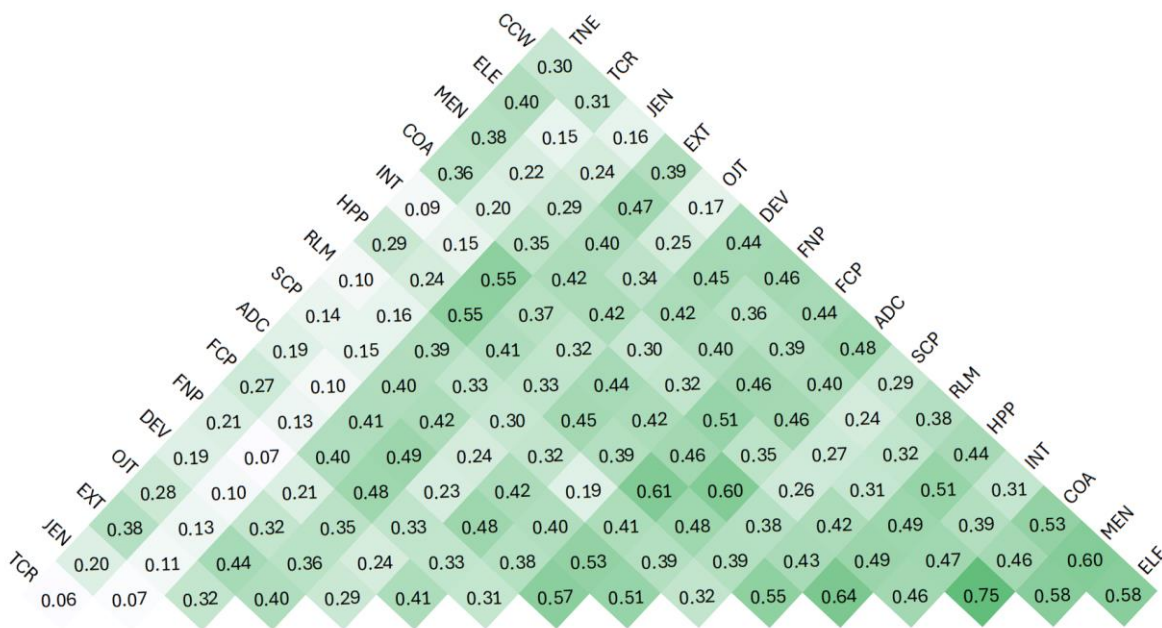


Figure 2. Results of the correlation analysis
Source: own elaboration

The highest relationship values in Figure 2 are concentrated primarily among development-oriented tools, indicating that organizations that systematically invest in employee development tend to combine and integrate these activities over a longer time horizon.

Strong linkages are particularly evident among tools focused on talent management and career development, specifically succession planning (SCP), assessment and development centers (ADC), formal career plans (FCP), and high-potential programs (HPP). In organizational practice, these instruments are often implemented jointly as part of a comprehensive talent management system. The empirical data therefore support the assumption of complementarity among these approaches rather than their isolated use.

Pronounced relationships are also observed between mentoring (MEN), coaching (COA), and developmental projects or assignments (DEV). These tools share a strong emphasis on individualized and experiential learning, which may explain their interrelatedness and their significant role in the development of managerial and professional competencies. The findings suggest that the effects of supportive developmental relationships can be strengthened when they are linked to concrete work tasks and challenges.

By contrast, relatively weaker correlations are found for some more formal or administratively oriented instruments, such as systematic training needs estimation (TNE) or the share of payroll costs allocated to training (TCR). A higher volume of financial resources devoted to training does not necessarily translate into broader or more sophisticated use of development tools. From an analytical perspective, this highlights the importance of the structural and strategic embedding of employee development.

E-learning and digital training (ELE) exhibit moderate relationships with most other tools, suggesting their role as a supportive and complementary element of the development system. According to the results, digital forms of learning appear to be most effective when combined with mentoring, coaching, or on-the-job training (OJT), rather than when used as stand-alone development instruments.

The results of the principal component extraction (Table 2) demonstrate how individual employee learning and development tools contribute to explaining the overall variance in the data. The reported values indicate the extent to which each variable is represented by the extracted components. Instruments oriented toward individual support and digital learning, such as coaching (COA, 0.769), mentoring (MEN, 0.764), and career

counseling and workshops (CCW, 0.729) show the highest proportions of explained variance, indicating their strong representativeness and central role in the overall structure of development practices. Similarly, systematic and formally structured talent management tools, particularly assessment and development centers (ADC, 0.655), succession planning (SCP, 0.659), e-learning (ELE, 0.621), and high-potential programs (HPP, 0.646), also achieve relatively high variance proportions, confirming their importance for structured employee development in the surveyed organizations.

