

E-learning as a standard for fulfilling strategic goals: Challenges and perspectives in the case of the public institution in central European country

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Abstract: Primary reason for interpretation the paper was the creation of a starting position for setting up e-learning in the structures of the executive forces of the Slovak Republic, which absent in the current dynamic environment. Problems with education arose mainly in connection with the global problem of Europe, such as the influence of illegal migrants, and it was necessary to retrain a large number of police officers in a short time. We reflect on the combined model of LMS Moodle and proctored training through MS TEAMS and their active use in practice. We focused on the efficiency in the number of participants in individual trainings and costs per participant according to the field of training. We compared the processed data with the costs of the pilot introduction of analytical organizational unit providing e-learning and interpreted the positive results in the application of e-learning compared to conventional (face-to-face) educational activities. As a basic (reference) comparative indicator, the costs of educational activities of selected organizational unit of state institution represented by own educational organizations and the number of trained employees for the periods in question were chosen. To measure effectiveness, we set financial—cost KPIs. Our findings clearly demonstrated that it is possible to significantly optimize costs when changing the current form of ICT education to e-learning. The implementation of another educational activities form of education, e-learning, within public institutions, according to the results of the analysis, can simplify and at the same time make education processes more efficient in the context of individual subjects of the Ministry of the Interior of the Slovak Republic.

Keywords: e-learning; crisis management; information and communication technology; learning management system Moodle

1. Introduction

Employee education is an integral part of fulfilling the strategic goals and tasks of executive management roles through all of the world by public institutions (Umek et al., 2017). In the public administration environment, it is crucial to deepen knowledge, skills and provide training of human resources for constant changes in the working environment according to the latest educational trends (Mikolajczik, 2022). In international practice, another educational activities forms are implemented, such as e-learning or a combination of distance and face-to-face education (Shen and Shang, 2024), which are absent in the conditions of the Ministry of Interior of the Slovak Republic. The study deals with the possibilities of streamlining educational processes in the environment of the Ministry of Interior of the Slovak Republic according to the best practices of other public and private institutions and setting key performance indicators (hereinafter referred to as “KPIs”). Individual educational institutions of the Ministry of the Interior of the Slovak Republic carry out activities primarily in the

form of full-time trainings, courses and seminars, while they use the distance form of education only to a minimal extent for selected types of courses. A prerequisite for the implementation of e-learning is the definition of the content of trainings, courses and seminars that can be transferred and fully implemented in a virtual environment (Muhhina, 2024; Špaček et al., 2023). The decisive parameter of the introduction of e-learning is testing, evaluation and assessment of acquired knowledge and skills for increasing the quality of education and the quality of human resources (Marcos Sánchez et al., 2022). The negative side of the current education settings of the research object educational activities is the absence of evaluation of success and the lack of feedback from participants. The main goal is to propose an optimal solution for the use of e-learning educational activities in practice in accordance with the needs and goals of the department, while observing the legislative environment and content of the current educational process. We examined Institute of Institute of Administrative and Security Analysis (INSTITUTE) e-learning education in the time horizon from week 39 2021 to week 44 in 2023, educational activities of Organization for public administration informatics (OPAI) organization (2020–2022) based on annual reports and educational activities of Institute for Public Administration (IPA) (2020–2022). As a reference indicator, the costs of OPAI, IPA training activities and the number of trained employees for the periods in question were chosen. The same parameters were investigated in INSTITUTE. The analysis does not include the initial costs of procuring software and hardware for the examined institutions of the Ministry of the Interior of the Slovak Republic, through which the training activities are carried out, as we examined operating costs for all entities. We then set out four research questions:

RQ1: What are the mutual disproportions from the point of view of training costs and the number of participants in the research object?

RQ2: In what areas is it possible to apply the e-learning model in the conditions of the research object?

Research article reflects on the effectiveness of the use of e-learning in the structure of public institutions on the example of the Slovak Republic after its pilot applied from a quantitative and economic point of view in relation to legislative limits and interpretations in relation to education (the principle of economy, efficiency and effectiveness). The subject of the research is an economic analysis of the educational activities of a public institution, which reflects the current conditions and standards that do not reflect the current needs of the 21st century in education using innovative educational methods. Our output is formulated recommendations of a strategic nature for setting up the education system supported by analytical evidence from the field of education performance of individual components of the public authority.

2. Literature review

Education of public administration entities represents the basic subsystem of human resources management (Obermayer et al., 2022), which is primarily based on the principles of lifelong learning in public administration (Ministry of Interior of the Slovak Republic, 2017, p. 13). The performance of services takes place at the level of state administration bodies, local state administration and self-government through its

