R E F E R E N C E

By: Prof D.Sc. Zhelyu Vladimirov, professional field 3.7 "Administration and management"

On: dissertation work of Ivona Hristova Litsova, on the topic "*Development of a Model for the Evaluation of Teaching and Learning Outcomes"* for awarding the educational and scientific degree PhD in professional field 3.7 "Administration and management", doctoral program Business Administration

Reason for the review: Order RD-38-52/26.01.2024 of the Rector of Sofia University "St. Kliment Ohridski"

1. Information about doctoral student

Ivona Litsova graduated from the High School with Foreign Languages "Exarch Joseph I" in Lovech with English and German. He holds a bachelor's degree in Business Administration from the Faculty of Economics of the Sofia University "St. Kliment Ohridski" (SU) (2012-2016) and a master's degree in "Management and development of human resources" from the Faculty of Economics of SU (2016 - 2018).

In the period 2014 – 2018, she worked successively as an intern, assistant and training and development expert at Lufthansa Technik Sofia, where she was responsible for the entire training process in the company. From the end of 2018 to 2020, she was part of the "Recruitment" department at the American IT company "VMware", where she participated in the organization and coordination of interviewing processes. From March 2020 until now, she is working in the international IT company with headquarters in the USA (Progress Software) as part of the team responsible for personnel selection.

She participated in numerous seminars, international scientific conferences and projects. She went through a number of trainings in Bulgaria and abroad. Has certificates for completed courses - "Train the trainer" at Lufthansa Technik, held in Hamburg, Germany; "Lean basics", "Structured problem solving" and "Continuous improvement" from the Lufthansa Technik Lean Academy. She has taken several courses to develop "Soft Skills", "Negotiation Skills", "Communication Skills" and "Conflict Management". She speaks English and German.

1. Information about doctoral student

The presented dissertation consists of an introduction, two chapters, a conclusion, information sources used, main contributions and seven appendices with a volume of 166 pages, and without the appendices and bibliography – of 136 pages. 195 information sources were used, five of them in Bulgarian and the rest in English. The text contains 50 figures and some tables are presented as figures.

In the Introduction, the relevance of the issues related to the development of internal company training of employees and the need for its evaluation is revealed. The choice of the topic is determined by scientific considerations and by the personal professional experience of the doctoral student in this field. The purpose of the dissertation is to propose and test a new model for evaluating training courses based on a comparative characteristic between existing models and methods for evaluating training results (p. 4). This objective is specified in four tasks.

The object of the study includes training evaluators and employees in management positions or in the HR department in large companies in Bulgaria from various sectors.

The topic of the research is their understanding of the trainings; the results of the trainings; the impact of technology, skills and participant behaviour on business and societal outcomes. The thesis defended is that the results of employee training can be measured for the business through elements of the *Learning, Technology and Behavior* factors. In this regard, 3 hypotheses are tested. Data for the empirical study were collected from a quantitative study with three questionnaires, a qualitative study through 20 semi-structured interviews and 6 meetings with representatives of training organizations. Restrictions are given on page 11

1. Information about doctoral student

The **first chapter** is an overview of theories of the Learning and Development process with an emphasis on assessment as an element of this process. Eight training evaluation models are analysed and a comparative characterization is made between their elements and applications. The theoretical framework of the study is the model of Donald Kirkpatrick (1994) and the supplemented and adapted New Model of Kirkpatrick (2016).

In **point 1** of the first chapter, the elements of the "Training and learning" system are disclosed, which are: 1. Objectives of training; 2. Analysis of training needs; 3 Training program; 4. Conducting the training; 5 Feedback; and 6. Evaluation of training.

The sequence of steps to be taken before training is given in Fig. 1 (pp. 16-17), and the stages of creating a training program are presented in Fig. 2 (p. 18). In addition, the categorization of learning objectives is given in terms of: instruction, organization as a whole, departments and individual performance. It has been noted that training is essential to increase the productivity, technological level and ultimately the rentability of organizations. This necessitates a careful analysis of training needs for training programs to be effective. The process involves collecting, analysing, and interpreting data about individual, group, or organizational skill gaps (p. 21). The identification of training needs also depends on the socio-demographic characteristics of employees (education, age, etc.). The different types of training needs analyses are summarized in Fig. 3 (p. 22).

Key elements of a good training program are presented: needs assessment, learning tasks and practical application. Two main approaches to introducing such programs are indicated: trainer-led or learner-led. The need for follow-up support to the training participants through monitoring, coaching, mentoring, etc. is shown. Both the individual benefits of the training programs and the benefits for the organization are revealed (pp. 24-25). The steps to be taken during training are summarized in Fig. 4 (pp. 28-29). The importance of feedback after the learning process through various tools is outlined.

