

Further Professional On-the-Job Training of Employees in the Digital Era

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Abstract—The paper addresses the needs of companies to create proactive training policies, crucial for the design and implementation of on-the-job training. The aim is to characterise the various types of on-the-job training and to propose further improvement taking into consideration the analysis of the opinions collected from an employee survey. Implementation of new technologies and processes influences the changes in many company activities. Some processes change, new ones appear, while others disappear due to gradual digital transformation. These processes do not necessarily lead to complete transformation into a digital environment. Each company is unique; therefore, its digital transformation is specific too. The result is a hybrid environment combining the digital and analogue world leading to the necessity to select adequate employees and form their further professional training as well. The employees, on the one hand, must demonstrate certain competencies and experience necessary to make the digital transformation a success story while on the other, they need to be prepared for new digital technologies and modern work processes. We characterise the development of employees from the perspective of both individual and/or team training and propose changes in further education in that sense. The individual form of further training, currently the dominant one, has had a long tradition in companies. At the same time, there is much more potential in team training, though it is still in progress. The results suggest that a lot of attention should be paid to the creation of learning teams as specified in the conclusion of the paper and also to a systematic approach towards team education and training.

Keywords—employee, digitalisation, Industrial Revolution 4.0, training, types of training, employee development

1 Introduction

Knowledge society and the transformation of companies have been influenced by the starting of the Industrial Revolution 4.0 [1]. This has brought about several changes which have an impact on education and training. Its necessity has become

lifelong. Companies, interested in highly qualified human resources must count with investments in employee training [2]. At the same time, the employees need to be ready and willing to be trained to meet the requirements and levels of performance which are continuously increasing due to modernisation, technological advancement and extensive digitalisation boosted by Covid – 19 which makes job-hunting more difficult. An employee who wants to preserve his/her employability needs to provide value to their employer and show progress in building up knowledge and skills. Employee on-the-job training covers two important areas: the training of individuals and teams.

The training of individuals consists of two basic parts, i.e., normative training – based on legislative requirements and training fostered by the employer. The company's training policy formulates the organisation and management of the training demanded by the employer. It includes a set of rules and principles applied in on-the-job training and is a result of the strategic goals and future perspectives of the company concerning employees' professional training.

The overall training programme should create appropriate conditions for sharing and developing knowledge in both the virtual and real world. Building partnerships and support of creativity may then provide more space for new ideas, opinions, and proposals for improvement of individuals, teams, and the whole company.

We formulated the goals of the paper and the empirical research in companies based on the study of on-the-job training. Each educational/training process has several stages starting with stating the aims of training, a needs analysis, programme design and evaluation of the results [3]. Each stage is a process. It is crucial that not just the superiors are involved in the processes but also subordinates who are the focus of our research. We can divide the training activities that form the training policies into two groups. The first group consists of the activities concerning the qualification of individuals for a particular job. The second group caters for in-company knowledge development which can be carried out in teams.

Excellent employees are a great asset which represents a high-quality company. The company's investment in its employees brings innovations, process improvements, and higher productivity. At the same time, it contributes to the overall performance and success of the company. We studied the intentions of companies to invest in their employees in both theoretical and empirical research and present the selected results which characterise those intentions. This paper is part of a research project VEGA no. 1/0328/21: Post-pandemic business management: identifying temporary and sustainable changes in sequential and parallel management functions in the context of the COVID-19 pandemic.

2 Further on-the-job training of employees

The role of the human factor in the work processes keeps growing and its quality has become a competitive advantage for companies. This fact has naturally led to changes in human resources management [4,5,6]. Company managers and especially HR managers try to improve the performance of employees by formulating criteria for selecting an employee with not only an optimal qualification but also capable to cope with various processes and methods to achieve the stated goals and tasks. Emphasis is on

effective use of human resources, establishing a positive relationship with the company, and accountability in fulfilling the planned tasks with a high degree of initiative, creativity, and inventiveness [7]. To achieve such demanding goals, the companies provide training for their employees. There are fewer and fewer companies that leave further development to the free will of the employees or companies which ensure only the compulsory (normative) training required by legislation. This includes the training required by the law of the country and requires passing a test of expertise to entitle an employee to carry out certain work activities [8].