employees (Casagrande et al., 2010). An integral part of the performance of work in the public interest and in the civil service is the constant deepening of knowledge, improving qualifications and responding to new needs and trends in education, which are adapted in the conditions of other institutions for several years (Matei and Dinca, 2022; Sangmook, 2017). The content of the document also responds to the Government Programme Declaration 2023 and the Plan of Main Tasks of the Ministry of the Interior of the Slovak Republic educational activities, which refer to the need to introduce new forms of education of employees in public administration, increase the qualifications of managerial and administrative personnel in relation to the internal and external environment and elaboration of a development concept in the field of continuous lifelong learning and cyclical training courses using knowledge in the field of e-learning and digital distance learning ways of education (Mohammed Nasser Hassan Ja'ashan, 2020). According to Amiti (2020), the use of e-learning is a prerequisite for effective management of public administrations in the field of education. The reason given is the reduction of primary (financial remuneration of lecturers) and secondary (provision of premises) costs incurred in educational processes, higher participation rates in trainings, courses and an increase in the number of trained employees during a defined period. Persada et al. (2022) divides e-learning into two typologically distinct components—synchronous and asynchronous learning. Synchronous distance learning is provided in real time by an online lecturer under his direct supervision—MS TEAMS (Khidir et al., 2022). The second form is represented by asynchronous distance learning, the focus of which is independent study—e-learning. Individual training activities are organized and developed independently by employees. The limiting factor of both components is Internet access, which must be permanent during the teaching of educational content. The concept of e-learning is defined directly in the legislative framework of the Slovak Republic. The starting position of the object of investigation reflects the need to introduce innovative forms of education of public administration employees, as it has only limited use of e-learning, which are currently implemented in pilot operation through the analytical department of the Ministry of the Interior of the Slovak Republic. In the future, it is expected to use e-learning in the structures of public institutions as a standard for meeting performance indicators and strategic goals. Currently, further e-learning education of the Police Force and the Fire Brigade of the Slovak Republic is underway, which represent the entry area of the development of e-learning of the Ministry of the Interior of the Slovak Republic. The positive impact of INSTITUTE e-learning activities on the number of participants in a relatively short time is the reason for the expansion of the given form of education. Authors Chanins (2017) and Cohen (2021) in their research interpreted importance of education via distance forms in the field of legislation. The reason is mainly the constant changes in the dynamic environment of public life, which also affect the performance of the police service. According to Marcos Sanchez et al. (2022), it is necessary to provide ICT resources for data transfer between the lecturer and course participants. Without technical resources, e-learning activities will not be possible. The need to adjust the educational process and implement e-learning results mainly from the low level of effectiveness of educational capacities, as there are not many possibilities in the environment of public institutions to use e-learning as a standard for fulfilling

educational tasks (Sousa and Rocha, 2019; Tapinos et al., 2011). Serdyukov (2017), Schuwer and Kusters (2014) declare that it is necessary to provide alternative forms of education and to introduce e-learning into the structures of public administration organizations, as this is where there is a high degree of frustration with rigid education procedures. Halford and Youansamouth (2024) determined the key aspects of the application of distance education of the police force in the investigated facility. They defined the area of the MS Office group as ICT, ad hoc created trainings in fundamental issues of ensuring public order and legislative changes. The three aspects are more effectively implemented through e-learning, as there is no need to provide rooms and refreshments for the education process. The time spent on face-to-face training will also be saved. In the conditions of organizations, it is necessary to modify outdated forms of education mainly because of the rigidity of procedures, the dynamics of the environment, the comfort of participants, the flexibility of working hours and the increased control and feedback between the employee and the manager and the superior (Hugo et al., 2024; Torraco and Lundgren, 2020).

3. Data and methods

The reason for the elaboration of the analysis in question was to map the starting situation for the future setting of the concept of education using its innovative educational activities form—e-learning—as a standard for fulfilling the strategic goals resulting from the Plan of Main Tasks of the Ministry of the Interior 2023. Based on this fact, we created a detailed overview of the educational activities of the ministry's contributory organizations (The subjects of the education analysis of the Ministry of Interior of the Slovak Republic were contributory organizations OPAI – organization for informatics of public administration and IPA – Centre of Special Purpose Facilities, Institute for Public Administration, which implement professional education for employees of the Ministry of Interior of the Slovak Republic and INSTITUTE as the starting object of research with pilot use of e-learning), which became the basis for creating the analysis. We focused on the cost side—burden on the budget of the department (Data on the number of participants, trainings and costs were contracted from annual reports and contracts of the organizations concerned (2020–2022 and 2023 in the case of INSTITUTE) and in cooperation with employees of IPA according to the instructions of the Personal Office of the Ministry of the Interior of the Slovak Republic. We acquired the materials of e-learning trainings from our own resources, which were the output of the National program effective public administration), efficiency in the number of participants in individual trainings and costs per 1 participant according to the area of training. We compared the processed data with the costs of pilot implementation of INSTITUTE e-learning and interpreted positive results in the application of e-learning compared to conventional (face-to-face) educational activities.

The conditional factor of the creation of analytical material was to find out the economic side of full-time education under the auspices of the Ministry of Interior of the Slovak Republic by the contributory organization OPAI and IPA and to point out the another educational activities form of education (e-learning), which was piloted by

the INSTITUTE of Ministry of Interior during our reporting period. At the same time, we monitored the number of participants in individual trainings INSTITUTE, OPAI and IPA, thus interpreting the effectiveness of e-learning compared to the currently preferred way of face-to-face education. However, it is important to note that not all areas of training and courses can use e-learning.

The defined objective of the analysis arises from the need to implement innother educational activitiestive forms of education in public administration. The main objective of the presented functional analysis is to create a basis for the implementation of e-learning in the structures of the Ministry of Interior of the Slovak Republic. The output of the analysis are recommendations for optimal setting of face-to-face and e-learning trainings in accordance with the needs and goals of the department. By identifying the parameter of costs of individual areas of training and costs per participant, we defined the impact on the budget before and after the introduction of e-learning, which reflects the necessary optimization measure. One of the secondary object OPAI of the material is to statistically substantiate the results of educational activities of the object of research across organizations of the Ministry of the Interior of the Slovak Republic in the educational environment. The costs of educational activities of the Ministry of Interior of the Slovak Republic, OPAI, IPA and the number of trained employees for the given periods were chosen as the basic (reference) comparative indicator.