Assessment of training, which is also the subject of the dissertation, is identified as one of the most essential components of the learning process. Some definitions of this estimate are presented in Fig. 6 (p. 33). According to the author, assessment is defined as the systematic collection and evaluation of information in order to make the best use of available training resources to achieve organizational goals (p. 32). The difficulty of measuring the effectiveness of training is demonstrated due to the abstract nature and long-term nature of the impact on learners. In addition, other obstacles to the effective evaluation of trainings are revealed. Examples of studies of the need, benefit, and evaluation goals of training by different authors are given, which do not differ much.

Point 2 of the first chapter explores different models for evaluating the effectiveness of training according to the nature of the business and the allocated budget. The comparison table in Appendix 2 presents models, methods and approaches for evaluating trainings according to three indicators: main characteristics, elements/components and application.

The guiding model in the dissertation is Kirkpatrick's first model, whose strength the author sees in its focus on the behavioral outcomes of training participants. The model includes four levels: (1) response; (2) learning; (3) behaviour; and (4) results (Fig. 9, p. 44), which are explained in more detail. In Kirkpatrick's new model, new elements are added and the levels are dealt with in reverse order. The principles of Kirkpatrick's new model are given on p. 51. According to the author, this model is focused entirely on learning outcomes, which is why it can also be applied to the evaluation of e-learning.

The next model examined belong to Phillips, which adds another level to the 4 levels of the previous model in order to estimate the return on investment. In essence, this level is a comparison of the monetary benefits of the training program with the costs (Fig. 12, p. 53). For this purpose, a variety of quantitative and qualitative data collection and processing methods are applied. Examples of the use of this model in other studies are also given.

The third model is the so-called success case method. As the author points out, this method brings to the fore the factors on which the success or failure of training depends (p. 57). The first part of the method shows potential success cases, while the second identifies the reasons for success. A typical distribution of learning outcomes is shown in Fig. 13 (p. 59).

The fourth model is known as Context, Input, Process and Product (CIPP). This model aims to answer the questions of whether the assessment scheme is functioning properly; where the trouble spots are and how they can be resolved; are there more efficient ways of collecting data (p. 61). The model has been evaluated as a useful tool in helping evaluators to formulate many important questions during the evaluation. The content of the four components of the model is detailed, while the wide application of the model in different organizations, disciplines and countries is shown.

Similar to some of the previous models is the so-called CIRO Model for evaluating Executive Training. It also included the assessment of 4 aspects of training: context, input, response and outcomes. It is important to note that the evaluation of results in this model takes place in three stages: immediate, subsequent and comprehensive.

Among other approaches and models for training evaluation, the following were also analysed: the "cost-benefit" method; Kaufman's five-stage model; the Fitz-Enz (1994) model; the scoring method of Mahapatra and Lai (2005); and the assessment levels of Cannon-Bowers et al. (1995). Kaufman's five-stage model extends the evaluation of learning to include the benefits of learning to society and the surrounding environment. Fitz-Enz's (1994) model contains a system for managing training costs - both fixed and 18 variable costs. The steps describing the "Analysis of training value" are presented (pp. 66-67). Mahapatra and Lai's (2005) method includes 5 levels of evaluation: technology, reaction, skill acquisition, skill transfer and organizational effect, some of which are comparable to the levels of previous models. The newly added level is that of technology, related to the application of IT in education (Fig. 16, p. 68). The three-level learning effectiveness scale of Cannon-Bowers et al. (1995) is presented in Fig. 17 (pp. 69-70). After these models, an example from the Bulgarian practice for evaluating the effects of the company's employee training is given (p. 71-72).

In addition to the presented models, the Six Disciplines and their impact on business training outcomes are analysed (Pollock, Jefferson, & Wick, 2015). These disciplines show how to remove unnecessary information from training programs to achieve maximum business results. Based on these models and above all on Kirkpatrick's New Model (2019), the author presents her own model of 4 constructs, through which she aims to show the influence of technology, learning and behaviour on training outcomes (p. 76).

The second chapter includes: research methodology; analysis of data from three surveys; analysis of data from conducted interviews; and testing the proposed model. The three surveys and the questions to representatives of training companies are given in the respective appendices. The evaluator questionnaire includes 25 questions divided into 5 groups. The employee questionnaire of the training outcome survey included 21 questions from three groups and two demographic questions. The third survey contains one question with 9 possible answers about what justifies the cost of education. Survey 1 was completed by 101 respondents, survey 2 – by 104, and survey 3 – by 107. The respondents were selected on the basis of those who responded via a link to the survey on social networks and by email.

The results of the first survey are presented with one-dimensional distributions of respondents by professional status (Fig. 19, p. 85) and experience in the field of assessment (Fig. 20, p. 85). It was reported that more than 2/3 of the respondents were of the same opinion (agree or disagree) with the stated statements. For example, nearly 85% agree that training evaluation is very important for the organization and the training employees; almost as much agree with the statements regarding the importance of the technology used in the trainings; the majority of respondents agree that the training should take place in an environment close to the real one; over 80% also agree with the statements that assessing post-training behaviour is the most important step in the assessment process; and over 80% agree that business outcomes after training are reflected in the achievement of training objectives.

