COMPARISON OF USAGE AND EFFECTIVENESS OF METHODS FOR FURTHER EDUCATION

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Abstract

The paper concerns the issue of further education with a special focus on analysing the methods used most often for further education in organizations and companies (both for-profit and non-profit ones). It presents the results of empirical research containing the data from over 600 companies operating in the Czech Republic. The data was collected using a questionnaire distributed to the graduates or current distant students of our faculty who already mostly hold various managerial positions.

The main objective of our research was to compare the usage of particular methods of further education and training and their effectiveness for achieving the goals of further education. Especially, the research study tries to answer the question, whether organizations are using or not using more often just those methods, which are considered by respondents also as more effective. Furthermore, another goal is to find out whether there are methods which are often used but perceived (predominantly) as ineffective. At the same time, "contradictory" methods that are perceived predominantly as inefficient, however, considered by a smaller group of respondents to be effective, are identified, and possible reasons for this contradictory opinion are discussed. Using ANOVA method, it has been confirmed that the differences in perceived effectiveness can be related to the different position of employees. Particularly different opinions are presented by managers and by the staff members. Finally, the relation between the perceived effectiveness of particular methods of further education and the level of employees' positions was analysed, using ANOVA. Different opinions were found between managers and staff members. The results should help the organizations to improve their strategies of further education with the aim to increase their effectiveness.

Keywords: further education, methods of education and training, effectiveness of education, on-the-job forms, off-the-job forms.

1 INTRODUCTION

One way to increase the organization's competitiveness is to focus on increasing the value of its human capital, i.e., investing in employee development through further education, with the aim of increasing working skills, competences and knowledge. Research confirms that participation in further (lifelong) training organized by employers is beneficial not only for the staff involved, but from an economic point of view also for the organizations or companies (De Grip and Sauermann [1]). The authors point out that the processes through which educational and development programs in the organization lead to higher employee productivity remain unclear. Furthermore, they state that research considering both the educational and economic perspectives should be focused on multidisciplinary research projects. That will help to clarify aspects connected with the issue of transferring education into practice and will enable the evaluation of the benefits of educational events for the organizations.

Further education should, therefore, be implemented systemically as a part of a long-term strategy of organizational development with clearly defined educational outcomes that correspond to the objectives of the entire organization and contribute to their achievement (Košťan and Šuleř [2]). Education cannot be effectively implemented without analysing and identifying educational needs, planning and selecting the appropriate training with appropriately selected forms and methods of learning through which the desired effects can be most easily achieved (Armstrong [3], Bartoňková [4], and others).

Economic issues related to human capital and its development are dealt with by Kucharčíková [5]. Her endeavour was to point out how important the identification of educational needs is for the effectiveness of investment in education, which will reflect the conditions of society. Consequently, an educational event with appropriately chosen methods and procedures is planned. The paper concludes that the well-prepared and conducted identification and analysis of training needs will lead
to more effective investment in human potential development and positive impacts on the performance of individuals, teams, and organization as a whole.

The main goal of the study by Falola et al. [6] was to explore in the Nigerian banking sector the effectiveness of education and development of employees and the associated competitive advantages. Both the effectiveness of methods of cognitive training for employee expertise and the impact of training techniques on behaviour and employee productivity were analysed. As for the training techniques and training methods under consideration, the authors have been inspired by Mehrdad et al [7], who divide training techniques into behavioural, also called on-the-job methods (i.e. orientation, training, briefing, apprenticeship, internships and assistance, work rotation and coaching) and cognitive, also called off-the-job methods (lectures, computer training, games and simulations, etc.). The results of the research (Falola et al. [6]) lead to the conclusion that behavioural techniques have a significant impact on employee performance and impact on the organization's prosperity, while cognitive training techniques lead to the optimum performance and have a significant impact on employee creativity. Both the behavioural methods and cognitive training enrich employees' potential by developing their skills and knowledge needed for optimum performance, increasing efficiency, promoting innovation and creativity that contribute to the organization's competitive advantage.