Most of the compulsory training courses that are designed for all the employees of a company are concerned with job safety, health protection at work [9,10], first aid and fire protection [11]. Courses for regular professional retraining deal with areas such as professional qualification for craftsmanship, and qualifications for specialized workers e.g., professional drivers, drivers of forklift trucks, electrotechnicians, welders etc. There, the companies fulfil only the minimal standards following the prescribed limits [12]. We consider qualification trainings such as periodical re-testing and renewal of competencies required by legislation a part of compulsory training.

The next set of training courses for individuals includes optional – voluntary further qualification and requalification training. The development of this training depends on the degree of involvement of the employer. The courses are included in the training strategies and policies of the company. The evaluation of these training activities reveals various approaches such as [13]:

- *Randomness*: the training activities are isolated and are not consistent with the company goals; the employee, responsible for the coordination of training has also other responsibilities and tasks often very important ones and his time for training activities is insufficient; a consistent training plan is missing, and the activities depend on random initiative; the coordinator approaches control as a formality; the training is rarely based on a systematic needs analysis; it is often superficial; the feedback, if carried out, reflects the subjective reactions of the participants rather than an objective evaluation [14,15].
- *System*: the training is carried out according to a training plan; a budget for training is allocated and usually centrally managed; a work position of training coordinator is established with a well-defined job description; the training proposals are systematic and standardised; lecturers are well-chosen and regularly trained; the results are evaluated based on the increase of knowledge and expertise and participant satisfaction [14,15].
- *Integration*: an integrated concept of training is promoted which supports a learning culture; an equilibrium of company, institutional and individual needs is sought; the position of training manager and an operational plan for training that is consistent with the goals of the company and human resources development are established; the training is an integral part of company's activities and is considered as a tool for development; it is viewed as an investment; the training is evaluated based on its benefit to the company and its employees [14,15].

The development of specific, in-company knowledge which can be provided in team training as a supplement to teamwork represents the second group of training [16].

On-the-job training should be focused on what sets the company apart from its competitors. It does not include some general competencies such as computer literacy, job safety, communication skills, foreign language competence etc. Instead, it incorporates all the activities needed to ensure the company's competitiveness, realize the strategic goals and the visions associated with searching for new work methods, improvement of processes and elimination of activities that do not bring any value [17]. Learning should be incorporated into everyday activities and should not require special attention now and again in specialized courses. The business world is changing rapidly so daily problems and situations can be solved only by incorporating the knowledge of individuals into a pool of knowledge within the company, preferring a free and creative approach towards knowledge, perfection of communication, coordination, cooperation, and trust. Knowledge is the result of complex reasoning; it is part of our cognitive competencies while information is only a passive source of material. To profit from the information, we need to interpret it using our knowledge [18]. In the companies, the managers and HR managers gradually acknowledge the necessity of employee training. Team training has become the dominant type of further development in some companies. Despite that, further development predominantly remains in the training of individuals.

The preferences and needs of on-the-job training are the focus of our empirical research.

3 Characteristics of qualification and requalification training – the basis of the empirical research

We formulated the principles of the empirical research based on domestic and foreign literature as well as the practices of companies [19,20] while focusing on both individual and team training.

In the case of individual training, we characterised:

- Further qualification training;
- Requalification (change of profession).

Concerning further qualification training, we investigated:

- **Induction** – ability to carry out simple work activities. Lower management, superiors, experienced employees as well as HR professionals and training specialists are permanently involved in the induction training [21]. Even if there were no specialists in that sphere available, experienced senior workers who have carried out the activities for a long time can be involved to provide introductory instructions and practical advice for the best possible completion of the activities.
- **Adaptation** – we can characterise it as a specific programme of adaptation and training activities that simplify and facilitate the process of mastering the tasks for the new employee and acquaint him with the conditions and environment [22]. The adaptation process consists of three components:
 - Work adaptation;
 - Company culture adaptation;
 - Socio-psychological adaptation.