To measure financial efficiency, we set financial—cost KPIs (KPI—Key performace indicator, KPI In the case of IPA, the price per participant was fixed—constant) according to the goal of the analysis as follows:

KPI 1 = rate of cost decrease (total cost and cost per participant) after the introduction of e-learning (%).

KPI 1 calculation – $(\text{Current costs} - \text{Costs after the introduction of e-learning}) \times 100$.

KPI 2 = trend of costs per participant according to the organization of the Ministry of Interior of the Slovak Republic depending on the number of participants (€).

KPI 2 calculation of OPAI – $\text{Contract amount for the relevant year} / \text{Number of participants in training}$.

KPI 2 calculation of IPA – fixed by contract .

KPI 2 calculation of INSTITUTE – $\text{Costs of e-learning operation for a given year} / \text{Number of participants in training}$
(The costs represent the gross salary of the employee per agreement who was responsible for the creation of content and operation of the system together with data recording and evaluation)

The defined KPIs are subject to analysis in order to compare the performance of education of individual organizations and to demonstrate the effectiveness of the implementation of e-learning in the conditions of the Ministry of Interior of the Slovak Republic (Development of the number of participants in continuity with the development of costs per participant). They determine how the form of education affects the costs of one participant in the total number of participants for the monitored period. Due to the non-existence of a system for evaluating the success of course participants in the research object, it was not possible to apply a model that takes into account the given aspect between traditional and e-learning forms of learning. Our key proposal is to apply the evaluation system to the structures of public institutions

globally, so that it is possible to evaluate processes and constantly increase the quality of education, as well as the potential of employees to create values for the organization.

3.1. Cost indicator of pilot e-learning

E-learning activities of INSTITUTE MV include the work of internal employees who are authorized to manage the LMS system (editing, inserting school material and other requirements arising from the selected type of training) by the relevant director of the department. The estimated costs represent the tariff salary of the employee (the currently delegated tasks are performed by an employee with a tariff salary in the 9th salary class), who, however, also performs other tasks resulting from the job description in the job description. Currently, it is not possible to determine the exact amounts of costs for e-learning activities of the INSTITUTE of the Ministry of the Interior of the Slovak Republic, as they are not precisely defined. Technical operation requires maintenance and management 1 to 2 working days in the respective month by an authorized employee.

3.2. Description of the time schedule of educational activities of the research object

E-learning training of the INSTITUTE of the Ministry of the Interior of the Slovak Republic was carried out in the time horizon from the 39th week of 2021 to the 44th week of 2023. The educational activities of the OPAI organization were carried out in the monitored period from 2020 to 2022 on the basis of annual reports. We also maintained the three-year timeframe of the investigation when analyzing the IPA (2020–2022).

3.3. Research purpose

The conditioning factor for the creation of analytical material was to find out the economic side of full-time education under the auspices of the Ministry of the Interior of the Slovak Republic through the contribution organization OPAI and to point out the innother educational activitiestive form of education (e-learning), which was piloted by the INSTITUTE of the Ministry of the Interior of the Slovak Republic during the period we monitored. At the same time, we monitored the number of participants in the individual INSTITUTE trainings of the Ministry of the Interior of the Slovak Republic, OPAI and IPA, thereby trying to interpret the effectiveness of e-learning compared to the currently preferred method of face-to-face education. We set four research questions in which we determine the causal relationship between face-to-face education, the number of employees for training and the budget of the department separately for both investigated departments (INSTITUTE of the Ministry of the Interior of the Slovak Republic, OPAI and IPA) and the effectiveness of the education of face-to-face and combined OPAI training (verification of the knowledge of trained personnel).

4. Results

In accordance with the currently set system of education and the starting position of the object of research, it was necessary, while observing the primary goal of the

work, to identify to what extent the currently used forms of education affect the number of participants, the maximum capacity in training centers and the budget of the department.

Following the set research question RQ2, we present a research opinion according to the analyzed outputs:

RQ2: In what areas is it possible to apply the e-learning model in the conditions of the research object?

Individual educational activities were categorically divided into groups (5) for interpretation of the areas of education, target group (3) and subtypes of education (3) of employees of the Ministry of the Interior of the Slovak Republic summarized according to mapped organizations of the Ministry for individual periods. The structured table expresses according to the target group employees of district offices (DISTRICT OFFICE), police officers and firefighters (uniformed), representat OPAI of municipalities and all employees according to the specification of training. That is, to whom the training courses were created and prioritised (**Table 1**). The reason for determining the input parameters was to determine the number of participants in the areas of training and costs per participant in the target group, which will subsequently be further processed for a comprehensive setting of the education system across organizational units of the Ministry of Interior of the Slovak Republic. **Table 1** shows that the widest portfolio of services is provided by IPA, while they began to use the distance form of education through MS TEAMS only in 2021. ICT education is primarily organised by the OPAI institution.

Table 1. Categorical distribution of examined quantities according to the relevant subject of the Ministry of Interior of the SR.

Organization	Target audience	Field of education	Education subtype
IPA	DISTRICT OFFICE, All employees of the Ministry of Interior of the Slovak Republic	ICT, LANGUAGE SKILLS, OTHER EDUCATIONAL ACTIVITIES—LEGISLATION, OTHER EDUCATIONAL ACTIVITIES—OTHER, SOFTSKILLS	In person, MS TEAMS
Institute	DISTRICT OFFICE, All employees of the Ministry of Interior of the Slovak Republic, Self-government	OTHER EDUCATIONAL ACTIVITIES—OTHER	Independent of the lecturer
OPAI	All employees of the Ministry of Interior of the Slovak Republic, Self-government	ICT	In person, MS TEAMS

Source: own processing.

