Effects of training and development on organizational performance in the CEE countries: Cranet 2021 project results

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Abstract: *The main aim of this paper is to investigate the effects of T&D on the organizational performance in companies that operate in the Central and Eastern Europe (CEE) Region. We used large-scale research data, obtained during the Cranet 2021 international survey, from seven countries, Serbia, Bosnia, Croatia, Slovenia, Romania, Hungary and Slovakia, with a total of 944 companies. Descriptive statistics, factor analysis, Spearman's correlation, and hierarchical regression were used in data processing. The results of the research showed that organizations that applied higher level of T&D techniques achieved a higher level of organizational performance (measured by the growth of income, profitability, productivity, rate of innovation, environmental performances, and service quality), too. No statistically significant effects were detected regarding the relation between the T&D budget (training importance) and the observed organizational performances. The limitation of the research is related to the fact that not all T&D elements were taken into analysis, like training effectiveness and extensiveness. The introduction of those variables into the model is a direction for future research. The originality lies in the fact that results highlighted specifically which training practices ensure the greatest increase in organizational performances. Also, since the data are gathered in seven different countries, the paper brings new insights into comparative HRM in the CEE region.*

Keywords: training and development; organizational performances; career management; Central and Eastern Europe; Cranet

1 Introduction

The contemporary business environment is characterized by different economic, political, social, environmental, and especially technological changes [1][2]. These changes and challenges affect organizations, because they need to survive on the market and gain competitive advantage. Since talented employees are regarded as one of the most critical organizational resources, it is essential for organizations to possess the requisite skills, knowledge, and capabilities. At the organizational level, human resource management (HRM), along with its training and development (T&D) initiatives, serves as a fundamental mechanism for talent development. Through the acquisition of new and improvement of existing competencies, employees will become more productive and achieve better organizational results, and gain sustainable competitive advantage [3-5]. Training is defined as a "learning process that involves acquiring skills, adopting rules, and forming attitudes" [6, p. 1077]. Employee training has positive economic value because it develops the knowledge and skills of employees, thereby improving their productivity, too [7][8]. Development is defined as "systematic efforts aimed at affecting individuals' knowledge, skills, and attitudes for personal growth or future jobs and/or roles" [5, p. 497, 9]. Previous research pointed out that organizations with more comprehensive T&D programs can achieve firm-specific human capital more easily and stimulate subsequent financial performances than organizations without such T&D opportunities [10].

Based on the aforementioned, the main aim of this paper is to investigate the effects of T&D on organizational performances. The methodology used in the research is based on data obtained during the Cranet 2021 international survey, from seven countries, Serbia, Bosnia, Croatia, Slovenia, Romania, Hungary, and Slovakia, with a total of 944 companies. The authors investigated the effects of an investment in training, measured as a training budget, and the usage of different training and development techniques on organizational performances, which were measured as profitability, productivity, rate of innovation, growth of revenues, etc.

The paper consists of four parts. The first part is related to the main theoretical insights on T&D as a part of the HRM process. The second part is dedicated to the explanation of the methodology of the research. In the third part, the main results and discussion have been presented, while the fourth part of the paper consists of conclusions, implications, limitations and future possibilities for research.

2 Theoretical background

At the beginning of this section, it is important to understand training and development in the context of HRM. Malik et al. [11] found that training, selective hiring, and structured interviews are key ability-enhancing HRM practices. Saks [12, p. 7] emphasized that training and development "provide employees with

opportunities for growth and fulfils employees' need for competence and strengthens their personal resources (e.g., self-efficacy)".

Training is the "planned and systematic activities designed to promote the acquisition of knowledge (i.e., need to know), skills (i.e., need to do), and attitudes (i.e., need to feel). Effective training takes place when trainees are intentionally provided with pedagogically sound opportunities to learn targeted knowledge, skills, and attitudes (KSAs) through instruction, demonstration, practice, and timely diagnostic feedback about their performance" [13, p. 77]. Development is more related to future roles and tasks, and less to the current tasks of an employee. It is "an act or process of developing; a gradual unfolding or growth" [14, p. 40]. "It is important that the concept of development does allow for considerable diversity in terms of how it occurs, where, and when. Many of the notions of development articulated in the HRM/D literature point to the issue of expanding one's potential through conscious and unconscious learning processes, trying to enable the individual to assume a future role within the organization" [14, p. 40]. Training and development are similar, but different approaches. Training can be associated with "learning by doing" whereas development involves learning thinking, doing, and feeling.