Of course, the choice between methods depends on the type of training being planned, the selected participants, the objectives of the training program and the nature of the training, as confirmed by Alipour et al. [8]. In order to implement the correct training methods, the organization should be informed of possible training methods and their effectiveness. Their study presents a conceptual framework for determining which methods to use when creating a training program. The authors of the paper classify the training and education methods according to the cognitive and behavioural approach. Cognitive methods provide both verbal and written information, clarify the relationships between concepts, or present ways to do something. On the other hand, behavioural methods allow participants to practice the desired behaviour in real or simulated mode. They stimulate learning through behaviour that ensures the best development of skills and the change of attitude. Either behavioural or cognitive learning methods can be used to change attitudes, though they do so by different means. The authors state that cognitive methods can be considered the most suitable for the development of knowledge, while behavioural methods effectively develop skills. However, the decision on what attitude to take also depends on the amount of funding available for training, the specificity and complexity of the knowledge and skills needed, the timetable for training and the possibilities and motivation of the participants.

The success of the transfer of skills and competencies acquired by training was addressed by Grossman and Salas [9]. The authors assess the transfer of acquired knowledge and skills to work using Baldwin and Ford’s model of transfer (Baldwin and Ford [10] and try to identify factors that have a demonstrable impact on the success of this transfer. They have confirmed that factors related to trainees’ characteristics, training design and the work environment are those having the closest and most consistent relationships with the transfer of training to employee activities.

From this survey of research, it is obvious that practically all the authors express the conviction about the need to use for further education proper methods which would assure desired benefits for trainees and the effectiveness of the training. Therefore, our research study tries to analyse this issue and the situation in the Czech Republic, which is sometimes regarded as one of the post-transformation economies. The goal of our research can be formulated using the following research question:

RQ: How much is the frequency of using methods of further education and training consistent with their overall effectiveness?

This study extends the results of our previous study presented at the INTED 2017 conference in Valencia (Mikova et al. [11]), which was based on a much smaller sample size and analyzed only a reduced set of training methods.

2 DATA SET AND METHODOLOGY

2.1 Data Set

To pursue our research goal, formulated above, the data were collected using an anonymous questionnaire, conducted online in 2017-2019. We received a total of 705 responses, after eliminating those with incomplete data, responses form 611 organizations operating in the Czech Republic were included in the analysis. The respondents participated voluntarily and absolutely no inducements were
applied, only a personal letter was sent to all graduates and current distant students asking them to help with the research carried out at our faculty. It should be emphasized here that all of them (even the current distant students) already work in various managerial positions, either as 1/ first level managers (staff members), or 2/ middle or line managers, or 3/ top managers. Therefore, their own assessment of the effectiveness of individual educational and training methods concerns the methods used in organizations for further education of people in managerial and administrative positions and not workers and similar positions.

2.2 Methods Used

Altogether 19 different educational and training methods were analysed. They were: Lectures, Discussions, Demonstrations, Case studies, Workshops, Brainstorming, Simulations, Managerial games, Assessment, Outdoor learning, E-learning, Instructing, Coaching, Mentoring, Counselling, Assisting, Task assigning, Job rotation, Working meetings.

The frequency of using each of these methods of further education and training was assessed in the questionnaire (and later coded for processing) on a scale “never” (0), “rarely” (1), “sometime” (2) and “often” (3). Each value in the brackets can be considered as the score of using a given method in a particular organization. It is clear that in a relatively large set of more than 600 organizations the frequency of using individual methods will be quite different. Since it would be highly impractical to compare the usage on the basis of their frequency distributions (of course, with a limitation of scale evaluation), we have used the average score of individual methods. It was calculated as the average value of the scores over all the sample of 611 questionnaires. Then the educational and training methods were ranked according to their average score of usage.

A slightly more complicated situation is in the case of assessing the effectiveness of individual methods. First of all, we have to realize that this assessment is based on the individual subjective opinion of each respondent, therefore, we denote it the “Perceived effectiveness”. Having in mind one of our research goals, namely to try to identify methods relatively often used while perceived by trainees (predominantly) as ineffective, the respondents were asked to name and rank the three most effective methods and at the same the three most ineffective methods. Of course, in all the cases again depending on how they perceive the effectiveness or ineffectiveness themselves. Again, the answers were coded and the first three most effective methods we assigned the score +3, +2, +1 (+3 is for the first place). On the other hand, to take into account the perceived ineffectiveness of individual methods, analogously the three “worst” most inefficient methods were assigned the score -3, -2, -1 (-3 is for the absolutely worst method – the most inefficient one).