Demographic characteristics of respondents from the second survey by sector (private or public) and position are presented. According to the obtained results, more than 80% of the respondents express the opinion that the trainings in their organization are applicable, credible, convincing and efficient (Fig. 25, p. 92). Almost 90% are of the opinion that it is very important to define in advance what "successful training" means for the manager. Regarding the assessment, it is important for the organization that it is timely so that appropriate measures can be taken afterwards (Fig. 26, p. 93). Also, for over 90%, learning design and IT-based tools are important and influence the acquisition of new knowledge (Fig. 27, p. 94). More than 80% of the respondents are of the opinion that the degree of learning after training is important to be evaluated (Fig. 28, p. 95), and also that what is learned during training should be synchronized with the behaviour of the participants afterwards (Fig. 29, p. 96). Nearly 90% are of the opinion that costs can be measured at any level of assessment (Fig. 30, p. 97). The results of the question "What justifies the training costs" of the third survey show that more than 60% of the respondents agree with all 9 proposed answers, which can be interpreted as successfully completed training.

Fig. 32 (p. 100) summarizes the data from the conducted interviews with representatives of training companies. According to these results, trainings are ordered by companies mainly from sectors such as IT, manufacturing and shared service centres. Respondents defined successful training as one in which there is good feedback, active participation and in which goals are achieved. The main methods of assessment of training are: feedback questionnaire, observation, key performance indicators and the Kirkpatrick model.

The chapter ends with testing the author's proposed regression model for evaluation of training (Fig. 33, p. 78). The independent and dependent variables and requirements for regression analysis are shown. The factors created by the author: Technology, Learning and Behavior are presented in more detail, together with their constituent variables. All constructs demonstrate high Cronbach Alpha.

The author selected one representative variable from each construct for the purposes of regression analysis. The choice of these variables is theoretically well justified. The adjusted R^2 of the regression model shows that the independent variables explain about 65% of the variance of

the dependent variable, and also the explained variance of the regression is greater than that of the residuals. All VIF values < 3, which means there is no danger of multicollinearity. The additional condition for the absence of multicollinearity is also fulfilled - the so-called "condition index" < 30. The selected variables have a positive and significant influence on the dependent variable *Results*. The variable representing the *Behavior* factor (t= 3.378**) has the greatest weight, followed by the variable representing the *Technology* factor (t = 3.363**) and the variable representing the *Learning* factor (t = 2.088**). Thus, the author confirms the raised hypotheses and proves the significance of the proposed model by applying additional data to support the model.

The **Conclusion** represents a recapitulation of the conducted research, indicating the relevant limitations and some research perspectives in this area.

4. Evaluation of theoretical and scientific-applied contributions

Four contributions are formulated, which are the personal achievements of the author.

First of all, this is an in-depth comparative analysis of the elements, characteristics and application of eight existing corporate training evaluation models.

Second - own research was carried out, which reveals the opinion of evaluators, managers and specialists from organizations of various branches in Bulgaria on the topic of training evaluation and the applicability of the proposed model.

Third, a new model for evaluating training in organizations is proposed and tested.

Fourth - the influence of three factors (technology, learning and behaviour) on the results of business training is proven.

5. Evaluation of publications on dissertation

On the topic of the dissertation, the candidate has 4 publications, one of which is co-authored, two are in English and two in Bulgarian. The review shows that most of the content of the dissertation has been tested in these publications.

6. Evaluation of the summary (autoreferat)

The summary of dissertation has a volume of 57 pages, reveals the main points of the dissertation work in a synthesized form and as such meets the requirements.

7. Critical notes, recommendations and questions

A technical note refers to the dissertation Content presented in the Summary without pages and marked Error! Bookmark not defined.

Another note concerns the partial pooling of the data from Surveys 1 and 2 in the part that refers to the verification of the proposed model and its components, without testing how well such a pooling is justified.

8. Conclusion

Regardless of these remarks, the dissertation shows that the doctoral student has done a significant work of analysing the literature, conducting three quantitative and one qualitative research, and adequately summarizing the results. The researched problem of evaluating the results of company trainings is important and the conclusions add new knowledge on the subject. The text shows very good knowledge of the researched issues, correct presentation of the theoretical approaches and reference to the information sources. Good skills are demonstrated in processing and analysing data from quantitative and qualitative research. The results outline the significance of the derived factors for a more accurate assessment of the results of employee training, as they

are sometimes associated with significant costs for organizations. The conclusions drawn are based on the processed data and the obtained results. With this work, the doctoral student demonstrates the qualities of a serious researcher with a responsible attitude to scientific activity.

All this gives me the reason to propose to the esteemed jury to award Ivona Hristova Litsova the educational and scientific degree PhD in professional field 3.7 "Administration and management", doctoral program Business Administration.

13.03.2024   Reviewer:
Sofia   Prof DSc Zhelyu Vladimirov