- **Targeted professional adaptation** – focusing on the development of qualifications required for specific work positions and occupations. These requirements for performance are based on the job register in the National system of occupations. The companies design their own competency models. It is usually a detailed description of how to behave and act in various situations, taking into consideration a great amount of specific information and it covers the most frequent problems and their solution. Competency models are descriptions of excellent personal performance and the standard used by companies to measure productivity. The key is to design a model of ideal performance which would reflect the company's specificity. The competency model is based on the expected and observable behaviour rather than the characteristics of the employees. The targeted professional adaptation should also be based on the specific requirements including performance criteria (task list), norms, required competencies, qualification and personality traits, and physical and health predispositions for the execution of the occupation summarised in the company's catalogue of jobs [23,24].
- **Development of key competencies** – this means developing those competencies which are not directly linked to any specific work position. The necessity of key competencies has appeared as the consequence of rapid technological, social, and organisational changes. They include many competencies not only the narrowly specialized ones and create the qualification superstructure. They cover the abilities, attitudes, values, personal traits, and characteristics of an individual enabling a person to act adequately in various professional and life situations. To complete the information, we present the list of key competencies [25]. The Framework of Reference of the European Union supports the necessity of key competency development with special attention to:
 - Increasing the level of basic skills (literacy, mathematical literacy, and basic digital skills);
 - Increasing individual and social competency and the ability to learn to improve life management with a mindful approach towards health and future orientation;
 - Supporting competency acquisition in science, technology, engineering, and mathematics (STEM) linked also to arts, creativity and innovation and motivating young people, especially girls and young women to seek a career in the area of STEM [26];
 - Increasing and perfecting the level of digital competencies at all levels of education and vocational instruction in all groups of the population,
 - Supporting entrepreneurial competencies, creativity, and initiative especially among young people, e.g., by supporting any opportunities for young learners to earn practical experience with the entrepreneurial environment during their studies;
 - Increasing the competency in the world languages and others and supporting the learners to study various languages relevant for their work and life situations which can contribute to cross-border communication and mobility,
 - Supporting the development of civic competencies to strengthen the awareness of social values as stated in paragraph 2 Treaty of European Union and the Charter of Fundamental Rights of the European Union;
 - Strengthening the awareness of all learners and teachers of the importance of the acquisition of key competencies and their relation to the society [25].

- **Specialization** – designed for the acquisition of special knowledge and skills related to new technological innovations and changes in job descriptions and specifications. It helps to develop an interdisciplinary approach toward professional training. Concerning job performance, it is important to define the requirements and levels of further training both necessary for the fulfilment of the job and the potential vision of other jobs [27].
- **Periodical retesting and renewal of competencies required by legislation** – authorizes individuals to carry out activities limited by law and includes the requirement of periodical renewal of competency [28].

The outcome of qualification training can aim at expanding the qualification or upgrading it. While the former is provided in the company and is closely linked to work activities, upgrading of qualifications is usually carried out in a formal educational system [29]. The employee who participates in such an educational programme achieves a higher level of education and an officially authorised certificate [30].

Requalification training is a specific type of training [21,31,32]. We focused our attention specifically on:

- **Requalification in a related area** – may take the form of:
 - Formal and/or;
 - Informal requalification (often result of informal training).
- **Renewal requalification** – is a type of requalification in a related area. It expands the earlier acquired theoretical knowledge and practical skills of an individual who lost their original qualification for not working in a specific area for a longer period in which changes took place due to new technologies.
- **Targeted requalification** – change of the existing qualification by acquiring knowledge, skills and habits needed for a new profession, usually targeted at a specific workplace.
 - It is a requalification associated with a change in professional orientation;
 - It often takes place within a formal educational system [30].

Requalification training includes any change of the previous qualification enabling the job applicant to collect new knowledge and practical experience in the area. It is an organized process that takes place through training or systematic education. The essence of requalification is any, even elementary change of qualification that provides further or new opportunities for the employee. As for its content, requalification focuses on scarce professions and the immediate needs of the labour market [31].

Team training currently presents a special form of training applied for qualification and in many cases for requalification. The requirements of recent times and the digital transformation of companies in various branches place the on-the-job team training in the spotlight. Completion of tasks is frequently associated with project teams and in the background of those teams, learning teams are established that can meet the learning requirements [17]. The aim of the paper is to characterise the various types of on-the-job training and to propose its further improvement while analysing the opinions resulting from an employee survey.

The basic requirement of team training is the acquisition of experts (specialists) and their grouping into teams to complete their present tasks or to prepare for the tasks in the future.

4 Research methodology

We focused our theoretical and empirical analysis on the types of professional training in companies. We evaluated the various types of training – compulsory, optional, qualification and requalification – based on time requirements. The research studied the situation in micro, small, medium, and large companies. The size of the company was determined only by the number of employees.