Then the Average Perceived Effectiveness (APE) for each of the methods was calculated and, furthermore, analogously the Average Perceived Ineffectiveness (API) was calculated. Now, we have to take into consideration that while some respondents assessed a particular method among the top three effective methods, other respondents may have assessed it among the “bottom” (the three most ineffective) methods. This perceived ineffectiveness has to be taken into account. Therefore, to get a more “fair” picture, a Corrected Average Perceived Effectiveness (CAPE) was calculated for each method:

\[
\text{CAPE} = \text{APE} + \text{API}
\]

All the investigated educational methods were ranked according to their CAPE, and the ranking was compared with the ranking according to the average score of usage.

Finally, when analysing the differences in CAPE values among different job positions of respondents, statistical methods, namely ANOVA was used.

3 RESULTS AND THEIR DISCUSSION

We recall that the aim of our research was to find out what educational methods the organizations use most often for training its employees, to find out and compare which methods the respondents consider themselves as most effective or most inefficient and to reveal those methods that are relatively often used while perceived by trainees (predominantly) as ineffective.

As explained in the previous section, the positive values of APE were calculated for each of the methods, similarly the negative values of API and finally their sum CAPE, representing the corrected average perceived effectiveness. All these values, together with the ranking according to APE are presented in Table 1.
Table 1. List of all 19 methods ranked according to CAPE (with the values of APE, API and the ranking according to APE)

<table>
<thead>
<tr>
<th>Method</th>
<th>APE</th>
<th>Ranking according to APE</th>
<th>API</th>
<th>CAPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructing</td>
<td>0.95</td>
<td>1.</td>
<td>-0.14</td>
<td>0.81</td>
</tr>
<tr>
<td>Coaching</td>
<td>0.75</td>
<td>2.</td>
<td>-0.24</td>
<td>0.51</td>
</tr>
<tr>
<td>Mentoring</td>
<td>0.72</td>
<td>3.</td>
<td>-0.27</td>
<td>0.45</td>
</tr>
<tr>
<td>Assisting</td>
<td>0.60</td>
<td>4.</td>
<td>-0.21</td>
<td>0.39</td>
</tr>
<tr>
<td>Workshop</td>
<td>0.27</td>
<td>8.</td>
<td>-0.09</td>
<td>0.18</td>
</tr>
<tr>
<td>Task assignment</td>
<td>0.33</td>
<td>7.</td>
<td>-0.17</td>
<td>0.16</td>
</tr>
<tr>
<td>Job rotation</td>
<td>0.38</td>
<td>6.</td>
<td>-0.26</td>
<td>0.12</td>
</tr>
<tr>
<td>Brainstorming</td>
<td>0.14</td>
<td>12.</td>
<td>-0.06</td>
<td>0.08</td>
</tr>
<tr>
<td>Discussions</td>
<td>0.18</td>
<td>9.</td>
<td>-0.14</td>
<td>0.04</td>
</tr>
<tr>
<td>Case studies</td>
<td>0.12</td>
<td>13.</td>
<td>-0.15</td>
<td>-0.03</td>
</tr>
<tr>
<td>Simulations</td>
<td>0.06</td>
<td>15.</td>
<td>-0.09</td>
<td>-0.03</td>
</tr>
<tr>
<td>Demonstrations</td>
<td>0.08</td>
<td>14.</td>
<td>-0.15</td>
<td>-0.07</td>
</tr>
<tr>
<td>Assessment</td>
<td>0.03</td>
<td>17.</td>
<td>-0.19</td>
<td>-0.16</td>
</tr>
<tr>
<td>Outdoor learning</td>
<td>0.02</td>
<td>19.</td>
<td>-0.18</td>
<td>-0.16</td>
</tr>
<tr>
<td>Working meetings</td>
<td>0.39</td>
<td>5.</td>
<td>-0.56</td>
<td>-0.17</td>
</tr>
<tr>
<td>Counselling</td>
<td>0.17</td>
<td>10.</td>
<td>-0.37</td>
<td>-0.20</td>
</tr>
<tr>
<td>Managerial games</td>
<td>0.05</td>
<td>16.</td>
<td>-0.25</td>
<td>-0.20</td>
</tr>
<tr>
<td>Lectures</td>
<td>0.15</td>
<td>11.</td>
<td>-0.46</td>
<td>-0.31</td>
</tr>
<tr>
<td>E-learning</td>
<td>0.03</td>
<td>18.</td>
<td>-0.51</td>
<td>-0.48</td>
</tr>
</tbody>
</table>

The results of the analysis by the methods just described above are illustrated in the following two figures. Fig. 1 illustrates the ranking of the investigated educational and training methods according to the average score of their usage. Fig. 2, on the other hand, illustrates the ranking of the methods according to CAPE, the average perceived effectiveness with the correction to the average perceived ineffectiveness.