Table 2. Extraction Method: Principal Component Analysis

Variables	Initial	Extraction
JEN	1.000	0.708
EXT	1.000	0.438
OJT	1.000	0.512
DEV	1.000	0.516
FNP	1.000	0.508
FCP	1.000	0.554
ADC	1.000	0.655
SCP	1.000	0.659
RLM	1.000	0.443
HPP	1.000	0.646
INT	1.000	0.601
COA	1.000	0.769
MEN	1.000	0.764
ELE	1.000	0.621
CCW	1.000	0.729

Source: own elaboration

By contrast, lower explained variance is observed for some external and experience-based methods, such as external training (EXT, 0.438), rotations and lateral moves (RLM, 0.443), and on-the-job training (OJT, 0.512). From the perspective of the data structure, these instruments are less homogeneous and may represent more specific or context-dependent approaches to employee development that are not fully captured by the principal component.

The first extracted component strongly reflects a combination of individualized, digital, and formally managed development tools, whereas experiential and external methods tend to follow a different structural logic. The results of the factor analysis indicate that the first factor explains the largest share of the data variance, namely 44.6%, and represents the dominant dimension of employee learning and development. The second factor accounts for 8.9% and the third factor for 7.3% of the total variance, with the three factors together explaining approximately 60.8% of the variability in the data (see Table 3). The data structure thus suggests the existence of one clearly dominant factor complemented by two additional, interpretatively relevant dimensions.

Table 3. Results of the factor analysis

Factor	Total	% of Variance	Cumulative %
1	6.687	44.581	44.581
2	1.337	8.910	53.491
3	1.098	7.322	60.813

Source: own elaboration

The choice of a three-factor solution is further supported by the scree plot (see Figure 3), which shows a pronounced drop in eigenvalues between the first and second components, followed by a clear leveling off of the curve for subsequent components.

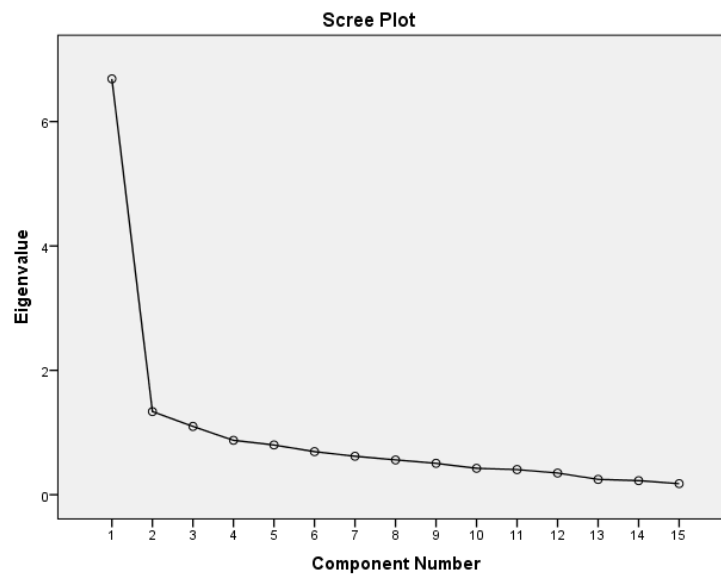


Figure 3. Scree Plot

Source: own elaboration

Figure 3 confirms that the first component explains a substantially larger proportion of data variability than the subsequent components, while the second component already makes a more limited, yet still meaningful, contribution to the total explained variance. The remaining components represent mainly supplementary or residual variability.

Based on a combination of the eigenvalue criterion, the shape of the scree plot, and the overall interpretability of the solution, a three-factor extraction was therefore adopted. To achieve a clearer and more unambiguous factor structure, orthogonal Varimax rotation with Kaiser normalization was subsequently applied. The rotated solution enabled a more distinct assignment of individual variables to factors, reduced cross-loadings, and enhanced the interpretative value of the resulting model. The results of the rotated factor analysis are presented in Table 4.