The research was carried out using interviews and questionnaire methods. The interviews were implemented to discover the opinions and experiences of the respondents. We used them in the pilot phase and while designing the questionnaire. We used a semi-structured type of interviews carried out by the members of the project research team VEGA 1/0328/21 – Post-pandemic business management: identifying temporary and sustainable changes in sequential and parallel management functions in the context of the COVID-19 pandemic. The questionnaire method was utilised for practical reasons as the research required a representative sample considering the size of the companies. The structured questionnaire enabled the collection of information from a larger set of respondents within reasonable time constraints and cost limitations. We collected the primary data based on the prepared questionnaire distributed in person or electronically. The structure of the questionnaire consisted of two parts: the informational part concerning basic data about the respondent and the topical one concerning the opinions of respondents about training in their company and generally, the interest of employees to participate in them. The respondents represented the manufacturing sphere, i.e., they were the employees of various companies in manual worker positions. During the research, some respondents renounced their participation because they considered the questionnaire intellectually challenging. Some questionnaires could not be used as they were not fully completed for various reasons. All principles of an ethical approach to personal data were thoroughly applied throughout the research and data processing. The collected data were used for statistical evaluation of the whole research sample only, not on an individual basis.

The respondents were chosen randomly in line with the statistical classification of economic activities SK NACE. Rev. 2. [33] and the manufacturing sector was represented by section C – industrial production. We believe that empirical research is applicable in all branches listed in the classification of economic activities and we plan to gradually cover them all. The planned number of respondents was set at 90 represented by various divisions: division 10 – grocery production, 11 – beverage production, 13 – textile production, and 14 – clothing production.

The research took place in the period June – December 2021.

For the analysis and evaluation of the research, we used the method of descriptive statistics. We applied two statistical methods to process the collected data:

- Manual processing: using the tally method in some types of questions;
- Automated processing: the data was processed by MS Excel [34].

The collected findings are presented in tables and then interpreted.

5 Results of the research

We focused our research on the time aspect of training, i.e., how much time companies devote to both compulsory training required by the legislation, and optional training that meets the needs of both employees and employers of the companies and lies fully within their authority. In the case of optional training, we concentrated on those which are concerned with extending the existing qualification of employees and requalification leading to a different kind of job. The opinions of the respondents were summarized in Table 1.

Table 1. Types of training activities in on-the-job training

Employee Training in Hours Per Month Per Employee	Types of Training Activities						
	Compulsory (Normative) Training	Optional Training					
		Qualification			Requalification		
		Small and Micro	Medium	Large	Small and Micro	Medium	Large
0 h.							
0 – 1/4h.	44						
0 – 1/2 h.	18						
0 – 3/4 h.	6						
0 – 1 h.	5	8				3	
1 – 2 h.	17	4	1		12	8	6
4 – 9 h.			3		6	4	9
10 – 15 h.			4	2		5	2
16 – 19 h.			3	4			3
20 – 25 h.				3			1
25 h.+		–	–	–	–	–	–
Total	90	12	11	9	18	19	21
		90			90		

Source: Results of empirical research in section C – industrial production.

Based on the results of the research, we can observe that the time allocated to compulsory training is substantially shorter. This finding applies to companies of all sizes therefore, we listed it as a whole without size specification. On the other hand, we found considerable differences in optional training which we divided into qualification and requalification training. It is interesting to note that requalification training prevails over qualification training according to the opinions of the respondents. It is reflected in both time that is allocated to them and the total numbers signified by the respondents. The preference for requalification training is noticeable in companies of all sizes. As the companies have limited resources to organise a large number of programmes, many training activities are incorporated into the formal educational (vocational) system. But in some cases, it is difficult to clearly distinguish between qualification and requalification training. But, regardless, of whether the respondents marked a specific type of

training as needed for qualification or requalification, the point is that it is provided and contributes to the professional development of the employees in their current or future job.

Table 2 classifies the training activities according to their contribution to overall company goals, their planning, and the general process of preparation. They show the opinions of respondents about the philosophy of training policies in their companies.

Table 2. Character of optional on-the-job training according to the employer’s approach

Company Size	Optional Training Activities			Total
	Random	System	Integration	
Small and micro companies	7	2	21	30
Medium companies	5	9	16	30
Large companies	4	14	12	30
Total	16	25	49	90

Source: Results of empirical research in section C – industrial production.

The results prove that the fewer employees a company has, the more the training focuses on work activities. Many respondents associate the integration of training into work activities both in individual and even more in team training. A team that works together trains together as well.

Project teams are part of the organisational structure of the company. They lead to the creation of learning teams with the expectation of inventions and innovations concerning their work tasks. We document these findings in Table 3. In micro and small companies, the philosophy of integration is mostly associated with team training. The medium and large companies use the philosophy of integration in both individual and team training. A few companies associate the philosophy of integration with individual training of employees who participate in specific training activities connected with their work tasks it is documented in the column Integration in Table 2 and in the column Team training in Table 3.