As part of the summary of the results of organizations of the Ministry of the Interior of the Slovak Republic implementing education for civil servants, performance indicators of education were assigned, which represent input parameters in the proposed optimization measures and the future setting of the education process of the Ministry of the Interior of the Slovak Republic. The highest number of participants was recorded in 2021 by the IPA organization with the partial introduction of online education through MS TEAMS. The reason for the introduction of the distance form was the COVID-19 pandemic in 2020, which limited face-to-face training and forced them to use other forms of courses in the following year. Currently, MS TEAMS is used as a standard of IPA education in selected areas (**Table 2**). When changing the form of education, the amount of funding per participant has not changed,

as the participation of a lecturer is still required. The positive side of this model is the reduction in accommodation and refreshment costs, while the need for employees to access the Internet.

Table 2. Learning performance indicators by organisation.

Organization	CÚZ 2020	OPAI 2020	CÚZ 2021	OPAI 2021	CÚZ 2022	OPAI 2022	Institute 2022	CÚZ 2023	OPAI 2023	Institute 2023
Number of employees	3100	2861	10,422	2250	9660	2464	753	9405	x	2431
Cost	86,875	288,589	320,675	288,607	315,462	309,350	2429	346,579	x	7287
Cost per employee	25	100	25	128	29	125	3	36	x	3

Source: custom processing.

In the field of other educational activities—legislation (OTHER EDUCATIONAL ACTIVITIES—LEGISLATION), the most employees of the Ministry of Interior participated during our examination in the number of 20,005. Trainings were provided primarily by IPA in person or online, while the possibility of face-to-face meetings prevailed. Similar trainings in the field of OTHER EDUCATIONAL ACTIVITIES—OTHER with a focus on administrative activities affecting the field of legislation were also carried out by INSTITUTE through e-learning. For comparison, the amount of costs per participant in the OTHER EDUCATIONAL ACTIVITIES—OTHER category implemented by INSTITUTE is 5.73 euros and for IPA the cost is 29 euros (We chose the same input parameter – the number of participants in 2022) with the number of participants 335, which corresponds to the number of participants in the IPA training in question. However, it should be noted that INSTITUTE’s professional training was not limited in capacity, as it implemented e-learning education. Within 4 months, up to 753 employees of the Ministry of Interior of the Slovak Republic were trained. A key finding in our research was that the average cost per participant in ICT was the high, at €115. It follows from this fact that it is necessary to change the form of ICT education to e-learning according to best practice (E-learning, represents the most modern way of teaching on any digital device. It represents the implementation of information technology in the development, distribution and management of education or teaching, which must be applied in public institutions as the most effective way of vocational training due to low budget burden and employee acceptance (Pegler and Litlejohn, 2007)). **Figure 1** summarises the most important findings in the area of cost per participant, which increased in particular for the OPAI organisation. The impact of ICT OPAI training in cost per participant represented an increase of 86 percentage points compared to other areas of education. The highest degree of impact on the economic burden on the budget of the Ministry of Interior of the Slovak Republic allocated per employee is represented by ICT trainings provided exclusively by OPAI Košice. According to our findings, they charged * 125.55 euros for each trained employee of the department for the chosen year 2022, as they could not cover the set maximum limit on the number of participants in 1 year, which translated into increasing costs per individual.

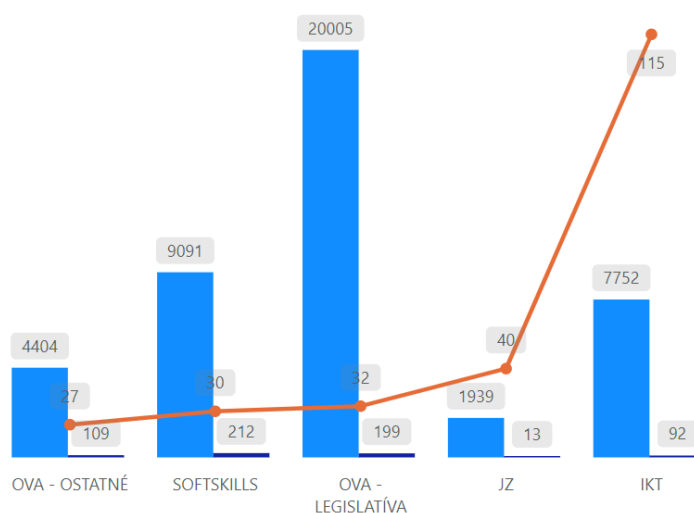


Figure 1. Average cost per participant, number of participants and trainings by field of education 2022 in euro.

Source: own processing.

The positive relationship applies exclusively to Institute, since for the other organisations studied there are fixed costs per participant, regardless of the number of participants. OPAI and IPA have in the contract maximum values of the number of participants per year that they can train due to fixed costs. Due to the fact that OPAI and IPA failed to achieve the maximum capacity of participants according to the contract in any of the examined years, the cost per 1 participant was significantly higher, which reflects the inefficient use of capacities and at the same time allocated funds. Our findings prove the justification for the implementation of e-learning, especially in the field of ICT and OTHER EDUCATIONAL ACTIVITIES—LEGISLATION. OPAI managed to fulfill the contract for 2020-2023 in the number of trained employees on average only 13% (Table 3).