For this paper, we will consider T&D as an HR process directed to increase employees' competencies to improve their current and future attitudes and behavior on the job. From an organizational point of view, there are four components of the T&D process in organizations. First, an organization provides processes, instruments, and investments, and develops a culture of continuous development. Second, managers need to be skilled in identifying areas to develop, allocating the right resources, and creating opportunities for training and achievement. Third, individuals must take responsibility for their improvement by accepting suggestions and committing to improving personal skills and developing new ones. Finally, activities and plans must be aligned with the needs of the organization and the capabilities of the business plan [15]. The person responsible for training in the company should perform a need assessment to find out what goals should be pursued. Once the goals are defined, it is necessary to harmonize the content and principles of learning. According to leading authors in this field, a training program always includes steps such as needs assessment, training plan, training implementation, and training program evaluation [16][17]. Training needs assessment means that an organization needs to investigate what kind of training is needed at a time, which will equip their employees with sufficient knowledge, skills, and abilities to reach organizational goals. Training plan and implementation refer to the organization of the training and development process, in terms of sufficient inputs for the training (budget, time, space, etc.) and decisions on techniques that will be used for training delivery. In the end, evaluation of the training refers to the investigation of the effectiveness and efficiency of the training process in terms of costs, benefits, and employees' attitudes toward the implemented training process.

In choosing a training program, technology plays the most vital role. Technology in training can lower organizational costs and provide organizational flexibility. Costs can be reduced through distance learning-based training, where training programs are transmitted via satellite to multiple locations. In this way, training can take place for 24 hours, at home or work, with the use of personal computers. Training with personal computers means taking responsibility for your training. This kind of technology makes learning more efficient as immediate feedback is possible, repetition opportunities are unlimited, and employees can learn at a pace that matches their intellectual and other abilities [18]. Among the possible classifications of training methods, there are presentation techniques, hands-on techniques (practical), and techniques for building groups [19].

2.1 Effects of T&D on organizational performance

Several prior research showed that activities of training and development had positive effects on performances [6, 20-27]. Tharenou et al. [21] performed a meta-analysis to investigate the relations between T&D and organizational-level performances. They found, based on 67 papers published, that "training is positively related to human resource outcomes and organizational performance, but is only very weakly related to financial outcomes. The relationship between training and firm performance may be mediated by employee attitudes and human capital. Furthermore, training appears to be more strongly related to organizational outcomes when it is matched with key contextual factors such as organization capital intensity and business strategy, in support of the contingency perspective. Further, training is related independently to organizational outcomes in support of the universalistic perspective of strategic human resource management rather than a configurational perspective" [21, p. 251]. Also, recent studies further support earlier findings on the positive role of training and development in shaping organizational outcomes. According to the results of Kim et al. [25] meta-analysis, organizational-level training is positively associated with organizational performance, although this relationship depends on several contextual and design-related factors. The results showed that the impact of organizational-level training on organizational performance became weaker as firms aged, it is stronger in knowledge-intensive industries, with regional differences. More recent research also suggests that these effects should be interpreted in light of the broader national context, particularly country-level human capital development [26], while the impact of workplace training appears to be stronger when organizations ensure social support, training transfer, and knowledge sharing [27]. When strategically planned, training can enable organizations to gain a competitive advantage by fostering competency development, enhancing essential organizational skills, and facilitating knowledge creation [28, p. 215]. McNamara et al. [29] found that the average days spent on training an employee per year and the extent of concentration of training (type of training and development techniques) have different effects on