Table 3. Character of optional on-the-job training according to the employer’s approach

Company Size	Optional Training Activities		Total
	Individual Training	Team Training	
Small and micro companies	11	19	30
Medium companies	20	10	30
Large companies	21	9	30
Total	52	38	90

Source: Results of empirical research in section C – industrial production.

Individual training remains the dominant form of training though, team training creates better conditions for cooperation and the design of strategies for further company development. Still, the results show that the smaller the company the less individual training it provides and prefers team training instead. The answers of the respondents

signal that the companies have a lot of experience with individual training, and they can plan and organise it effectively. In team training, the design of target groups for team training constitutes a problem as they have difficulties with setting their specific goals which would be measurable, adequate, specific, and consistent. Team training still shows much space for improvement.

6 Discussion and conclusions

The application of new technologies and procedures influences the changes in company processes [35]. Changes in some activities, the appearance of new ones but also the disappearance of other activities under the impact of advancing digital transformation take place in companies. The analysed companies have not yet undergone the transformation to Industry 4.0, they can be characterised as conventional companies. Each of them is unique and therefore the digital transformation is also specific [36]. We can presume that it will take place in the companies gradually, starting usually with warehouse management. The employees, on one hand, must possess competencies and experience to complete the digital transformation in the company successfully and on the other, they need to be prepared for new digital technologies and modern work processes. The European Parliament and the Council of Europe passed in 2006 recommendations on key competencies for lifelong learning – The European Framework of Reference. The demands for competencies have greatly changed in recent times. A large proportion of work positions were automated and, in many companies, further transformation to Industry 4.0 is taking place [37] which increases the importance of the European Framework of Reference. Therefore, the key competencies remain the decisive area for further on-the-job training. As proven by the research, a major part of training activities focuses on requalification training rather than qualification. The acquisition of knowledge and skills necessary for the accomplishment of work activities that the employee did not carry out for a longer time has become an important part of requalification. Another important part of requalification training is training for a completely different profession with different work activities.

There is an observable shift from the training of individuals to team training. The essence of that training lies in teams that learn together though they were originally created with the purpose of proper realization of work activities. A team is a group of people complementing each other's knowledge, who have a common goal, and a similar approach to work that they are responsible for [38]. Highly effective teams invest time and effort into the study, formation and negotiation of their existence and tasks. Each employee has his/her place in the team, and their own task, which is different from others, but the employees are mutually dependent. Team training requires appropriate communication and change of attitudes and behaviour so that the members of the team can integrate their knowledge into independent actions. The goal is to improve the team's performance and consequently the whole company. It is important to involve all the employees in the training process. Learning teams are established in the background of project teams that are part of the organisational structure of the companies. The process of their creation is a high priority in the companies. They need to find a method how to create target groups, adjust their set-up at various levels, and specify

their training goals that would be realistic and achievable in the particular team. There is still a lot of space for continuous, follow-up training for teams.

Based on the proposed design of learning teams in Table 4, the companies could perform better in achieving their team training goals.

Table 4. Proposal of learning teams' design

Learning Teams	
Parallel Learning Teams	Follow-Up Learning Teams
Each learning team is independent. They are created based on their content and specific training goals with a high degree of independence. Cooperation among teams is not expected.	They are independent teams. Employee training in the learning team of a lower level continues in a learning team of a higher level. The number of teams can increase at a higher level depending on the complexity and content of the training.

Source: Results of empirical research.

Follow-up training teams provide more space for increasingly more complex tasks and content.

The process of creating learning teams for team training is crucial. In individual training, homogeneity is typical for the formation of target training groups. In team training, heterogeneity is preferred as they need to fulfil complex tasks. To create follow-up teams, careful construction of target groups is required to make sure that all members of the team will conscientiously fulfil the learning tasks. To prove that it is capable of further training in complex and demanding tasks, the team must consist of creative, engaged and strongly motivated individuals.

The essence of team training is in attracting experts (specialists) and their grouping into teams so that they can complete the current tasks in the company or prepare for their future ones.

We can expect that the Industrial Revolution 4.0 will bring changes into training. The changes will concern not just an increased use of information technologies and switch into virtual reality but also based on the ability to train in teams which ensures the link between work and training processes.

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