Table 3. Summary comparison of surveyed organizations of the Ministry of Interior of the Slovak Republic for the period in question.

Organization	OPAI 2020	CÚZ 2020	OPAI 2021	CÚZ 2021	OPAI 2022	CÚZ 2022	INSTITUTE2022
Contract	228,000.00	315,350.00	288,600.00	315,350.00	309,600.00	315,350.00	*9716.40
Maximum capacity of participants	18,750	12,614	18,825	12,614	18,750	10,874	Unlimited
Price per person-day (according to contract)	12	25	15	25	17	29	Not established
Price per person-day (real status)	79.69	101.73	128.27	30.26	125.65	32.64	**3.23
Real costs	288,589.00	85,600.00	288,607.00	320,675.00	309,350.00	315,462.00	2429.00
Actual number of trainees	2861	3100	2250	10422	2464	9660	753

* No contract, we calculated the amount as annual operating costs (employee on contract)

** The amount depends on the number of participants in training, the higher the participation, the lower the cost per participant training process interval—Q4 2022

Source: own processing.

Following the set research question RQ1, we present a research opinion according to the analyzed outputs:

RQ1: What are the mutual disproportions from the point of view of training costs

and the number of participants in the research object?

INSTITUTE education, which took place exclusively in the form of e-learning, is a proof of efficiency not only in terms of total costs, but also costs per participant, which decrease proportionally with increasing numbers. This means that the more employees go through the training process, the lower the cost per employee will be (**Figure 2**). Regardless of the number of trained employees over the specified period, the costs of operating e-learning represent a significantly lower financial burden on the budget of the Ministry. This is based on the findings in **Table 3**, which shows prices for training activities under contracts.

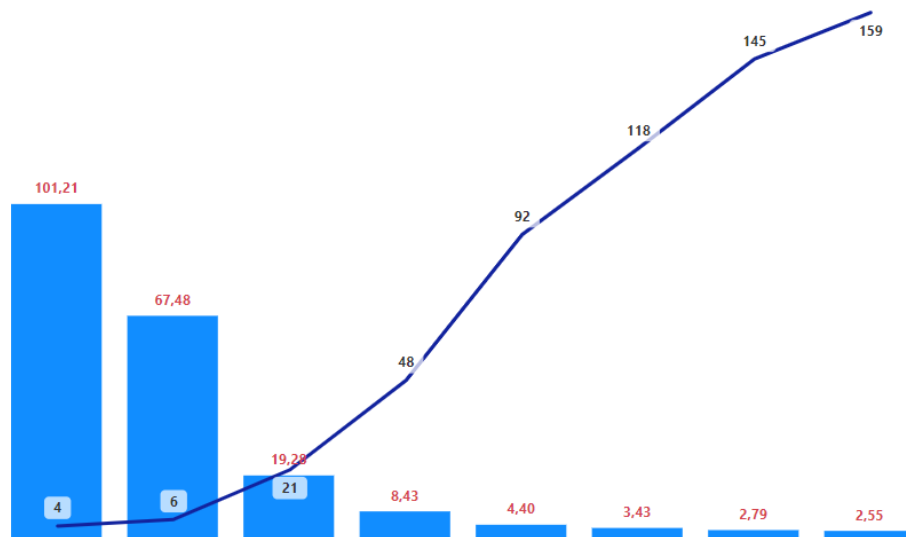


Figure 2. Development of costs per participant by number of participants in INSTITUTE 2022 training in euro.

Source: own processing.

Note: **Figure 2** was chosen based on the highest number of weekly INSTITUTE training sessions in 2022 due to data comparability with the educational process of other surveyed organizations. The key prerequisite for the application of e-learning is the fact that the number of trained employees under the auspices of INSTITUTE took place for 2 months, during which 753 employees participated in the e-learning process.

The decisive indicator of educational performance is the amount of costs per percussion of the number of participants in the training. The reason for this is the plan of the executive branches of the Ministry of the Interior of the Slovak Republic to educate a wide range of employees of PPZ, HaZZ and other employees of sections in a relatively short period of time, in the required quality with a high number of participants. Reflecting the current situation of OPAI and IPA trainings, we present the findings on Graphs 3 and 4. Compared to e-learning education, there is a fundamental difference between the dependence of the number of participants and the cost per participant. The price for training 1 employee is constant, regardless of the number of participants in the training process. As a result of face-to-face education, high costs are calculated per participant, as they do not take into account the actual amount of trained staff. They are fixed for 1 calendar year from the budget of the Ministry of Interior of the Slovak Republic. A limitation of the educational process are the capacity possibilities of IPA and OPAI, which are able to educate only a strictly defined number of people in full-time form with regard to the number of places in

classrooms (**Figure 3**).