three aspects of organizational performance: level of productivity, rate of innovation, and rate of turnover for organizations in Anglo, Germanic, Nordic, and Eastern European cultures. The authors analyzed data from the 2004 Cranet survey and found that training-related measures had a positive impact on productivity levels in Anglo nations. However, no significant correlation was observed between training and high productivity levels in Germanic, Nordic, or Eastern European cultural contexts. Similarly, Shaheen et al. [30] explored these relationships within the educational sector, specifically focusing on the role of training for school teachers. The study aimed to assess the significance of teacher training and examine its relationship with teacher performance. Based on an analysis of 197 completed questionnaires, the findings demonstrated a significant and positive association between training and organizational performance. Furthermore, the mediating role of employee performance also yielded positive results [30, p. 490]. Esteban-Lloret et al. [31] investigated determinants of employee training and their impact on organizational legitimacy and organizational performance. Based on 374 organizations from Spain, the authors found that the percentage of trained employees has a positive and significant effect on organizational outcomes (profitability of sales, overall profitability, and financial performance). Slavić and Berber [32] investigated the relations between certain aspects of T&D and organizational performances and the influence of importance of training and systematic evaluation of training on organizational performances (productivity and service quality). Results revealed positive relations between T&D activities and productivity and service quality. Núñez-Cacho Utrilla et al. [33] investigated the effects of coaching on organizational performances. Based on the sample from 498 enterprises operating in Spain, by using the structural equations modelling method, they found that 91% of companies which conducted coaching as a training method achieved an increase in individual and organizational performances (sales growth and productivity). Similarly, Szabó et al. [34] also investigated relations between coaching, as a training and development method, and found that a higher level of the usage of coaching for career management is positively related to the level of productivity and negatively related to the level of staff turnover. Fletcher et al. [35] found that the relationship between perceived T&D and intention to stay is fully mediated by different forms of a work attitude, on a sample of 1191 employees in UK. By analyzing the above-mentioned previous research on the theme, it is clear that training and development, as an HR process, can enhance several types of performances in an organization. Based on that, the authors proposed the main research hypothesis:

H1: Training and development components have positive effects on organizational performances in the CEE region.

3 Methodology

The methodology employed in this study is based on global data from the Cranet international network, which conducts comparative research on HR policies and practices through a standardized questionnaire. This survey is administered approximately every four years to generate high-quality data for academic research and to inform public and private sector organizations. Its objective is to advance knowledge on HRM practices across different countries [36]. For this study, the authors utilized the most recent Cranet dataset from 2021/2022, focusing on the Central and Eastern European region. The survey prioritizes quantitative data, such as percentage distributions and ratios, while minimizing the inclusion of attitudinal information. To mitigate respondent and cross-country biases, open-ended questions are kept to a minimum [36]. The questionnaire includes more than 60 predominantly closed-ended questions grouped into several sections related to HRM policies and practices, organizational characteristics, and respondent information. Data were collected during 2021/2022, by national Cranet teams using a harmonized methodology and translated versions of the questionnaire adapted to local contexts. The respondents were selected purposively, as the survey was completed by persons responsible for HRM issues in organizations, most often HR managers or other senior managers with relevant organizational knowledge. In line with the Cranet methodology, the unit of analysis was the organization, and the sample primarily included medium-sized and large organizations, usually with more than 100 employees, while in smaller or developing countries organizations with at least 50 employees could also be included. In the present study, the final sample consisted of 944 organizations from seven CEE countries.

The *independent variables* used in the research are as follows:

- **Training budget**: The percentage of the annual payroll costs spent on training of employees. This data is provided in the Cranet questionnaire.
- **Training techniques:** Mentoring, e-learning and digital learning, coaching, external training (off-the-job), career counselling and/or workshop, training on-the-job, and developmental projects, assessment and development centres, high flier schemes, succession plans, formal career plans, planned lateral move and/or job rotation, formal networking schemes, international assignments, and job enrichment.

The *dependent variable* used in the research is organizational performance (OrgPerf), which is a mean of 6 variables: rating of profitability, productivity, service quality, innovation, environmental matters, and changes in gross revenue over the past 3 years.

Control variables are size, sector, industry, and the main market on which an organization operates.

3.1 Sample

The sample consists of 944 organizations from seven CEE countries, Bosnia (5% of the sample), Croatia (12.2%), Romania (20.6%), Serbia (11.2%), Slovenia (17.8%), Slovakia (16.2%), and Hungary (17.1%), mostly from the private sector (74%), in the service industry (67%), with 60% of large companies (more than 250 employees). All countries come from the region of Central and Eastern Europe. The larger share of large companies in comparison with SMEs is a result of the Cranet methodology, where only organizations with more than 100 employees are adequate to be investigated (for smaller and developing countries it is accepted even 50 employees per organization).

3.2. Data processing and reliability analysis

Data analysis was performed in four steps. First, the authors investigated Cronbach's alpha coefficient, as a measure of internal consistency, i.e., the measure of scale reliability. Second, the authors performed Factor analysis to reduce different data into correlated factors, i.e., constructs. Third, Spearman's correlation analysis was performed to assess associations between variables. Finally, the fourth, hierarchical regression model was created to assess the predictive effect of independents on the dependent variable. The value of Cronbach Alpha in table 1 for originally set statements describing organizational performances is 0.796 for 6 questions, and for training and development techniques is 0.911 for 15 questions (variables), which is considered satisfactory because those surpassed the lowest limit of acceptability that is 0.6 [34].