From the results presented in the graphs, at least three methods can be clearly identified, which belong among the most frequently used, while their overall effectiveness (after the correction) takes substantially negative values. They are E-learning, Lectures and Working meetings. Specifically, E-learning has APE = 0.03 (without the correction), API = -0.51, and CAPE = -0.48 (with the correction). Though we could provide real distributions of answers for E-learning, to get an idea about the meaning of the just specified values, it is perhaps more illustrative to provide a simplified example. If APE = 0.03, then for 611 questionnaires, the overall effectiveness is about 611 x 0.03 = 18. This value means, for example, that 18 respondents might have given E-learning the score of +1 point (for the "third best" method), or about 6 respondents gave the score +3 points (for the "first best" method), or various similar combinations. On the other hand, considering ineffectiveness, from the value of API = -0.51 we get the overall ineffectiveness about -0.51 x 611 = -312. It means, for example, that at the same time 312 respondents might have given E-learning the score of -1 point (for the third worst method), or about 104 respondents the score -3 points (for the "first" worst method), or various similar combinations. These numbers are definitely not negligible. To conclude, in our research, E-learning has been found out as rather widely used; however, perceived by respondents as highly inefficient.

At the same time, a more detailed analysis of uncorrected values of APE and API, reveals an interesting, though perhaps unexpected finding of the existence of methods which we may call as "contradictory" ones. At least two methods belonging to this category have been found out. They are Working meetings and Lectures. APE for Working meetings is 0.39, i.e., uncorrected summary effectiveness is approximately 240 (611 x 0.39), what means that e.g., 240 respondents might have given them +1 point for the third best (most effective) method, or about 80 respondents +3 points (for
the absolutely "first" most effective method), or various similar combinations. However, at the same
time, the ineffectiveness of the Working meetings is the highest of all the analysed methods (API = -
0.56). It means that the overall ineffectiveness is about \(-0.56 \times 611 = -342\), i.e., 342 respondents
consider the Working meetings as the 3rd worst method (with -1 point assigned) or 114 respondents
for the absolutely 1st worst method with regard to its effectiveness (with -3 points assigned), or
various possible combinations.

A similar situation can be seen for the method Lectures. To sum it up, while a major part of
respondents considers the Working meetings and Lectures as ineffective, a smaller (but not negligible)
part of respondents consider the same methods to be very effective. These rather contradictory evaluations deserve some discussion. In our opinion, the explanation can be based on two reasons. The first one is obvious; it will depend very much on the quality of realizing the particular method. A lecture can be made brilliant and interesting, but also awful and boring! The same holds to some extent for working meetings. Here, we should emphasize a great responsibility for those who prepare lectures and business meetings to do it so that they would be for the participants sufficiently beneficial. They have to take into consideration for whom is the action designed, what will be its content, who will deliver the lecture or manage the meeting. This reason is in accordance with the findings of Falola et al. [6], Alipour et al. [8] or Fayole [9].

The second reason may be a dependence on the type of job position within the organization hierarchy. This assumption has been confirmed by a more detailed statistical analysis. Using ANOVA, the comparison of APE among the three job positions (Staff members, Line or middle managers, Top managers) showed a statistically significant difference (P-value = 0.025) between the individual positions for the method Lectures. While top managers perceive the lectures as relatively very efficient, the staff members and line managers perceive them as rather inefficient. A statistically significant difference in APE was found by means of ANOVA also for Coaching (P-value = 0.006) and Rotation (P-value = 0.029).