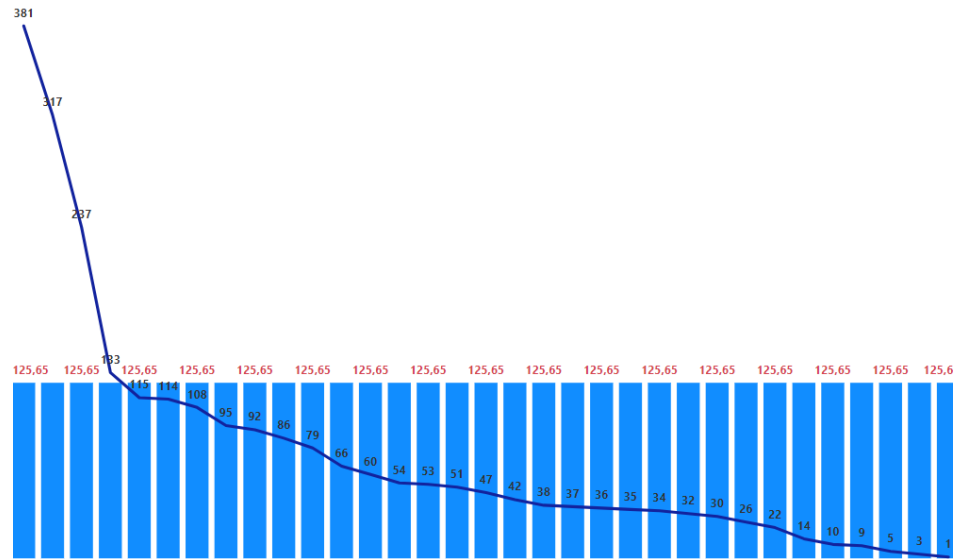


Figure 3. Development of costs per participant by number of participants in OPAI 2022 training in euros.

Source: own processing.

The cost of 1 participant in the case of IPA resulting from the 2022 contract in the amount of 25 euros includes a lecturer, premises, refreshments and accommodation. Partial optimization of training areas by changing to e-learning will demonstrably reduce costs, as it will not be necessary to provide premises and other matters necessary for the performance of full-time trainings for the defined subjects of training.

The cost per participant and the number of participants, as two basic variables over the period under review, achieve a negative correlation in the development trend (The interpretation of the result is supported by the PowerBI analysis tool as a data source actively used in the implementation of functional analysis). The inverse relationship is caused by precisely fixed costs per participant, which do not change in any way as the number of participants increases or decreases.

The finding has a negative impact on the allocation of funds per participant to individual organisations, which are determined on the basis of the maximum number of participants, and it is not possible to specify the actual number of participants in the trainings in question (In 2022, the fixed costs per participant in the environment of IPA were set at 29 euros. With a lower rate of participants, the cost increased to €32.64 per participant. OPAI showed a difference of up to €108.65 in 2022 when converted into the real costs of the participant). In practice, this means that the allocated resources are allocated at a fixed rate for 1 year with a maximum amount per 1 participant in training, which increases when the maximum capacity of participants is not reached, increasing the cost per participant. The disadvantage of the current model is the fact that with limited capacity of participants, it is not possible to reduce costs per individual if the maximum state is not met. Another limiting factor of the full-time form of training in the case of IPA is the implementation of adhoc educational activities. In this situation, the task of IPA is to find the appropriate specialist and

prepare premises for training. Here we see space for discussion in the preparation of e-learning, adhoc trainings (Figure 4).

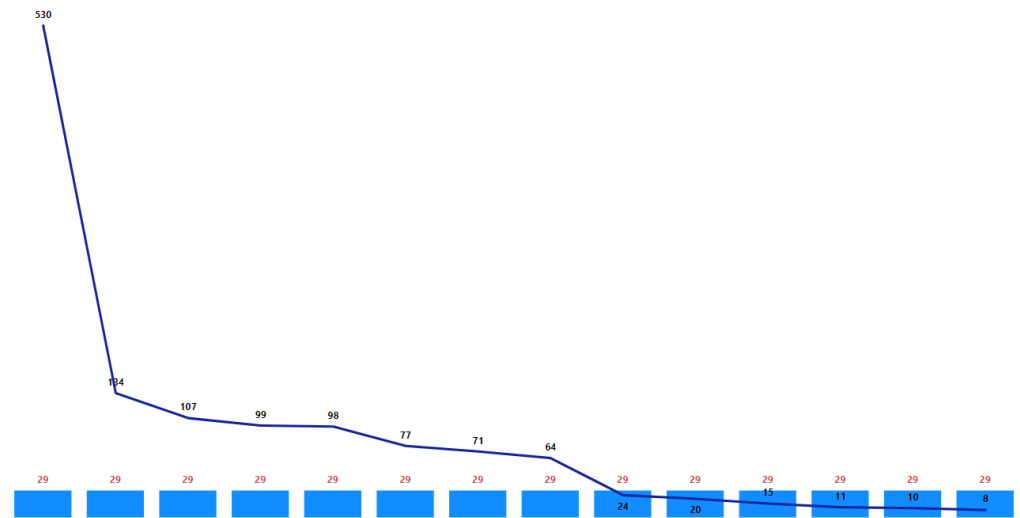


Figure 4. Development of costs per participant according to the number of participants in the training of IPA 2022 in euros.

Source: own processing.