Table 1

Reliability Statistics

	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Organizational performances	.796	.802	6
Training and development techniques	.911	.910	15

Source: Authors research based on Cranet data 2021

Table 2 presents descriptive statistics for variables used in the research, related to training and development.

Table 2

Item Statistics

Organizational performances	**Mean**	**Std. Deviation**
Gross revenue over the past 3 years	4.21	.881
Service quality	4.14	.810
Productivity	3.87	.765
Profitability	3.76	.899
Rate of innovation	3.70	1.021
Environmental matters	3.63	.998
Training and development techniques	**Mean**	**Std. Deviation**
Job enrichment	1.30	.976
External training (off-the-job)	1.31	.938
Training on-the-job	2.03	.966
Developmental assignments/project	1.50	1.018
Formal networking schemes	.84	.895
Formal career plans	1.06	1.007
Assessment and development centers	.62	.851
Succession plans	.92	1.001
Planned lateral move and/or job rotation	1.10	.937
High flier schemes	.98	1.022
International assignments	.72	.940
Coaching	.99	.982
Mentoring	1.41	1.012
E-learning and digital learning	1.38	1.098
Career counselling and/or workshop	.81	.932

Source: Authors research based on Cranet data 2021

The Kaiser-Meyer-Olkin and Bartlett spherical tests were implemented to check if the sample is adequate for future analyses. Bartlett's spherical test needs to be significant ($p < 0.000$) for the application of factor analysis to be justified. The Kaiser-Meyer-Olkin KMO indicator takes values between 0 and 1; and 0.6 is recommended as the least acceptable [35]. The KMO is 0.818, and Bartlett's test of sphericity is 1012.287 ($p<0.000$) for organizational performances, and the KMO is 0.943, and Bartlett's test of sphericity is 5252.232 ($p<0.000$) for training and development techniques. Both tests have been confirmed.

Table 3 presents the results of the factor analysis (component matrix) for organizational performances. Conducted exploratory factor analysis (EFA) has identified only one factor from 6 variables, with an eigenvalue of 3.073 describing 51.22% of the total variance. All performance ratings formed one factor, organizational performance (OrgPerf).

Table 3

Component Matrix and Eigenvalues

	Component (1)
Profitability	.830
Productivity	.806
Service quality	.762
Rate of innovation	.715
Environmental matters	.611
Gross revenue over the past 3 years has been:	.520
Eigenvalues	*3.073*
% of Variance	*51.218*

Extraction Method: Principal Component Analysis. 1 component extracted

Source: Authors research based on Cranet data 2021

Table 4 presents the results of the factor analysis (rotated component matrix). Exploratory factor analysis (EFA) has identified 2 factors, with an eigenvalue of 6.716 that describes 44.78% of the total variance for the first factor (TD2), and an eigenvalue of 1.059 that describes 7.063% of the total variance for the second factor (TD1).

Table 4

Rotated Component Matrix and Eigenvalues

	Component	
	TD2	**TD1**
Assessment and development centers	.733	
High flier schemes	.719	
Succession plans	.718	
Formal career plans	.695	
Planned lateral move and/or job rotation	.640	
Formal networking schemes	.638	
International assignments	.581	
Job enrichment	.572	
Mentoring		.759
E-learning and digital learning		.691
Coaching		.669
External training (off-the-job)		.604
Career counselling and/or workshop		.599
Training on-the-job		.578
Developmental assignments/project		.563
Eigenvalues	*6.716*	*1.059*
% of Variance	*44.776*	*7.063*

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 3 iterations.

Source: Authors research based on Cranet data 2021

TD2 consists of assessment and development centers, high flier schemes, succession plans, formal career plans, planned lateral moves and/or job rotations, formal networking schemes, international assignments, and job enrichment. TD1 was formed from mentoring, e-learning and digital learning, coaching, external training (off-the-job), career counselling and/or workshop, training on-the-job, and developmental projects.

4 Results and Discussion

Correlation analysis (Table 5) indicated that organizations more oriented toward international and global markets, with a higher level of implementation of TD1 and TD2, and higher training investment are associated with a higher level of organizational performance. The production sector organizations are associated with lower organizational performances (rho=-0.139, $p<0.01$).