These findings mostly correspond to those of Arthur et al. [13]. Their results indicated that the training method used, the characteristics of skills and tasks, and the choice of evaluation criteria for training were all linked to the effectiveness of training programs. Their contribution provides valuable information for decision-making regarding the selection, implementation and evaluation of organizational training programs. They also present interesting findings regarding the effectiveness of lectures. Although widely used in practice, they are rated mostly negatively, as a boring and inefficient way of training. Arthur et al. [13], in their meta-analysis, demonstrated their effectiveness (regardless of whether they were independent lectures or linked to other methods), a finding contrary to the current bad public image. Especially the effectiveness of training has been demonstrated in the training of some specific skills and tasks.

As far as E-learning is concerned, in our research study, it was found to be the “top ineffective” method. On the other hand, Batalla-Busquets and Pacheco-Bernal [14] point to the perception of different face-to-face vs. virtual approaches and attitudes that can be encountered in corporate education. They argue that e-learning is perceived as a more flexible and up-to-date method of education, but on the other hand, face-to-face training is perceived as more motivating than the virtual course, allowing more practical explanations from trainers. The benefits of e-learning are clearly identifiable from a company’s perspective: as a flexible and effective method for developing staff skills and expertise, it reduces training costs. However, in terms of employees, the benefits of virtual training are no longer so clear. The authors state that on-the-job e-learning is emerging as a useful method in situations where there is a strong similarity between approaches to education and work and where career development is linked to the intensive use of ICT and continuous learning. In our opinion, e-learning may be a suitable method of training for people who are capable of self-education and have a positive attitude towards lifelong learning and also sufficient ICT skills.

Several authors categorize training methods into off-the-job methods and on-the-job methods, e.g., Folwarczna [15], Alipour et al. [8], Roshchin and Travkin [16], Ahadi and Jacobs [17], Nazarov and Akhmedjonov [18], Cheng, & Hampson [19]. As we adopted the division according to Folwarczna [15], we have:

- “Off-the-job” methods: Lectures, Discussions, Demonstrations, Case studies, Workshops, Brainstorming, Simulations, Managerial games, Assessment, Outdoor learning, E-learning

Though there is not a total agreement on the assigning particular training methods into these two categories, it is not without interest that in our research study the methods most often denoted as “off-the-job” were assessed (except workshops) at the bottom part of ranking according to the corrected perceived effectiveness (see Figure 2.)
4 CONCLUSIONS

The results of the study provide answers to research question RQ. We can state that the usage of particular methods is in most cases consistent with their perceived effectiveness as illustrated in Fig.1 and Fig.2. The methods with the negative values of CAPE (Corrected Average Perceived Effectiveness) are placed in the second half of ranking according to the average usage score. However, the exceptions have been found. They are E-learning, Lectures and Working meetings. All these three methods are relatively often used while their CAPE attains negative values.

As discussed in the previous section, in the case of Lectures and Working meetings an interesting phenomenon had been found out. These two methods are predominantly perceived as inefficient but at the same time perceived by a smaller group of respondents as effective. The reasons for this contradictory assessment may result at one hand from the different quality of lectures and working meetings, on the other hand also from the different job position of respondents. A more detailed analysis by ANOVA revealed statistically significant differences in assessment of Lectures, Coaching, and Rotation among the groups of staff members, middle or line managers, and top managers.

E-learning has been found in our study as relatively often used but perceived as the least effective of all the investigated methods. However, as discussed above, some authors (e.g., Batalla-Busquets and Pacheco-Bernal [14]) though admit the advantage of face-to-face learning compared with virtual e-learning, but present arguments in favour of e-learning. In our opinion e-learning should be used with special care and can be suitable for employees who have sufficient ICT skills and capability supported by strong self-discipline and will to self-educate themselves.

In any case, our research supports the findings of the majority of authors cited in this study about the necessity to organize the training carefully and above all, to evaluate its results with respect to its effectiveness. To conclude, it should be imperative for organizations not to organize further education and training just for the sake of itself, but to adjust well its objectives, contents, and methods to the objectives of the organization and to bring benefits to its employees.

5 LIMITATIONS OF STUDY AND FUTURE RESEARCH

The limitation of the research study consists in the facts that it did not consider sectors of economic activities, included only organizations operating in the Czech Republic and did not take into account further education and training for the workers’ job positions.

In future research, we plan to include into the analysis the sectors of economic activity, the specific focus of further education in organizations, and in cooperation with partners from abroad to include data from other countries.

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