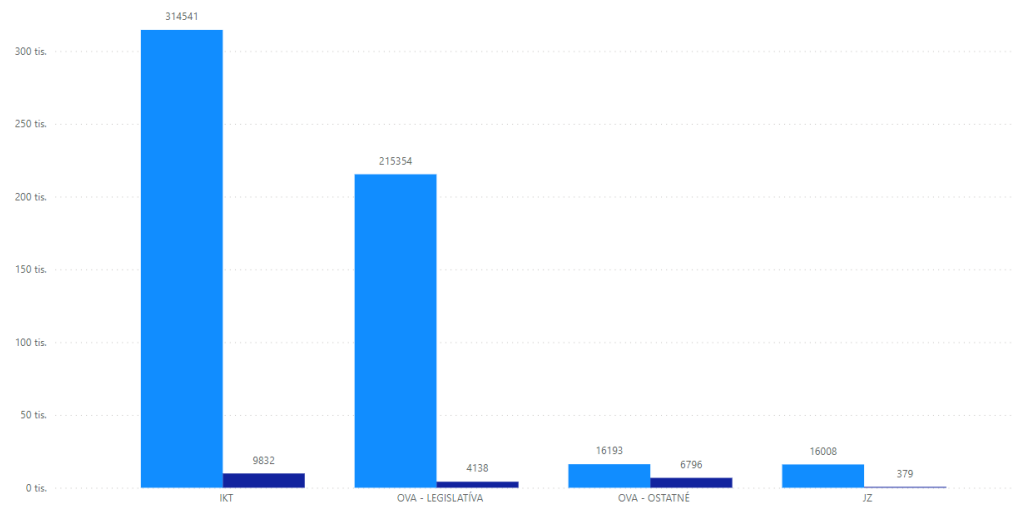


Figure 5. Current costs and post-learning costs by field of education in 2022 in Eur.

Source: own processing.

Significant differences in the change in the form of education in terms of costs were found in all areas of training. If we transform to e-learning, for example, the area of OTHER EDUCATIONAL ACTIVITIES—LEGISLATION, the total costs will decrease by more than 90%. The same situation would occur in the field of ICT. If we only partially adjusted ICT (Changing the form of training to e-learning would affect only MS Office suite—basics, which are offered by OPAI organization in limited capacity and the need to complete training within 2 working days. By changing to e-learning, there would be no need to provide accommodation, lecturers and accommodation), costs would fall by more than 60%. The OTHER EDUCATIONAL ACTIVITIES—OTHER area represents a part of education that can be switched to e-learning in a short time span. The reason for this is the currently ongoing trainings

under the auspices of INSTITUTE in cooperation with PPZ and HaZZ, which have set the content and structure (**Figure 5**).

5. Discussion

The recommendation of the authors of the analysis is to apply an innovative form of education, e-learning, to the structures of the Ministry of Interior of the Slovak Republic as a primary educational platform to ensure motivation of employees and a more interesting form of courses to increase their educational level and qualification prerequisites for effective and efficient response to changes in the dynamic environment of public administration (Jashan, 2020). The implementation of an innovative form of education, e-learning, within public institutions according to the results of the analysis can simplify and at the same time streamline education processes (Khan et al., 2012; Khrykov et al., 2020) in the context of individual subjects of the Ministry of Interior of the Slovak Republic. Another aspect of the application of e-learning at the level of state and local government is the fact that e-learning has the ambition to gradually become an integral part of the work performance of employees themselves, who will attend courses, seminars and other types of education without the need for forced activities by their superiors (Alario-Hoyos et al., 2017; Rodríguez et al., 2017). This will be mainly due to the comfort of employees and the attractiveness of presentation materials. Of course, it will be necessary to continue conducting interviews with individual departments, sections and representative OPAI of self-governments and district offices on the studied topic in order to ensure maximum efficiency of education processes (Hernandez, 2017). In research, Rasheed et al. (2020) interpret two levels of understanding e-learning in the organization. The first is the factor of improved education through the effective use of information technology for the benefit of the organization, which is also the subject of our research in the case of the number of trained participants in a short time. However, the second level of their research reflects on the financial perspective of e-learning. In our research, we also see the potential of saved financial resources, but in the case of executive branches such as the police, fire brigade and mountain rescue service, or crisis management is not a priority. The priority in the case of our object of investigation is the provision of quality education in compliance with legal rules such as economy, expediency and efficiency for the fulfillment of education standards in the performance of the civil service.

The results clearly showed that it is necessary to apply an innovative educational form of learning in the form of distance learning, e-learning, since with a given type of employee learning it is possible to achieve a large number of trained personnel in a relatively short time (factor of increasing the number of qualified employees). Another important factor that influenced the effectiveness of e-learning is ensuring comfort for employees, as there was no need to make a transfer on the part of the competent authority a large number of employees per agreed place (factor of saving time and reducing costs related to training). Another advantageous factor for e-learning is the easy scalability of the training subjects without the need for a lecturer, but in this fact it will be necessary to set a strategy for the development of e-learning in the object of our research (Butoracová Šindleriová and Turčan, 2023). The key

activity in the field of setting up e-learning processes will be obtaining and evaluating feedback from employees to constantly increase the effectiveness of the educational mechanism (Khmyrov, 2019). Suggested KPIs (e-learning effectiveness indicator) includes Costs of trained employees of the Ministry of Interior of the Slovak Republic, Number of staff trained over a defined period, Success of the subject of education (validation by test according to the needs of the relevant organisational unit, flexible time without additional costs). Validation of acquired knowledge, which will be the subject of education, will take place in the form of test questions after completion of training (setting up validation will be within the competence of the superior employee according to the needs of the relevant department, section, department...). Educational activities of IPA represent a specific area of research of our issue due to the content of individual training activities (SOFTSKILLS, LEGISLATION).