Table 5

Spearman's Correlations

	Size	**Business sector**	**Sector**	**Main market**	**TD1**	**TD2**	**Training budget**	**OrgPerf**
Size	1							
Business sector	.04	1						
Sector	.004	.327**	1					
Main market	.036	-.274**	-.363**	1				
TD1	.108**	-.029	-.185**	.269**	1			
TD2	.091*	-.084*	-.262**	.254**	.735**	1		
Training budget	-.052	.080*	-0.05	.089*	.228**	.196**	1	
OrgPerf	.007	0.07	-.139**	.180**	.299**	.283**	.131**	1

*** Correlation is significant at the 0.01 level (2-tailed).*
** Correlation is significant at the 0.05 level (2-tailed).*

Source: Authors research based on Cranet data 2021

The authors ran a hierarchical regression analysis. The R-value of 0.230 indicates a moderate level of prediction. The R square is 0.053, meaning the model explains only 5.3% of the variability of the dependent variable. The variance inflation factors were lower than the generally accepted threshold of 10 [36], and pointed out that there was no multicollinearity issue in the model.

Table 6

Model Summary

Model[c]	R	R Square	Change Statistics				
			R Square Change	F Change	df1	df2	Sig. F Change
1	.230[a]	.053	.053	9.882	4	706	.000
2	.343[b]	.118	.065	17.197	3	703	.000

a. Predictors: (Constant), Main market for product or services, Size, Business sector, Sector
b. Predictors: (Constant), Main market for product or services, Size, Business sector, Sector, Training budget, TD2, TD1
c. Dependent Variable: OrgPerf

Source: Authors research based on Cranet data 2021

Following the introduction of T&D variables in the model, the R square change for the dependent variable was 0,063, indicating that the independent variables explained an additional 6.3% of the variance in the organizational performance variable. The R of the final model is 0.343 and the R2 is 0.118. This means that the independent variables explain 11.8% of the variance of the dependent variable. The change in R square in the model was significant ($F(3,703)=17.197$, $p<0.01$). The introduction of the T&D variables in the model altered R2 to a significant degree. The F-ratio in the ANOVA table 7 demonstrated that the overall regression model is a good fit for the data ($F(5.459) = 13.405$, $p<0.01$).

Table 7

ANOVA test for the model

Model[a]		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17.204	4	4.301	9.882	.000
	Residual	307.287	706	.435		
	Total	324.492	710			
2	Regression	38.213	7	5.459	13.405	.000
	Residual	286.278	703	.407		
	Total	324.492	710			

a. Dependent Variable: OrgPerf

Source: Authors research based on Cranet data 2021

Table 8 presents the coefficients of the regression model for the organizational performances, as dependent variables. The first step in the regression model was to introduce control variables, of size, sector, industry, and market for products and services of a company. According to the positive beta coefficient ($\beta=0.174$, $p<0.05$), companies from the private sector will have a higher level of organizational performances than companies from the public sector when the other variables in the model are controlled. The main market for business has a positive, statistically significant predictive effect on organizational performances ($\beta=0.097$, $p<0.05$).

Companies that are more oriented towards international markets have a higher level of organizational performances. In the case of the industry sector (β=-0.107, p<0.05), companies from the manufacturing sector are associated with lower organizational performances, compared to service sector.

Table 8

Regression Model Coefficients

Dependent Variable: OrgPerf		**Unstandardized Coefficients**		**Std. Coef.**	**t**	**Collinearity Statistics**	
		B	**Std. Error**	**Beta**		**T**	**VIF**
1	(Constant)	3.396**	.154		22.109		
	Size	-.023	.050	-.017	-.458	.992	1.008
	Business sector	.174**	.054	.124	3.195	.894	1.119
	Sector	-.107**	.043	-.099	-2.504	.865	1.156
	Main market for products or services	.097**	.021	.187	4.709	.852	1.174
2	(Constant)	3.210**	.152		21.156		
	Size	-.057	.049	-.042	-1.165	.972	1.029
	Business sector	.147**	.053	.105	2.765	.875	1.143
	Sector	-.071	.042	-.066	-1.711	.849	1.177
	Main market for products or services	.061**	.021	.117	2.955	.798	1.253
	TD1	.174**	.052	.177	3.357	.451	2.217
	TD2	.101*	.051	.104	1.995	.463	2.160
	Training budget	.007	.011	.024	.642	.923	1.084

Source: Authors research based on Cranet data 2021

Following the inclusion of T&D variables, in table 8, the results showed that, according to the positive beta coefficient (β=0.147, p<0.01), companies from the private sector and companies that operate more in the global market (β=0.061, p<0.01) will have a higher level of organizational performances, when the other variables in the model are controlled (held fixed). Training and development techniques groups such as TD1 and TD2 have positive statistically significant predictive effects on organizational performances. TD1 (β=0.174, p<0.01) and TD2 (β=0.101, p<0.05) are associated with a higher level of organizational performances. Training budget, i.e., the percentage of the annual payroll costs spent on training did not show statistically significant effects on organizational performances. Based on the results of correlation and regression analysis, hypothesis 1 is partially proved, since the training budget did not have a predictive effect on organizational performances.