Table 4. Factor analysis by Varimax with Kaiser Normalization

Variables	Factor 1 Support for Coaching and Digital Learning	Factor 2 Formal Talent Management Systems	Factor 3 Experiential Mobility	Career
MEN	0.800		0.304	
CCW	0.765	0.378		
COA	0.716		0.506	
ELE	0.713	0.294		
SCP		0.763	0.277	
ADC	0.251	0.709	0.299	
DEV	0.323	0.622		
FNP	0.386	0.599		
EXT	0.370	0.430	0.341	
JEN		0.296	0.786	
OJT	0.208		0.685	
HPP	0.352	0.408	0.596	
RLM	0.240	0.231	0.576	
INT	0.219	0.478	0.570	
FCP	0.312	0.469	0.487	

Source: own elaboration

The results of the exploratory factor analysis support the interpretation that the examined employee learning and development tools are organized into several interrelated dimensions, with one dominant factor explaining a substantial share of the variance in the data. The scree plot revealed a pronounced decline in eigenvalues between the first and second components, indicating the presence of a strong central factor complemented by smaller yet still interpretable dimensions. The first factor reflects a combination of individually oriented and digitally supported development activities, while the remaining two factors represent structured formal talent management systems and experiential career mobility.

Factor 1: “Support for Coaching and Digital Learning” primarily comprises variables focused on individual development through mentoring (MEN, 0.800), career workshops (CCW, 0.765), coaching (COA, 0.716), and e-learning (ELE, 0.713). This factor reflects personalized and technology enabled learning that enhances employee competencies and engagement.

Factor 2: “Formal Talent Management Systems” encompasses structured and organizationally driven processes, particularly succession planning (SCP, 0.763), assessment and development centers (ADC, 0.709), developmental tasks and projects (DEV, 0.622), and formal networking programs (FNP, 0.599). Supplementary items include external training (EXT, 0.430) and formal career plans (FCP, 0.469), underscoring a systematic and strategic HR approach to talent identification and development.

Factor 3: “Experiential Career Mobility” represents development activities based on hands on work experience and career mobility. The highest loadings are observed for job enrichment (JEN, 0.786), on-the-job training (OJT, 0.685), high-potential programs (HPP, 0.596), rotations and lateral moves (RLM, 0.576), and international assignments (INT, 0.570). This factor highlights the importance of active learning in real work settings and the strategic development of careers through experience.

4. Discussion

Our results indicate that three main dimensions of employee learning and development dominate in Slovak organizations: individual support and digital learning, formal talent management systems, and experiential career mobility. This three-factor model reflects both global and regional trends emphasizing flexible, personalized, and strategically integrated approaches to workforce development (Adams, 2025; Cherrington, 2024). In comparison with international literature, our findings confirm that coaching and mentoring significantly foster competence development, motivation, engagement, and organizational performance (Adams, 2025; Smith, 2025). At the same time, formal training and networking activities appear to be less prevalent, which is consistent with the findings of Coculova and Svetozarovova (2024), who report that small and medium-sized organizations in Central Europe tend to prefer digitalized and personalized methods over traditional workshops.

The importance of data-driven needs analysis is also supported in our context. Although training needs estimation and training cost ratios (TNE/TCR) were not directly measured, the latent structure of the development dimensions suggests a high level of systematicity and process maturity (Lee & Han, 2024). This result corresponds with international research emphasizing that effective HRD requires strategic integration, alignment among development tools, and adaptation to organizational and demographic conditions (Leuhery et al., 2024; Tadesse Bogale & Debela, 2024; Barach, 2025).

Our findings further confirm that organizational culture is a key determinant of successful employee development. Organizations that support learning and employee initiative demonstrate greater use of individualized and digital development methods, whereas organizations focused on short-term performance tend to favor more formal and administrative approaches (Barach, 2025; Urbancová et al., 2024; Havierníková et al., 2025; Gross-Gołacka et al., 2022; Tadesse Bogale & Debela, 2024; Greer, 2024). This conclusion is consistent with international studies highlighting the influence of organizational values and strategy on the implementation of HRD practices (Gross-Gołacka et al., 2022; Leuhery et al., 2024).

Demographic and individual employee characteristics, such as age, experience, and cognitive preferences, also have a significant impact on the choice of learning methods. Practical and experiential approaches, such as job enrichment or on-the-job training, are preferred by older and more experienced employees, while younger generations value flexible and digitalized forms of learning (Cherrington, 2024; Hughes, 2019). These findings are further supported by literature on neurodiverse and heterogeneous work teams, which emphasizes that individual adaptation of development methods enhances HRD effectiveness (Lee, 2023; Sniderman et al., 2024; Smith & Bury et al., 2023; Horlin et al., 2024).

From a Central European comparative perspective, our results show that Slovak organizations favor digitalized and personalized learning formats more strongly than Czech organizations, which continue to rely more heavily on traditional training and internal workshops (Gross-Gołacka et al., 2022; Coculova & Svetozarovova, 2024). This difference can be explained by varying levels of digitalization, investment models, and organizational cultural preferences.