The educational activities of IPA will need to be analyzed in more detail and professionally assessed the possible transformation of face-to-face education into e-learning in order to streamline educational processes in terms of the use of working time and costs of the department (Littlejohn and Pegler, 2007). In the continuity of the comparative analysis in question, it will be necessary to prepare a content analysis of the trainings of the institutions in question in order to find out which areas can be transformed into an e-learning environment while respecting the specified quality of teaching and without limiting the positive aspects of face-to-face trainings. According to best practice, it is possible to change the ICT education system for MS Office—basic and advanced functionalities that take place in the online environment of the MS support application interface (<https://support.microsoft.com/sk-sk/office/video%C5%A1kolenie-pre-excel-9bc05390-e94c-46af-a5b3-d7c22f6990bb>). IS Fabasoft training, which is education in the field of ICT (Gemage et al., 2022; Ovadia, 2019), is attended by more than 2900 people exclusively in person form by the OPAI organization, except for the specific training IS Fabasoft—advanced functionalities, which is realized exclusively online. Our proposal is to process the content of all IS Fabasoft trainings into a form of e-learning, which already partially works in practice through the LMS 365 system. In further analysis, we recommend discussing mandatory OSH and fire protection training due to possible transformation to e-learning for selected types of civil servant jobs. The output of the analysis is quantitatively based findings of a primarily economic nature with regard to the budget of the Ministry of the Interior of the Slovak Republic. Through a comparative analysis of the subjects of the Ministry of the Interior of the Slovak Republic in the field of education, we defined alternative steps to change its form in certain areas. The field of ICT has been trained in application practice by e-learning for a long time. Our findings clearly demonstrated that when changing the current form of ICT education to e-learning, costs can be significantly optimised (Oproiu, 2015; Gaston-Keith, 2018). However, it is only one of the areas where transformation to e-learning is possible. Another example is the area of legislation and specific training of PPZ and HaZZ. These areas of education even took place in the form of e-learning under the auspices of INSTITUTE with a positive response. Already in the current period, it is possible to continuously switch to e-learning in selected areas of education (training for police, firefighters). The provision of the e-learning platform (technical and program provision, content creation, recording and evaluation of professional education) is in

operation and available for subjects of the Ministry of Interior of the Slovak Republic. It will be necessary to define the areas of courses that will be implemented by e-learning for the goals of individual sections, departments and executive branches of the Ministry of the Interior of the Slovak Republic.

6. Conclusion

The proposal of the authors of the article is determine the strategic setting of the education system across the entire organizational structure of the department, that the individual components of the ministry determine the current capacities for fulfilling tasks within the framework of education and the need to ensure the transition to e-learning education. In the case of our proposals, it is about conducting further research to understand the effective use of strategy development tools that can help decision-makers invest in technology in the face of disruptive innother educational activitiestion. The areas of operational focus for learning with technology identified through this research indicated needs and requirements for practice. Our benefit is demonstrable financial savings for a public organization that uses primarily rigid educational procedures that need to be transformed to a certain extent on the basis of e-learning. The decisive factor of success is the view of the authors on setting up the education system in the object of investigation based on the results of education and individual activities. From the interpreted research, there are clear, generally applicable recommendations for public institutions in the European area, which are related to the need for the application of e-learning in the educational portfolio. Legislative procedures, soft skills and specific training aimed at the executive components of the organization can be turned into e-learning, as our research results prove that the system works effectively.

Sucuoglu and Umunze-Andrew (2022) clearly declare the necessity of introducing e-learning into public administration structures, as they are a significant prerequisite for reducing costs and increasing efficiency in the field of education. The more educational activities are saturated with facts, this applies mainly to professional courses related to legislation, the more we need to include elements to lighten the topic. Based on our findings, we recommend several improvements to stay attentive while taking as much knowledge as possible from the training. We agree with the views of Fuertes et al. (2020), which clearly state that the formulation and implementation of the strategy develops in different phases of strategy development. At the beginning is the strategic analysis, followed by the strategy formulation phase, and at the end of the entire process, strategic decision-making and implementation take place.

Change as the basis for maintaining attention due to the fact that attention decreases after some time. If e-learning is created with uninteresting content, predictable style, participants know exactly what will happen next, efficiency naturally decreases (Silvestru, et al., 2013; Singh, 2014). We recommend putting videos and short demonstrations to help you understand the phenomenon. The elements of repetition are the most overlooked part, but they will ensure a positive impact on the goal and focus of the course. During the courses, it is important to ensure that the success of participants is evaluated so that education is of permanent importance for the department and its organizational units. After the implementation of the training,

we propose to test the knowledge of the employee through test questions with a time interval corresponding to the length of the test with the required achievement of the number of points for successful completion of training. Systematic setting of courses in terms of content and evaluation of participants thus represents a key role in fulfilling the object OPAI of the Ministry of Interior of the Slovak Republic. From the point of view of the effectiveness of e-learning as an alternative in the performance of education, it is necessary to create a single platform and rules for all groups of employees. According to Janssen and Voort (2020), also in our research, by analyzing the documents of the research object, we found insufficient commitment of the institution to introduce e-learning. E-learning is a dynamic and changing process of education environment, which in the case of public institutions requires a high degree of strategic planning, harmonization of the educational process, determination of limits when introducing it into the structures of the organization from the point of view of human resources, allocation of financial resources and material security. The primary need for the application of e-learning in the case of the object of our investigation is to convince employees of the benefits of its implementation (Almaiah et al., 2020). We define the framework of e-learning development in the context of public institutions in a practical context. The financial framework, the quantitative framework and the qualitative framework represent an open system for the individual components of the object of investigation in order to suit each unit of the department from the point of view of learning with technology and the gradual introduction of new learning methods.

According to Broucker et al. (2017), it is necessary to implement e-learning in the structures of public institutions to fulfill strategic goals after the cases from the period of COVID-19. Like Gabryelczyk (2020), we have clearly demonstrated the effectiveness and efficiency of e-learning. Our findings show that there is currently no education evaluation system in place beyond the fundamental rules for hiring an employee. We recommend introducing an evaluation system, as it is not possible to verify the rate of successful completion of courses in the current environment.

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