The results of the present research are in the line with previous research of McNamara et al. [29] who found that the extent of concentration of training (type

of training and development techniques, also from the Cranet methodology) have different effects on three aspects of organizational performance: level of productivity, rate of innovation, and rate of turnover. Also, Shaheen et al. [30] investigated similar relations in schools, and they found a significant and positive association between training and organizational performance. If we bear in mind the CEE region, the research results are in the line with previous research of Slavić and Berber [32], who investigated the relations between certain aspects of T&D and organizational performances and the influence of two aspects of employee training and development (importance of training and systematic evaluation of training) on organizational performances (productivity and service quality). Similarly, Szabó et al. [34] also investigated relations between coaching, as a training and development method, and found that a higher level of the usage of coaching for career management is positively related to the level of productivity and negatively related to the level of staff turnover.

5 Conclusions

Training and development, as an HRM process, are related to organizational success and development. Numerous research all around the world proved that companies that invest in the T&D of their employees yield higher organizational performances, usually measured by productivity, service quality, revenue growth, or even ROE and ROA. Also, T&D is positively related to specific employees' attitudes like job satisfaction, commitment, and engagement. Therefore, T&D needs to be considered a valuable and important investment in the employees of an organization, because T&D are seen even as a part of broader compensation to employees [40]. Training and development can be analyzed through different measures, but usually, days invested in training, training budget (in %), and training techniques used are mostly investigated in previous research.

According to the results of this research, companies from the private sector will have a higher level of organizational performances than companies from the public sector, when the other variables in the model are controlled. Also, the main market for business has a positive, statistically significant predictive effect on organizational performances. Companies that are more oriented toward international and global markets have a higher level of organizational performances. In the case of the industry sector, companies from the manufacturing sector are associated with a lower level of organizational performances, compared to the service sector organizations. More important, training and development techniques groups such as TD1 and TD2 have positive statistically significant predictive effects on organizational performances. Training budget, i.e., the percentage of the annual payroll costs spent on training did not show statistically significant effects on organizational performances. Based on the results, hypothesis 1 is partially proved,

since the training budget was not found to be a statistically significant predictor of organizational performances.

The theoretical implication of the paper lies in the continued investigation of the relations between training and development and organizational performances in the CEE based on the same methodology. This way of investigation makes comparisons from different points in time possible, and conclusions about changes in these relations are more detailed. Also, it is possible to make conclusions about the level of development of the T&D process in countries in the same region. The research also adds new insight into the theme of the importance and effects of T&D on business, especially in terms of its sustainability. The main practical implications of the paper lie in the fact that organizations and their managers should use different training techniques to increase the KSAs of their employees, especially those that were captured in TD1, as mentoring, on-the-job training, coaching, development projects, and e-learning and digital learning that showed a stronger predictive effect on organizational performance (higher Beta coefficient).

Some of the limitations of the present research are related to the variables used in the analysis. Not all T&D variables were included, such as days spent on training per employee, or training needs assessment. The introduction of both of these in the analysis will provide even more details regarding the level of the T&D process and its impact on performance. For this research, the training methods used (15 different methods) were very complex to analyze, and therefore, the authors decided just to investigate these components.

Future research could build on these findings by examining in more detail whether the effects of training and development on organizational performance differ across sectors, organizational sizes, and ownership structures. It would also be important to consider the broader national and institutional context of CEE countries, as such factors may influence the way training investments translate into organizational outcomes. Future studies based on longitudinal data could provide a clearer insight into the longer-term effects of training and development practices. Finally, future research could examine more directly whether the increased level of knowledge developed through organizational training and development activities leads not only to better organizational performance, but also to more innovation-oriented outcomes, including the generation of technological solutions, new ideas, and patent-related activity. This appears particularly relevant in the context of recent evidence showing that open science and open access policies may support patent activity and the translation of scientific knowledge into technological development [41].

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