Based on the integration of our findings and comparisons with international studies, future research should focus on less frequently used tools, such as formal networking programs, international assignments, and the combination of digital learning with on-the-job training (Lee & Han, 2024). Greater attention should also be paid to data-driven needs analysis, which enables the optimization of training strategies and enhances HRD effectiveness. Moreover, adapting development methods to workforce diversity, including age, experience, cognitive preferences, and neurodiversity, is essential to ensure that learning initiatives reflect employees' actual needs (Bury et al., 2023; Sniderman et al., 2024).

Finally, the strategic integration of key HRD dimensions, individual support, formal talent management systems, and experiential mobility, allows for the creation of a coherent and systematic framework that maximizes the impact of development interventions (Urbancová et al., 2024; Leuhery et al., 2024; Greer, 2024; Barach, 2025).

Overall, the results demonstrate that Slovak organizations apply HRD practices in a systematic, modern, and strategic manner, providing an empirical basis for comparative studies within the Central European region and supporting the formulation of evidence-based recommendations for effective human resource development planning.

Conclusions

The approach of Slovak organizations to employee learning and development is determined by a combination of organizational characteristics, cultural preferences, and the demographic structure of the workforce. The three identified core factors, individual support through coaching and digital learning, formal talent management systems, and experiential career mobility, confirm that organizations favor integrated, systematic, and flexible development strategies (RQ1, RQ2). The selection of specific learning methods is closely linked to organizational size, sector, organizational culture, and the needs of different employee generations, including considerations of neurodiversity.

The results yield several managerial implications that are relevant both for strategic human resource management and for the day-to-day decision-making of managers and HR specialists:

1. *The need for an integrated and systemic approach to HRD*

Managers should strive for the strategic integration of individual support, formal talent management systems, and experiential career mobility into a unified development framework. Organizations that successfully connect these dimensions create a coherent and sustainable system for human capital development.

2. *Strengthening individualized and digitally supported forms of development*

The strong role of mentoring, coaching, career counseling, and e-learning suggests that employees increasingly expect personalized, flexible, and technologically accessible learning formats. Managers should therefore invest not only in digital infrastructure but also in the development of competencies among internal coaches and

mentors. These tools enhance employee engagement, support self-regulated learning, and enable organizations to better respond to individual career needs.

3. The strategic role of formal talent management systems

The importance of factors such as succession planning, assessment centers, and structured development projects confirms that formal talent management remains a key pillar of HRD, particularly in larger and more structurally mature organizations. Managers should view these systems not as administrative instruments, but as strategic mechanisms that support the continuity of critical competencies, internal mobility, and long-term organizational stability.

4. Leveraging experiential career mobility as a development tool

Experiential forms of development, such as job enrichment, on-the-job training, planned rotations, and international assignments, emerge as important mechanisms for enhancing employee adaptability and professional flexibility. Managers should plan these tools systematically rather than using them on an ad hoc basis and deliberately link them to career planning and talent identification processes. This approach can increase the return on investment in development while simultaneously strengthening the retention of key employees.

5. The necessity of accounting for workforce diversity

The findings imply that the effectiveness of individual development tools is influenced by employees' age, experience, and individual preferences. Managers should therefore adopt a differentiated approach to HRD and create a portfolio of development methods that reflects generational, professional, and cognitive diversity within the workforce, including neurodiversity.

6. Shifting from short-term training to long-term development strategies

The relatively weak relationship between the level of investment in training and the structure of utilized development tools suggests that financial allocation alone is not the decisive factor in HRD success. For managers, it is crucial to focus on long-term development planning, systematic needs assessment, and the alignment of learning initiatives with organizational strategy, rather than merely on the volume of training delivered.

Among the theoretical limitations of the study are the limited generalizability of the results due to the sample size and the exclusive focus on Slovakia. The study also does not fully capture the long-term dynamics of HRD practice implementation, nor the direct impact of individual methods on employee performance and motivation. From a practical perspective, limitations arise from the heterogeneity of organizations in terms of resource availability, HR process maturity, and digitalization levels, which may affect the transferability of the recommendations to other organizational types or regions.

Future research should therefore focus on longitudinal analyses of the effectiveness of individual HRD methods, particularly combinations of digital and experiential learning, expand comparative analyses to the Czech Republic and other Central European countries to identify regional differences, examine in greater depth the influence of organizational culture and specific demographic factors (including neurodiversity) on engagement and development outcomes, and analyze the relationship between the level of HRD systematization and concrete organizational outcomes such as productivity, innovation, and talent retention.

Based on the results, it can be concluded that systematic and personalized approaches to employee learning and development represent a key pillar of effective human resource management and provide an empirical foundation for strategic decision-making and the optimization of development activities in a dynamic work environment.

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